Upgrading the IW SPM IP

Note: Refer to the *NN10003100 PT-ATM Product and Technology Fundamentals* document (Section 11) before upgrading the SPMs. This section describes the overall end-to end Succession upgrade strategy.

Upgrading the software on all the individual circuit packs will upgrade the SPM. The SPM offers two options for upgrades. Automated SPM upgrades are performed on all the circuit packs at once. Manual SPM upgrades are performed on a circuit pack by circuit pack basis.

The term PANTHER is commonly used as a reference to the Automated Upgrade process used to upgrade Peripheral Modules including SPM peripherals. The DMS CI tools that actually perform the Automated Upgrades are the 'PMUPGRADE' and 'SWUPGRADE PM' tools. Both of these tools can be accessed from the CI level of the DMS MAP and include Help functions that explain their use.

Note: An SPM with an GEM configured on it cannot be upgraded using an automated SPM upgrade. The SPM must be upgraded manually.

	CAUTION
⚠	**Possible service interruption** Prior to performing an SPM upgrade, all applicable RM RMIDs and PROTWHOMIDs must be aligned.

Upgrade procedures

The two SPM upgrade options are outlined in the following tables. The procedures used to perform an automatic upgrade are shown in Table 1. Table 2 lists the procedures used to perform a manual upgrade or downgrade.

Table 1   Automated Upgrade Procedures

Procedure	Page
Prepare an automated upgrade	10
Perform an automated upgrade	19

Table 2   Manual Upgrade Procedures

Procedure	Page
Prepare a manual upgrade or downgrade	26
Perform a manual upgrade or downgrade	38
Upgrade or Downgrade a GEM	41
Upgrading a CEM	50
Post upgrade or downgrade process	56
Downgrading a CEM to an earlier release	58
Downgrading a CEM to an earlier version in the same release	64

Upgrade overview

The upgrade process requires upgrading the software in the SPM circuit packs. A separate load exists for each type of circuit pack. Upgrading the software on all the individual circuit packs will upgrade the SPM. Software upgrades require the following sequence:

- GEM
- CEM

An SPM upgrade involves upgrading circuit pack software loads. The circuit packs are grouped into circuit pack protection groups. A manual upgrade consists of the following phases:

- Check alarms on the SPM before starting the upgrade
- Update the circuit pack load inventory.
- Upgrade all RM circuit pack protection groups that require an upgrade
- For each RM circuit pack protection group, upgrade all circuit packs in the groups that require an upgrade.
- Upgrade CEMs that require an upgrade.

Upgrade Methods

An SPM upgrade consists of upgrading the software on all of the individual circuit packs on an SPM. Two different upgrade methods are available:

- Automated upgrades
- Manual upgrades

The automated method upgrades all of the circuit packs at once. The manual method upgrades circuit pack types individually. An SPM configured with an GEM requires a manual upgrade and cannot be upgraded using an automated upgrade.

Upgrade Preparation

Before performing an SPM upgrade, each of the following requirements should be met:

- an office image was taken in the last 24 hours
- all peripheral module (PM) logs are enabled
- all SPM logs are enabled
- the circuit pack is in-service and the activity state is inactive
- automatic routine exercise (REX) testing is suspended in the office

> **CAUTION**
> **Possible service interruption**
> Nortel Networks strongly recommends completely loading entire SPMs during a single maintenance release or milestone upgrade. Failure to load all RMs and CEMs in an SPM can result in inadvertently running unsupported mixed load SPM configurations. Mixed load configurations can, in turn, result in the reload of modules in an out-of-procedure sequence, which can be potentially service affecting. However, if you cannot complete the loading of all SPMs during the same period, upgrade only a limited number of SPMs during that loading period.
>
> *Note 1:* Due to a loadname mismatch in table MNCKTPAK, SPMs not loaded with an upgrade load reflect an ISTB condition. The ISTB condition remains in effect until you have completed the upgrade on all SPMs.
>
> *Note 2:* For PPSL maintenance, only changes to the PMLOADS is required (refer to the PM upgrade section).

During upgrade preparation, the new load files are transferred from a tape to a disk drive. An upgrade tape can consist of any of the following:

Table 3 Upgrade Release Types

Release	Explanation
milestone	upgrades to the next base software release
maintenance or emergency	upgrades to a new release within the current base software release
Pre-Patched SPM Load (PPSL) milestone	upgrades to the next base software release with corrective content (patches) included
PPSL maintenance	upgrades to a new release within the current base software release and includes patches

Software Loads

The SPM Load tape contains the SPM loads, SPM patches, and $XREF file which is identified by "XPMxx" where "xx" refers to the SPM load.   The automatic upgrade procedure uses $XREF files to apply patches after loading. If the $XREF files are not loaded, then patches must be manually applied.

PrePatched Loads (PPL) have patches built in as part of the load and are identified by an alpha numeric suffix at the end of the file name. For example:

Load type	Numbering example
PPL	GEM19DE_010082A3
non-PPL	GEM19DI_010086

Table 4 shows an example of load names that might be used in an SPM upgrade and the appropriate procedure to follow. In this example, a milestone upgrade would be performed from release16 to release 17. In contrast, a PPSL maintenance release requires only updating the file names in the PMLOADS table and does not require performing upgrade procedures in the last column.

Table 4 Milestone release load example

Current load name in PMLOADS	Current active load file	New load name from SPM load tape contents	New active load file name from SPM load tape contents	Upgrade procedure to perform
GEM16AF	GEM16AF_010005	GEM17AE	GEM17AE_010010	Upgrade or Downgrade a GEM
IWS16AF	IWS16AF_010005	IWS17AE	IWS17AE_010010	Upgrading a CEM

Protection Groups

A protection group consists of multiple circuit packs grouped together for system reliability through sparing. Each protection group has a unique group identification (ID) assigned to it. The CEM does not belong to a protection group, and therefore does not have a circuit pack protection group ID.

The MNCKTPAK table contains a listing of each circuit pack in the SPM and associated protection group IDs. Figure 1 identifies the important fields in the MNCKTPAK table when performing an upgrade.

Figure 1 Circuit pack upgrade fields
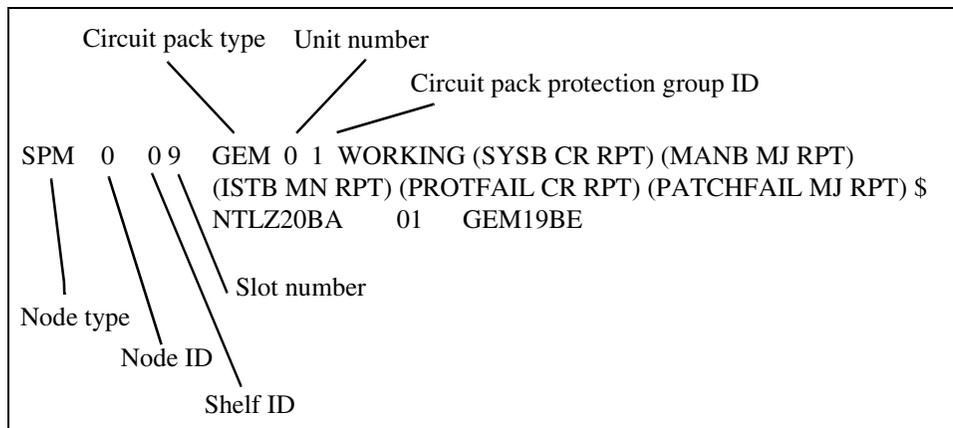
The circuit pack protection group ID is a subfield of the CPKTYPE field. The following list identifies the subfield name for each RM type.

- GEM: GEMGRPID
- CEM: CEMGRPID

The protection group ID in the MNCKTPAK table is defined in the MNPRTGRP table through the GRPKEY field, GRPID subfield. The GRPID subfield values range from1 through 28.

Upgrade strategies

Nortel Networks strongly recommends completely loading entire SPMs with a single maintenance release or milestone upgrade. Failure to load all RMs and CEMs in an SPM can result in inadvertently running unsupported mixed load SPM configurations. Mixed load configurations can, in turn, result in the reload of modules in an out-of-procedure sequence, which can be potentially service affecting. If unable to complete the loading of all SPMs in one session, plan to upgrade a limited number of SPMs in multiple sessions.

During the upgrade process SPMs not loaded with an upgrade load reflect an ISTB condition caused by a loadname mismatch in the MNCKTPAK table. The ISTB condition remains in effect until all SPMs have been upgraded.

Operating company personnel can upgrade more than one RM and more than one SPM at the same time.

To upgrade multiple RMs at the same time on the same SPM, open a MAPCI session for each RM type.

To concurrently upgrade multiple SPMs, Nortel Networks recommends upgrading up to two SPMs at the same time. Open a MAPCI session for each RM type on each SPM.

Note that during in-service loading, which involves downloading from the computing module (CM), you can load a maximum of eight RMs at the same time. The restriction of in-service loading no more than eight RMs at the same time also applies to CEMs. During mate loading, up to sixty four RMs can be loaded from the mate at the same time.

For nonpatchable loads, post-release software updates (PRSU) must be built into the load file.

PPSL

A Pre-Patched SPM Load (PPSL) is a Spectrum load which includes the released base software content and the corrective content (patches). PPLS advantages include:

- reduce patching effort after reloading

- reduce recovery time

- reduce one night process (ONP) upgrade time

After loading a PPSL, new patches can be applied using standard tools and procedures through post release software management (PRSM). PRSM can also remove patch files that were built into a PPSL.

