Fault Management

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 activity performed by operating company personnel clears the alarm condition. The alarm system includes audible notification and visual display through warning lights and the 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 correcting 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 an operating company defined threshold.

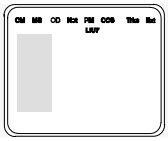
- Minor alarm

  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 following figure gives an example of a MAP alarm banner for a SIMPLEX alarm.

Figure 1
MAP alarm banner for SIMPLEX alarm



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

Under the Trks column of the alarm banner, the type of carrier for a carrier going SysB is denoted as shown in the following table:

Trks Banner	Carrier Type
D	STS1P
	STS3cP
	DS3P
	VC4P
d	DS1P
	DS1L
	VT15P
	VC12P
	EiP
	E1L
P	STS3L
	STS1L
	STS1P
	STM1M
S	OC3S
	STS1S
	STM1R

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 following figure gives an example of a log report for the SPM630 log.

Figure 2 Log report example for SPM630 log

```
** SPM630 Feb07 10:22:11 4700 INFO Device Protection
   Location:    SPM  01 DLC 01
   From:        Working
   To:          Spare
```

Tools and utilities

Fault management for alarms and logs is performed through the MAP.

Fault management indicators

The following table lists the fault management indicators generated by the SPM.

SPM fault management indicators

Log name and number	Probable cause	Required action
BITS300	A BITS 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 alarm has been cleared.	None
BITS601	A BITS 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 (See the APS list in the SPM alarm to log correlation table for additional information)
CARR310	A carrier failure event cleared.	None (See the APS list in the SPM alarm to log correlation table for additional information)

SPM fault management indicators

Log name and number	Probable cause	Required action
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.
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
PRSM400	An SPM loadfile cotaining SPM PRSU fixes has been datafilled in table PMLOADS.	None

SPM fault management indicators

Log name and number	Probable cause	Required action
NODE600	A connectivity log that is generated for the intermediate communication audit failures and when there is a(n): state mismatch, MIP mismatch, Trouble mismatch, Activity mismatch, Available mismatch, or No response.	None (See“NODE600 log Sanit Audit reasons” on page -11 for a detailed explanation.)
SPM300	A device fault has occurred.	Clear the fault using the appropriate procedure.
SPM301	The clock oscillator tuning range has reached 70% or 90% of the maximum range.	If the clock range is between 70% and 90%, no immediate action is required, but consider replacing the CEM. If the clock range exceeds 90%, replace the CEM.
	SPARTS (Spectrum Patching After Return To Service) 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.	Determine the cause of the SWER and take appropriate action.
SPM312	A trap has occured.	None
SPM313	A fault has been recorded in the Module Information Memory (MIM) of the SPM.	None

SPM fault management indicators

Log name and number	Probable cause	Required action
SPM330	The two CEMs have either come in to datasync or out of datasync.	None
SPM331	A device had a protection switch failure.	Clear the PROTFAIL alarm using the appropriate procedure.
SPM332	The synchronization reference source was switched by manual action, switched by system action, or lost the last synchronization refrence in the OC-3 protection group.	None
SPM334	A 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.	Clear the PROTFAIL alarm using the appropriate procedure.
SPM340	A CM warm switch of activity (SWACT) failed.	Manually busy the SPM and return it to service.
SPM341	An SRM has entered into Holdover state.	None
SPM342	An SRM has entered into Holdover 24 state.	None
SPM344	The SRM loss of redundancy (LOR) alarm has been set.	None
SPM350	There is the potential for resource exhaustion of a particular resource type. The log also generates when the alarm is cleared.	When the alarm goes on, either 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.

SPM fault management indicators

Log name and number	Probable cause	Required action
SPM500	A device has changed states.	None
SPM501	The clock mode has changed from sync, freerun, holdover, or acquire to sync, freerun, holdover, or acquire.	None
SPM600	The message switch (MS) has changed modes and is unable to notify the in-service SPM of the mode change.	None
SPM610	An SPM node SSM value has changed.	None
SPM611	A reference node switch has occurred.	None
SPM630	A successful sparing event has occurred.	None
SPM641	An SRM has exited Holdover state.	None
SPM642	An SRM has exited Holdover24 state.	None
SPM644	The SRM LOR alarm has been cleared.	None
SPM600	The message switch (MS) has changed modes and is unable to notify the in-service SPM of the mode change.	None
SPM650	A successful in-service loading procedure has occurred.	None
SPM651	An in-service loading procedure has failed.	Reload the circuit pack.

SPM fault management indicators

Log name and number	Probable cause	Required action
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
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 in a 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
SPM705	A trunk has been set to a lockout (LO) or SysB state.	See “Actions for SPM705 log” on page -12 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

SPM fault management indicators

Log name and number	Probable cause	Required action
SPM709	A dynamic update has failed for the ISDNPROT table.	None
SPM710	The DDM audit has updated the ISDNPROT table.	None
SPRF670	It is initiated by the user in the SPERFORM process to report the data for the SPM activity (SPMACT) tool.	None
SPRF671	It is iniated by the user in the SPERFORM process to report the data for the SPM usage (SPUSAGE) tool.	None

NODE600 log Sanit Audit reasons

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

Actions for SPM705 log

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.
DSP with AB Bit resources went out of service	LO	Correlate this log with an SPM500 log to determine the faulty DSP. This log generates when a DSP goes out of service, and there is either 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 generates in case of a successful recovery; or an SPM705 log with reason set to 'Not enough DSP AB Bit resources in service' generates in case of failure.
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 generates if the DSP configured with AB Bit resources is not in service during trunk RTS.
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.
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 RTSed. If the problem persists, call Nortel's second level of support.

Actions for SPM705 log

If the reason text is	And the trunk state is	Take this action
Internal SPM messaging failure	SB	Check for SPM SWERRs. 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 RTSed. 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) to automatically recover the trunks.
CM transaction pool temporarily exhausted	SB	Too many trunk RTS's were issued simultaneously. Either BSY the trunks in SB state and RTS them, or wait for the CM audit to recover the trunks.

Viewing alarms on the SPM

At the MAP level

1 Post the SPM by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

`>QUERYPM FLT`

and pressing the Enter key.

3 Display alarms on the SPM by typing

`>LISTALM`

and pressing the Enter key.

Clearing an AIS alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no> <ckt_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>TST <carrier_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

>MAPCI;MTC;PM

and pressing the Enter key.

Example of a MAP screen:

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

10 Post the SPMs by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a BERSD alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

If the alarm list shows	Do
None	Step 15
BERSD	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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing a BERSF alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

`>LISTALM <carrier_no>`

and pressing the Enter key.

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 by typing

`>LISTALM <carrier_no>`

and pressing the Enter key.

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 by typing

`>LISTALM <carrier_no>`

and pressing the Enter key.

If the alarm list shows	Do
None	Step 15
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 by typing

`>QUIT ALL`

and pressing the Enter key.

Clearing a BITS level alarm

At the MAP level

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

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

2 Access the Maintenance level of the MAP by typing

`>MAPCI;MTC`

and pressing the Enter key.

Example of a MAP screen:

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

3 Note the number of SPMs with alarms and their severity by looking under the PM column in the top alarm banner generated in Procedure 2.

4 Based upon the severity of the alarmed SPMs, post all SPMs with that severity by typing

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

and pressing the Enter key.

where

severity
is the alarm severity from Procedure 3 (minor, major, or crit)

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   32  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 - ----
```

5 List the alarms on the posted of SPM by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

```
ListAlm: SPM 32

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

6 Use the result of Procedure 5 to trace the fault to the SRM.

If the alarm is	Do
being generated by the SRM	Procedure 8
not being generated by the SRM	Procedure 7

7 Post the next SPM by typing

>NEXT

and pressing the Enter key, then return to Procedure 5.

8 Select the SRM by typing

>SELECT SRM 0

and pressing the Enter key.

where

Example of a MAP screen:

```
SPM   30 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
```

9 List alarms on the selected SRM by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

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

10 Post the BITS MAP level of the selected SRM by typing

>BITS

and pressing the Enter key.

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

11 List alarms on the BITS links by typing

>QRYALM all

and pressing the Enter key.

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 30   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
```

12 Busy the alarmed BITS link by typing

>BSY <link_no>

and pressing the Enter key.

where

link_no
is the BITS link number (0 to 2)

13 Wait until the BITS link status is MANB. Then return the link to service by typing

>RTS <link_no>

and pressing the Enter key.

where

link_no
is the BITS link number (0 to 2)

14 Return to the SRM level by typing

>QUIT

and pressing the Enter key.

15 List alarms on the SRM by typing

>LISTALM

and pressing the Enter key.

If the alarm	Do
is cleared	Procedure 25
is not cleared	Procedure 16

At the MAP level

16 Access the Clock level of the MS by typing

>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 >
```

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

If the SPM	Do
is providing timing	Procedure 18
is not providing timing	Procedure 19

18 Perform a node reference switch by typing

>SWCARR

and pressing the Enter key.

At the SRM level

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

If the BITS link alarm	Do
still exists	Procedure 20
clears	Procedure 25

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

If the BITS link alarm	Do
still exists on the link	Procedure 21
moves to the other link	Procedure 22
clears	Procedure 25

21 Swap the BITS link output connections at the TSG.

If the BITS link alarm	Do
still exists on the link	Procedure 23
moves to the other link	Procedure 22
clears	Procedure 25

22 Replace the BITS link cable.

If the BITS link alarm	Do
still exists on the link	Procedure 23
clears	Procedure 25

23 Replace the SRM using the appropriate procedure.

If the BITS link alarm	Do
still exists on the link	Procedure 24
clears	Procedure 25

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

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

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a CLKOOS alarm

At the MAP terminal

1 Access the PM level of the map screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>DISP STATE ISTb SPM

and pressing the enter key.

3 Post each ISTb SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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) by typing

>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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>MAPCI;MTC

and pressing the Enter key.

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 by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

11 Post the SPM number for the SPM that is raising the CLKOOS alarm by typing

>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 by typing

`>LISTALM`

and pressing the Enter key.

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

15 Access the STS3L carriers by typing

`>NEXT`

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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

22 Force the CEMs to switch activity by typing

>PROT;FORCE;QUIT

and pressing the enter key.

23 Select the active (A) CEM by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

where

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

24 List the alarms on the CEM by typing

>LISTALM

and pressing the enter key.

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

25 Force the CEMs to switch activity by typing

>PROT;FORCE;QUIT

and pressing the Enter key.

26 Select the active (A) CEM by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

where

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

27 List the alarms on the CEM by typing

>LISTALM

and pressing the Enter key.

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

If the alarm list shows	Do
CLKOOS	Step 28

28 Select the active OC3 module by typing

>SELECT OC3 <oc3_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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 by typing

>FORCE <act_oc3_no> <inact_oc3_no>

and pressing the Enter key.

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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a COTLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

`>LOGUTIL`

and pressing the Enter key.

2 Display all the SPM350 logs by typing

`>DUMPLOGS SPM 350`

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63) 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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a DTMFLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

>LOGUTIL

and pressing the Enter key.

2 Display all the SPM350 logs by typing

>DUMPLOGS SPM 350

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63) 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 by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

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

6 Do the following substeps to 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 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 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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a ECANLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

>LOGUTIL

and pressing the Enter key.

2 Display all the SPM350 logs by typing

>DUMPLOGS SPM 350

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63) 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 by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

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

6 Do the following substeps to 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 SPM NOSPARE 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 whether the alarm has cleared.

If the alarm list indicates	Do
Minor ECANLOW	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 by typing

```
>LISTALM
```

and pressing the Enter key.

If the alarm list indicates	Do
Minor ECANLOW	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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a HLDOVR alarm

At the MAP terminal

1 Post the SPM by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 ManB  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

2 Query the faults on the SPM by typing

>QUERYPM FLT

and pressing the Enter key.

Example of a MAP screen:

```
SPM 32 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

CEM  0 SysB Act    Alarm: SYSBNA   Severity: Critical Action: RPT
CEM  1 ManB InAct  Alarm: MANBNA   Severity: Major    Action: RPT
```

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

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

4 Select the system-busy CEM by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>TRNSL

and pressing the Enter key.

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	Procedure 12
NA or UR	Procedure 10

10 Return the C-side links to sercvice. 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 by typing

>LISTALM

and pressing the Enter key.

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

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

13 List the alarms on the CEM by typing

>LISTALM

and pressing the Enter key.

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

14 Select the SRM by typing

>SELECT SRM 0

and pressing the Enter key.

Example of a MAP screen:

```
SPM   30 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
```

15 List alarms on the selected SRM by typing

>LISTALM

and pressing the Enter key.

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 by typing

>BITS

and pressing the Enter key.

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   30  SRM   0
LinkNo   BitsName    Status     State    SSM    Alarm
    0    BITSA       Act        SysB     NIL       .
    1    BITSB       InAct      SysB     NIL       .
    2    BITSOUT                Uneq     NIL
```

17 List alarms on the BITS links by typing

>QRYALARM all

and pressing the Enter key.

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 30   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 that state of the BITS link causing the alarm by looking in the State column from Procedure 16.

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

19 Busy the alarmed BITS link by typing

>BSY <link_no>

and pressing the Enter key.

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 by typing

>RTS <link_no>

and pressing the Enter key.

where

link_no
is the BITS link number (0 to 2)

21 Return to the SRM level by typing

>QUIT

and pressing the Enter key.

22 List alarms on the SRM by typing

>LISTALM

and pressing the Enter key.

If the HLDOVR alarm	Do
is not cleared	Procedure 23
is cleared	Procedure 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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing an HLDOVR24 alarm

At the MAP terminal

1 Post the SPM by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 ManB  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

2 Query the faults on the SPM by typing

>QUERYPM FLT

and pressing the Enter key.

Example of a MAP screen:

```
SPM 32 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

CEM  0 SysB Act    Alarm: SYSBNA   Severity: Critical Action: RPT
CEM  1 ManB InAct  Alarm: MANBNA   Severity: Major    Action: RPT
```

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

Ifthe alarm is being caused by the	Do
CEM	Procedure 4
SRM	Procedure 14

4 Select the system-busy CEM by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>TRNSL

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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

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

13 List the alarms on the CEM by typing

>LISTALM

and pressing the Enter key.

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

14 Select the SRM by typing

>SELECT SRM 0

and pressing the Enter key.

Example of a MAP screen:

```
SPM   30 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
```

15 List alarms on the selected SRM by typing

>LISTALM

and pressing the Enter key.

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 by typing

>BITS

and pressing the Enter key.

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   30  SRM   0
LinkNo   BitsName    Status     State    SSM    Alarm
    0    BITSA       Act        SysB     NIL       .
    1    BITSB       InAct      SysB     NIL       .
    2    BITSOUT                Uneq     NIL
```

17 List alarms on the BITS links by typing

>QRYALARM all

and pressing the Enter key.

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 30   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 that state of the BITS link causing the alarm by looking in the State column from Procedure 16.

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

19 Busy the alarmed BITS link by typing

>BSY <link_no>

and pressing the Enter key.

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 by typing

>RTS <link_no>

and pressing the Enter key.

where

link_no
is the BITS link number (0 to 2)

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

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

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

22 Return to the SRM level by typing

`>QUIT`

and pressing the Enter key.

23 List the alarms on the SRM by typing

`>LISTALM`

and pressing the Enter key.

24

If the alarm	Do
clears	Procedure 31
does not clear	Procedure 25

25 Replace the SRM using the appropriate procedure.

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

26 Swap the BITS link output connections at the TSG.

If the BITS link alarm	Do
still exists on the link	Procedure 29
moves to the other link	Procedure 27
clears	Procedure 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	Procedure 29
moves to the other link	Procedure 28
clears	Procedure 31

28 Replace the BITS link cable.

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

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

If the alarm	Do
still exists	Procedure 30
clears	Procedure 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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an ISTB alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>STATUS

and pressing the Enter key.

3 Display the SPMs that are in-service trouble by typing

>DISP STATE ISTB SPM

and pressing the Enter key.

4 Record the number of the SPMs.

5 Post each in-service trouble SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>SELECT <module_type> <module_no>

and pressing the Enter key.

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 by typing

>QUERYMOD

and pressing the Enter key.

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 Acess the PROT level by typing

>PROT

and pressing the Enter key.

9 Perform a manual protection switch by typing

>MANUAL <active_cpk> <spare_cpk>

and pressing the Enter key.

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	Procedure 11
any other circuit pack	Procedure 12

11 Load the CEM with its software load by typing

>LOADMOD INSVLD

and pressing the Enter key.

Go to Procedure 13.

12 Download matching software for the circuit pack by typing

>LOADMOD MATE <active_cpk>

and pressing the Enter key.

where

active_cpk
is the number of the previously inactive circuit pack

13 Protection switch back to the original circuit pack by typing

>MANUAL <active_cpk> <inactive_cpk>

and pressing the Enter key.

