

SOFTWARE RELEASE RETROFIT PROCEDURES FOR 5ESS[®] PLATFORMS

The enclosed package is Issue 2.10, an update of Lucent Technologies information product 235-106-107. Use the following instructions as a checklist as you replace the appropriate materials.

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Replace the entire Section 2 with the new Issue 2.10 Section 2.

Replace the existing Section 8.32 with the new Issue 2.10 Section 8.32.

Replace the entire Index with the new Issue 2.10 Index.

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**235-106-107
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**5ESS[®] Switch
Software Release Retrofit
Procedures for 5ESS[®] Platforms**

5E14 or 5E15 to 5E16.2
Software Release

235-106-107
Issue 2.10
January 2007



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Software Release Retrofit Procedures for 5ESS® Platforms

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1. INTRODUCTION

1.1 PURPOSE

The **5ESS[®]** *Switch Software Release Retrofit Procedures*, 235-106-107, provides a general overview, planning information, and detailed procedures to Retrofit a *5ESS* switch to the latest 5E16.2 Software Release.

This Retrofit Procedure can be used by offices currently running on either the 5E14 Software Release or 5E15 Software Release.

The following Retrofit Methods are supported by Lucent Technologies for the 5E16.2 Software Release Retrofit:

- **Tape Based (5ESS/VCDX)** — 5E16.2 TEXT/ODD delivered on a Single Tape Retrofit (STR) Tape. The data is then read into the *5ESS* switch disks from the DAT drive on the Night-of-Retrofit.
- **Network Based (NBR)** — 5E16.2 TEXT/ODD is electronically downloaded from Lucent Technologies directly to the Customer's ASM or Central Server. The TEXT/ODD data is then loaded onto the *5ESS* switch disks via the DCI connection on the Night-of-Retrofit.
- **Enhanced OnSite BREV Retrofit (EOSBR)** — 5E16.2 TEXT/ODD is produced on a Single Tape Retrofit (STR) Tape on site via a SUN Blade Workstation provided by Lucent. The data is then read into the *5ESS* switch disks from the DAT drive on the Night-of-Retrofit.

For offices using the EOSBR Method, Lucent Engineering will send the following accompanying documents under separate cover:

- *Enhanced OnSite BREV Retrofit Service Overview*
- *Datasheet / Enhanced OnSite BREV Retrofit Service*

If you do not receive these documents by -8 weeks prior to the Night-of-Retrofit, please contact the Lucent Engineering Helpdesk at 1-877-266-9485.

- **OnSite Data Evolution (OSDE)** — 5E16.2 TEXT is electronically downloaded from Lucent Technologies directly to the Customer's ASM or Central Server. The 5E16.2 ODD is evolved directly on the Customer's ASM on the Night-of-Retrofit using tools downloaded from Lucent Technologies. The TEXT/ODD data is then loaded onto the *5ESS* switch disks via the DCI connection on the Night-of-Retrofit.

5ESS Distinctive Remote Module (DRM) is a remote network architecture consisting of a Host *5ESS* and up to 15 additional Switching Nodes networked via an Administrative Services Module (ASM). DRM is a type of Switching Network that uses the OSDE Retrofit Method to perform Software Release upgrades of the network. Each switch in the network is individually updated, via the OSDE Retrofit method, starting with the Host *5ESS*, followed by simultaneous Node Retrofits. For more information on DRM and DRM Node Retrofits, refer to Section 11 and Appendix A1.

This document is intended to be used by several different types of users. Customer managers and planners will use Sections 1 through 4 to schedule jobs and plan for Software Release Retrofits. Office technicians will use Sections 4, 5, 8, 9 and 11 for office preconditioning and Retrofit implementation. Sections 6 and 7 will be used only in the event of a Retrofit failure and only in consultation with technical support staff.

Both the office technicians and the Site coordinators should have a good working knowledge of the *5ESS* switch.

1.2 UPDATE INFORMATION

Procedural Changes

- Offices can no longer go up to the ENTER Stage PAUSE prior to the Night-of-Retrofit. The System Preparation Steps of Section 5.1 may be performed at -1 day. However, Section 5.2 **must not** be started until the Night-of-Retrofit. To maximize office preparation for the Night-of-Retrofit, certain activities have been moved out of the Setup Stage and into the System Preparation Stage, offering offices the option of performing most of the -1 day Retrofit Activities experienced with former Retrofits.
- RETROPRP is a new online automated preconditioning and system evaluation procedure to prepare an office for Retrofitting.
- The VCDX procedures for the 5E16.2 Retrofit can be found in this manual. They have been transitioned over from the 235–120–13x series of documents to this series.
- Single Tape Retrofit (STR) allows offices using the Tape Base Retrofit method to Retrofit using one tape which contains all the data previously delivered to the office on multiple tapes. Procedures for VCDX also use STR, and will no longer use the Disk Based Retrofit method.
- A new SM OFFLINE PUMP check has been added as part of office prechecks to ensure a successful SM OFFLINE PUMP has been performed prior to the Night-of-Retrofit.
- The database dump through the Night-of-Retrofit interval has been shortened from 17 days to a 5 business day turnaround for Tape Based Retrofit and a 3 day turnaround for NBR. See Table 1-1 or 1-2 for the schedule of when Lucent **must** receive the database dump based on your office's Night-of-Retrofit.