A PPSL file is named with the first fourteen characters of the base load plus two additional appended characters to indicate the version number. The two-character appendage uses an alpha numeric format. For example, a PPSL for the base load CEM16BP_010041 could be CEM16BP_010041A3.

The QUERYPM FILES command for a posted SPM at the PM MAP level indicates the existence of a PPSL for a GEM or CEM through the default filename.. For example:

CEM 0 InSv Act Default Loadname: IWS19BF
                        Default Filename: IWS19BF_010031A1
                        Running Load: IWS19BF_010031
                        Load in Flash: IWS19BF_010031

A load query through PRSM identifies a PPSL by including "PPSL" in the PRSUID name. For example, SPPSLGEM16DI .

Additionally, if using remlogin to the resource module through the CEM, the command" /patches/patchlist" indicates a PPSL by the status "Builtin". For example:

```
Patch ID        Status
--------        ------
BUZ65S0P        Applied (BuiltIn)
CLF60S0P        Applied (BuiltIn)
DXH54S0P        Applied (BuiltIn)
GAG09S0P        Applied (BuiltIn)
```

A PPSL requires datafill changes made only to the PMLOADS table. The file and volume names must be updated to reflect the new PPSL load name and location.

SPARTS

Patches applied to resource modules initially reside on the DRAM, the memory in which the load is running, of a device. The patched DRAM image does not copy over to the device's Flash memory until after patching activity has ceased on a device for a period of time. The delay between the end of the last patch action on the device and the start of the DRAM-to-Flash image copy varies depending on the load and the device:

- 60 minutes in SP14-16 loads (80 minutes for the inactive CEM in SP15-16)
- 5 minutes in SP17 and later loads (15 minutes for the inactive CEM)

It is possible that this delay could prevent patch updates to the PRSM database which would produce patching mismatches between the PRSM and the device's LPM (local patch manager). SPM Patching after RTS (SPARTS) addresses this issue.

When an RTS is initiated on a device, SPARTS obtains and compares a list of patches actually applied to the device to the patches applied to all other devices in the office that are running the same load. If no patch discrepancies exist, then SPARTS takes no further action. If patch discrepancies exist, SPARTS applies any missing patches to the device and likewise removes any applied patches that are not running on other devices with the same load within the office.

SPARTS raises a PATCHFAIL alarm against the SPM node (not the device) if it fails to apply or remove any required patches. SPARTS

schedules up to three attempts, each spaced 30 minutes apart, to correct a patch discrepancy. Once an attempt succeeds any subsequent attempts are cancelled and the PATCHFAIL alarm clears. A PATCHFAIL alarm can be manually cleared by running an ISTBAUDIT command against the device.

Run a DBAUDIT command against a device after loading the first device with a PPSL. A DBAUDIT populates the PRSM database and ensures that SPARTS correctly handles patching on any other device loaded with the same PPSL.

SPARTS does not apply a patch that has not already been applied in an office. SPARTS ensures that previously applied patches are applied every time an RTS is performed on a device.

Downgrading

Like a software upgrade, a software downgrade loads a different version of software to the SPM components. A downgrade is only performed due to an error condition that necessitates returning to a previous software version.

The downgrade procedure is identical to the upgrade procedure, performed in reverse order, for all components except for the CEM and GEM. Those components require different treatment depending on whether the downgrade is to an earlier release or an earlier version within the same release.

Tools and utilities

SPM upgrades are performed using the MAP display commands.

Prepare an automated upgrade

Each destination volume must have sufficient free space for the new SPM load or PRSU files and meet all office criteria.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
dist_vol	the name of the new Load File Distribution volume
patch_vol	the name of the new Patch Distribution volume
load_number	the number of the current load
load_name_1 (2) (n)	the names of the loads to be included or excluded (repeat variable as needed)

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

At the CI level of the MAP display

1   Send the terminal responses to a printer by typing

> **>RECORD START ONTO <printer>**

2   Identify the patch destination volume by typing

> **>TABLE PADNDEV;LIST ALL;QUIT**

Example

```
TABLE: PADNDEV
TOP
DEVKEY     DEVICE
-------------------
    1 D030M17PTCH

    2 D030M15PTCH

    3  S01DIMAGE

BOTTOM
```

3   Access the PMUPGRADE utility by typing

> **>PMUPGRADE**

4   Set confirmation to ON by typing

>   **>SET CONFIRMATION ON**

5   Carryover loads are load files on the tape that have the same version of the load currently used in the office. Operating company personnel can issue a SET CARRYOVER ON command to copy all SPM loads for the office. The default carryover setting is OFF.

If the office	Do
requires all SPM loads for the office be copied	step 6
does not require all SPM loads for the office to be copied	step 7

6   Set carryover to ON by typing

     >SET CARRYOVER ON

7   Confirm the Load File Distribution setting is correct. If necessary, change the setting by typing

     >SET LOADDISTRIB <dist_vol>

     Example

If	Do
SLM tape drive[a]	**>SET LOADDISTRIB S01T**
XA-Core DAT drive	**>SET LOADDISTRIB F02UTAPE**

a.The Load File Distribution and Load File Destination volumes must reside on the same SLM device.

8   Confirm the Load File Destination setting is correct. If necessary, change the setting by typing

     >SET LOADDEST <dist_vol>

     Example

If	Do
SLM tape drive[a]	**>SET LOADDEST S01DPMLOADS**
XA-Core DAT drive	**>SET LOADDEST F02LPMLOADS**

a.The Load File Distribution and Load File Destination volumes must reside on the same SLM device.

9   Confirm the Patch File Distribution setting is correct. If necessary, change the setting by typing

>**SET PATCHDISTRIB <patch_vol>**

Example

If	Do
SLM tape drive	>**SET PATCHDISTRIB S01T**
XA-Core DAT drive	>**SET PATCHDISTRIB F02UTAPE**

10   The ISN, XPM, and SPM Patch Destination settings must point to the patch file destination volume. Confirm the ISN, XPM, and SPM Patch Destination settings are correct based on the PADNDEV table listing obtained in <u>step 2</u>. If necessary, change the setting by entering the following commands

>**SET ISNPATCH <patch_vol>**

>**SET XPMPATCH <patch_vol>**

>**SET SPMPATCH <patch_vol>**

> ***Note:*** The SPM patch destination volume should be entered in the PADNDEV table.

Example

If	Do
SLM tape drive	>**SET ISNPATCH S01DPMLOADS**
	>**SET XPMPATCH S01DPMLOADS**
	>**SET SPMPATCH S01DPMLOADS**
XA-Core DAT drive	>**SET ISNPATCH F02LPMLOADS**
	>**SET XPMPATCH F02LPMLOADS**
	>**SET SPMPATCH F02LPMLOADS**

11   Generate an office load report by typing

>**DISPLAY LOADS**

Result

PMUPGRADE compiles the PMUPGRADE Load Report from the PMLOADS table and the SPM inventory tables.

Note: A load can have an empty "Tables Used" column. If office policy requires data in this column, perform the following steps:

- Exit PMUPGRADE
- Delete the out-dated load from the PMLOADS table
- Go to step 3 of this procedure

12   Generate a node report for the office by typing

>DISPLAY NODES

Result

The PMUPGRADE Node Report is compiled from SPM inventory tables. The nodename information for the MNCKTPAK table is obtained from the MNNODE table.

13   Display the firmware information by typing

>DISPLAY FWINFO

14   Set the preferred load to the current load by typing

>SET FWPREFERRED <load_number> CURRENT

Note: The preferred load must be equal to the current load.

15   Start the filecopy phase of the utility by typing

>START FILECOPY

Time Requirements

The FILECOPY process copies files to the destination volume and adds new loads to the PMLOADS table. The process requires approximately 40 minutes. The amount of time depends on the number of SPM loads and PRSU files.

16   When prompted to confirm a tape is in its appropriate drive, confirm the tape is physically inserted in the drive. Do not use the INSERTTAPE or IT commands on the tape.

If the SLM or XA-Core tape cartridge label text indicates Patches:Yes, the tape includes the required PRSUs for SPM load files.

17   At the prompt, continue by typing

>Y

If the response indicates	Do
the replacement loadname cannot be found	step 18
multiple replacement loadnames are found	step 19
ready to continue	step 20

18   A response similar to the following example appears if PMUPGRADE cannot locate the replacement loadname.

```
No replacement loadname found on distribution volume for SM206BH1.
Please enter replacement loadname, or "S" (Same) or "Q" (Quit FILECOPY)
```

If	Do
A new load type replaces the current load type	Enter the new loadname. Ensure the loadname is typed accurately Go to step 20
The load is manufacture discontinued	Enter "S" Go to step 20
The load is a filler SPM loadname, indicating a SPM does not have a load	Enter "S" Go to step 20

19   If a response indicates that multiple replacements are found on the load distribution volume, enter the appropriate loadname.

The loadname appears before the underscore in the load file name. For example, GEM17DE is the load name for the load file GEM16DE_010082A3.

20   Review the Load File Selection Report and determine if any loads need to be added or removed from the report.

If	Do
one or more loads need to be added or removed from the report	step 21
the report is complete and no loads need to be added or removed	step 26

21   Stop the file copy process by typing

>N

If	Do
one or more loads need to be removed from the report	step 22
one or more loads need to be added to the report	step 23

22   Remove the loads from the report by typing

>SET EXCLUDELOADS <load_name_1> <load_name_2> ... <load_name_n>

Note: Separate each load name with a space.