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 by typing

>QUIT

and pressing the Enter key.

15 List the alarms on the module by typing

>LISTALM

and pressing the Enter key.

16 Determine whether the alarm has cleared.

17 Perform an in-service test on the module by typing

>TST

and pressing the Enter key.

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 Acess the PROT level by typing

>PROT

and pressing the Enter key.

20 Perform a manual protection switch by typing

>MANUAL <active_cpk> <spare_cpk>

and pressing the Enter key.

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 by typing

>QUIT

and pressing the Enter key.

22 Manual busy the module by typing

>BSY

and pressing the Enter key.

23 Perform an out-of-service test on the module by typing

>TST

and pressing the Enter key.

24 Determine the test condition of the module.

25 Return the module to service by typing

>RTS

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing an LOP alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no> <ckt_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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
LOF	Step 8

8 Test the carrier by typing

>TST <carrier_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 Type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP screen:

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

13 Post the SPMs by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

`> LISTALM carrier_no`

and pressing the Enter key.

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 by typing

`>QUIT ALL`

and pressing the Enter key.

Clearing an LOR alarm

At the MAP level

1 Post the SPM by typing

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

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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   32  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 STM 0  9  A Insv --- -  2 - ---- VSP 6 9  A Insv
  --- - 3 I Insv STM 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 by typing

>SELECT SRM 0

and pressing the Enter key.

Example of a MAP screen:

```
SPM   30 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 by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

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

4 Post the BITS MAP level of the selected SRM by typing

>BITS

and pressing the Enter key.

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

5 List alarms on the BITS links by typing

>QRYALM all

and pressing the Enter key.

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 30   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 that state of the BITS link causing the alarm by looking in the State column from Procedure 4.

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

7 Busy the alarmed BITS link by typing

>BSY <link_no>

and pressing the Enter key.

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 by typing

>RTS <link_no>

and pressing the Enter key.

where

link_no
is the BITS link number (0 to 2)

9 Return to the SRM level by typing

```
>QUIT
```

and pressing the Enter key.

10 List alarms on the SRM by typing

```
>LISTALM
```

and pressing the Enter key.

If the LOR alarm	Do
is not cleared	Procedure 11
is cleared	Procedure 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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an LOS alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>MAPCI;MTC;PM

and pressing the Enter key.

Example of a MAP screen:

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

5 Post the SPMs by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

`>SELECT OC3 <module_no>`

and pressing the Enter key.

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 by typing

`>PROT`

and pressing the Enter key.

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

`>MANUAL <from_unit_no> <to_unit_no>`

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing a MANB alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>STATUS

and pressing the Enter key.

3 Display the SPM that are manual busy by typing

>DISP STATE MANB SPM

and pressing the Enter key.

4 Record the number of teh SPMs

5 Post each manual busy SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>SELECT <module_type> <module_no>

and pressing the Enter key.

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 by typing

>RTS

and pressing the Enter key.

9 Determine the state of the module.

If the module is	Do
InSv	Step 16
SysB or IstB	Step 10

If the module is	Do
any other state	Step 12

10 Perform the alarm clearing procedures for SysB or IstB, 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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a MANBNA alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>DISP STATE MANB SPM

and pressing the Enter key.

3 Record the number of the SPMs.

4 Post each manual-busy-not-available SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>TRNSL

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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

9 Perform the following substeps to record ENET information:

a List the status of the ENET links by typing

>TRNSL

and pressing the Enter key.

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 Do the following substeps to detemine the MS card numbers:

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

>TABLE ENINV

and pressing the Enter key.

b Create a heading for the tuple by typing

>HEADING

and pressing the Enter key.

c Position on the tuple for the ENET shelf by typing

>POS <enet_shelf_no>

and pressing the Enter key.

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 example above).

11 Locate the MS cards by typing

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

and pressing the Enter key.

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 Do the following substeps to 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, by typing

>TRNSL <ms_card_port>

and pressing the Enter key.

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. INSERT TABLE

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 by typing

```
>LISTALM
```

and pressing the Enter key.

If the alarm list shows	Do
None	Step 16
SYSBNA	Step 15

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an MFLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

>LOGUTIL

and pressing the Enter key.

2 Display all the SPM350 logs by typing

>DUMPLOGS SPM 350

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63) 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 by typing

>LISTALM

and pressing the Enter key.

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

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

6 Do the following substeps to 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.

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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a NOSPARE alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>STATUS

and pressing the Enter key.

3 Post all of the SPMs by typing

>POST SPM all

and pressing the Enter key.

4 List the alarms on each SPM by typing

>LISTALM

and pressing the Enter key.

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 - ----
ListAlm
ListAlm: SPM 11  CEM 0

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

5 Record the number of each SPM with a NOSPARE alarm.

6 Determine which of the modules are not in service (InSv, CBsy, or IsTb) and select the modules by typing

>SELECT <module_type> <module_number>

and pressing the Enter key.

where

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

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

7 Locate the NOSPARE alarms on each module by typing

>PROT;LISTALM

and pressing the Enter key.

8 Determine the state of the module from the LISTALM display.

Example of a MAP screen:

```
 SPM   16  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  0 W A ManB    8 -- - - ----
 2 -- - - ----    9 -- - - ----    2  1 W A ManB    9 -- - - ----
 3 -- - - ----   10 -- - - ----    3 -- - - ----   10 -- - - ----
 4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
 5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
 6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
 7 -- - - ----   14 -- - - ----    7 -- - - ----   14 -- - - ----
ListAlm

ListAlm: VSP_GRP 1

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

If the module is	Do
OffL	Step 9
ManB	Step 10
in any other state	Step 13

9 Return to the module level and set the module to manual busy by typing

>QUIT;BSY;RTS

and pressing the Enter key. Go to Step 11.

10 Return to the module level and return the module to service by typing

>QUIT;RTS

and pressing the Enter key.

11 List the alarms on the module at the proctection level by typing

>PROT;LISTALM

and pressing the Enter key.

Example of a MAP screen:

```
ListAlm

ListAlm: VSP_GRP 1

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

12 Determine whether the NOSPARE alarm has cleared.

If the alarm list indicates	Do
NOSPARE	Step 13
None	Step 21

13 Determine the state of the module.

If the module is	Do
SysB	Step 14
in any other state	Step 20

14 Perform an in-service test on the module by typing

>TST

and pressing the Enter key.

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.
```

15 Determine the test condition of the module. I

If the test results show	Do
Test passed.	Step 16
Test failed.	Step 19

16 Return the module to service by typing

>RTS

and pressing the Enter key.

17 List the alarms on the module by typing

>LISTALM

and pressing the Enter key.

18 Determine whether the NOSPARE alarm has cleared.

If the alarm list indicates	Do
NOSPARE	Step 20
None	Step 21

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

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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing a PROTFAIL alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>STATUS

and pressing the Enter key.

3 Post the all of the SPMs by typing

>POST SPM all

and pressing the Enter key.

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 by typing

>SELECT <module_type> <module_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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	Procedure 8
in any other state	Procedure 11

8 Perform an in-service test on the module by typing

>TST

and pressing the Enter key.

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.	Procedure 10
Test failed.	Procedure 12

10 Return the module to service by typing

>RTS

and pressing the Enter key.

11 Determine the state of the module.

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

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

13 Access the protection level of the MAP screen by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

16 Determine whether the alarm has cleared.

If the alarm list indicates	Do
PROTFAIL	Procedure 17
None	Procedure 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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an RAI alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no> <ckt_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

>MAPCI;MTC;PM

and pressing the Enter key.

Example of a MAP screen:

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

8 Post the SPMs by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an RFI alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>DISP ALARM

and pressing the Enter key.

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 by typing

>POST SPM <spm_no> <ckt_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 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 the far-end devices.

6 List the alarms on the carrier by typing

>LISTALM <carrier_no>

and pressing the Enter key.

where

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

If the alarm list shows	Do
None	Step
RFI	Step 7

7 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

Example of a MAP screen:

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

8 Post the SPMs by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
refers to number of the SPM (0 to 63)

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 by typing

>SELECT OC3 <module_no>

and pressing the Enter key.

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 by typing

>PROT

and pressing the Enter key.

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

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

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 by typing

>LISTALM <carrier_no>

and pressing the Enter key.

13 Determine whether the alarm has cleared.

If the alarm list shows	Do
RFI	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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a SIMPLEX alarm

At the MAP terminal

1 Access the carrier level of the MAP screen by typing

>MAPCI;MTC;TRKS;CARRIER

and pressing the Enter key.

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 by typing

>POST ALRM

and pressing the Enter key.

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 by typing

>NEXT

and pressing the Enter key.

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 by typing

>LISTALM carrier_no

and pressing the Enter key.

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 (using the next carrier number)
No SIMPLEX alarms appear for all listed carrier numbers on the STS3L screen	Step 3 (to proceed to other STS3L carrier alarms)
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 by typing

>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 by typing

`>BSY carrier_no`

and pressing the Enter key.

where

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

9 Return the carrier to service by typing

`>RTS carrier_no`

and pressing the Enter key.

where

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

10 List the carrier alarms by typing

`>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
No SIMPLEX alarms are present for all carriers	Step 21

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

12 To clear the SYSB alarm, refer to the procedure for clearing a SYSB alarm, and return to the Carrier level.

13 List the carrier alarms by typing

`>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 by typing

`>POST ALRM`

and pressing Enter.

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 by typing

`>LISTALM carrier_no`

and pressing Enter.

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 by typing

`>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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a SYSB alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>STATUS

and pressing the Enter key.

3 Display the SPMs that are system busy by typing

>DISP STATE SYSB SPM

and pressing the Enter key.

4 Record the number of the SPMs.

5 Post each system busy SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>SELECT <module_type> <module_no>

and pressing the Enter key.

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 by typing

>TST

and pressing the Enter key.

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 by typing

>RTS

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>QUIT ALL

and pressing the Enter key.

Clearing a SYSBNA alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>DISP STATE SYSB SPM

and pressing the Enter key.

3 Record the number of the SPMs.

4 Post each system-busy-not-available SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>TRNSL

and pressing the Enter key.

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 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 by typing

>LISTALM

and pressing the Enter key.

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

9 Perform the following substeps to record ENET information:

a List the status of the ENET links by typing

>TRNSL

and pressing the Enter key.

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 Do the following substeps to detemine the MS card numbers:

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

>TABLE ENINV

and pressing the Enter key.

b Create a heading for the tuple by typing

>HEADING

and pressing the Enter key.

c Position on the tuple for the ENET shelf by typing

>POS <enet_shelf_no>

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

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 Do the following substeps to 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, by typing

>TRNSL <ms_card_port>

and pressing the Enter key.

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 unit by typing

>LISTALM

and pressing the Enter key.

If the alarm list shows	Do
None	Step 16
SYSBNA	Step 15

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a TONESLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

>LOGUTIL

and pressing the Enter key.

2 Display all the SPM350 logs by typing

>DUMPLOGS SPM 350

and pressing the Enter key.

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 by typing

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

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63) 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 by typing

>LISTALM

and pressing the Enter key.

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

a Check the alarm list for a NOSPARE alarm.

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

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

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 by typing

```
>LISTALM
```

and pressing the Enter key.

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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing an VCXO70 alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>DISP STATE ISTb SPM

and pressing the Enter key.

3 Record the number of the SPMs.

4 Post each ISTb SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

If the alarm list shows	Do
None	Step 13
VCX070	Step 10

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

11 List the alarms on the CEM by typing

>LISTALM

and pressing the Enter key.

If the alarm list shows	Do
None	Step 13
VCX070	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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Clearing a VCXO90 alarm

At the MAP terminal

1 Access the PM level of the MAP screen by typing

>MAPCI;MTC;PM

and pressing the Enter key.

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 by typing

>DISP STATE ISTb SPM

and pressing the Enter key.

3 Record the number of the SPMs.

4 Post each ISTb SPM by typing

>POST SPM <spm_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

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 by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

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 by typing

>LISTALM

and pressing the Enter key.

If the alarm list shows	Do
None	Step 13
VCX090	Step 10

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

11 List the alarms on the CEM by typing

>LISTALM

and pressing the Enter key.

If the alarm list shows	Do
None	Step 13

If the alarm list shows	Do
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 by typing

```
>QUIT ALL
```

and pressing the Enter key.

Allowing/inhibiting alarm reporting

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 to not be reported.

Example of alarm reporting configuration

At the MAP level

1 Access table MNNODE by typing

```
>TABLE MNNODE
```

and pressing the Enter key.

2 Begin the table addition by typing

```
>ADD
```

and pressing the Enter key.

3 Answer each of the prompts with the required datafill provided by the table range.

Example

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:

>$

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) $ $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>Y

TUPLE ADDED

JOURNAL FILE INACTIVE

4 Exit table MNNODE by typing

>QUIT

and pressing the Enter key.

Configuring alarm severity profiles

Alarm severity is configured during datafill. There are four alarm severities that can be datafilled:

- No action (NA)
- Minor (MN)
- Major (MJ)
- Critical (CR)

The procedure that follows datafills a DLC RM in table MNCKTPAK. The procedure shows how to datafill each possible alarm severity.

Example alarm severity datafill

At the MAP level

1 Access table MNCKTPAK by typing

```
>TABLE MNCKTPAK
```

and pressing the Enter key.

2 Begin the table addition by typing

```
>ADD
```

and pressing the Enter key.

3 Answer each of the prompts with the required datafill provided by the table range.

Example

This is an example of datafilling table MNCKTPAK.

```
>ADD
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
CPKKEY:
>SPM 1 1 1
```

```
CPKTYPE:
>DLC
UNITNO:
>0
DSPGRPID:
>1
WRKSPR:
>WORKING
ALRMCTRL:
>SYSB CR RPT
ALRMCTRL:
>MANB MJ RPT
ALRMCTRL:
>ISTB MN RPT
ALRMCTRL:
>PROTFAIL NA NRPT
PEC:
>NTLX72BA
RELEASE:
>01
LOAD:
>DLC16AC
TUPLE TO BE ADDED:
SPM 1 1 1 DLC 0 1 WORKING (SYSB CR RPT) (MANB
MJ RPT) (ISTB MN RPT) (PROTFAIL NA NRPT)
NTLX72BA 01 DLC16AC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
```

4 Exit table MNCKTPAK by typing

>QUIT

and pressing the Enter key.

Correlating Logs with alarms to further isolate faults

Alarms and logs are often related to each other when a particular fault condition exists. The following table correlates alarms and logs together to help isolate faults.

SPM alarm to log correlation

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	Automatic Protection Switching Architecture Mismatch - the local multiplexer and the remote multiplexer are working in different modes.
APSCHMM (Selector Channel Mismatch)	CARR300	Automatic Protection Switching Selector Channel Mismatch - the transmitted and received Primary section channel numbers differ by more than 50ms.

SPM alarm to log correlation

Alarm	Related logs	Probable cause
APSFC (Automatic Protection Forced Command)	CARR310	Automatic Protection Switching Forced switch from protection section or working section
APSFEPLF (Automatic Protection Switching Far End Line Failure)	CARR310	Indicates an Automatic Protection Switching of the Far End Protection Line Failure
APSIC (Invalid Code)	CARR300	Automatic Protection Switching Invalid Command - the received bytes are invalid of contain inappropriate responses to requests for more than 50ms.
APSLCK (Automatic Protection Lockout)	CARR310	Automatic Protection Switching Lockout of protection
APSMAN (Automatic Protection Manual Command)	CARR310	Automatic Protection Switching Manual switch from protection section or working section
APSMM (Mode Mismatch)	CARR300	Automatic Protection Switching 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.

SPM alarm to log correlation

Alarm	Related logs	Probable cause
BPV	BITS301, BITS601	The incoming signal has a BPV alarm indicating a degraded signal.
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.
DTMFLOW	SPM350	The low water mark threshold was exceeded for DTMF resources.
ECANLOW	SPM350	The low water mark threshold was exceeded for ECAN resources.
HLDOVR	SPM342, SPM501, SPM642	Two possible causes: 1. The CEM clocks have lost network synchronization 2. The SRM has gone into the holdover mode as a result of loss of reference signals.
HLDOVR24	SPM341, SPM501, SPM641	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.

SPM alarm to log correlation

Alarm	Related logs	Probable cause
ISTB	ENET308, SPM300, SPM331, SPM500, SPM630	The SPM is in service, but is experiencing non-service-affecting faults.
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	SPM311, SPM344, SPM644	Two possible causes: 1. One of the BITS links for the SRM is out of service, causing the SRM to lost 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.

SPM alarm to log correlation

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	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	
PROTFAIL	SPM300, SPM331, SPM500	Protection switching failed for a RM.
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.