Table 1-1 — Database Dump Schedule for Tape Based Retrofit

Night of Retrofit*	Recommended Database Dump Day (customer discretion)	Data Tapes Arrive at Lucent (by noon)	New Data Sent	Tapes Arrive at Customer Site
Friday, Saturday or Sunday	Monday	Tuesday	Thursday	Friday
Monday	Tuesday	Wednesday	Friday	Monday
Tuesday	Wednesday	Thursday	Monday	Tuesday
Wednesday	Thursday	Friday	Tuesday	Wednesday
Thursday	Friday	Monday	Wednesday	Thursday

Table 1-2 — Database Dump Schedule for Network Based Retrofit

Night of Retrofit*	Recommended Database Dump Day (customer discretion)	Data Files Arrive at Lucent (by noon)	Evolved Data Available for Download (by noon)
Friday, Saturday or Sunday	Wednesday	Wednesday	Friday
Monday	Thursday	Thursday	Monday
Tuesday	Friday	Friday	Tuesday
Wednesday	Monday	Monday	Wednesday
Thursday	Tuesday	Tuesday	Thursday

* If the Night-of-Retrofit falls on a holiday, the previous day’s schedule will be followed.

- EOSBR (Enhanced OnSite BREV Retrofit) Method will use a preliminary database dump as a trial. Double logging will not occur until the Final Database Dump. See Table 1-3 for the schedule of when you will dump the database based on your office’s Night-of-Retrofit.

Table 1-3 — Database Dump Schedule for Enhanced OnSite BREV Retrofit

Night of Retrofit*	Recommended Preliminary Database Dump (customer discretion)	Final Database Dump	Data Evolved
Friday, Saturday or Sunday	Previous Friday	Friday	Friday
Monday	Previous Monday	Monday	Monday
Tuesday	Previous Tuesday	Tuesday	Tuesday
Wednesday	Previous Wednesday	Wednesday	Wednesday
Thursday	Previous Thursday	Thursday	Thursday

* If the Night-of-Retrofit falls on a holiday, the previous day’s schedule will be followed.

- The Night-of-Retrofit End Stage Procedure has been expanded to include the procedures that were formerly found in the “Cleanup Stage”.

Manual Sections Reorganized:

The information within the various Retrofit manual sections has been reorganized. The introduction of RETROPRP has prompted a reorganization of the document sections. Preconditioning work is now covered by Section 4, RETROPRP. Section 3 is now Procedural Overviews.

Single Version — Software Release Retrofit Procedures

All supported Retrofit Methods (Tape/NBR/OSDE/EOSBR) are now handled by a single version of the Software Release Retrofit Procedures. This single version of the Software Release Retrofit Procedures has become possible with the introduction of RETROPRP (online preconditioning and system evaluation procedures) and Single Tape Retrofit (STR). Most of the procedural documentation differences between the various Retrofit methods have become transparent to the user with the introduction of RETROPRP and STR. Certain differences do exist between the 5E and the VCDX/DRM platforms for the Night-of-Retrofit Implementation. Therefore a new section 11 has been added for the VCDX and DRM Node retrofit implementation.

1.2.1 SUPPORTED SOFTWARE RELEASES

This documentation supports the 5E16.2 Software Release. The office may be currently running on either the 5E14 or 5E15 Software Release. Retrofitting to the 5E16.2 Software Release is supported for both 5E14 and 5E15 Software Releases.

1.3 ORGANIZATION

This document provides descriptive and procedural information in the following areas:

- **Section 1 — Introduction:** Contains a brief introduction to the document and a general overview of Software Release Retrofit. It also provides a brief overview of the remaining sections of the document.
- **Section 2 — Planning:** Contains the planning requirements necessary to effect an efficient and timely Retrofit, including information for RETROPRP to be run at -9 weeks to determine office hardware needs.
- **Section 3 — Procedural Overviews:** Contains brief overviews of various audits, memory checks, and other procedures executed during the RETROPRP preconditioning and Night-of-Retrofit procedures.
- **Section 4 — RETROPRP - Automated Preconditioning and System Evaluation:** Contains procedures to execute RETROPRP, a new automated procedure designed to prepare an office for the Night-of-Retrofit. The procedure performs hardware and software checks, system verification, and final preparation work for Retrofit.
- **Section 5 — 5E Retrofit Implementation:** Contains the specific, detailed procedures required on site to perform the Retrofit. It does not include information or procedures for Retrofit work that occurs off site such as Office Dependent Data (ODD) and Equipment Configuration Data (ECD) evolution. This section is only for the 5E platform. The equivalent section for the VCDX/DRM Nodes is **Section 11**.
- **Section 6 — Recovery Procedures:** Contains procedures to recover from various Retrofit-related troubles. It will handle a majority of the error conditions that can occur during a Retrofit. This section is used only in the event of a failure during the Retrofit procedure and only after consultation with next level of support.
- **Section 7 — Backout Procedures:** Contains procedures to back out of various Retrofit-related troubles. This section provides procedures and different entry points (depending on how far the office has progressed into the Retrofit) for returning to the old Software Release and duplexing the system. This section is used only in the event of a failure during the Retrofit procedure and only after consultation with next level of support.

- **Section 8 — Manual Procedures:** Contains manual procedures for SM offline pump and non-off-line boot recovery procedures. Also contains many of the procedures previously run by office personnel during the preconditioning interval. (Procedures that are now automatically executed by RETROPRP.)
- **Section 9 — Worksheets and Tables:** Contains a series of Retrofit worksheets that will be used throughout the Retrofit interval to record information important to the Retrofit. Review them before starting the Retrofit. The tables referenced throughout the Retrofit process are now located in this section.
- **Section 10 — Reference Documents and Required Materials:** Contains a list of reference documents and required materials.
- **Section 11 — VCDX / DRM Node Retrofit Implementation:** Contains the specific, detailed procedures required on site to perform the Retrofit. It does not include information or procedures for Retrofit work that occurs off site such as Office Dependent Data (ODD) and Equipment Configuration Data (ECD) evolution. This section is only for the VCDX and DRM Nodes. The equivalent section for the 5E platform is **Section 5**.
- **Appendix A1 — Distinctive Remote Module (DRM) Retrofit:** Contains the specific detailed procedures required to perform a Retrofit of a DRM.

A **Glossary** and **Index** are also included at the end of this document.

1.4 GENERAL INFORMATION

1.4.1 COMMENTS

The primary goal during the actual Retrofit interval is to transition from one Software Release to another while maintaining adequate service and reliability. Utmost care must be used when using this document to ensure that the impact on the subscribers is minimized. This can only be done by following the steps in this document in the order given. Remember, **Software Release Retrofit is a service-affecting activity**.

The procedures must only be used in stable offices that are performing within all parameters normally used to measure office performance. Software Release Retrofit is not a means of fixing problems in an office and should never be used as such.

Many of the procedures in this document are not used in day-to-day office operations and should be fully reviewed before use.

Retrofit-related trouble and fault resolution are provided in the Recovery Procedures, the Backout Procedures and Manual Procedures (Sections 6, 7 and 8 respectively). If problems arise, you should escalate to your next level of support before attempting any procedures in Sections 6, 7 or 8.

Unless otherwise noted, time intervals that are notated as negative numbers (i.e. -9 weeks, -7 days, etc.) refer to the number of weeks or days *prior* to the scheduled Night-of-Retrofit.

Any deviation from the procedures could jeopardize the Retrofit and result in service interruptions beyond the control of this document.

1.4.2 NEW PROCEDURES OVERVIEW

1.4.2.1 Single Tape Retrofit (STR) Tape

Single Tape Retrofit (STR) is a streamlined enhancement to the Retrofit Tape reading process, implemented for Tape Based or EOSBR Retrofits. Only one STR Tape is required to upgrade an office to the 5E16.2 Software Release. Multiple DAT tapes are no longer needed for Tape Based or EOSBR Retrofits. For backup purposes only, a second STR Tape will also be shipped for Tape Based or created for EOSBR.

The STR Tape is inserted into the DAT drive at the beginning of the Retrofit Setup Stage of Retrofit Procedure and left in the drive until the completion of the Enter Stage of the Retrofit Procedure. The Retrofit process automatically accesses the tape as needed throughout the Retrofit Procedure without any interaction from office personnel.

A STR Tape contains the following data:

- TOP/tools
- AM TEXT
- AM ODD
- SM TEXT
- SM ODDs
- Volume Table Of Contents (VTOCs)
- Disk Options for the outboard disk pairs (MHDs 4 and higher)

For the VCDX tape retrofit, the STR tape also contains additional Solaris operating system and 3B emulator.