Example

>SET EXCLUDELOADS BTMKA02 ECLI4BC

If	Do
one or more loads need to be added to the report	step 23
the report is complete and no loads need to be added or removed	step 24

23   Add the loads to the report by typing

>SET INCLUDELOADS <load_name_1> <load_name_2> ... <load_name_n>

Note: Separate the load names with a blank space.

Example

>SET INCLUDELOADS BTMKA02 ECLI4BC

If	Do
one or more loads need to be removed to the report	step 22
the report is complete and no loads need to be added or removed	step 24

24   Repeat the file selection phase of the utility by typing

>START FILECOPY

25   Confirm that the appropriate load names have been added or removed from the Load File Selection Report.

If the Load File Selection Report	Do
does not show the excluded and/or included load names	step 21
shows the excluded and/or included load names	step 26

26   Accept the Load Selection Report by typing

    >Y

From the terminal where PMUPGRADE is active

27   Confirm the patch file selection prompt by typing

    >Y

    Note: PMUPGRADE uses the $XREF patch control files to select PRSUs for copying. Depending on the method of PRSU delivery, this file may not be available. If the file is not available, PMUPGRADE generates a warning that no patch control file has been found. Contact your next level of support for instruction on how to proceed with the upgrade and a list of required PRSUs to be manually applied.

28   Create the list of files to copy by typing

    >Y

    Time Requirements

    This final phase of the FILECOPY process requires approximately 20 minutes to complete adding new loads to the PMLOADS table. The amount of time depends on the number of SPM loads and PRSU files.

29   Generate a PMUPGRADE load report for the office by typing

    >DISPLAY LOADS

    Confirm the selected new loads have been added to the report.

30   Start the generation of the PM upgrade plan by typing

    >START PLAN

    Note: Only one PM upgrade plan can be executed at a time. A new plan cannot be started until an existing plan has been cancelled or completed.

31   Display the PM upgrade plan by typing

    >DISPLAY PLAN

The PMUPGRADE Plan Report organizes the SPM update by tasks and layers. A task is a set of SPMs of the same type at the same site with the same load requirements. A layer is a grouping of tasks.

32   Review the PMUPGRADE report.

- Confirm all SPMs that require upgrading are included in the plan report

  Note: For loads added to the Loadfile Selection Report with the SET INCLUDELOADS command, the associated SPMs must be manually updated.

- Confirm the correct loads are included with each task in the plan report.

- Confirm that the sequence of tasks in the plan report conforms to office policy.

  Note: If the sequence of tasks does not comply, use the RUNSTEP command during the automated SPM upgrade to change the order of tasks.

- Confirm offline SPMs that are being installed or commissioned in the office are not included in the plan report. If an offline SPM is included in the plan report

  — update the appropriate SPM inventory table. Change the loadname field for that SPM to the new loadname from the loadfile selection report.

  — Repeat Steps 30 and 31. Ensure the offline SPMs are not included in the new plan report.

33   Exit the PMUPGRADE utility by typing

    >QUIT

34   Stop the terminal responses from printing by typing

    >RECORD STOP ONTO <printer_name>

35   Remove the SPM load tape from the tape drive.

Check office policy concerning additional copies of SPM load and PRSU files. Some offices require additional copies of SPM load and PRSU files on a parallel device.

At your desk

36   Any new hardware, identified by a Product Engineering Code (PEC), required for the software upgrade release must be installed.

If each node	Do
has the required hardware	step 37
does not have the required hardware	Contact your next level of support for more information.

37   You have completed this procedure and prepared the office for an automated software upgrade.

Perform an automated upgrade

Use at least two devices with the procedure. Use one device to perform the automated SPM update. Use the second device as a trace device to monitor the progress of the automated SPM update.

Some offices use a third device during the automated SPM update. Use the third device as a MAP terminal. Post the SPMs and monitor SPM loading, patching, and service status.

Send the output of each device to a printer for record keeping.

SWUPGRADE PM will disable the Spectrum Patching After RTS (SPARTS) tool during the automated upgrade. When SWUPGRADE PM is completed or aborted, SPARTS is automatically re-enabled.

The SPM601 log will be generated when SPARTS is disabled and will again be generated when SPARTS is enabled. No action is required when this log is generated.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
max_no	the UNLIMITED or the maximum number of SPMs the system updates concurrently
dev_name	the name of the new Patch Distribution volume
spm_no	the ID (number) of the SPM
step_name	the name of the step

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

At the CI level of the MAP display

1 Send the terminal responses to a printer by typing

>**RECORD START ONTO <printer>**

2 Enter the SWUPGRADE PM increment for automated SPM upgrades by typing

>SWUPGRADE PM

3 Establish a second device as a trace device by typing

>SET TRACE_DEVICE <dev_name>

Note: The second device records SWUPGRADE PM operations during the automated SPM update.

4 The trace device must display a message indicating that the device is selected for TRACEing.

If the device	Do
displays the message	step 5
does not display the message	Confirm the correct device is selected as the trace device. If necessary, repeat step 3.

5 Start the SPM update shift by typing

>SET SHIFT STARTED

SWUPGRADE PM checks for the availability of a $XREF patch cross-reference file and processes patch cross-reference information.

6 Display the SWUPGRADE PM environment variables by typing

>DISPLAY VAR ALL

The variable name TRACE_DEVICE is the trace device established in step 3. SHIFT indicates the status of the current upgrade shift. CONCURRENCY indicates the maximum number of concurrent upgrades.

7 Display HELP for the CONCURRENCY variable by typing

>HELP VAR CONCURRENCY

8 Determine the maximum number of SPMs to update concurrently. Note that a concurrency value set to UNLIMITED can exceed the maintenance window for the SPM update shift in large scale offices. The maximum value cannot exceed eight. The value defaults to eight if entering a value of UNLIMITED or greater than eight.

If the value in CONCURRENCY	Do
needs to be changed	step 9
does not need to be changed	step 11

9   Set the concurrency value by typing

>**SET CONCURRENCY <max_no>**

10   Display the environment variables and confirm the change by typing

>**DISPLAY VAR ALL**

11   Set prompting to on by typing

>**PROMPTING ON**

PROMPTING ON is the recommended method of operation. Set PROMPTING ON forces a pause after each automated step. This allows user intervention for the next required step. The remainder of this procedure assumes prompting is enabled.

12   From a second terminal, post the node designated for an upgrade by typing

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

Example

>**MAPCI;MTC;PM;POST SPM 23**

13   Display alarms on the RMs on the SPM by typing

>**QUERYPM FLT**

14   Display and note any alarms on the node by typing

>**LISTALM**

15   Display and note the carrier statuses on the node by typing

>**MAPCI;MTC;TRKS;CARRIER;POST SPM spm_no 1**

16   Determine the impact of the current alarm status on the upgrade.

If there are	Do
alarms other than ISTB alarm	step 17
no alarms or all alarms are ISTB alarms	step 18

17   Perform the appropriate alarm clearing procedures. After completing the required procedures, go to step 18.

18   From the SWUPGRADE device, begin the automated SPM update by typing

>**START**

19   Display and review the upgrade steps by typing

>**DISPLAY STEPS**

A step with an "_A_" identifies the step as an automated step. An "_M_" identifies the step as a manual step.

After a manual step has been completed the status changes from NEEDED to COMPLETED.

The columns marked as PERM, ACT, and PROC are used by other platforms and do not apply to the SPM upgrade.

Steps proceed automatically, however the option exists to manually select a step.

20   Display HELP on the step you wish to execute by typing

>HELP STEP <step_name>

SWUPGRADE PM displays a brief description of the step including

- the nodes affected by the step

- the load(s) and PRSU(s) required by the step

- the steps required prior to the step

21   Execute the upgrade process automatically or manually through one of the following commands:

If executing the upgrade	Do
automatically	Type
	>GO
	Go to 22
manually	Type
	>RUNSTEP <step_name>
	Go to step 26

22   Observe the trace device response for the manual step.

23   Update all nodes manually using the procedures found in the 'Prepare a manual upgrade or downgrade' and 'Perform a manual upgrade or downgrade' sections of this document.

24   Override the SWUPGRADE PM utility by typing

>OVERRIDE <step_name>

25   Confirm the action by typing

>Y

If you want to	Do
go to another upgrade step	step 19

If you want to	Do
finish the upgrade	step 29

26   The automated upgrade displays the upgrade progress through the following:

- a trace device response
- the status of each node
- table update status
- software loading status

SWUPGRADE PM stops executing if:

- nodes are not ready for upgrading
- all nodes have been successfully upgraded
- a SET SHIFT FINISHED or SET SHIFT ABORTED command has been entered
- An SPM upgrade failure occurs.
- The SWUPGRADE PM shift exceeds the 14 hour time limit.

27   After SWUPGRADE PM completes a step, the trace device displays an update status report for each node.

If	Do
every node in the step passed and you want to continue the SPM update shift	step 19
a node in the step failed	step 28
every node in the step passed and you want to finish the SPM update shift	step 29

Note: Use the QUERYPM FILES command from the MAP display to confirm each node is correctly loaded and in-service.

28   Possible reasons for a node failure are:

- The SPM status, or one of its units, changed due to a maintenance problem not related to the automated update.
- The SPM load file or required PRSU files are not in the Destination Volume.
- The node encountered a hardware problem.

Review logs PM703, SPM650, SPM651,SPM300, SPM500,SPM335 and NODE500, plus the trace device output to determine why the node failed the automated upgrade.