SPM alarm to log correlation

Alarm	Related logs	Probable cause
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 OC-3.
TLD	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

Alarm	Related logs	Probable cause
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.

Viewing logs

At the MAP level

1 Access the logutil level by typing

>LOGUTIL

and pressing the Enter key.

2 Display logs on your MAP screen by typing

>START

and pressing the Enter key.

Stop logs

At the MAP level

1 Access the logutil level by typing

>LOGUTIL

and pressing the Enter key.

2 Stop the display of logs on your MAP screen by typing

>STOP

and pressing the Enter key.

Retrieving the most recent log

At the MAP terminal

1 Access the log utility level of the MAP screen by typing

```
>LOGUTIL
```

and pressing the Enter key.

2 Display the log by typing

```
>OPEN <logname> <lognumber>
```

and pressing the Enter key.

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.

Add log to display

At the MAP level

1 Access the logutil level by typing

`>LOGUTIL`

and pressing the Enter key.

2 Add report of logs to display by typing

`>ADDREP <device> <rep name>`

and pressing the Enter key.

where

device
is the device logs are running on

rep name
is the name of the report (log) you wish to display (e.g., PM, CM, IOD, etc.)

Delete log from display

At the MAP level

1 Access the logutil level by typing

`>LOGUTIL`

and pressing the Enter key.

2 Delete selected reports from displaying by typing

`>DELREP <device> <rep name>`

and pressing the Enter key.

where

device
is the device logs are running on

rep name
is the name of the report (log) you wish to suppress (e.g., PM, CM, IOD, etc.)

Replacing a CEM circuit pack

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

`>MAPCI;MTC;PM`

and pressing the Enter key.

2 Access the SPM screen by typing

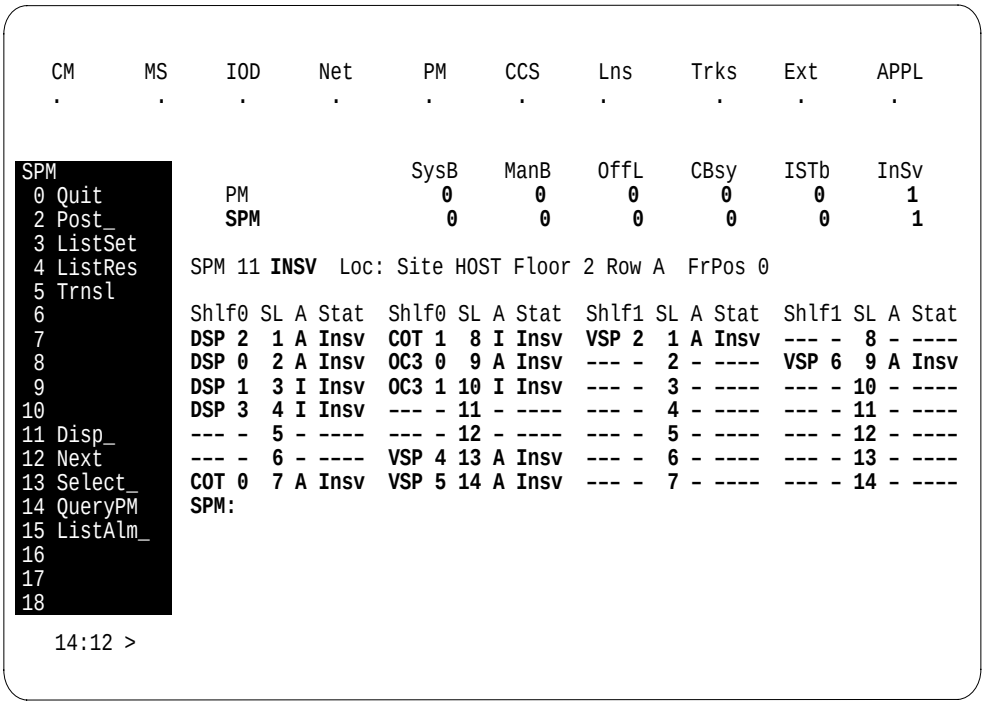
`>POST SPM <spm_no>`

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

The following illustration is an example of an SPM screen. This example may not reflect your SPM screen.



3 Access the CEM card by typing

>SELECT CEM <cem_no>

and pressing the Enter key.

where

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

The following illustration is an example of a CEM screen.

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


CEM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                 0       0       0       0       0       1
 2               SPM                0       0       0       0       0       1
 3 Listset        COT               0       0       0       0       0       2
 4
 5 Trnsl     SPM 20    CEM 0  Act  INSV
 6 Tst
 7 Bsy       Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS       Default Load: COTnnnn
 9 Offl      Clock:
10 LoadMod   Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11           POST:
12 Next      COT:
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the CEM screen, type

>PROT

and press the Enter key.

The following is an example of a Protection screen.

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


Protectn                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                        0       0       0       0       0       1
 2               SPM                       0       0       0       0       0       1
 3                 COT                     0       0       0       0       0       2
 4
 5          SPM   11  InSv
 6          Prot Grp: COT    Mode: Non-revertive   Schema: N/A
 7 Force    Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 8 Manual    1 -- - - ----    8  1 S I InSv    1 -- - - ----    8 -- - - ----
 9           2 -- - - ----    9 -- - - ----    2 -- - - ----    9 -- - - ----
10           3 -- - - ----   10 -- - - ----    3 -- - - ----   10 -- - - ----
11           4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
12           5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
13 Select_   6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
14           7  0 S A InSv   14 -- - - ----    7 -- - - ----   14 -- - - ----
15 ListAlm  PROT:
16
17
18

    14:10 >
```

5 At the Protection (PROT) screen, determine if the CEM being replaced is active (A) or inactive (I). If the CEM is in service and active, make the CEM inactive by typing

>MANUAL

and pressing the Enter key. Monitor the MAP screen to ensure the change of state occurs.

At the CEM screen

6 Take the CEM card out of service by typing

>BSY

and pressing the Enter key.

7 Confirm the command by typing

>YES

and pressing the Enter key.

8 Return to the SPM screen and wait for the CEM to change to the manual busy (ManB) state.

Note: The state change to ManB may take several minutes to complete.

At the CEM screen

9 Before removing the CEM card, you must change the state of the ENET links to ManB. Perform the following substeps to record the applicable ENET information:

a List the ENET links by typing

>TRSL

and pressing the Enter key.

Example of a MAP screen:

```
SPM   11 CEM   0  InAct    ManB          /

Loc : Row C  FrPos  4 ShPos  6 ShId 0 Slot  7
Default Load: SPMnnnn
Clock:
Input Ref:            Source:           Current Mode:
Trnsl
Link 1: ENET 0  X  14  0; Status: OK
Link 2: ENET 0  X  14  1; Status: OK
Link 3: ENET 0  Y  14  2; Status: OK
Link 4: ENET 0  Y  14  3; Status: OK
```

Note: In this example, the dual self configuration for X and Y are two different shelves, and the single shelf configuration for X and Y is one shelf.

b Record the ENET plane, shelf, and slot number (`0,X,14` and `1,X,14` in the example above).

10 Go to the ENET level of the MAP by typing

>MTC;NET

and pressing the Enter key.

The following is an example of an ENET screen.

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


CEM                ENET     System    Matrix    Shelf 0 1 2 3
 0 Quit             Plane 0 CSLink    Fault           F - - -
 2                  Plane 1 CSLink     .              F - - -
 3 QueryEN
 4 Locate          MTC:
 5 Deload_         ENET:
 6
 7
 8
 9
10
11 RExTst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

    14:12 >
```

11 Go to the ENET-shelf level of the MAP by typing

>SHELF <shelf_no>

and pressing the Enter key.

where

shelf_no
is the number of the ENET shelf (0 to 3) that holds the card

Example of a MAP screen:

```
SHELF 00  Slot         1111111 11122222 22222333 333333
           123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ..OO.F-- -------- ..OO.F.. .  .
 Plane 1    .  .   .F ..OO..-- -------- ..OO.F.. .  .

SHELF:
```

12 Locate the first ENET card by typing

>LOCATE 0 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

13 If dual-shelf connections are used, locate the second ENET card by typing

>LOCATE 1 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

14 Go to the card level of the ENET by typing

>CARD <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET card (0 to 38)

Example of a MAP screen:

```
SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ......F. -------- ...S.... .  .
 Plane 1    .  .   .F ......F. -------- ..FS.... .  .

CARD 14   Front:     Back:   DS-512 Links
           Xpt        I/F    0 1 2 3
 Plane 0    .          .     . . . .
 Plane 1    .          .     . . . .
CARD:
```

15 Translate the peripheral-side links of the ENET by typing

>TRNSL P <plane_no> <link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 3)

Example of a MAP screen:

```
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 submitted.
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 passed.
ENET Plane:0 Shelf:00 Slot:14 Link:00 :
  SPM 11 CEM 0 Lnk 1
```

Repeat the TRNSL P command to determine all four ENET P-side links to the CEM being replaced. Record the link connections. The following example shows the ENET links for a typical dual-shelf SPM connection.

ENET links for a typical dual-shelf SPM connection

ENET Plane	Link	SPMCEM	Link
0	0	0	1
0	1	0	2
0	2	0	3
0	3	0	4
1	0	1	1
1	1	1	2

ENET links for a typical dual-shelf SPM connection

ENET Plane	Link	SPMCEM	Link
1	2	1	3
1	3	1	4

16

CAUTION
Loss of service
A temporary interruption of service occurs when ENET links are busied. The interruption can affect data calls.

Busy (BSY) the four ENET links to the CEM being replaced by typing

>BSY <plane_no> LINK <link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the BSY command for each link to the CEM being replaced. Do not busy the links to the other CEM.

17 Change the PEC field to the new value.

At the equipment frame

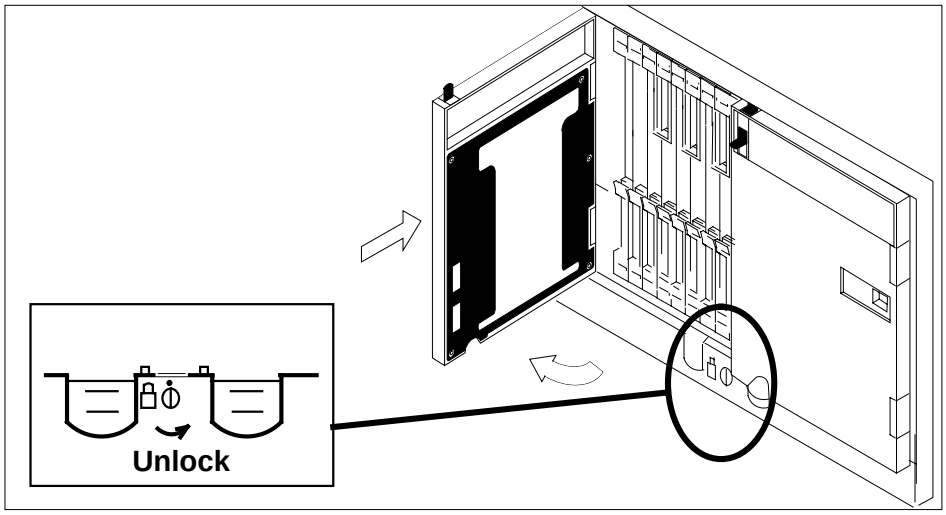
18

CAUTION

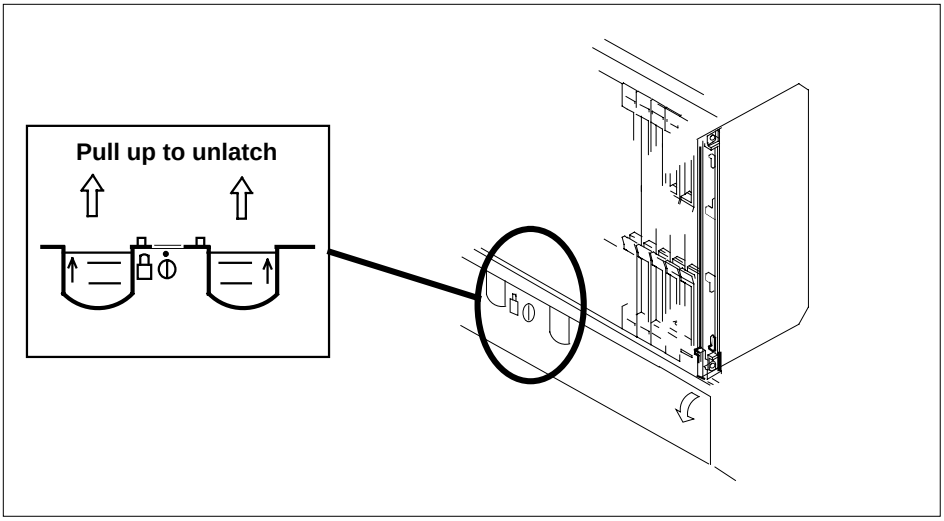
Static electricity damage

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

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



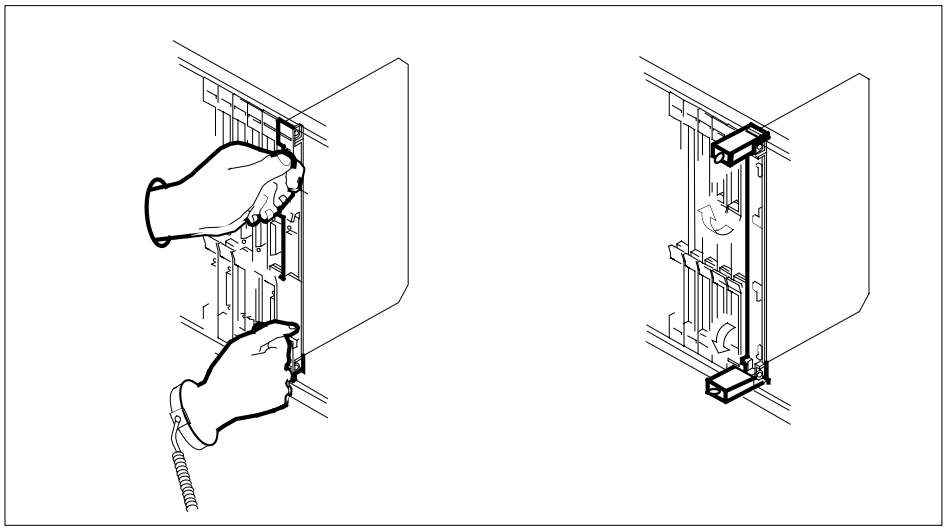
19 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



20

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

As shown in the following figure, open the locking levers on the card to be replaced.



21

CAUTION

Damage to fiber cables

Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label the DS-512 fiber cables to ensure that they are reconnected in the original order.