The STR Tape must be inserted into the DAT drive prior to initiating the Retrofit Process. The Read Headers Step will fail if the STR Tape is not in the drive at the time this Step is executed. After insertion of the STR Tape at the beginning of the Retrofit Procedure, no other user interaction with the STR Tape is required.

1.4.2.2 RETROPRP — Automated Preconditioning and System Evaluation Procedure

RETROPRP is an online procedure used to prepare an office for the Night-of-Retrofit. This online procedure replaces the instructions previously executed during Advance Preparation (Section 3) and System Evaluation (Section 4) sections of the Retrofit Manual. RETROPRP supports the following Retrofit methods: Tape Based, EOSBR, NBR, and OSDE.

MCC Pages and Commands used in RETROPRP are similar to the MCC Pages and Commands used in the RETROFIT Procedure. For users familiar with the Retrofit Procedure, RETROPRP will look similar.

RETROPRP contains both automated and manual instructions. MML Automation has been implemented to minimize user input and reduce preconditioning time by automatically running and interpreting many commands. The RETROPRP Procedure provides detailed Instruction Pages to give users information for executing any manual instructions that are required.

RETROPRP gives advanced warning of any upcoming activities that should be executed during low traffic periods PRIOR TO executing them. This will give the user

the opportunity to wait until the office is in a low-traffic period before continuing RETROPRP. This applies to high risk procedures such as AM OFFLINE BOOT, SM OFFLINE PUMP, and selected System Diagnostics.

The RETROPRP activities are performed in Four Stages:

1. **Setup Stage** — This stage initializes the RETROPRP Procedure. This stage will be executed each time the RETROPRP Procedure is initiated (initial run performed at -9 weeks). The options used by RETROPRP are setup during this stage by the user via the MCC 1989 Procedure Options Page.
2. **Hardware Prechecks (HW_PRECHK) Stage** — This stage identifies any hardware requirements for the new generic. This stage is run early in the preconditioning interval to allow users time to order, install, and test any required hardware prior to the next stage – System Verification. Data audits are also performed during this stage to allow users to identify and resolve any ECD/ODD errors prior to the database dump.

This stage must be started at -9 weeks and repeated as often as needed until all Hardware and Software checks pass.

3. **System Verification (SYS_VFY) Stage** — This stage ensures the integrity of office hardware and data. System diagnostics and software audits are run during this stage to ensure system integrity. Database dumps are performed and either shipped to Lucent Technologies, in the case of EOSBR, kept on site for evolution near the end of this stage. For offices using the OSDE Retrofit Method, an optional AM Offline Boot and OSDE TRIAL evolution can be performed during this stage.

This stage must be started at -2 weeks.

4. **Final Preparation (FINAL_PREP) Stage** — AM OFFLINE BOOT is run to ensure the bootability of the switch on the Night-of-Retrofit. For offices using the OSDE method, the final and required OSDE TRIAL evolution is performed during this stage. The new generic Text and Evolved ODD/ECD Databases are delivered electronically, via on site tape or via Tape from Lucent Technologies. At the completion of this stage, all necessary preconditioning steps have been performed and the office is ready to continue with Night-of Retrofit procedures using Section 5 (for 5E) or Section 11 (for VCDX) of the Retrofit Manual.

RETROPRP provides several checks that will fail, thereby alerting users to various pre-Retrofit requirements that are not met. The RETROPRP Procedure online instructions and command automation (MML) enhance the opportunity for users to successfully complete office preconditioning on shortened intervals

1.4.2.3 IRN2/SSI

CNI-SSI without Direct Link Node (DLN) will be supported on the 5E16.2 Software Release. At one point, only the CNI-IRN2 platform was being supported for offices retrofitting beyond 5E14 Software Release. Lucent Technologies has reviewed this requirement and agreed to support CNI-SSI without DLN beyond the 5E14 Software Release. 5E16.2 support of the CNI-SSI non-DLN platform allows a direct conversion from CNI-SSI to SS7-PSU signaling platform without an interim IRN2 upgrade. A CNI-SSI to SS7-PSU Conversion Procedure has been developed to support this signaling platform upgrade. Prior to retrofitting to 5E16.2, CNI-SSI with DLN must be converted to IRN2. This is due to memory limitations on this platform.

Retrofit Impact: CNI-SSI Non-DLN offices are supported on the 5E16.2 Software Release. CNI-SSI DLN offices are not supported on 5E16.2. Office with CNI-SSI DLN MUST convert to CNI-IRN2 prior to performing a 5E16.2 Software Release Retrofit.