If you can	Do
determine why the node failed	Correct the problem and return to step 21
not determine why the node failed	Contact your next level of support. You may have to correct this problem before you continue the SPM update shift, skip this problem and continue the update shift, or finish the SPM update shift.

29   Finish the automated SPM update shift by typing

>SET SHIFT FINISHED

Result

A Summary Report for PM Software Upgrade containing the following information:

- the step name

- the elapsed time between the previous and current step

- the time the step began

- the elapsed time to execute the step

- the final result status

A result status of STEP NOT COMPLETE indicates SWUPGRADE PM did not perform the step. This could indicate a step that was overridden and performed manually.

The SET SHIFT FINISHED command can generate a PM700 log that indicates the SPM update shift has finished. No action is required for this log.

30   Display the step of the automated SPM update by typing

>DISPLAY STEPS

If all steps	Do
except UPGRADE_COMPLETE are complete or overridden	step 31
are not complete or overridden	step 34

31   Execute the UPGRADE_COMPLETE step by typing

>GO

32   Obtain the final record of all completed steps by typing

    >DISPLAY STEPS

33   Complete the UPGRADE_COMPLETE step by typing

    >GO

34   Quit the SWUPGRADE PM utility by typing

    >QUIT

35   Stop the terminal responses from printing by typing

    >RECORD STOP ONTO <printer>

36   You have completed this procedure.

Prepare a manual upgrade or downgrade

This procedure prepares the disk volume and file names in the PMLOADS and MNCKTPAK tables for a software upgrade. The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
log_name	the name of a log type
log_#	the specific number of a log type
spm_no	the number of the SPM (0 to 85)
drive_name	the name of the SLM tape drive
drive_no	the XA-Core tape drive number
tape_vol	the name of the PCL-specific SLM tape cartridge volume
pc_file	the name of the patch control file
load_name	the load name of the new load (as it appears in the PMLOADS table)
act_file	the active load file name (as it appears in the PMLOADS table)
act_vol	the active volume name (as it appears in the PMLOADS table). The volume identifies the device where the act_ file is stored.
bkp_file	the backup load file name (as it appears in the PMLOADS table). The backup load file name should be identical to the act_file name.
bkp_vol	the backup volume name (as it appears in the PMLOADS table). The backup volume identifies where the bkp_file is stored. The backup volume name should be identical to the act_vol name.

Variable Abbreviations

Abbreviation	Definition
disk_vol	the name of the backup disk volume
act_load	the name of the new active load (as it appears in the PMLOADS table)
shelf_ID	the shelf number (0 or 1)
slot_no	the number of slot location (1 through 14)
rm_name	the RM name (CEM, GEM, etc.)
rm_no	the RM number

Throughout the procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

ATTENTION

Follow your company policy for soaking selected circuit packs before upgrading the rest of your office.

ATTENTION

The XA-Core command syntax for drive_no and disk_no correspond to the following identifiers in the XA-Core command examples:

Shelf position is the front (F) or rear (R) shelf position of the input output processor (IOP).

Slot position is the two-digit number of the slot position for the IOP with the tape device.

Packlet position is the upper (U) or lower (L) packlet position of the IOP with the tape device.

In the command example F17UTAPE, F is the shelf position, 17 is the two-digit slot position, U is the packlet position, and TAPE identifies the software delivery medium.

At the CI level of the MAP display

1   Send the terminal response to a printer by typing

> **>RECORD START ONTO printer**

Example

> **>RECORD START ONTO PRINTER1**

2   Enter the log utility and list devices by typing

> **>LOGUTIL**

> **>LISTDEVS**

Example of a MAP display

```
No. Device  Status      Rerouted Format
---- -------  -------     ----------- -------
0  MAP121      Outputting Logs  No   STD
```

3   Verify that logs are routed to a printer by typing

> **>LISTREPS SPECIAL PRSM**

Example of a MAP display

```
Log  Rep.  Event              Suppressed/
Name No. Class Type  Event Label     Thresholded     Syslog
--------------------------------------------------------------------------------------
16 report(s)  printed
```

> **>LISTREPS SPECIAL SPM**

Example of a MAP display

```
Log  Rep.  Event              Suppressed/
Name No. Class Type  Event Label     Thresholded     Syslog
--------------------------------------------------------------------------------------
67 report(s)  printed
```

> **>LISTREPS SPECIAL NODE**

Example of a MAP display

```
Log  Rep.  Event              Suppressed/
Name No. Class Type  Event Label     Thresholded     Syslog
--------------------------------------------------------------------------------------
11 report(s)  printed
```

> **>LISTREPS SPECIAL TUPL**

Example of a MAP display

```
Log  Rep.  Event              Suppressed/
Name No. Class Type  Event Label     Thresholded     Syslog
--------------------------------------------------------------------------------------
9 report(s)  printed
```

4   Resume any SPM, NODE, and TUPL logs that have been suppressed by typing

>**`RESUME <log_name> <log_#>`**

Example

>**`RESUME SPM 311`**

5   Post each SPM scheduled for an upgrade by typing

>**`MAPC NODISP;MTC;PM;POST SPM spm_no`**

6   List and print the loads on the SPM by typing

>**`QUERYPM FILES`**

7   Exit the SPM screen by typing

>**`QUIT ALL`**

8   Identify the patch destination volume by typing

>**`TABLE PADNDEV;LIST ALL;QUIT`**

Example

```
TABLE: PADNDEV
TOP
DEVKEY        DEVICE
-------------------
     1 SFDEV

     2 F17LPTCH_CM

BOTTOM
```

9   Place the load tape into the tape drive of the selected disk volume.

10   Access the disk utility by typing

>**`DISKUT`**

Response

```
Disk utility is now active
```

11   Identify the PMLOADS volume by typing

>**`LV`**

SLM Drive Example

```
Volumes found on the node CM:
-----------------------------
NAME                   TYPE      TOTAL        FREE
TOTAL   OPEN  ITOC    LARGEST
                                 BLOCKS      BLOCKS
FILES FILES FILES  FREE SEGMENT
```

```
-------------------------------------------------
---------------------------------
S00DIMAGE              STD    1228735     146455
4      0      2      141905
S00DPMLOADS            STD     614335     222655
48      0      0       43041
S00DOCC2               STD      51135          3
4      0      0          3
S00DOCC3               STD      51135          3
4      0      0          3
S00DAMA2               STD      51135          3
3      0      0          3
S00DAMA3               STD      51135      51135
0      0      0       51135
S01DIMAGE              STD    1228735     251359
4      0      0      179607
S01DPMLOADS            STD     614335     521314
24      0      0      361614
S01DOCC                STD      51135          3
4      0      0          3
S01DOCC1               STD      51135          3
4      0      0          3
S01DAMA1               STD      51135          3
4      0      0          3
S01DFTFS               FTFS     51198       2759
147      0    N/A       2503
Total number of volumes found on node CM : 12
```

XA-Core DAT Drive Example

```
Volumes found on the node CM:
------------------------------
NAME                   TYPE     TOTAL       FREE
TOTAL   OPEN   ITOC    LARGEST
                                BLOCKS     BLOCKS
FILES FILES FILES  FREE SEGMENT
-------------------------------------------------
---------------------------------
F17LIMAGE1             FTFS   2048000     305152
13      0      4      129024
F17LIMAGE2             FTFS   2048000     376832
12      0      0      169984
F17LIMAGE3             FTFS   2048000     362496
14      0      4      229376
F17LPMLOADS            FTFS    614400     409440
39      0      0      259904
F17LSPMLOADS           FTFS    819200     648544
15      0      0      464224
```

```
F17LPATCH              FTFS      81920        39264
318       0        0      39264
```

12   Insert the load tape into the tape drive by typing

If	Do
SLM tape drive	**IT drive_name**
	Example
	IT S00T
XA-Core DAT drive	**IT drive_no**
	Example
	IT F02UTAPE

13   List the load file contents of the tape by typing

If	Do
SLM tape drive	**LF drive_name**
	Example
	LF S00T
XA-Core DAT drive	**LF drive_no**
	Example
	LF F02UTAPE

14   Identify the load files required for upgrading by comparing the load files on the tape to the load files currently on the SPM (determined in step 6).

15   Determine if the tape contains patch control files.

If the tape cartridge label text indicates	Do
"Patches: Yes"	step 16
"Patches: No"	step 18

16   Without changing the load file names, copy the patch control file to the PMLOADS volume determined in step 11 by typing

If	Do
SLM tape drive	**RE FILE act_vol drive_name tape_vol pc_file**
	Example

If	Do
	RE FILE S00DPMLOADS S00T SPM00035 XPM35RTP$XREF
XA-Core DAT drive	**RE FILE act_vol drive_no pc_file**
	Example
	RE FILE F02LPMLOADS F02UTAPE XPM35RTP$XREF

17   Print the patch content of the patch control file by typing

   >PRINT pc_file

   Example

   >PRINT XPM35RTP$XREF

18   Copy each load/patch file individually from the tape to a disk volume by typing

If	Do
SLM tape drive	**RE FILE act_file drive_name tape_vol act_file**
	Example
	RE FILE CEM15CV_010073 S01DPMLOADS S01T CEM15CV_010073 F
XA-Core DAT drive (loads)	**SCANF tape_vol COPY act_vol load_name**
	Example
	SCANF SPM00035 COPY F02LPMLOADS CEM15CV_010073F
XA-Core DAT drive (patches)	**SCANF tape_vol COPY act_vol NAME *PATCH**
	Example
	SCANF SPM00035 COPY F17LPMLOADS NAME TLC75S0Q$PATCH

   Note 1: The disk (destination device) and the tape cartridge (origination device) must be in the same tape unit.