22

DANGER

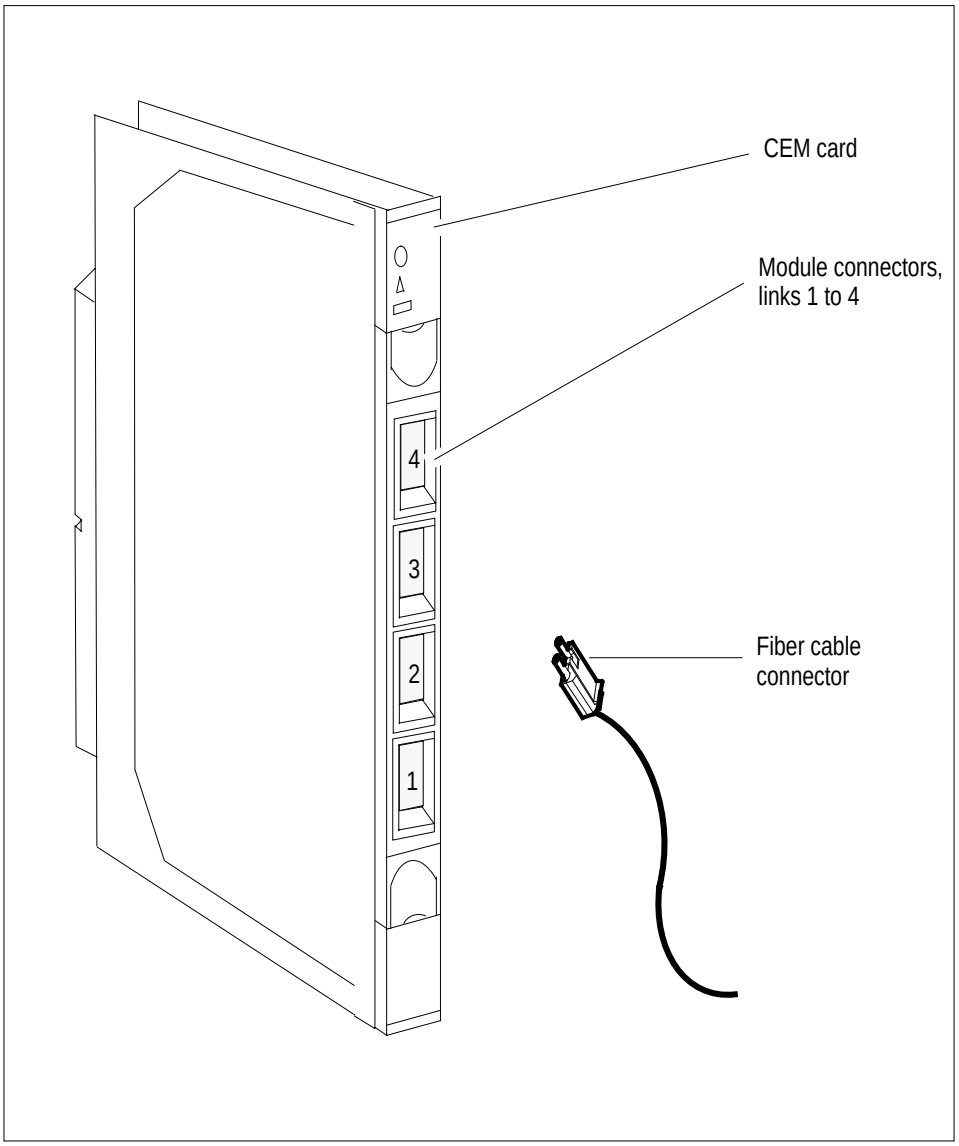
Laser radiation exposure

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

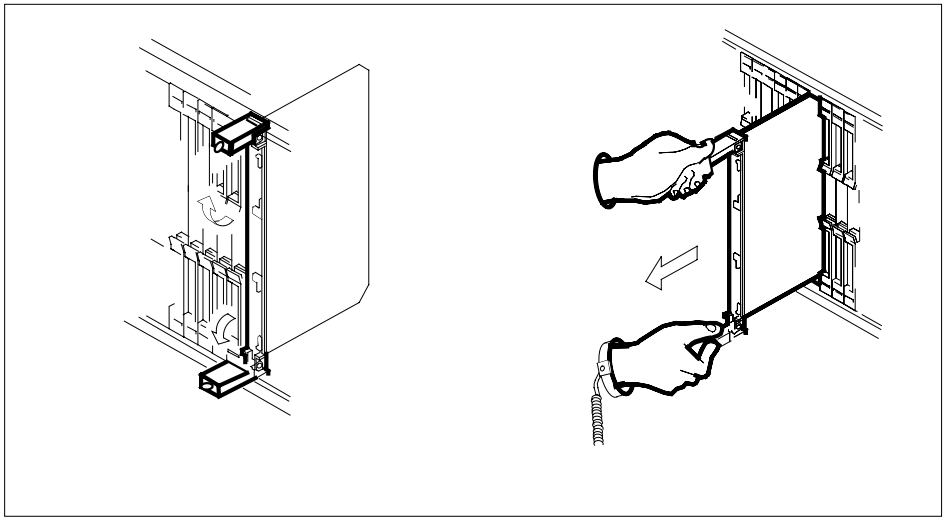
Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

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

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



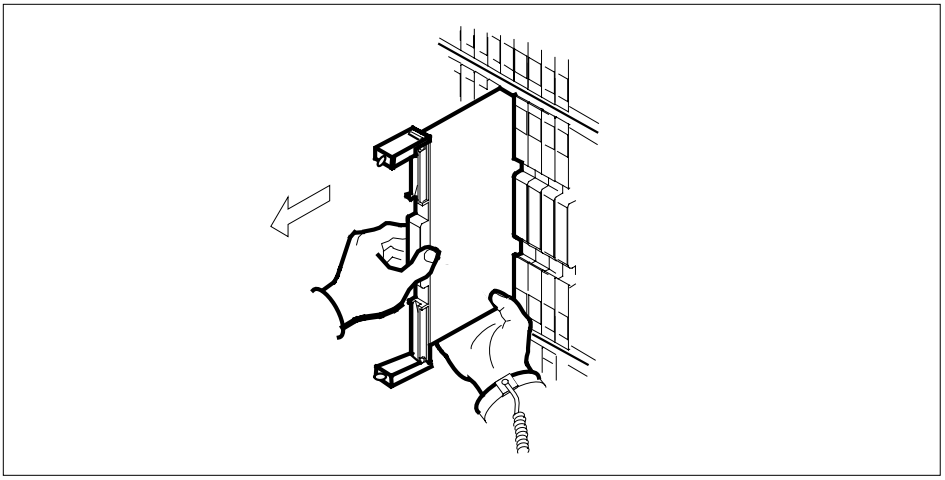
23 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.



24

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

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



25 Place the card you have removed in an electrostatic discharge (ESD) protective container.

26

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

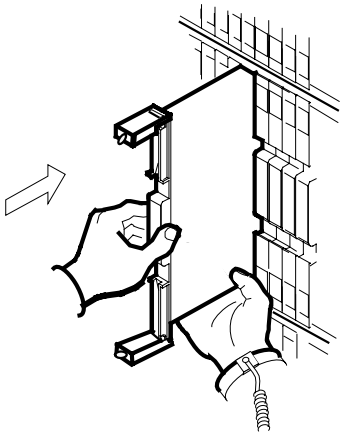
Ensure that the replacement card has the same PEC and release number.

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

27 Insert the replacement CEM card into the shelf.

28 Open the locking levers on the card.

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



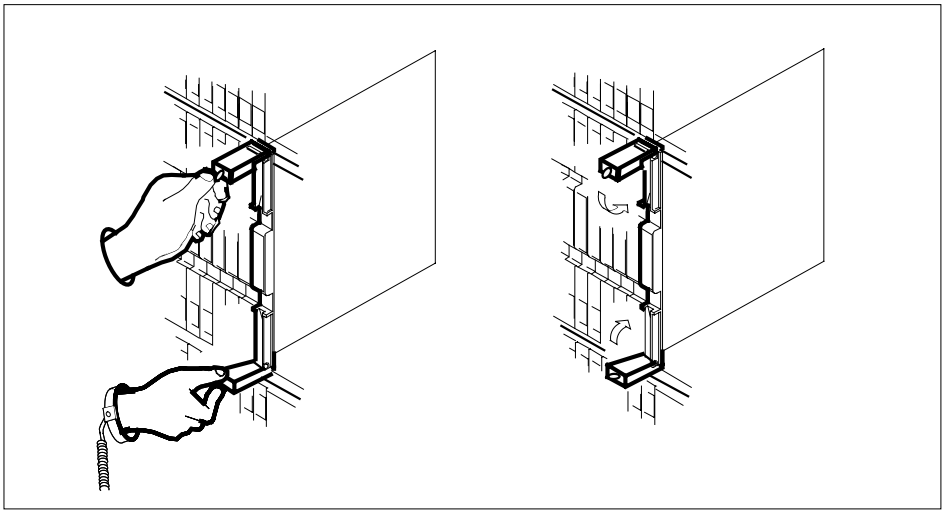
30

CAUTION

Damage to fiber cables

Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

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



31 Close the locking levers to secure the card.

32 Wait until the card performs a self test. The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement CEM card may be defective; remove the card and replace it with another replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

33 Reconnect the DS-512 fiber cables as follows:

- Remove the caps on the module and cable connectors.
- Gently guide the cable connector into its receptacle notches.
- Squeeze the locking clip and gently push the connector into the receptacle until it clicks into place.

34 Close the cable-trough door. Close and lock the card-access door.

At the MAP terminal:

35 Return-to-service (RTS) the four ENET links to the replacement CEM by typing

```
>RTS <plane_no> LINK <link_no>
```

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the RTS command for each link to the replacement CEM.

36 At the CEM screen, reset the replacement CEM card by typing

```
>RESETMOD FW
```

and pressing the Enter key.

Wait until the MS ports clear and the maintenance activity completes.

37 Post the SPM by typing

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

and pressing the Enter key.

spm_no
is the number of the SPM (0 to 63)

38 Select the CEM by typing

```
>SELECT <cem_no>
```

and pressing the Enter key.

where

cem_no
is the CEM number (0 or 1)

39 Lload the replacement CEM card by typing

```
>LOADMOD
```

and pressing the Enter key.

Note: The LOADMOD process can take up to 15 minutes to complete. Monitor the progress at the /Load: indicator at the end of the SPM line on the CEM MAP display.

40 Return the replacement CEM card to service by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to InSv may take several minutes to complete.

41 If the replacement CEM card must be the active CEM, go to the protection (PROT) screen and type

```
>MANUAL
```

and press the Enter key. Monitor the MAP screen to ensure the change of status occurs.

42 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

Replacing a DLC, DSP, or VSP circuit pack

At the MAP terminal

1 Ensure you have access to both the CM and the CEM.

Note: This procedure uses the DLC RM in its examples. When you use this procedure to replace DSPs or VSPs, replace DLC with the acronym for your RM.

2 Determine the initial conditions of the RMs in the protection group of the RM whose datafill you need to modify.

```
CI>SPMRESMAN SPM <spm_no> DLC <dlc_no>
```

where

spm_no
is the SPM number of the SPM housing the RM whose datafill is to be changed (0 to 63)

dlc_no
is the number of the RM whose datafill is to be changed (0 to 27)

Note: The SPMRESMAN command is available on loads SP12, SP11, or SP10 only if patch DCW25 has been applied. If patch DCW25 has not been applied, you must apply it, then begin this procedure again.

Example of an initial SPMRESMAN command and results

```
>spmresman spm 5 DLC 1
SPM 5
 ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DLC  0    23    ACTIVE          24        2              NO
DLC  1    24    ACTIVE          25        2              NO
DLC  2    25  INACTIVE          23        2              NO
DLC  3    26    ACTIVE          26        2              NO
DLC  4    27    ACTIVE          27        2              NO
```

For the RM whose datafill needs to be changed, note the values of the RMID, activity state, and ProtWhomID.

If	Do
ProtWhomID is the same as ithe RM's own RMID, regardless of its activity state	Step 6
ProtWhomID is not the same as ithe RM's own RMID, regardless of its activity state	Step 3

3 Determine which RM currently has its ProtWhomID set to the RMID of the RM whose datafill is to be changed.

Example
Assume you want to change the datafill for DLC 1 in the SPMRESMAN output illustrated in Step 2. DLC 1 has an RMID of 24. Look for RMID=24 in the ProtWhomID column; you see that DLC 0 has this value. This means DLC 0 is protecting DLC 1.

4 Using the SPMRESMAN results from Step 2, note the activity status of the RM whose datafill you need to change.

If the activity status is ACTIVE, then spare the RM to an INACTIVE RM.

Example
As before, assume you want to change the datafill for DLC 1. Note that its activity status is ACTIVE in the output example in Step 2. DLC 2 is INACTIVE, so spare DLC 1 to DLC 2. The following command sequence accomplishes this.

```
>MAPCI;MTC;PM;POST SPM 5
>SELECT DLC 1
>PROT
>MANUAL 1 2
>Y
```

Note: Do not type this example verbatim; remember to substitute appropriate values for your system.

SPMRESMAN command updated results

```
>spmresman spm 5 DLC 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DLC  0    23    ACTIVE          24        2              NO
DLC  1    24  INACTIVE          23        2              NO
DLC  2    25    ACTIVE          25        2              NO
DLC  3    26    ACTIVE          26        2              NO
DLC  4    27    ACTIVE          27        2              NO
```

Observe that DLC 1, the one whose Datafill you wish to change, is now INACTIVE.

5 Spare the RM (found in Step 3) that is protecting the RM whose datafill you want to change. Spare it to the INACTIVE RM from Step 4.

Example
Based on the SPMRESMAN output in the preceding Step, perform a SPARE operation of DLC 0 to DLC1 (since DLC 0 is currently protecting DLC1, and DLC 1 is INACTIVE). The follow command sequence illustrates this action.

```
>MAPCI;MTC;PM;POST SPM 5;SELECT DLC 0;

>LISTRES

>PROT

>MANUAL 0 1

>Y
```

Issue the SPMRESMAN command again. In the sample output that follows, note that DLC 0 is inactive and protecting itself (the RMID and ProtWhomID field are the same), and DLC 1 is active and protecting itself.

SPMRESMAN command updated results

```
>spmresman spm 5 DLC 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DLC  0    23  INACTIVE          23        2              NO
DLC  1    24    ACTIVE          24        2              NO
DLC  2    25    ACTIVE          25        2              NO
DLC  3    26    ACTIVE          26        2              NO
DLC  4    27    ACTIVE          27        2              NO
```

6 BSY all inactive RMs by entering the following for each one:

>MAPCI;MTC;PM;POST SPM <spm_no>;SELECT DLC <dlc_no>;BSY FORCE

Example
In the SPMRESMAN output in the preceding Step, there is one inactive RM, DLC 0. So you would enter the command

>MAPCI;MTC;PM;POST SPM 5;SELECT DLC 1;BSY FORCE

SPMRESMAN command results

```
>spmresman spm 5 DLC 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DLC  0    23  INACTIVE          23        2              YES
DLC  1    24    ACTIVE          24        2              NO
DLC  2    25    ACTIVE          25        2              NO
DLC  3    26    ACTIVE          26        2              NO
DLC  4    27    ACTIVE          27        2              NO
```

In the example printout, note that DLC 0 is inactive and the “safe to change” field is YES.

7 BSY FORCE the RM whose datafill is to be modified by entering the following:

>MAPCI;MTC;PM;POST SPM <spm_no>;SELECT DLC <dlc_no>;BSY FORCE

SPMRESMAN command results

```
>spmresman spm 5 DLC 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DLC  0    23  INACTIVE          23        2              YES
DLC  1    24    ACTIVE          24        2              YES
DLC  2    25    ACTIVE          25        2              NO
DLC  3    26    ACTIVE          26        2              NO
DLC  4    27    ACTIVE          27        2              NO
```

Note that the “safe to change” field for the RM whose datafill you wish to change, DLC 1 in the example, now is YES.

8 Take the DLC card to be replaced off line by typing

>OFFL

and pressing the Enter key.

If	Do
there is a PEC code change	Update Table MNCKTPAK to match the replacement card

Note: Other fields in the RM's data tuple besides PEC code may be changed, such as resource type or the number of resources of each type. These changes should be made at this point in the replacement procedure.

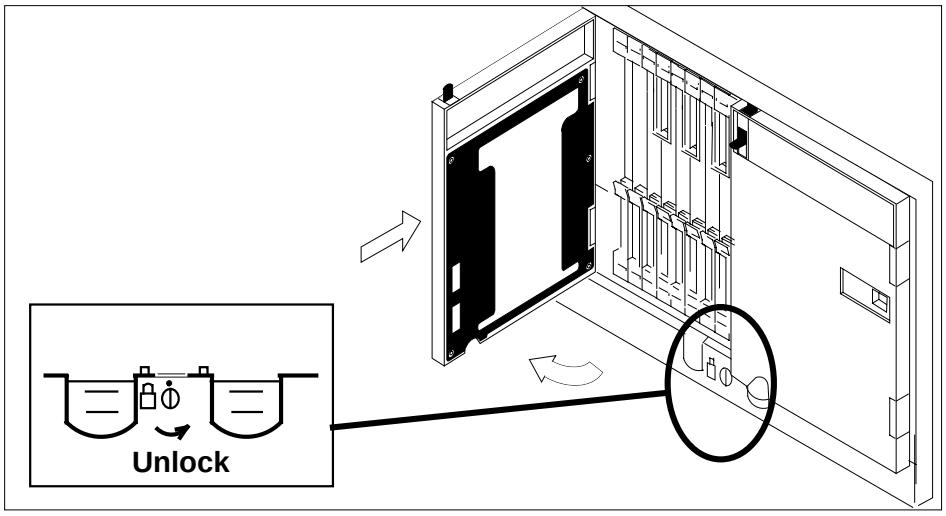
9

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame to protect the cards against static electricity damage.

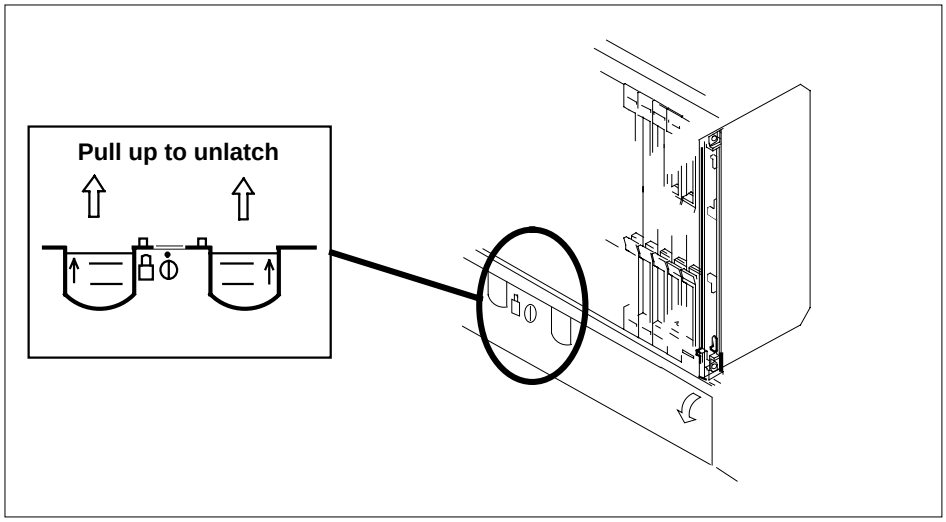
Return to the SPM screen and wait for the module state to change.