1.4.2.4 SS7-PSU

The SS7 Packet Switch Unit (PSU) platform has been developed to provide the foundation for the evolution of the 5ESS Switch. The SS7-PSU platform will support advanced products and services that will converge office and data office needs, as well as support customer transition from a circuit-switched environment. A SS7 PSU Conversion Procedure will allow the replacement of the CNI platform in offices. An SM that provides SS7-PSU signaling will be known as a Global SM (GSM). Two types of GSMs exist: Host GSMs and Island GSMs. CM3 requires SS7 PSU Signaling as provided by GSMs.

Retrofit Impact: A GSM Link Configuration Check has been added to the HW_PRECHK Stage of RETROPRP to determine the CCS Signaling impact during the SWITCHFORWARD Stage. GSMs configured with an optimal duplex CCS link configuration will maintain 50% of the CCS Signaling capacity during SWITCHFORWARD. GSMs with a non-optimal configuration may experience reduced signaling capacity or extended signaling outage during SWITCHFORWARD. For more detailed information refer to Section 3.12 GSM CCS Link Configuration Check.

1.4.2.5 SM OFFLINE PUMP CHECK

A new tool has been added to the pre-Retrofit checks which ensures that the office has successfully completed an SM OFFLINE PUMP prior to the Night-of-Retrofit. The results of this check can be determined by running the OP:RETROCHK command. Expect the SM OFL PUMP line to say STATUS "COMPLETED" and SUMMARY "NO ERROR" if the office had successfully performed an SM OFFLINE PUMP prior to the execution of the new SM OFFLINE PUMP CHECK tool. The OP:RETROCHK Command will display SM Offline Pump Status Not Completed if a successful SM Offline Pump has not been completed. The backup ODD (with oddevol) or OSDE trial will not be allowed if SM Offline Pump is not completed at this point.

1.4.2.6 CM 3

CM3 is designed to replace the current CM2 and provide the foundation for increased capacity and future evolution. A CM2 to CM3 Conversion Procedure has been developed to accomplish the installation of the new CM3 hardware. For offices upgrading to a CM3, the AM must be a 3B21 and SS7 Signaling software must be based on the PSU. CM3 does support Classic SM architecture, so SM upgrades to SM-2000 are not required. The 5E16.2 Software Release does support both CM2 and CM3 platforms, so while CM2 to CM3 Conversion prior to upgrading to 5E16.2 is preferred, it is not required.

Note: A CM2 to CM3 Conversion is a separate procedure and is not performed during or as part of the Retrofit. The 5E16.2 Software Release does NOT support the CM1 platform.

Retrofit Impact: AM OFFLINE BOOT is required for CM3 Offices performing the 5E16.2 Software Release Retrofit Procedure to prevent unacceptable levels of downtime during SWITCHFORWARD. For CM3 offices AM OFFLINE BOOT MUST BE USED during the SWITCHFORWARD Stage and if necessary during BACKOUT (if the office has already switched to 5E16.2 Software Release). Offices failing to use

AM OFFLINE BOOT during the SWITCHFORWARD Stage will experience unacceptable levels of downtime in call processing.

1.4.2.7 Moving Head Disk

For 5E16.2, MHDs 2 and 3 need to be reconfigured to 2G. This may require new MHDs.

1.4.2.8 ASM Upgrade

ASM customers must be on ASM SWD ASM02-0030 before retrofitting to 5E16.2. This upgrade **MUST BE COMPLETED PRIOR** to starting the SYS_VFY Stage of RETROPRP. SWD ASM02-0030 includes a Solaris 8 Operating System upgrade and ASM Release 6.0. Special procedures are required for this installation, refer to 235-200-145, **5ESS Switch OneLink Manager™ Administrative Services Module User's Guide**, Section 7, procedure entitled HANDLING ASM SOFTWARE DELIVERY INSTALLATION (ASM RELEASE 6.0 SOFTWARE UPGRADE PROCEDURES).

Note: Installation procedures are different for Simplex and HA-ASM Configurations.

Verify that the ASM and 5E are on appropriate SWD/SU levels before applying SWD ASM02-0030. Refer to Table 1-4.

**Table 1-4 — 5E and ASM SWD/SU Levels Required Before Applying SWD
ASM02-0030**

Retrofit	5E	ASM
5E15 to 5E16.2	5E15 BWM02-0004	ASM02-0020
5E14 to 5E16.2	5E14 BWM02-0002	Release 3.1

An ASM 6.0 Recovery CD-ROM is required before performing the OS upgrade procedures. One Recovery CD will be required for Simplex ASM and two Recovery CDs will be required for HA-ASM. Order the ASM 6.0 Recovery CD-ROM.

NETRA t1120 and NETRA 20 Terminal Server Software will be upgraded to Version V3.O35. Refer to the 235-200-145, **5ESS Switch OneLink Manager Administrative Services Module User's Guide** for upgrading the Terminal Server software.