   Note 2: The patch volume was determined in <u>step 8</u>. A patch volume that begins with the letter "D" is located on an IOM disk

and must be copied to the Store File Device (SFDEV). From SFDEV, copy the patches to the IOM disk.

19   List the load and patch file disk volume, and verify that all required files have been correctly copied to the disk volume, by typing

>LF load_vol

>LF patch_vol

SLM Example

>LF S00DPMLOADS

>LF S000DPATCH

XA-Core Example

>LF F02PMLOADS

>LF F17LPTCH

> ***Note:*** If a load or patch volume begins with the letter "D", it must be listed through disk utility.

Example

>DSKUT

>LIV D030PM17PTCH ALL

20   If a load and patch update worksheet has been completed, compare the results of step 19 to the worksheet.

If	Do
you discover required load files that were not copied on the disk volume	step 18
all required load files have been copied onto the disk volume	step 21

21   Steps 21 through 26 copy the upgrade load and PRSU patch files identified in step 19 to their respective back up volumes.

Eject the load tape by typing

If	Do
SLM tape drive	**ET drive_name** *Example* **ET S00T**
XA-Core DAT drive	**ET drive_no** *Example*

If	Do
	ET F02UTAPE

22 List the active load file contents on the disk volume by typing

If	Do
SLM tape drive	**LF disk_vol**
	Example
	LF S00DPMLOADS
XA-Core DAT drive	**LF disk_vol**
	Example
	LF F0LPMLOADS

23 Copy each load file from the active disk volume to a backup disk volume by typing

If	Do
SLM tape drive	**COPY act_load disk_vol**
	Example
	COPY LPC08BC S01DPMLOADS
XA-Core DAT drive	**COPY act_load disk_vol**
	Example
	COPY F02LPMLOADS

24 List the loads on the backup volume to ensure that all loads have been copied by typing

If	Do
SLM tape drive	**LF disk_vol**
	Example
	LF S01DPMLOADS
XA-Core DAT drive	**LF disk_vol**
	Example
	LF F0LPMLOADS

25   Review the listing and verify that all of the load files have been copied to the backup volume.

If all load files	Do
are not in the backup volume	step 23
are in the backup volume	step 27

26   Continue based on the patch status.

If PRSUs	Do
were in the PMLOADS volume	repeat step 22 through step 25 for the patch volume
are in a separate volume	step 27

27   Remove the SPM load tape from the tape drive and quit the disk utility by typing

>QUIT

Store the SPM load tape in an available on-site location for future use.

28   Access the PMLOADS table by typing

>TABLE PMLOADS

29   Steps vary based on the upgrade release type.

If the release type is	Do
a milestone (new release)	step 30
a maintenance or emergency (same release)	step 31

30   For each required load, add a new load name by typing

>ADD load_name act_file act_vol bkp_file bkp_vol N

Example

>ADD IWS17AF IWS17AF_010005 S00DPMLOADS IWS17AF_010005 S00DPMLOADS N

31   For each new load file, update the file name to reflect the new load values

      Example

The following example changes the load file name and backup load file name from IWS17DI_010086A1 to IWS17DI_010086A2.

>POS IWS17DI

```
        IWS17DI

IWS17DI_010086A1          S00DPMLOADS
IWS17DI_010086A1          S00DPMLOADS
```

>CHA

```
ACTFILE: IWS17DI_010086A1
```

>IWS17DI_010086A2

```
ACTVOL: S00DPMLOADS
```

>

```
BKPFILE: IWS17DI_010086A1
```

>IWS17DI_010086A2

```
BKPVOL: S00DPMLOADS
```

>

```
UPDACT: N
```

>

```
TUPLE TO BE CHANGED:

        GEM17DI

GEM17DI_010086A2          S00DPMLOADS
GEM17DI_010086A2          S00DPMLOADS              N

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

>Y

```
TUPLE CHANGED
```

32   The MNCKTPAK table requires updating only when the load changes for a milestone release. If only changing the load file in the PMLOADS table, no changes are required for the MNCKTPAK table.

Note: Prior to making changes to the MNCKTPAK table, post the SPM to be upgraded and check for and clear any alarms.

If this is	Do
a milestone release	[step 33](#)
not a milestone release	[step 38](#)

33   Access the MNCKTPAK table by typing

>**TABLE MNCKTPAK**

34   List the contents of the table by typing

>**LIST ALL**

35   Update the circuit pack load inventory for each SPM scheduled for an upgrade during the maintenance window by typing

>**POS SPM spm_no shelf_ID slot_no**

Example

>**POS SPM 0 0 9**

Response

```
SPM 0 0 9 GEM 0 1 WORKING(SYSB CR RPT)(MANB MJ
RPT)(ISTB MN RPT)(PROTFAIL CR RPT)(PATCHFAIL MJ
RPT) $ NTLZ20BA     01     GEM19BE
```

36   Update the appropriate circuit pack load names to match the new loads in the upgrade by typing

>**CHA LOAD load_name**

Example

>**CHA LOAD GEM17BF**

37   Confirm the system prompt by typing

>**Y**

38   Stop the terminal response from printing by typing

>**RECORD STOP ONTO printer**

39   You have successfully completed this procedure. Go to the 'Perform a manual upgrade or downgrade' section of this document.

Perform a manual upgrade or downgrade

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

Perform a manual upgrade or downgrade

At the CI level of the MAP display

1   Ensure that the 'Prepare a manual upgrade or downgrade' section of this document has been completed.

2   Post the SPM designated for an upgrade by typing

   >MAPCI;MTC;PM;POST SPM spm_no

   Example

   >MAPCI;MTC;PM;POST SPM 23

3   Check alarms on the SPM node and circuit packs by typing

Alarm Source	Command
SPM node	**>LISTALM**
circuit pack	**>QUERYPM FLT**

4   Any alarms, other than ISTB alarms, must be cleared before continuing.

If the alarm listings show	Do
alarms other than ISTB alarm	step 5
no alarms or ISTB alarms only	step 6

5   Perform the appropriate alarm clearing procedure. After alarms other than ISTB have been cleared, continue to step 6.

6 Upgrade circuit packs by protection groups for each SPM that requires an upgrade. The order for upgrading circuit packs, and the procedures are below.

> *Note:* The order for upgrading circuit packs is as follows: GEM -> CEM.

If	Do
GEM	Upgrading or downgrading an GEM
CEM	Upgrading a CEM
After upgrading packs	step 10

7 The procedure for downgrading the CEM varies based on whether downgrading to a different release or within the same release.

> *Note:* The order for downgrading circuit packs is as follows: CEM -> GEM.

If downgrading to a	Do
different release (i.e. 16.0 -> 15.8)	step 8
different version in the same release (i.e.15.4 ->15.3)	step 9

8 Downgrade circuit packs to an earlier release as follows:

If	Do
CEM	Downgrading a CEM to an earlier release
GEM	Upgrading or downgrading and GEM
After downgrading packs	step 10

9 Downgrade circuit packs to an earlier version within the same release as follows:

If	Do
CEM	Downgrading a CEM to an earlier version in the same release
GEM	Upgrading or downgrading and GEM

10 When all circuit packs protection groups have been upgraded or downgraded follow the 'Post upgrade or downgrade process' section of this document.

Upgrade or Downgrade a GEM

The procedure requires:

- in-service loading the inactive GEM
- switching activity between the inactive and the active GEM
- loading the inactive GEM
- switching activity to return resources to original locations

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
inact_rm	the number of the inactive RM
rm_no	the RM number
prsu_id	the PRSU name
act_rm	the number of an active RM
shelf_no	the shelf number of the inactive GEM

Upgrading or downgrading a GEM

At the CI level of the MAP display

1 If not already posted, post the SPM by typing

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

2 Record the unit number and shelf number of the inactive GEM in the circuit pack protection group. Also record the number of the inactive CEM.

3 Select the inactive GEM by typing

>`SELECT GEM inact_rm`

Example

>`SELECT GEM 1`

Result

Both GEMs are in an ISTb status due to the load name change made in the MNCKTPAK table.

4　　Ensure that the GEM is ISTB and inactive by typing.

>**QUERYMOD**

> *Note:* The default load is the new load and the actual load is the load scheduled for change.

Example of MAP display

```
SPM  23  GEM  1 Query: Request has been submitted.
GEM  1 ISTb InAct  Loc: Row CC  FrPos 28 ShPos  0 ShId 0 Slot 10
Default Load: OC318BI            Actual Load: OC317BU
```

5　　In-service load the inactive RM by typing

>**LOADMOD INSVLD**

During execution of the LOADMOD INSVLD command, the RM automatically goes to a SysB state and then returns to service.

Example of MAP display

```
RTS is recommended to load an RM device from Flash memory.
LOADMOD reloads devices from the un-patched core disk load.
Applicable patches will not be applied following LOADMOD.
Relevant patches will be automatically queued for application
as part of device RTS.