Note: The state change from ManB (manual busy) to OffL (offline) can take several minutes to complete. After the state change is complete, remove the DLC card.

10 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



11 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



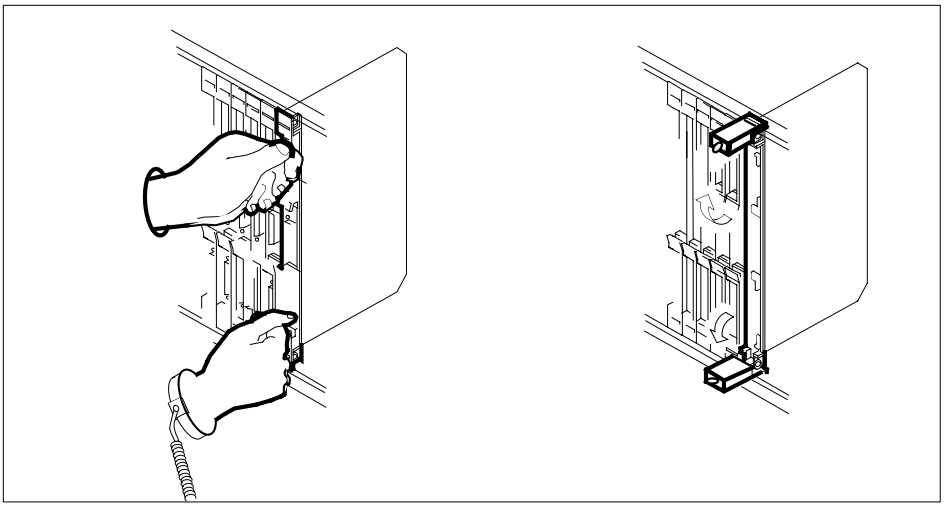
12

CAUTION

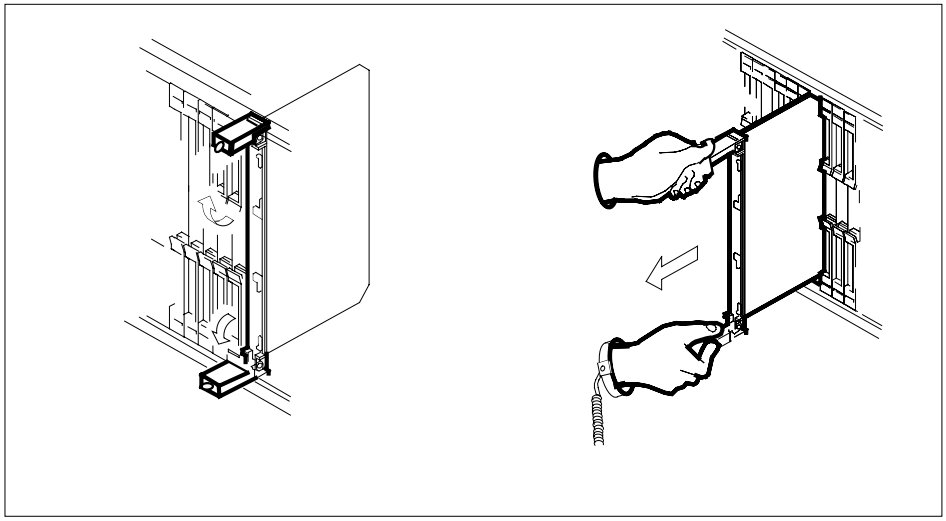
Card lever breakage

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

As shown in the following figure, open the locking levers on the card to be replaced.



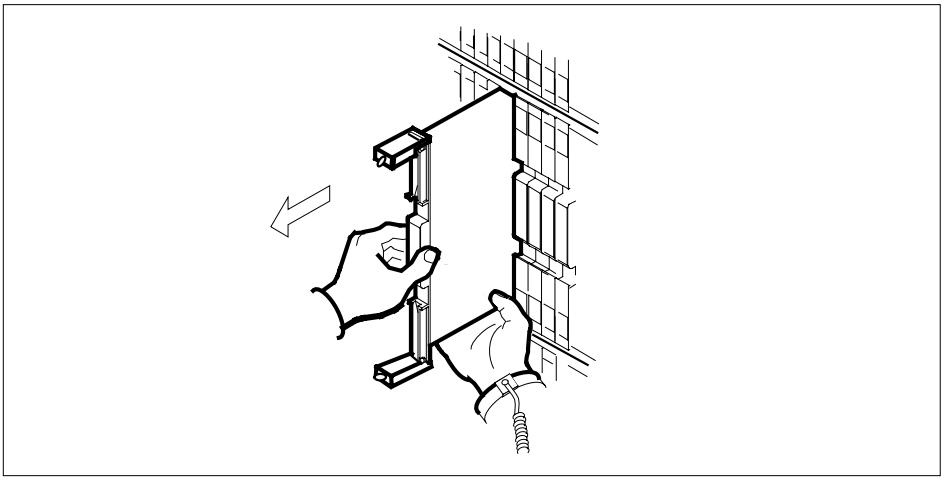
13 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.



14

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

As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



15

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Place the card in an electrostatic discharge (ESD) protective container.

16

CAUTION

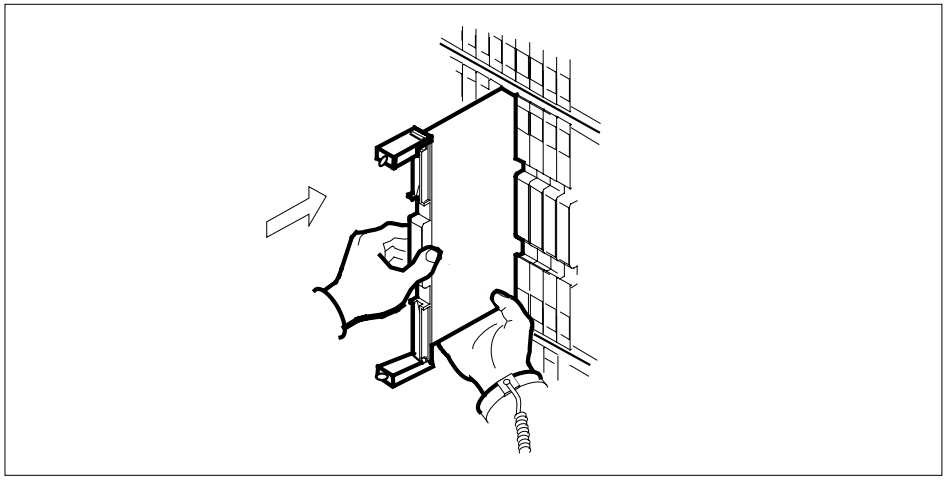
Equipment damage due to empty slots

Equip all unused slots on a powered shelf with NTLX60BA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

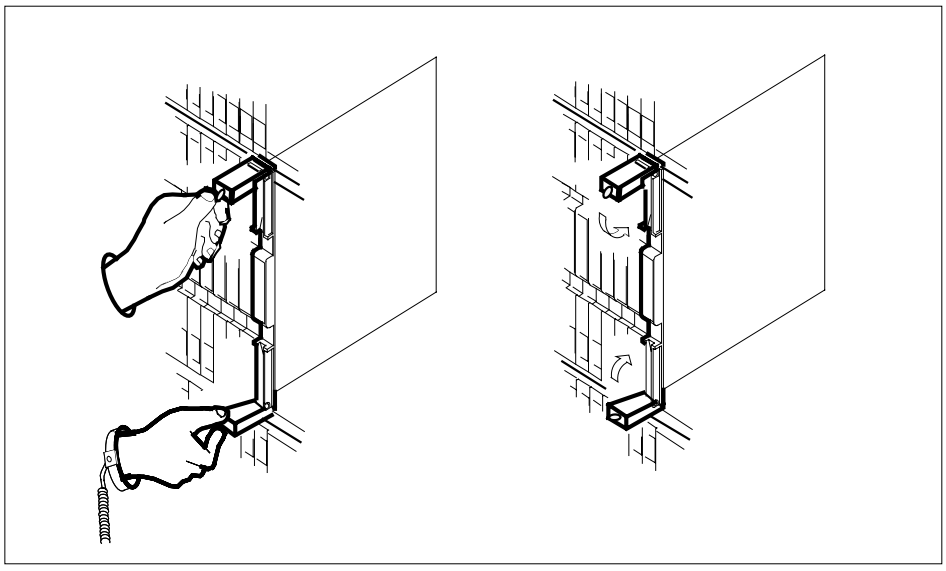
Insert the replacement DLC card into the shelf. If a replacement card is not available, insert an NTLX60BA filler module in the slot until a replacement card is available.

17 Open the locking levers on the card.

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



19 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



20 Close the locking levers to secure the card.

21 *Wait until the card performs a self-test (less than one minute).* The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement RM card is defective; remove the card and replace it with another RM replacement card of the same type. If both LEDs remain on with the second replacement card, contact your next level of support.

22 Close and lock the access door.

23

> **CAUTION**
> **Mixing activity states and service states**
> RMs can be busy and active at the same time. To avoid this situation, do not busy (BSY) an active RM and do not attempt a protection switch to a BYS'd RM.

Ensure the replacement module is inactive before setting it to manual busy. Change the DLC card from the OffL state to ManB state by typing

>BSY

and pressing the Enter key.

24 Reset the firmware by typing

>RESETMOD FW

and pressing the Enter key.

25 Load the module software by typing

>LOADMOD

and pressing the Enter key.

Note: Module loading can take up to seven minutes to complete.

26 Return the new DLC card to service by typing

>RTS

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to one minute to complete.

27 From the DLC screen, type

>PROT

and press the Enter key.

28 Set the DLC to active (A) by typing

>MANUAL from_unit_no <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the active unit [spare]

to_unit_no
is the number (0 to 27) of the inactive unit [newly replaced]

and press the Enter key.

29 If you need to replace another card, go to Step 2.

30 RTS the remaining inactive RMs that you busied in Step 6 by entering the following command:

```
>MAPCI;MTC;PM;POST SPM <spm_no>;SELECT DLC
<dlc_no>;BSY RTS
```

The modification to the provisioned data is complete.

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

```
>QUIT ALL
```

and pressing the Enter key.

Replacing an OC3 circuit pack

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

`>MAPCI;MTC;PM`

and pressing the Enter key.

2 Access the SPM screen by typing

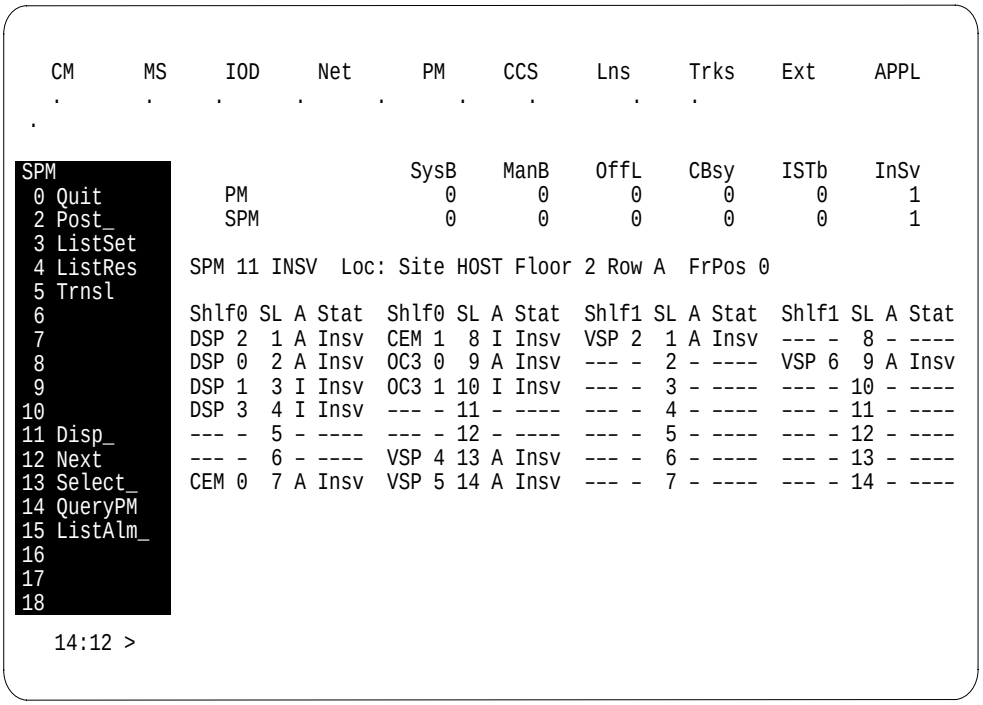
`>POST SPM <spm_no>`

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of an SPM screen. This example may not reflect your SPM screen.



3 Access the OC3 card by typing

>SELECT OC3 <oc3_no>

and pressing the Enter key.

where

oc3_no
is the number of the OC3 card (0 or 1)

This is an example of an OC3 screen.

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

OC3                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                    0       0       0       0       0       1
 2               SPM                   0       0       0       0       0       1
 3 ListSet       OC3                   0       0       0       0       0       2
 4
 5             SPM 11    OC3 0  Act  InSv
 6 Tst
 7 Bsy         Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9  Prot Grp : 1
 8 RTS         Default Load: OC3LOAD                      Prot Role: Working
 9 OffL
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the OC3 screen, type

>PR0T

and press the Enter key.

This is an example of a Protection screen.

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

Protectn                          SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                 0       0       0       0       0       1
 2               SPM                0       0       0       0       0       1
 3               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 by typing

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

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

Note: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

6 Access the carrier maintenance screen and post the STS3L line carriers by typing

>MAPCI;MTC;TRKS;CARRIER;POST SPM <spm_no> STS3L

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of the CARRIER screen showing posted STS3L carriers.