Supported ASM Platforms

- **ASM1** — Legacy Simplex ASM - (Netra t1120)
- **ASM2** — Standard ASM (Model 2) - (Netra t1120 with DS130 External Disk and Terminal Server)
- **HA-ASM** — (Two Netra t1120s with 2 DS130 External Disks and 2 Terminal Servers)
- **ASM3** — (Simplex Netra 20 with S1 External Disk and Terminal Server)
- **HA-ASM3** — (Two Netra 20s with 2 S1 External Disks and 2 Terminal Servers)

For more information contact next level of support or access the Lucent Electronic Delivery website. Instructions for access can be found in Section 7.4.1, Accessing ASM Webpage Information in the 235-200-145, **5ESS Switch OneLink Manager Administrative Services Module User's Guide**.

1.4.3 COMMUNICATION MODULE NAME CHANGE

The term Communication Module (CM) has been changed to the Global Messaging Server (GMS), representing the new portfolio name of this particular module. The current names of the specific types of the GMS (the CM2 and CM3) have not been changed. Where the CM name has been used in a generic way within this information product, the name will be changed to GMS. Where the specific version of GMS (CM2 or CM3) is being described or mentioned, the name will not be changed. However, the GMS name may be added to the description in certain places as a reminder of the change, and that the particular version is a part of the overall portfolio. The following list provides some examples of how you may see these names used together:

- Global Messaging Server (formerly Communication Module)
- GMS (formerly CM)
- Global Messaging Server-CM2
- GMS-CM2
- Global Messaging Server-CM3
- GMS-CM3

1.4.4 5ESS-2000 SWITCH NAME CHANGE

This 5ESS switch document may contain references to the 5ESS switch, the 5ESS-2000 switch, and the 5ESS AnyMedia[®] Switch. The official name of the product has been changed back to the 5ESS switch. In the interim, assume that any reference to the 5ESS-2000 switch or the 5ESS AnyMedia Switch is also applicable to the 5ESS switch.

1.5 HIGH-LEVEL PROCEDURAL OVERVIEW

1.5.1 GENERAL

The major sections of the Retrofit interval are as follows:

- Planning
- RETROPRP — Automated Office Preconditioning and System Evaluation
- Night-of-Retrofit Implementation

1.5.2 PLANNING

Planning for the Retrofit Process includes running the Hardware Prechecks (HW_PRECHK) Stage of RETROPRP to perform preliminary checks on the following items:

- Utilize Memory Forecasting Tool to forecast, plan, and order the associated memory and installation services.
- Execute On-Switch ECD Verification Tool to verify critical ECD parameters needed for Retrofit.
- Execute On-Switch Hardware Audit Tool which verifies the release specific hardware needed for Retrofit.
- Execute ODD Retrochk tool to audit ODD critical relations needed for Retrofit.

1.5.3 RETROPRP — AUTOMATED PRECONDITIONING AND SYSTEM EVALUATION

For 5E16.2, office preconditioning and system evaluation is accomplished by running an automated procedure called RETROPRP. RETROPRP completes the preconditioning work in four stages:

1. Setup Stage
2. Hardware Prechecks Stage
3. System Verification Stage
4. Final Preparation Stage

Refer to Section 4 for more detailed information on the RETROPRP Procedure and Implementation instructions.

1.5.3.1 Setup Stage

The Setup Stage initializes the RETROPRP Procedure. This stage will be executed each time the RETROPRP Procedure is initiated.

RETROPRP is started from MCC Page 1980. During this Setup Stage of RETROPRP, a detailed online RETROPRP Introduction is displayed for the user. The user is advised to print this guide for future reference. An Options Page is provided during

this Setup Stage, for selecting the Retrofit method and allowing, if desired, a two stage short-cycle of the RETROPRP Procedure using only the Setup and Hardware Prechecks Stages.

1.5.3.2 Hardware Prechecks Stage (HW_PRECHK)

The Hardware Prechecks Stage is initially run as soon as the Retrofit is ordered to identify hardware needs for the office. The Setup Stage/Hardware Prechecks Stage cycle is then repeated as hardware is installed or software errors are corrected until all prechecks within the Hardware Prechecks Stage are completed successfully.

The initial run of RETROPRP Hardware Prechecks must be done at -9 weeks to allow time for ordering and installation of needed hardware.

1.5.3.3 System Verification Stage (SYS_VFY)

The System Verification Stage performs system diagnostics and software checks to verify the integrity of the switch. Database dumps are performed during this stage and either shipped to Lucent Technologiesor, in the case of EOSBR, kept on site for evolution to the new Software Release. For OSDE Retrofits, an optional OSDETRIAL can be performed during this stage.

This stage must be started at -2 weeks.