Do you wish to proceed with LOADMOD?
Please confirm ("YES", "Y", "NO", or "N"):
```

6　　At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

```
SPM 23  GEM  1  Load: Request has been submitted.
SPM 23 GEM  1  Load: Command completed. Command passed.
```

If the GEM load is	Do
the first for this office	step 7
not the first for this office	step 18

7　　Open a second window and access the PRSM tool by typing

>**PRSM**

8　　Ensure that SPARTS has patched the device by typing

>**DBAUDIT SPM spm_no GEM rm_no**

Example

>**DBAUDIT SPM 23 GEM 1**

Example of MAP response

Database audit submitted for 1 DESTs
Auditing destination SPM 23 GEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs

9   If required, patch the GEM load file.

If RM patches	Do
are required for the RM load file	step 10
are not required for the RM load file	step 12

10   Apply the patches by typing

>APPLY 'patch_id | patch_id | patch_id IN SPM spm_no GEM inact_rm

Example

>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 GEM 1

11   Ensure that SPARTS correctly patched the inactive RM by typing

>REPORT DEST SPM spm_no GEM inact_rm

Example

>REPORT DEST SPM 23 GEM 1

Example of MAP response

REPORT DEST SPM 23 GEM 1
PRSUID   STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
KNO03S0Q   20020915 23:29 GEN   VA OC317BU N SPM 0 GEM 1
PPM95S0Q   20020915 23:33 GEN   VA OC317BU N SPM 0 GEM 1
KAA07S0Q   20020915 23:34 GEN   VA OC317BU N SPM 0 GEM 1
BWB78S0Q   20020915 23:36 GEN   VA OC317BU N SPM 0 GEM 1
SCO63S0Q   20020915 23:48 GEN   VA OC317BU N SPM 0 GEM1
SNT0001A0041   20020915 23:46 GEN   A OC317BU N SPM 0 GEM 1

> *Note:* A PRSUID with a prefix of "SPPSL" indicates that PPSL patches have been applied.

12   Exit the PRSM tool by typing

>QUIT

If the load is	Do
Pre-Patched SPM Load (PPSL)	step 13
not PPSL	step 18

13   Remote login to the inactive CEM (recorded in <u>step 2</u>) by typing

   `>REMLOGIN SPM spm_no inact_rm`

Example

`>REMLOGIN SPM 23 1`

14   Remote login to the inactive GEM (recorded in <u>step 2</u>) that received the new load by typing

   `>REMLOGIN -S shelf_no`

Example

`>REMLOGIN -S 10`

15   Identify the patches that are built into the PPSL by typing

`>patches/patchlist`

MAP Example

```
Execute: patchListDump(void)
Patch List
----------
Patch ID          Status
--------          ------
BUZ82S0P          Applied (BuiltIn)
PPM95S0P          Applied (BuiltIn)
BUZ68S0P          Applied (BuiltIn)
BWB78S0P          Applied (BuiltIn)
PJL69S0P          Applied (BuiltIn)
SCO63S0P          Applied (BuiltIn)
```

16   Log out of the inactive GEM by typing

`>REMLOGOUT`

17   Log out of the inactive CEM by typing

`>REMLOGOUT`

18   Access the protection level of the MAP by typing

`>PROT`

19   Switch activities from the active GEM to the inactive GEM by typing

`>MANUAL act_rm inact_rm`

Example

`>MANUAL 0 1`

20   Confirm the system prompt by typing

   `>Y`

Result

The active GEM becomes the inactive GEM and the former inactive (upgraded) GEM becomes active.

21   Exit the PROT level by typing

>QUIT

22   Select the inactive GEM by typing

>SELECT inact_rm

Example

>SELECT GEM 0

23   Ensure that the GEM is ISTb and inactive by typing.

>QUERYMOD

24   Mate load the inactive GEM from its mate by typing

>LOADMOD MATE act_rm

Example

>LOADMOD MATE 1

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

Example of MAP display

RTS is recommended to load an RM device from Flash memory.
LOADMOD reloads devices from the un-patched core disk load.
Applicable patches will not be applied following LOADMOD.
Relevant patches will be automatically queued for application
as part of device RTS.

Do you wish to proceed with LOADMOD?
Please confirm ("YES", "Y", "NO", or "N"):

25   At the confirmation prompt, continue by typing

>Y

Example of MAP response

SPM 23   GEM 0   Load: Request has been submitted.
SPM 23 GEM 0   Load: Command completed. Command passed.

26   Open a second window and access the PRSM tool by typing

>PRSM

27   Ensure that any patch failures are corrected by typing

>ISTBAUDIT SPM spm_no GEM

Example

```
>ISTBAUDIT SPM 23 GEM
```

Example of MAP response

This DEST set does not have any patch-related problems.

28   Ensure that SPARTS correctly patched the RM by typing

```
>REPORT DEST SPM spm_noGEM
```

Example

```
>REPORT DEST SPM 23 GEM
```

Example of MAP response

PRSUID	STATDATE	STATT	CAT	ACT	ST	LOADNAME	H	DESTID
SNT0001A0041	20020915	08 27	GEN		VA	OC317BU	N	SPM 23 GEM 0
SNT0001A0041	20020915	08 27	GEN		VA	OC317BU	N	SPM 23 GEM 1
SPPSLOC316DI	20020915	08 27	GEN		VA	OC317BU	N	SPM 23 GEM 0
SPPSLOC316DI	20020915	08 27	GEN		VA	OC317BU	N	SPM 23 GEM 1

29   Exit the PRSM tool by typing

```
>QUIT
```

30   From the original window, access the protection level of the MAP by typing

```
>PROT
```

31   Switch activities from the active GEM to the inactive GEM by typing

```
>MANUAL act_rm inact_rm
```

Example

```
>MANUAL 1 0
```

32   The OC3 circuit pack upgrade is completed.

If	Do
upgrading	Upgrading aCEM
downgrading	

In summary, this upgrade procedure requires:

- in-service loading the inactive CEM
- switching activity between the inactive and the active CEM
- in-service loading the inactive CEM
- switching activity to return resources to the original location

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
spare_rm	the number of the spare RM
inact_rm	the number of the inactive RM
act_rm	the number of the active RM

Upgrading a CEM

At the CI level of the MAP display

1 If not already posted, post the SPM by typing

>MAPCI;MTC;PM;POST SPM spm_no

Example

>MAPCI;MTC;PM;POST SPM 23

2 Record the unit number and shelf number of the inactive CEM.

3 Select both CEMs by typing

>SELECT CEM ALL

4 Access the protection level of the MAP by typing

>PROT

Result

Both CEMs are in an ISTb status due to the load name change made in the MNCKTPAK table.

Example of MAP display

```
SPM 23  0  ISTb.
Prot Grp: CEM        Mode: N/A          Schema: N/A
Sh0 U R A Stat  Sh0 U R A Stat  Sh1 U R A Stat   Sh1 U R A Stat
1 -- - - ----     8  1 S I ISTb    1 -- - - ----  8 -- - - ----
2 -- - - ----     9 -- - - ----    2 - - - ----    9 -- - - ----.
3-- - - ----     10 -- - - ----    3 -- - - ----  10 -- - - ----.
4 -- - - ----    11 -- - - ----    4 -- - - ----  11 -- - - ----
5 -- - - ----    12 -- - - ----    5 -- - - ----  12 -- - - ----
6-- - - ----     13 -- - - ----    6-- - - ----   13-- - - ----
7 0 W A ISTb     14 -- - -    7 -- - - ----  14 -- - - ----
```

5   Select the spare CEM, designated with an "S", by typing

>**SELECT CEM <spare_rm>**

Example

>**SELECT CEM 1**

6   Ensure that the CEM is ISTB and inactive by typing

>**QUERYMOD**

> ***Note:*** The default load is the new load.

Example of MAP display

```
Default Load: CEM18BH
Clock:
Input Ref: Mate       Source: CEM 0 FP   Current Mode: SyncDefault Load: OC318BI
QueryMod
CEM  0 ISTb Act   Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  7
CEM  1 ISTb InAct  Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  8
```

7   In-service load the inactive CEM by typing

>**LOADMOD INSVLD**

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

8   At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

```
SPM 23   CEM  1   Load: Request has been submitted.
SPM 23   CEM  1   Load: Command completed. Command passed.
```

If the CEM load is	Do
the first for this office	step 9
not the first for this office	step 19

9   Open a second window and access the PRSM tool by typing

>**PRSM**

10   Audit the status of the RM by typing

>DBAUDIT SPM spm_no CEM inact_rm

Example

>DBAUDIT SPM 23 CEM 1

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23 CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

11   If required, patches must be applied to the CEM load file.

If RM patches	Do
are required for the RM load file	step 12
are not required for the RM load file	step 14

12   Apply the patches by typing

>APPLY 'patch_id | patch_id | patch_id IN SPM spm_no CEM inact_rm

Example

>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 CEM 1

13   Ensure that SPARTS correctly patched the active CEM by typing

>REPORT DEST SPM spm_no CEM rm_no

Example

>REPORT DEST SPM 23 CEM 1

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID            STATDATE     STATT  CAT   ACT   ST   LOADNAME  H   DESTID
----------------  ------------ ------ ----- ----- ---  --------- --  -----------------
SNT0001A0041      20020915     08 27  GEN         A    CEM16CM   N   SPM 23 CEM 1
SNT0001A00C0      20020915     08 27  GEN         A    CEM16CM   N   SPM 23 CEM 1
SNT0001C000D      20020915     08 27  GEN         A    CEM16CM   N   SPM 23 CEM 1
SPPSLCEM16CM      20020915     08 27  GEN         A    CEM16CM   N   SPM 23 CEM 1
```

Note: A PRSUID with a prefix of "SPPSL" indicates that PPSL patches have been applied.