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

POST            CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
 0 Quit         TRUNKS    1    0   28    28     0    0    0     0    0    50
 2 Post_        TIMING    0    0    0     0     0    0    0     0    0     2
 3              HSCARR    0    0    0     1     3    0    1     0    0   180
 4               STS3L
 5 Loop_        N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
 6 Tst_         0  HSCARR HOST   11    0     0     0   3 InSv   .S --
 7 Bsy_         1  HSCARR HOST   11    1     0     0   4 InSv   -- --
 8 RTS_         SIZE OF POSTED SET  :  2
 9 Offl_        MTC:
10              TRKS:
11 Disp_        CARRIER:
12 Next         POST:
13
14 Detail_
15 ListAlm_
16
17 Perfmon_
18

    14:12 >
```

7 Record the STS3L line carrier number (listed under N) associated with the OC3 card being replaced (listed under OC3RM). Record the state of the carrier (listed under STATE).

8 Manual busy (ManB) the STS3L line carrier by typing

>BSY <carrier_no>

and pressing the Enter key.

where

carrier_no
is the carrier identification (N) number (0 to 4)

9 Post the SPM OC3 section carriers by typing

>POST SPM <spm_no> OC3S

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

Example of a MAP screen:

```
CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
TRUNKS    1    0   28    28     0    0    0     0    0    50
TIMING    0    0    0     0     0    0    0     0    0     2
HSCARR    0    0    0     1     3    0    1     0    0   180
 OC3S
N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
0  HSCARR HOST  11     0     0     -   1 InSv   .S --
1  HSCARR HOST  11     1     0     -   2 InSv   -- --
SIZE OF POSTED SET  :  2
POST:
```

10 Record the OC3 Section carrier number (listed under N) associated with the OC3 card being replaced (listed under OC3RM). Record the state of the carrier (listed under STATE).

11 Manual busy (ManB) the OC3 Section carrier by typing

>BSY <carrier_no>

and pressing the Enter key.

where

carrier_no
is the carrier identification (N) number (0 to 4)

At the OC3 RM card level of the SPM

12 Take the OC3 card to be replaced out-of-service by typing

>BSY

and pressing the Enter key.

13 Set the OC3 card offline (OffL) by typing

>OFFL

and pressing the Enter key.

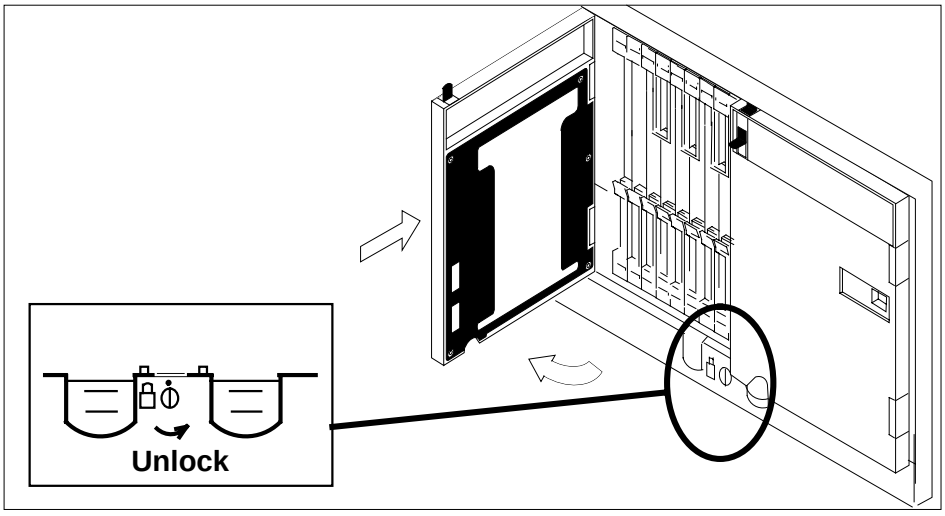
14 Return to the SPM screen and wait for the module to change state.

Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change completes, remove the OC3 card.

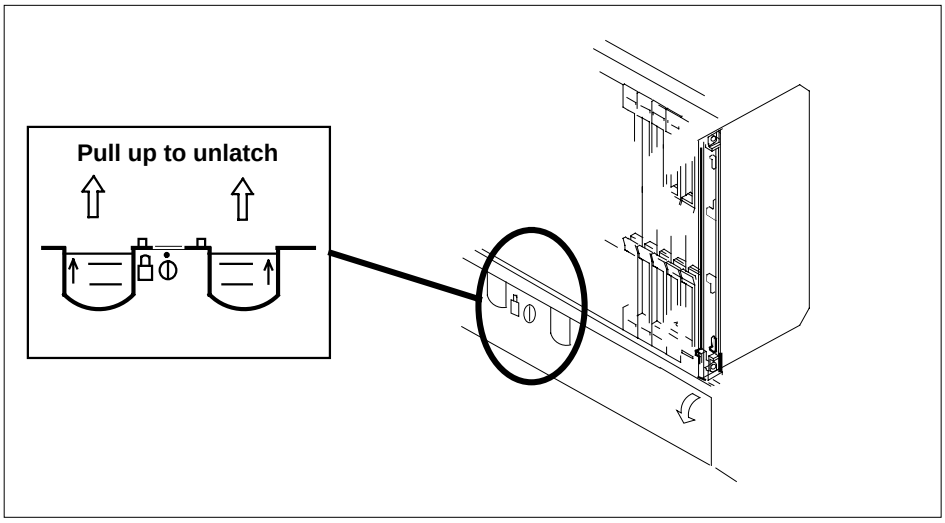
15

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

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



16 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



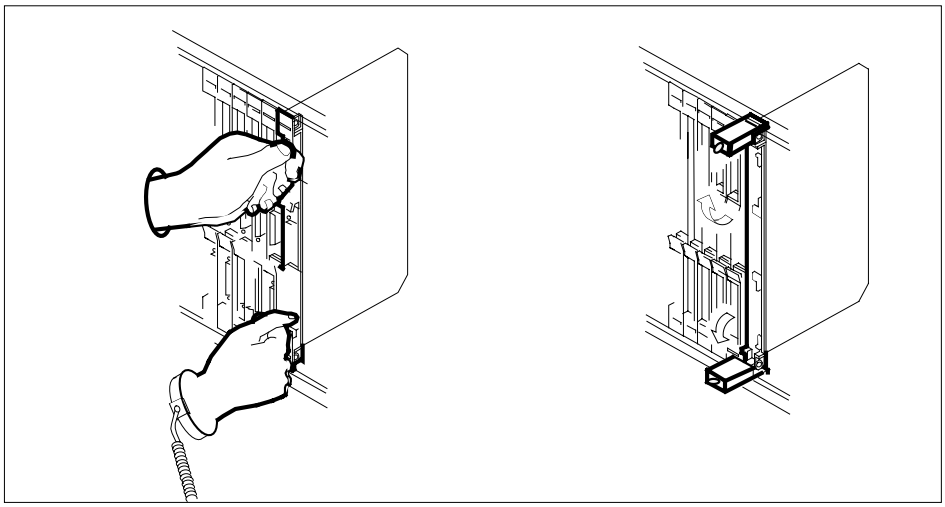
17

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.

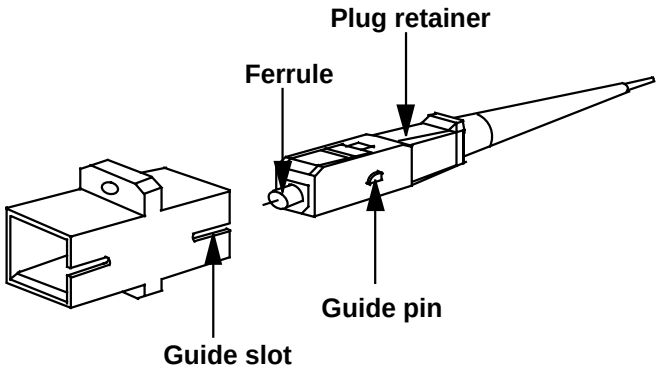
Determine which type of fiber optic adapter you have before disconnecting the cables from the faceplate of the card. The

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

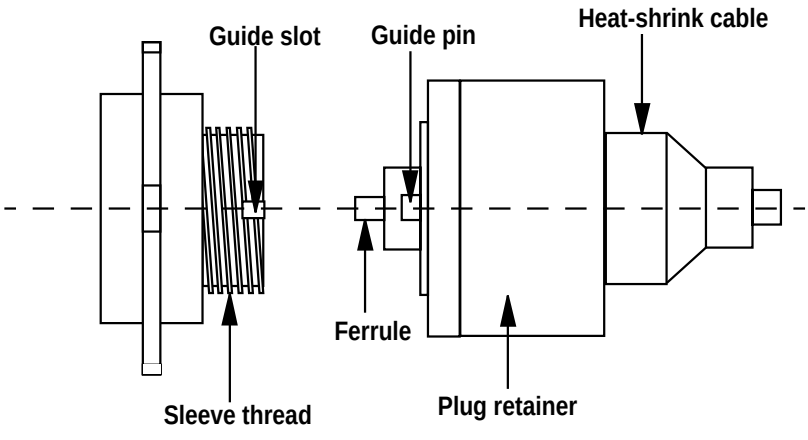
Refer to the following figures for each type of adapter.

SC to SC fiber optic adapter

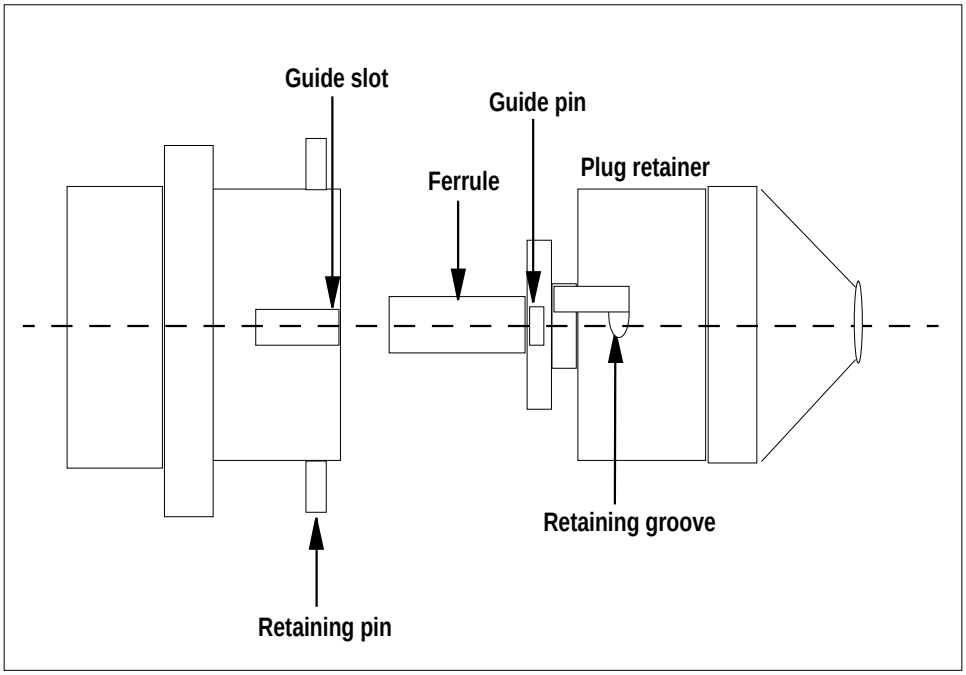


Note: A connector extender is installed on all SC connectors mating on the inside of the faceplate to facilitate connector removal.

FC fiber optic adapter



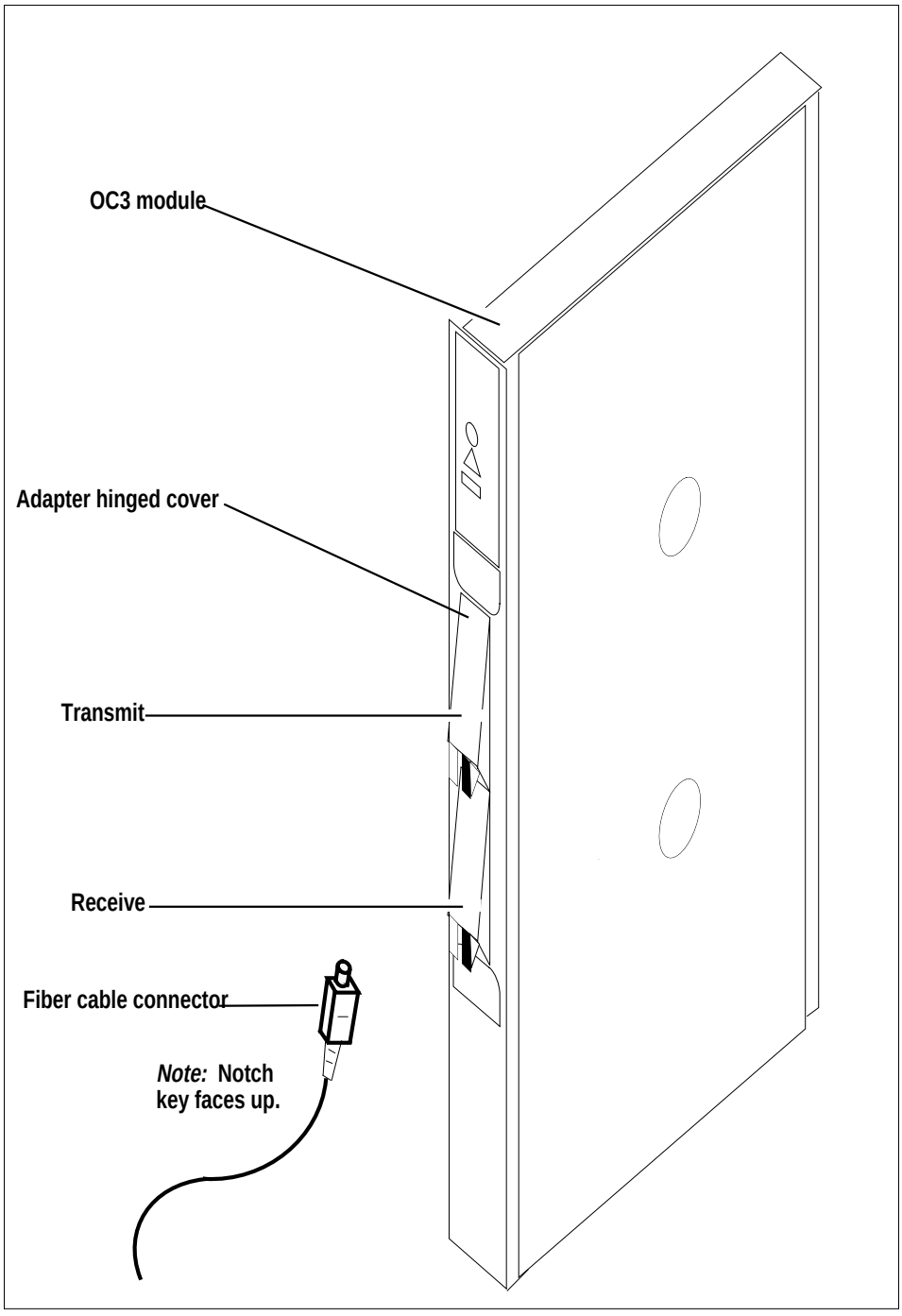
ST fiber optic adapter



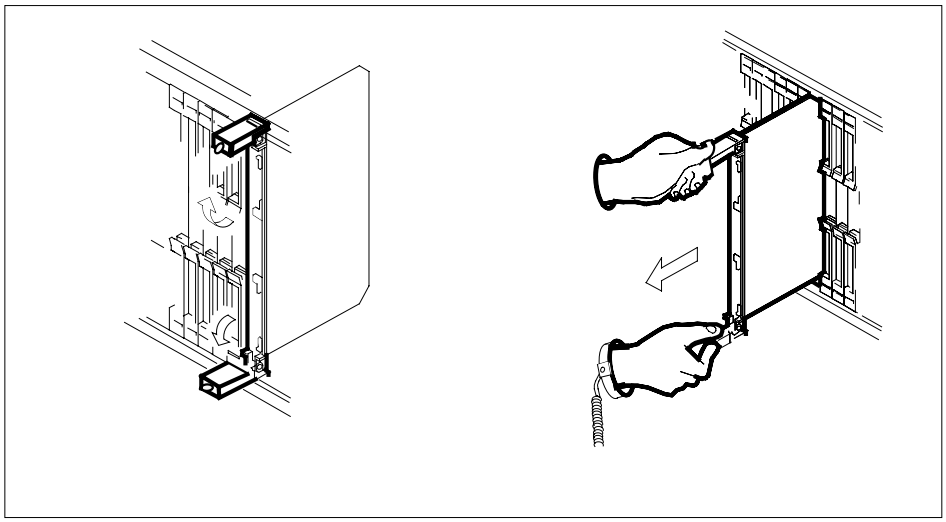
20 Disconnect the fiber cables from the faceplate of the card.

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.

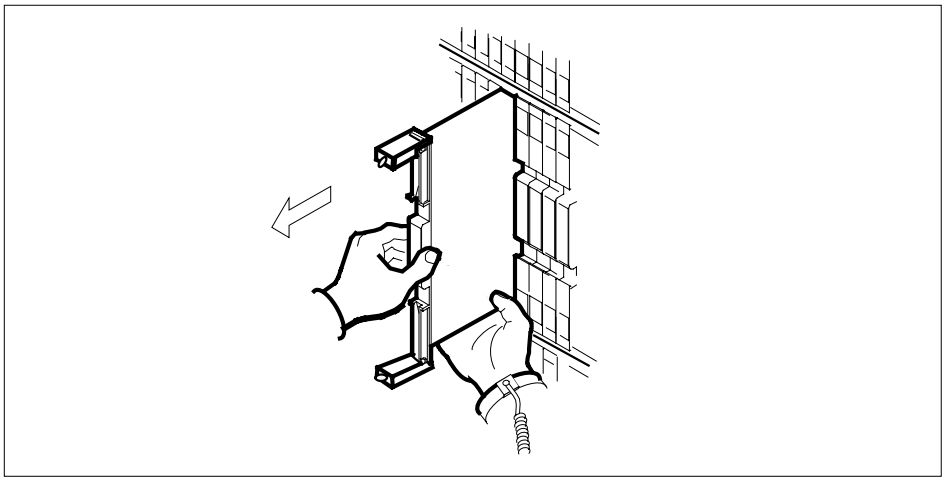
22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.



23

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

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



24 Place the card you have removed in an electrostatic discharge (ESD) protective container.

25

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement card with the same PEC and the same release.

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

26

ATTENTION

Examine the fiber connectors on the replacement 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

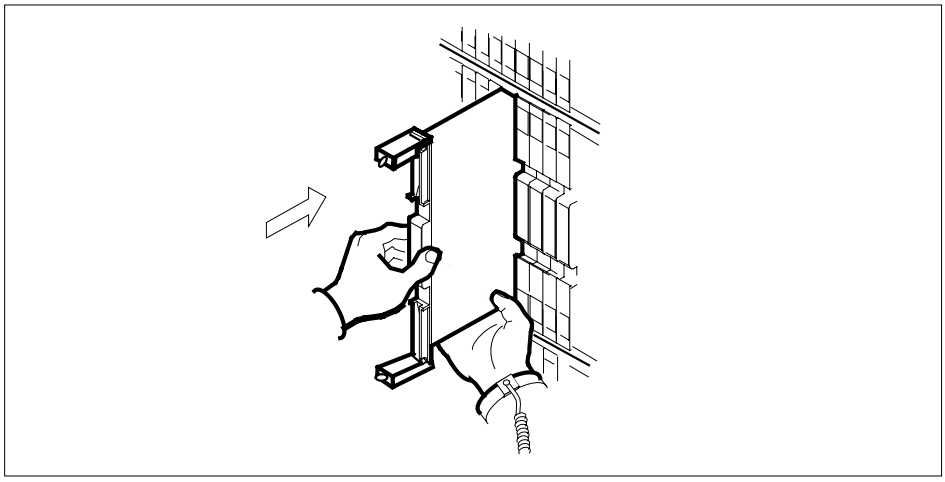
Equipment damage due to empty slots

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

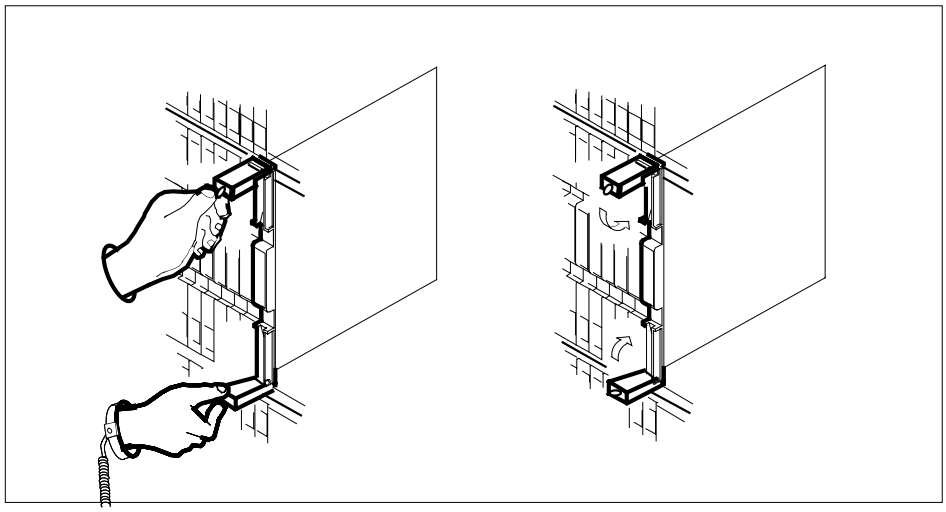
CAUTION

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 by typing

>BSY

and pressing the Enter key.

36 Load the new OC3 card with the default software load by typing

>LOADMOD

and pressing the Enter key.

Monitor the progress of the loading activity on the SPM line of the OC3 screen.

37 Return the new OC3 card to Insv state by typing

>RTS

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to seven minutes to complete.

38 Access the performance monitoring (PERFMON) screen and post the OC3 carrier by typing

>MTC;TRKS;CARRIER;POST SPM <spm_no>
OC3S;PERFMON <car_no>

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

car_no
is the number of the OC3 carrier (0 or 1)

Example of a MAP screen:

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

 PERFMON 0  SPM 11  OC3RM 0  OC3S 0
Interval:              Status:
Parm   Count  M D      Parm   Count M D      Parm    Count M D
SEFS-N   10            CV-N     35           ES-N        5
SES-N     9            LBC-N     0           OPT-N       7
OPR-N UNSET
PERFMON:
```