- Refer back to the following Tables for Database Dump Schedules.
 - Table 1-1 for Tape Based Retrofits.
 - Table 1-2 for NBR
 - Table 1-3 for EOSBR
- Optional OSDETRIAL for OSDE is done at the end of the SYS_VFY stage.

1.5.3.4 Final Preparation Stage (FINAL_PREP)

The Final Preparation Stage performs the final preparation work for Night-of-Retrofit. Final preparation work consists of running AM OFFLINE BOOT (5E only) and final hardware and software checks. For OSDE, the final OSDETRIAL is performed during this stage.

This stage must be started after the database dump has been executed.

AM OFFLINE BOOT (5E only) must be run after the database dump, but within 7 days of the Night-of-Retrofit.

Final OSDETRIAL must be run within 4 days of Night-of-Retrofit for OSDE.

New Generic Text and Evolved ODD/ECD data is delivered electronically via ASM or on a STR Tape.

1.5.4 NIGHT-OF-RETROFIT IMPLEMENTATION

Retrofit implementation begins the morning of the planned transition to the new Software Release and consists of System Preparation Activities, eleven separate and distinct Stages, followed by duplex regression tests. Refer to Section 3.3 for an overview of the major activities performed in each of the Retrofit Stages.

Implementation instructions for the Night-of-Retrofit are covered in Section 5 (5E) and Section 11 (VCDX / DRM) of this manual. In the following, Section 5 is used for explanation, but similar activities are also applicable to Section 11.

1.5.4.1 SYSTEM PREPARATION ACTIVITIES

The System Preparation Activities in Section 5.1 may be performed at -1 day before the Night-of-Retrofit. However, Section 5.2, Setup Stage, **must not** be started until the Night-of-Retrofit. To maximize office preparation for the Night-of-Retrofit, certain activities have been moved out of the Setup Stage and into the System Preparation Stage, offering offices the option of performing most of the -1 day Retrofit Activities experienced with former Retrofits. If the office has chosen the EOSBR Method, the final database dump should be performed as part of the System Preparation Activities.

1.5.4.2 SETUP STAGE

The Setup Stage is the starting point for the Retrofit to the new Software Release. The Setup Stage in Section 5.2 **must not** be started until the Night-of-Retrofit. To maximize office preparation for the Night-of-Retrofit, certain activities have been moved out of this Setup Stage and into the System Preparation Activities. This offers offices the option of performing most of the -1 day Retrofit Activities experienced with former Retrofits.

Caution: *All input messages must be entered at the Master Control Center (MCC) or Switching Control Center (SCC). Failure to do so could result in missing the output responses to messages and jeopardize the transition because of differences in the MCC and other terminals in the office.*

1.5.4.3 BEGIN STAGE

The Begin Stage lasts approximately 1 hour.

1.5.4.4 ENTER STAGE

In the Enter Stage, new Software Release Text, ODD and ECD databases are loaded to the off-line disks. The data load into the odd-numbered disks should take about 60 minutes. (Larger offices will require more time). The odd-numbered disks are marked off-line. At the end of this stage, the odd-numbered disks will contain the new Software Release and the evolved ODD and ECD Databases.

In the Enter Stage, each SM will be forced simplex (MCTSI side 0 ACTF/MCTSI side 1 UNV). All MCTSIs side 1 will be off-line pumped with the new Software Release data.

The procedure will take 2 to 4 hours or more, depending on office size.

1.5.4.5 PROCEED STAGE

The Proceed Stage lasts approximately 1 to 2 hours.

1.5.4.6 SWITCHFORWARD STAGE

In the Switchforward Stage, the Administrative Module (AM), Communication Module Processor (CMP) and MCTSI's of each SM are switched to the 5E16.2 Software Release. During the switch forward, 2-port stable calls with a talking path are maintained and all transient calls are routed to reorder. New originations are also routed to reorder. Because stable calls are maintained, the switch forward may be scheduled earlier in the evening at a time acceptable to the operating company.

1.5.4.7 RECOVERY PREPARATION STAGE

The Recovery Preparation Stage provides the tasks necessary in the event a recovery is required.

1.5.4.8 POST-BOOT STAGE

The switch (with the exception of the SMs and disk drives) is duplexed after the transition on the new Software Release.

1.5.4.9 SOAK STAGE

The Soak Stage consists of acceptance testing, reconfiguring AMA disk partitions (if necessary) and starting the reapplication of RCs and CORCs.

Acceptance testing is expected to last up to 1 hour. During this interval, the operating company performs a series of locally-developed tests to assess the reliability of the new Software Release before committing the switch to full-duplex operation. Other activities in this stage include executing manual actions.

1.5.4.10 COMMIT STAGE

During the Commit Stage, the remaining units will be duplexed.