14   Exit the PRSM tool by typing

>**QUIT**

If the load is	Do
Pre-Patched SPM Load (PPSL)	step 15
not PPSL	step 19

15   Remote login to the inactive CEM (recorded in step 2) by typing

>**REMLOGIN SPM spm_no inact_rm**

Example

>**REMLOGIN SPM 23 1**

16   Identify the patches that are built into the PPSL by typing

>**patches/patchlist**

Example of MAP response

```
Execute: patchListDump(void)
Patch List
----------
Patch ID          Status
----------        ----------
BUZ82S0P          Applied (BuiltIn)
PPM95S0P          Applied (BuiltIn)
BUZ68S0P          Applied (BuiltIn)
BWB78S0P          Applied (BuiltIn)
PJL69S0P          Applied (BuiltIn)
SCO63S0P          Applied (BuiltIn)
```

17   Log out of the inactive CEM by typing

>**REMLOGOUT**

18   Log out of the dShell by typing

>**EXIT**

19   From the original window, begin executing manual CEM sparing to switch activity by accessing the protection level of the MAP display and typing

>**PROT**

20   Ensure that the CEM loaded with new software in step 7 is in-service. If not in-service, wait until the CEM is in-service.

21   Switch activities from the active CEM to the inactive CEM by typing

>**MANUAL**

22   Confirm the system prompt by typing

>**Y**

23 Select the inactive CEM by typing

>**SELECT CEM inact_rm**

Example

>**SELECT CEM 0**

24 Ensure that the CEM is ISTB and inactive by typing.

>**QUERYMOD**

25 In-service load the inactive CEM by typing:

>**LOADMOD INSVLD**

26 Confirm the system prompt by typing

>**Y**

During execution of the command, the RM goes from an InAct ISTb state to an InAct InSv state.

Example of MAP response

SPM 23 CEM 0 Load: Request has been submitted.
SPM 23 CEM 0 Load: Command completed. Command passed.

27 Open a second window and access the PRSM tool by typing

>**PRSM**

28 Ensure that any patch failures are corrected by typing

>**ISTBAUDIT SPM spm_no CEM**

Example

>**ISTBAUDIT SPM 23 CEM**

Example of MAP response

This DEST set does not have any patch-related problems.

29 Ensure that SPARTS correctly patched the RM by typing

>**REPORT DEST SPM spm_no CEM inact_rm**

Example

>**REPORT DEST SPM 23 CEM 0**

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
KNO03S0Q        20020915 23:29 GEN     VA CEM17BU  N SPM 23 CEM 1
PPM95S0Q        20020915 23:33 GEN     VA CEM17BU  N SPM 23 CEM 1
KAA07S0Q        20020915 23:34 GEN     VA CEM17BU  N SPM 23 CEM 1
BWB78S0Q        20020915 23:36 GEN     VA CEM17BU  N SPM 23 CEM 1
SCO63S0Q        20020915 23:48 GEN     VA CEM17BU  N SPM 23 CEM 1
SNT0001A0041    20020915 23:46 GEN      A CEM17BU  N SPM 23 CEM 1
```

30 Exit the PRSM tool by typing

>**QUIT**

31 From the original window, access the protection level of the MAP by typing

>**PROT**

32 Switch activities from the active CEM to the inactive CEM by typing

>**MANUAL act_rm inact_rm**

Example

>**MANUAL 1 0**

33 Display RM alarms on the SPM by typing

>**QUERYMOD**

34 Display alarms on the SPM, with both CEMs in service, by typing

>**LISTALM**

35 If new alarms were introduced during this procedure, clear the alarms using procedures in the Fault Management section.

36 The CEM circuit pack upgrade procedure is complete.

Complete the upgrade using the 'Post upgrade or downgrade process' section of this document.

Post upgrade or downgrade process

Post upgrade process

At MAP level

1 Access the PMLOADS table by typing

>**TABLE PMLOADS**

2 Position on each old load name designated for deletion in the PMLOADS table by typing

>**POS load_name**

Example

>**POS GEM16AF**

3 Initiate the tuple deletion by typing

>**DEL**

4 At the confirmation prompt, delete the tuple by typing

>**Y**

5 Access the disk utility by typing

>**DISKUT**

Response

Disk utility is now active

6 List the active PMLOADS volume by typing

If	Do
SLM tape drive	**LF disk_vol**
	Example
	LF S00DPMLOADS
XA-Core DAT drive	**LF disk_vol**
	Example
	LF F0LPMLOADS

7 Delete each load file from the active disk volume by typing

>**DDF act_load**

Example

>**DDF CEM16CD_010064A1**

8　　List the loads on the active volume to ensure that all loads have been deleted by repeating step 6.

　　　Follow step 7 for any files that have not been deleted.

9　　Repeat steps1 through 7 for the backup and patch volumes.

　　　When all active, backup, and patch files have been deleted, continue to step 10.

10　Quit the disk utility by typing

　　　>QUIT

11　Store an image of the completed upgrade or downgrade to a disk volume by typing

　　　DUMP act_file image_vol ACTIVE RETAIN NOSDM

　　　Example

　　　>DUMP GEM16AF_010005 S00DIMAGE ACTIVE RETAIN NOSDM

　　　　Note:　The route action to turn off SDM spooling option (nosdm) reduces CI lockout time. Without specifying a route action, the default value is leave SDM spooling on (usesdm).

12　The process is completed.

Downgrading a CEM to an earlier release

In summary, this upgrade procedure requires:

- busying the inactive and active RMs
- loading the inactive and active RMs
- returning the inactive and active RMs to service
- applying patches to the inactive and active RMs

This procedure requires simultaneously placing both CEMs in a busy condition which places the SPM in an out of service condition.

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
inact_rm	the number of the inactive RM
patch_id	the patch name
filename	the name of the replacement load file
act_rm	the number of an active RM
rm_no	the number of the CEM

Downgrading a CEM to an earlier release

At the CI level of the MAP display

1   Review the CEM load and patch files.

         Note: Ensure that all necessary patches are present for the new CEM load..

2   If not already posted, post the SPM by typing

       >MAPCI;MTC;PM;POST SPM spm_no

       Example

       >MAPCI;MTC;PM;POST SPM 23

3   Record the unit number and shelf number of the inactive CEM.

4   Select both CEMs by typing

    >SELECT CEM ALL

5   Access the protection level of the MAP by typing

    >PROT

    Result

    Both CEMs are in an ISTb status due to the load name change made in the MNCKTPAK table.

Example of MAP display

```
SPM 23  0  ISTb.
Prot Grp: CEM        Mode: N/A          Schema: N/A
Sh0 U R A Stat  Sh0 U R A Stat  Sh1 U R A Stat  Sh1 U R A Stat
1 -- - - ----    8  1 S I ISTb   1 -- - - ----   8 -- - - ----
2 -- - - ----    9 -- - - ----   2 - - - ----    9 -- - - ----.
3-- - - ----    10 -- - - ----   3 -- - - ----  10 -- - - ----.
4 -- - - ----   11 -- - - ----   4 -- - - ----  11 -- - - ----
5 -- - - ----   12 -- - - ----   5 -- - - ----  12 -- - - ----
6-- - - ----    13 -- - - ----   6-- - - ----   13-- - - ----
7 0 W A ISTb   14 -- - -   7 -- - - ----  14 -- - - ----
```

6   Select the inactive CEM by typing

    >SELECT CEM inact_rm

    Example

    >SELECT CEM 1

7   Ensure that the CEM is ISTB and inactive by typing

    >QUERYMOD

      Note: The default load is the new load.

Example of MAP display

```
Default Load: CEM18BH
Clock:
Input Ref: Mate       Source: CEM 0 FP  Current Mode: SyncDefault Load: GEM18BI
QueryMod
CEM  0 ISTb Act   Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  7
CEM  1 ISTb InAct  Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  8
```

8   Busy the inactive CEM by typing

    >BSY

9   Load the inactive CEM by typing

    >LOADMOD <filename> NOWAIT

10   After the CEM that was selected in step 6 has finished loading, step 10 selects and step 11 busies the active CEM still in service. These steps minimize the resulting outage of taking both CEMs out of service.

Select the active CEM by typing

>SELECT CEM act_rm

Example

>SELECT CEM 0

11

> ⚠ **CAUTION**
> **Possible service interruption**
> Performing this step will drop all RMs to a CBSY state and all SPM traffic will be lost until step 14 is performed.

Busy the active CEM by typing

>BSY FORCE

12   Load the forced busied CEM by typing

>LOADMOD <filename> NOWAIT

Result

Both CEMs remain ManB and swap Active and Inactive states.

13   Select the CEM that was busied and loaded in step 8 and step 9 by typing

> *Note:* This CEM was previously InAct ManB and is now Act ManB

>SELECT CEM act_rm

Example

>SELECT CEM 1

14   Return the CEM selected in step 13 to service by typing

>RTS

This CEM becomes the active CEM and RMs and circuits recover.

If the CEM load is	Do
the first for this office	step 15
not the first for this office	step 24

15   Access the PRSM tool from a second window by typing

>PRSM

16   Update the PRSM database for the CEM that was returned to service in step 14 by typing

>`DBAUDIT SPM spm_no CEM rm_no`

Example

>`DBAUDIT SPM 23 CEM 1`

Example of MAP response

Database audit submitted for 1 DESTs
Auditing destination SPM 23 CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs

17   If required, patches must be applied to the CEM load file.

If RM patches	Do
are required for the RM load file	step 18
are not required for the RM load file	step 20

18   Apply the patches by typing

>`APPLY 'patch_id | patch_id | patch_id IN SPM spm_no  CEM inact_rm`

Example

>`APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 CEM 1`

19   Ensure that SPARTS correctly patched the active CEM by typing

>`REPORT DEST SPM spm_no CEM rm_no`

Example

>`REPORT DEST SPM 23 CEM 1`

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID           STATDATE    STATT   CAT   ACT   ST   LOADNAME  H   DESTID
---------------- ----------- ------- ----- ----- --- ---------- -- ----------------
SNT0001A0041     20020915    08 27   GEN         A    CEM16CM   N   SPM 23 CEM 1
SNT0001A00C0     20020915    08 27   GEN         A    CEM16CM   N   SPM 23 CEM 1
SNT0001C000D     20020915    08 27   GEN         A    CEM16CM   N   SPM 23 CEM 1
SPPSLCEM16CM     20020915    08 27   GEN         A    CEM16CM   N   SPM 23 CEM 1
```

Note: A PRSUID with a prefix of "SPPSL" indicates that PPSL patches have been applied.