Note: The initial value of the optical power received (OPR) must be recorded for the OC3 Section carrier terminating on the replacement OC3. This initial reading is OPR0 (OPR zero). If the OPR0 value has not been recorded for the replacement OC3 card, the count for the PERFMON parameter OPR-N appears as UNSET(see the previous example).

39 Record the value for OPR0 by typing

>METERPP RECORDOPR0

and pressing the Enter key.

where

RECORDOPR0
means Record OPR 0 (zero)

If an OPR0 value has already been recorded for the replacement OC3 card, confirm the reset confirmation request by typing

>YES

and pressing the Enter key.

40 At the carrier screen, restore the OC3S carrier and the STS3L carrier to their original state as recorded in Step 10 and Step 7. The OC3S carrier should be restored first.

41 To ensure sparing capability of the new OC3 RM, set the new OC3 card to working (W). To do this, access the Protection (PROT) screen from the OC3 screen and type

>MANUAL <from_unit_no> <to_unit_no>

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

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

Note 1: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

Note 2: The MANUAL command without options and the FORCE command can be used only with a CEM card.

42 To ensure that the new RM can release activity, repeat Step 41.

43 You have completed this procedure. Return to the CI level of the MAP screen by typing

>QUIT ALL

and pressing the Enter key.

Replacing a 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 needs to occur before it is replaced.

If the SRM is	Do
ACTIVE	Procedure 2
STANDBY	Procedure 4

2 Access the clock level of the message switch MS by typing

`>MAPCI;MTC;MS;CLOCK`

and pressing the Enter key.

```
 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 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 >
```

3 Switch the SRM from ACTIVE to STANDBY by typing

>SwCarr

and pressing the Enter key.

4 Access the PM screen level of the MAP display by typing

>MAPCI;MTC;PM

and pressing the Enter key.

5 Access the SPM screen by typing

>POST SPM spm_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of an SPM screen. This example may not reflect your SPM screen.

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

SPM                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit            PM                 0       0       0       0       0       1
 2 Post_           SPM                0       0       0       0       0       1
 3 ListSet
 4 ListRes    SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7            DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8            DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9            DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10            DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_      --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next       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 by typing

>SELECT SRM 0

and pressing the Enter key.

This is an example of an SRM screen.

Note: The four fields in the bottom of the SYNCRM Map screen are:

- Input reference - displays the active bits link for the posted SYNCRM. Possible values are:
  - BITSA - BITSA is the active BITS link.
  - BITSB - BITSB is the active BITS link.
  - NIL - Both BITSA and BITSB are inactive. THis happens when both BITS links are not providing timing.
- SSM - (Sync Status Message) displays the overall SSM value of the SYNCRM. Possible values are:
  - PRS
  - STU
  - ST2
  - TNC

— S3E

— ST3

— SMC

— ST4

— DUS

- Holdover - displays whether or not the SYNCRMs that are providing the timing references are in holdover. Possible values are:

  — Y

  — N

- TMGNODE - displays whether or not the SYNCRM is providing timing reference at present. The possible values are:

  — MASTER - the MS is deriving timing from this Sync RM.

  — STANDBY - the MS is deriving timing from the other Sync RM datafilled in table SYNCLK .

```
   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 by typing

>Bits

and pressing the Enter key.

This is an example of the 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
 6 Tst_      SPM 11    SRM 0
 7 Bsy_         LinkNo   BitsName   Status  State   SSM   AlmSev
 8 RTS_           0      BITSA       Act    InSv    NIL
 9 OffL_          1      BITSB       InAct  InSv    NIL
10 Swbits         2      BITSOUT             Uneq    NIL
11          BITS:
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 by typing

>BSY link_no

for each link number and pressing the Enter key.

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 by typing

>BSY

and pressing the Enter key.

11 Set the SRM card offline (OffL) by typing

>0FFL

and pressing the Enter key.

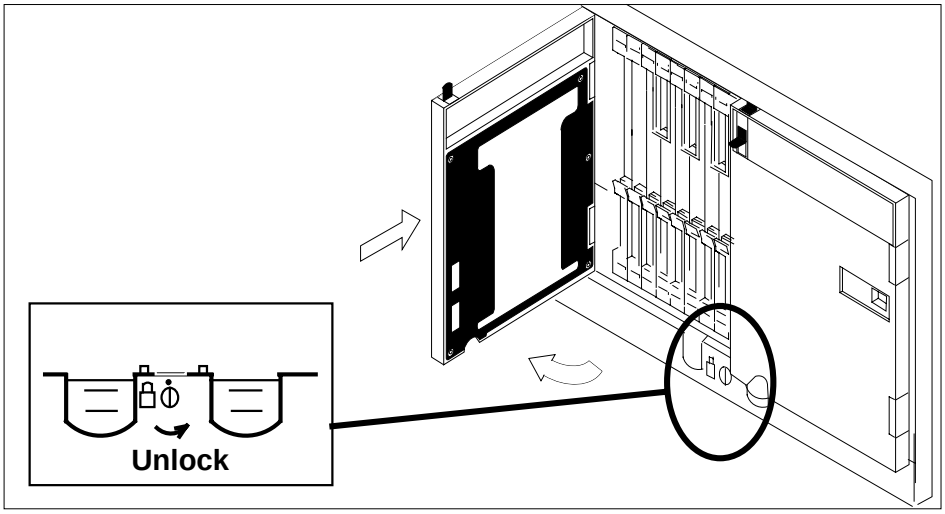
12 Return to the SPM screen and wait for the module to change state.

Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change completes, remove the SRM card.

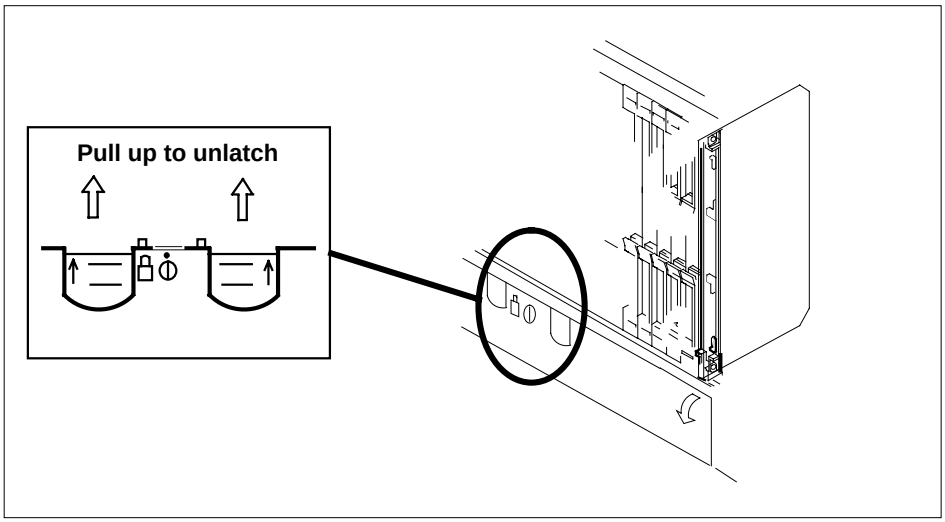
13

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.



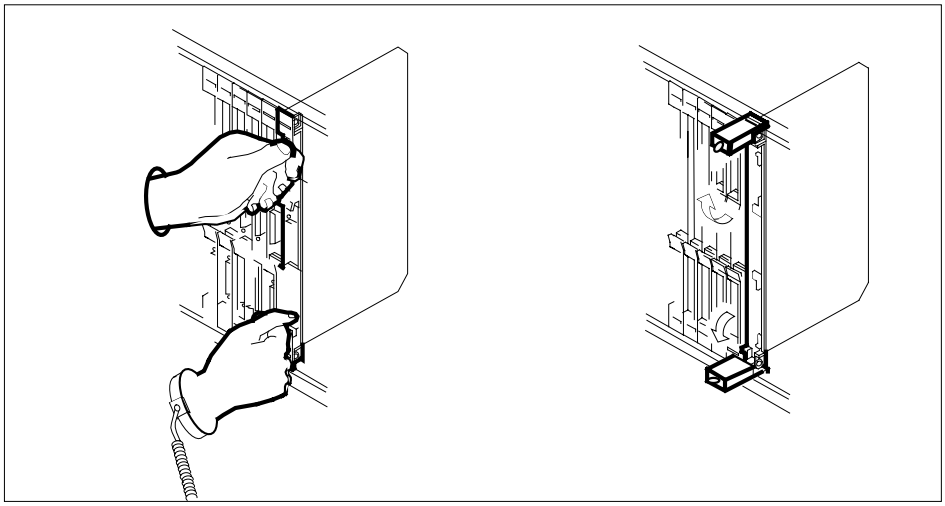
15

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.

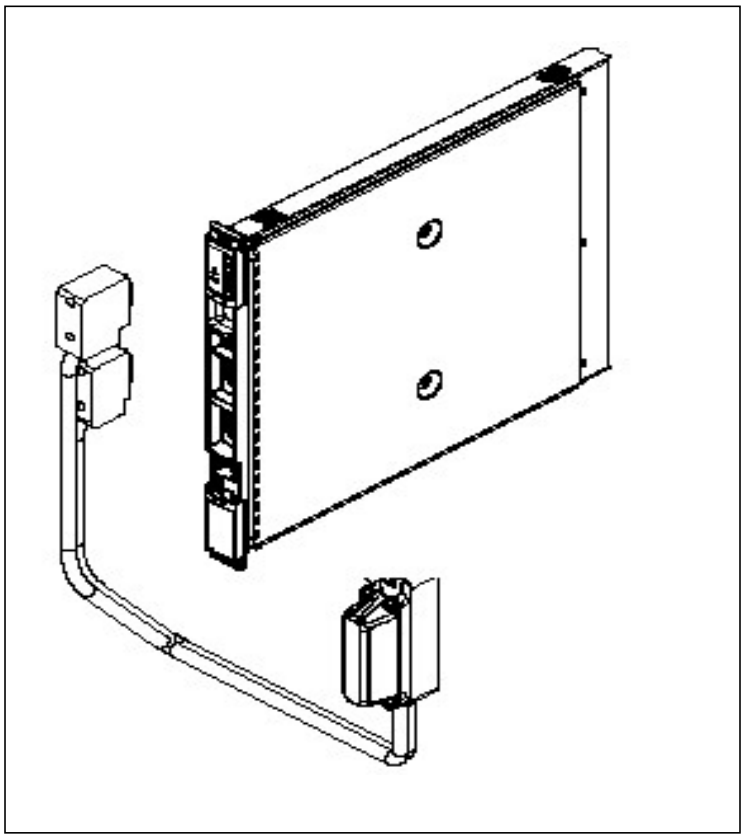


16 Disconnect the cable and 15-pin connector from the faceplate of the card.

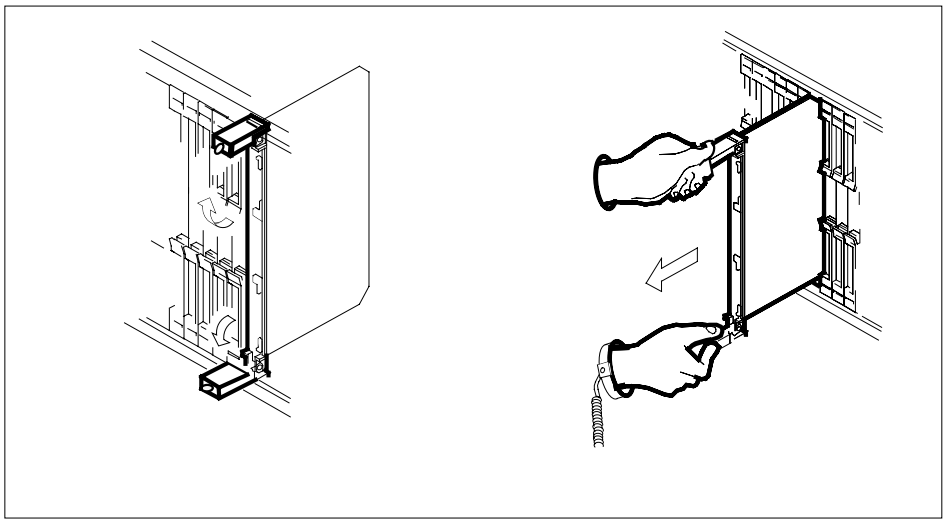
17 After the cable has been removed, cap the connectors on the module and the cable. Store the cables in the cable trough.

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



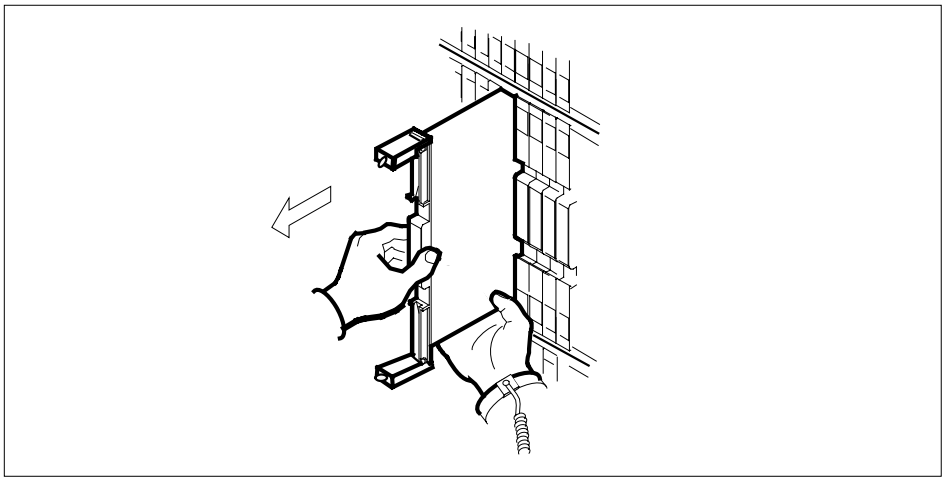
18 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.



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

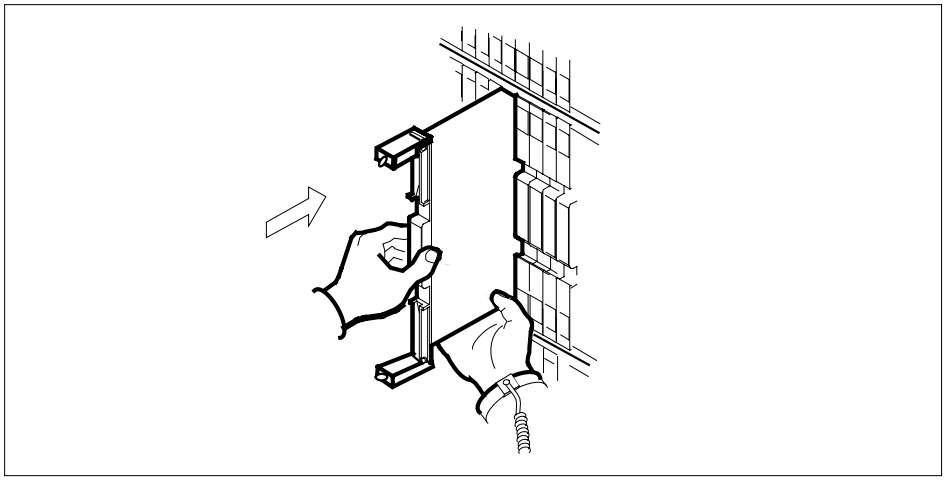
Equipment damage due to empty slots

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.

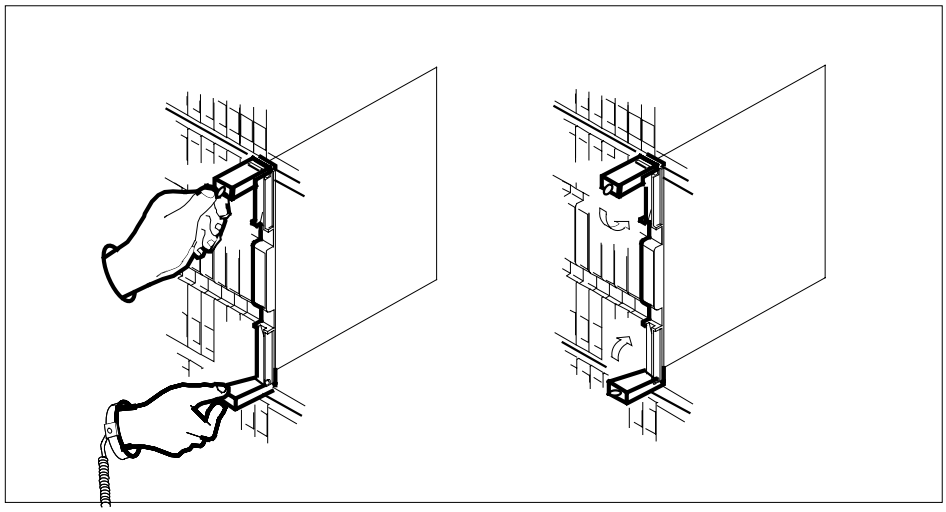
23 Open the locking levers on the card.

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 by typing

>BSY

and pressing the Enter key.

31 Load the new SRM card with the default software load by typing

>LOADMOD

and pressing the Enter key.

Monitor the progress of the loading activity on the SPM line of the SRM screen.

32 Return the new SRM card to Insv state by typing

>RTS

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to seven minutes to complete.

33 Access the BITS level by typing

>BITS

and pressing the Enter key.

34 At the BITS screen, restore theBITS links to their original state as recorded in Procedure 8.

35 If the SRM was orginally the Active node reference, return it to ACTIVE status.

If the SRM was originally	Do
ACTIVE	Procedure 36
STANDBY	Procedure 38

36 Access the clock level of the message switch (MS) by typing

>MAPCI;MTC;MS;CLOCK

and pressing the Enter key.

```
 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 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 >
```

37 Switch the SRM from ACTIVE to STANDBY by typing

```
>SwCarr
```

and pressing the Enter key.

38 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

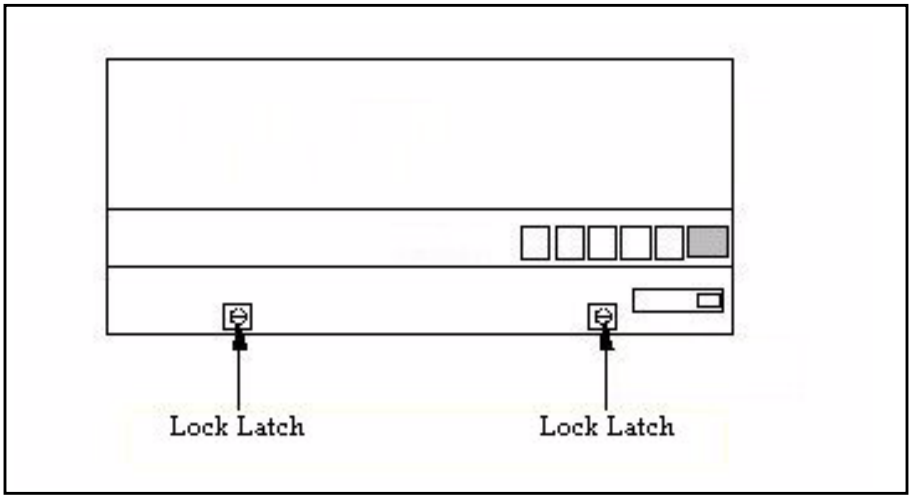
and pressing the Enter key.

Replacing an alarm card assembly (ALM)

At the front of the equipment frame

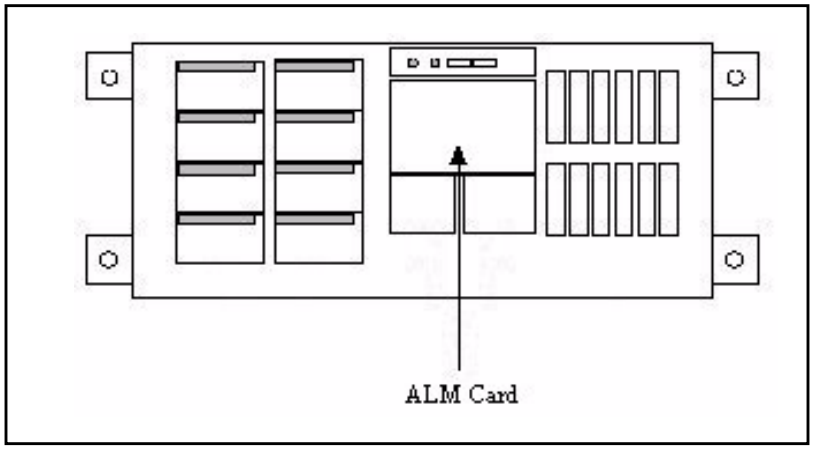
1 Move the lock latches of the power cabling interface unit (PCIU) to the unlocked position as indicated on the cover.

Lock latches of the PCIU



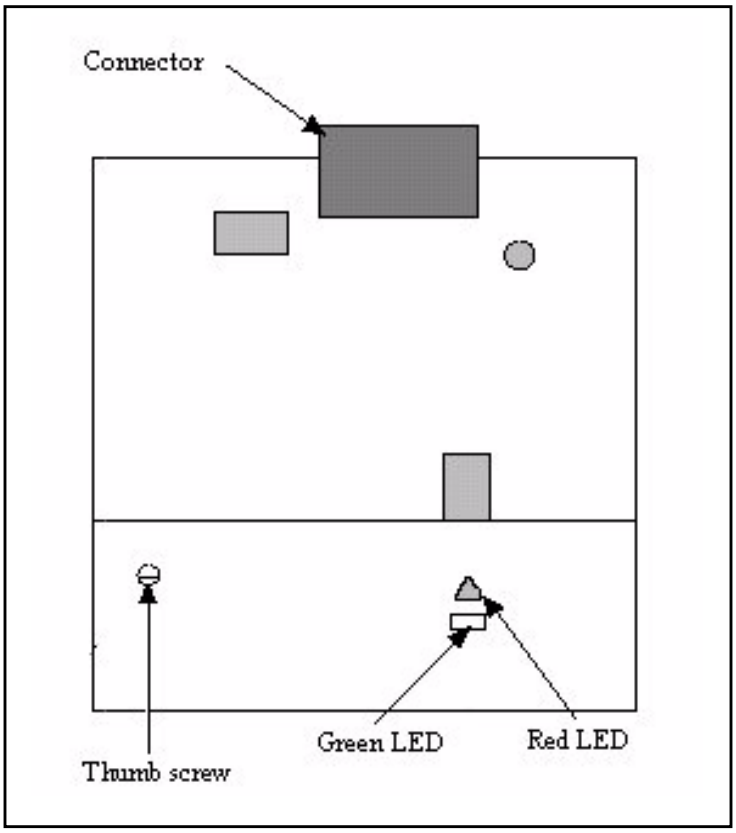
2 Lift the cover of the PCIU to gain access to the NTLX58 ALM.

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 does not impact the operation of the fans.

6 Make a clean, direct insertion, and be sure to fully seat the card.

Once the pack is inserted the green LEDs on the fan units will light up and the amber SPME frame alarm indicator on the cover of the PCIU will light up temporarily and 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.

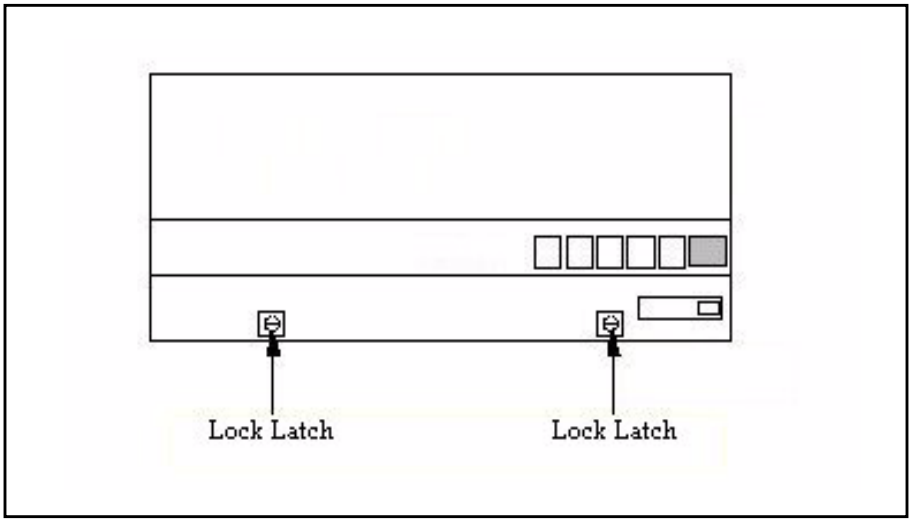
9 You have completed this procedure.

Replacing a fan management unit (FMU)

At the front of the equipment frame

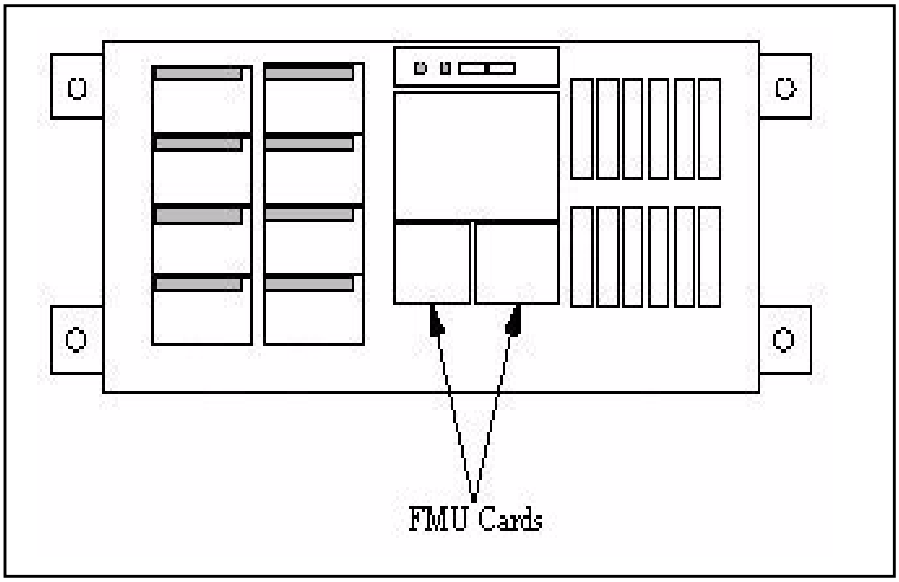
1 Move the lock latches of the power cabling interface unit (PCIU) to the unlocked position as indicated on the cover.

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.

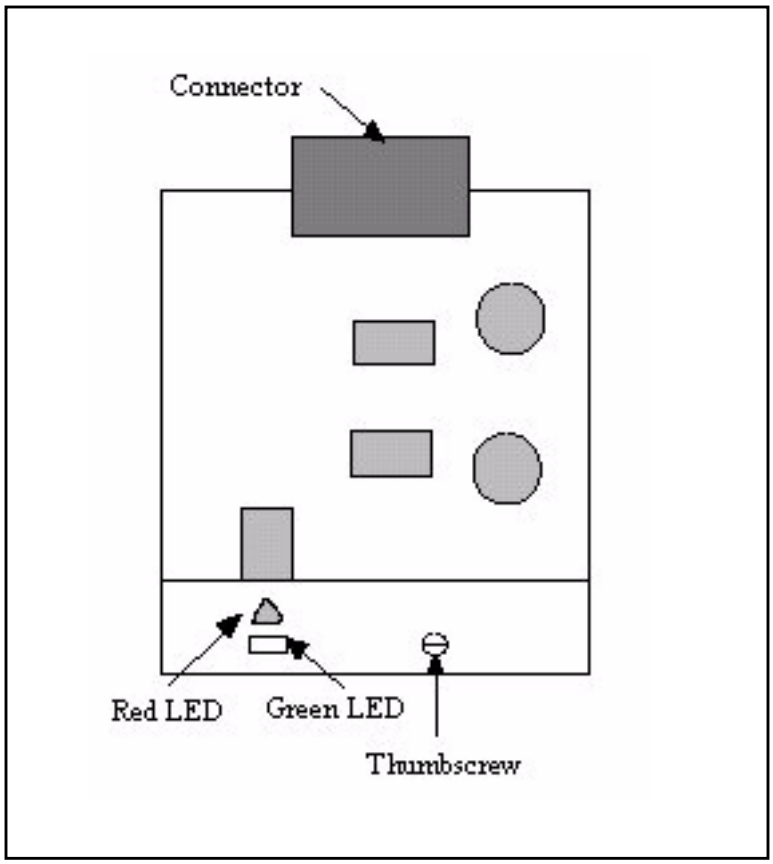
Move the lock latches on each of the eight fan units to the unlocked position as indicated on the faceplate of the fans.

4 Reaching inside the faceplate of the fans depress the latch and slide fan unit out a few inches to unseat them from the NTLX55 cooling units in shelf positons 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 the thumb screw on the front of the FMU.

FMU with thumb screw



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 be sure to fully seat the card.

Note: Do not rely on the thumb screw to seat the card.

10 TIghten the thumb screw.

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 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 positons XX and YY.

13 Ensure that the green LEDs on the faceplate of the fan units are lit and the fan 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.

Testing a circuit pack

At the MAP level

1 Post the SPM containing the circuit pack to test by typing

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

and pressing the Enter key.

where

spm_no
is the SPM number (0 to 63)

2 Select the circuit pack to test by typing

`>SELECT <rm> <rm_no>`

and pressing the Enter key.

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 by typing

`>TST`

and pressing the Enter key.

Retrieve test results

At the MAP level

1 Perform the Procedure , “Testing a circuit pack,” on page 257.

2 The test results will be output to 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.
```