20   Exit the PRSM tool by typing

>**QUIT**

If the load is	Do
the first Pre-Patched SPM Load (PPSL) CEM load for the office	step 21
not the first CEM load for the office	step 24

> *Note:* A remlogin is required only for a PPSL load and only once for an office to determine if the correct patches are built into the load.

21   Remote login to the active CEM that was returned to service in step 14 by typing

>**REMLOGIN SPM spm_no act_rm**

Example

>**REMLOGIN SPM 23 1**

22   Identify the patches that are built into the PPSL by typing

>**patches/patchlist**

Example of MAP response

```
Execute: patchListDump(void)
Patch List
-----------
Patch ID          Status
----------        ----------
BUZ82S0P          Applied (BuiltIn)
PPM95S0P          Applied (BuiltIn)
BUZ68S0P          Applied (BuiltIn)
BWB78S0P        Applied (BuiltIn)
PJL69S0P         Applied (BuiltIn)
SCO63S0P          Applied (BuiltIn)
```

23   Log out of the inactive CEM by typing

>**REMLOGOUT**

24   Select the CEM that was loaded in step 12 by typing

>**SELECT CEM inact_rm**

Example

>**SELECT CEM 0**

25   Return the inactive CEM to service by typing

>**RTS**

26   Access the PRSM tool from a second window by typing

>**PRSM**

27   Ensure that any patch failures are corrected for this CEM by typing

    `>ISTBAUDIT SPM spm_no CEM`

Example

    `>ISTBAUDIT SPM 23 CEM`

Example of MAP response

This DEST set does not have any patch-related problems.

28   Ensure that SPARTS correctly patched the RM by typing

    `>REPORT DEST SPM spm_no CEM`

Example

    `>REPORT DEST SPM 23 CEM`

Example of MAP response

PRSUID	STATDATE	STATT	CAT	ACT	ST	LOADNAME	H	DESTID
SNT0001C000D	20020915	08 27	GEN		A	CEM18BP	N	SPM 23 CEM 0
SNT0001C000D	20020915	08 27	GEN		A	CEM18BP	N	SPM 23 CEM 1

> ***Note:*** A PRSUID with a prefix of "SPPSL" indicates that PPSL patches have been applied.

29   Exit the PRSM tool by typing

    `>QUIT`

30   The CEM circuit pack upgrade procedure is complete.

Continue the downgrade process with the 'Upgrading or downgrading an OC3' section of this document.

Downgrading a CEM to an earlier version in the same release

In summary, this upgrade procedure requires:

- in-service loading the inactive RM
- switching activity between the inactive and the active RM
- loading the inactive RM

This procedure requires a protection switch. The protection switch fails if no OC3s are datafilled in the MNHSCARR table. Before upgrading the CEMs, carriers must be datafilled in the MNHSCARR table. Without carrier datafill, a protection switch requires the FORCE command.

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
inact_rm	the number of the inactive RM
patch_id	the patch name
filename	the name of the replacement load file
act_rm	the number of an active RM

Downgrading a CEM to an earlier version in the same release

At the CI level of the MAP display

1   If not already posted, post the SPM by typing

      >MAPCI;MTC;PM;POST SPM spm_no

      Example

      >MAPCI;MTC;PM;POST SPM 23

2   Select both CEMs by typing

      >SELECT CEM ALL

3   Access the protection level of the MAP display by typing

      >PROT

      Example

Both CEMs are in an ISTb status due to the load name change made in the MNCKTPAK table.

Example of MAP display

```
SPM 23  0  ISTb.
Prot Grp: CEM          Mode: N/A          Schema: N/A
Sh0 U R A Stat  Sh0 U R A Stat  Sh1 U R A Stat  Sh1 U R A Stat
1 -- - - ----    8  1 S I ISTb    1 -- - - ----   8 -- - - ----
2 -- - - ----    9 -- - - ----    2 - - - ----    9 -- - - ----.
3-- - - ----    10 -- - - ----    3 -- - - ----  10 -- - - ----.
4 -- - - ----   11 -- - - ----    4 -- - - ----  11 -- - - ----
5 -- - - ----   12 -- - - ----    5 -- - - ----  12 -- - - ----
6-- - - ----    13 -- - - ----    6-- - - ----   13-- - - ----
7  0 W A ISTb   14 -- - -    7 -- - - ----  14 -- - - ----
```

4 Select the inactive CEM by typing

>SELECT CEM inact_rm

Example

>SELECT CEM 1

5 Ensure that the CEM is ISTB and inactive by typing

>QUERYMOD

> *Note:* The default load is the new load.

Example of MAP display

```
Default Load: CEM16BP
Clock:
Input Ref: Mate        Source: CEM 0 FP   Current Mode: Sync
QueryMod
CEM  0 ISTb Act   Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  7
CEM  1 ISTb InAct  Loc: Row E  FrPos  0 ShPos  6 ShId 0 Slot  8
```

6 In-service load the inactive CEM by typing

>LOADMOD INSVLD

Result

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

7 At the confirmation prompt, continue by typing

>Y

If the CEM load is	Do
the first for this office	step 8
not the first for this office	step 16

8 From a second window, access the PRSM tool by typing

`>PRSM`

9 Update the PRSM database for the CEM loaded in step 6 by typing

`>DBAUDIT SPM spm_no CEM inact_rm`

Example

`>DBAUDIT SPM 23 CEM 1`

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23 CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

10 If required, patches must be applied to the CEM load file.

If RM patches	Do
are required for the RM load file	step 11
are not required for the RM load file	step 12

11 Apply the patches by typing

`>APPLY 'patch_id | patch_id | patch_id IN SPM spm_no  CEM inact_rm`

Example

`>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 CEM 1`

12 Exit the PRSM tool by typing

`>QUIT`

If the load is	Do
Pre-Patched SPM Load (PPSL)	step 13
not a PPSL	step 16

Note: A remlogin is required only for a PPSL load and only once for an office to determine if the correct patches are built into the load.

13 Remote login to the inactive CEM that was loaded in step 6 by typing

`>REMLOGIN SPM spm_no inact_rm`

Example

>REMLOGIN SPM 23 1

14 Identify the patches that are built into the PPSL by typing

>patches/patchlist

Example of MAP response

```
Execute: patchListDump(void)
Patch List
----------
Patch ID          Status
----------        ----------
BUZ82S0P          Applied (BuiltIn)
PPM95S0P          Applied (BuiltIn)
BUZ68S0P          Applied (BuiltIn)
BWB78S0P          Applied (BuiltIn)
PJL69S0P          Applied (BuiltIn)
SCO63S0P          Applied (BuiltIn)
```

15 Log out of the inactive CEM by typing

>REMLOGOUT

16 From the original window, begin executing manual CEM sparing to switch activity by accessing the protection level of the MAP display and typing

>PROT

17 Switch activities from the active CEM to the inactive CEM by typing

>MANUAL

18 Confirm the system prompt by typing

>Y

19 Select the inactive CEM by typing

>SELECT CEM inact_rm

Example

>SELECT CEM 0

20 In-service load the inactive CEM by typing:

>LOADMOD INSVLD act_rm

Example

>LOADMOD INSVLD

21 Confirm the system prompt by typing

>Y

During execution of the command, the RM goes from an InAct ISTb state to an InAct InSv state.

Example of MAP response

```
SPM 23  CEM  0  Load: Request has been submitted.
SPM  23  CEM  0  Load: Command completed. Command passed.
```

22 Access the PRSM tool from a second window by typing

>PRSM

23 Ensure that any patch failures are corrected for this CEM by typing

>ISTBAUDIT SPM spm_no CEM

Example

>ISTBAUDIT SPM 23 CEM

Example of MAP response

```
This DEST set does not have any patch-related problems.
```

24 Ensure that SPARTS correctly patched the RM by typing

>REPORT DEST SPM spm_no CEM

Example

>REPORT DEST SPM 23 CEM

Example of MAP response

```
PRSUID          STATDATE  STATT  CAT  ACT  ST   LOADNAME  H   DESTID
---------------- --------------- --------- ----- ----- --- ---------------- -- ------------------
SNT0001C000D    20020915  08 27  GEN       A    CEM18BP   N   SPM 23 CEM 0
SNT0001C000D    20020915  08 27  GEN       A    CEM18BP   N   SPM 23 CEM 1
```

Note: A PRSUID with a prefix of "SPPSL" indicates that PPSL patches have been applied.

25 Exit the PRSM tool by typing

>QUIT

26 The CEM circuit pack downgrade procedure is complete.

Continue the downgrade process with the 'Upgrading or downgrading an GEM" section of this document.