In the Commit Stage, the disks containing the old Software Release are off-line until all SMs are duplex on the new Software Release. This ensures a clean backout possibility until the even-numbered disks are committed to the new Software Release.

Duplexing the disks is the last major task. This stage is expected to last from 1½ to 6 hours depending on the number of disks in the office.

1.5.4.11 END STAGE

The End Stage completes the Retrofit interval. During this stage, the Retrofit cycle is completed, and RC and REX are allowed. This is followed by a series of general cleanup steps to reset Automatic Line Insulation Testing (ALIT) parameters, AMA passwords, automatic ODD backup schedule, and call trace lines.

The final task is to make full office backup tapes.

Discounting full office backups, the End Stage is expected to last 30 minutes to 1 hour. Additional time for full office backups is dependent on office size/equipment and should be calculated into the overall Retrofit planning schedule.

1.5.4.12 DUPLEX REGRESSION TESTING

The operating company should monitor office performance for several days following the Retrofit. This should include 1 full, normal business day. Promptly report per local practices any abnormal conditions that arise.

1.6 WORKSHEETS AND TABLES

Section 9 of this document contains several worksheets and tables that are to be used throughout the Retrofit process. It is very important to enter data on the worksheets as specified. Some of the data on the worksheets are entered at intervals before the Retrofit and are referenced and used on the Night-of-Retrofit. If key fields in the worksheets are not filled in by the Night-of-Retrofit, they can cause delay or cancellation of the Retrofit.

1.7 RETROFIT NOTES

The Retrofit Notes provide additional information and procedures for the upcoming Retrofit that are not included in this document. Supplemental information and procedures that may not have been available at publication of this document may be included in the Retrofit Notes. Starting at -9 weeks before the Night-of-Retrofit, an advance copy of the Retrofit Notes can also be obtained by contacting your technical support organization (SUMS Center).

Retrofit Notes for the Software Release Retrofit are also available on the web. All current *5ESS* Retrofit users **MUST REGISTER** to access this website.

To register: Click on the "Register Now" link and complete the required fields on the form.

Follow these steps to get to the Retrofit Index Page:

- Log on to the Online Lucent Customer Support Website at **<https://support.lucent.com/portal/olcsHome.do>**.
- Click on the "Documentation" link.
- Click on the "*5ESS* Switch" link.
- Click on the "Release Information" link.

Here you will find access to the most current Retrofit Notes, the SU Compatibility Notice, and Current CFT Descriptions.

Retrofit Notes are no longer available on PIMS/SCANS. It is critical to obtain the **latest** copy of the Retrofit Notes, as the notes are updated weekly.

1.8 SOFTWARE RELEASE RETROFIT TECHNICAL ASSISTANCE — SUMS CENTERS

Technical assistance for Software Release Retrofits is provided by the Lucent Technologies Software Update Management Service (SUMS) Centers. If there are any questions regarding the Software Release Retrofit, call your Lucent Technologies SUMS Center support indicated in Table 1-5.

Table 1-5 — SUMS Centers

SUMS	LOCATION	TELEPHONE NUMBER
South	Birmingham, AL	1-800-824-1626 (NAT.) 1-205-560-2174 FAX 1-205-560-2188
Western	Denver, CO	1-877-295-0084 FAX 1-720-482-4267

1.9 MISCELLANEOUS

1.9.1 COMMENTS, NOTES, CAUTIONS, AND WARNINGS

This document uses four levels of notation to add support information to the text. The four levels and their implications are:

- Comment:** Additional information for clarification or further explanation.
- Note:** Important information that could affect the procedures.
- Read:** The read prompt provides useful information for the user that will be of assistance when performing the procedures that follow it.
- Caution:** Very important information. Cautions unheeded may result in an adverse impact on the operating company subscribers or on the ability to successfully complete the procedures.
- Warning:** Critical information. Warnings unheeded will result in adverse impact on operating company subscribers and/or jeopardize the successful completion of the procedures.

1.9.2 FORMAT AND USE OF DOCUMENT

1.9.2.1 Overview

In this document, special message formats and conventions have been used. The user should be aware of these message formats and conventions and their meaning. They include the following:

- [] (brackets)
- box
- { } (braces)
- | (pipes)

1.9.2.2 Brackets []

Information (equipment unit, output response, tape, etc.) that appear inside brackets indicate that this information may be applicable to your office. In most cases, the user can easily determine from the information if it applies to the office. Output responses, equipment units, tapes, etc., inside the brackets may or may not be output, equipped, or loaded depending on the office. Brackets around an output response indicate that only some offices will receive the output response depending on equipment configuration in the office. For example:

```
[ RST MHD 4 COMPLETED ]
```

The restore MHD 4 completed message will only be output if an office has an MHD 4 equipped.

1.9.2.3 Box

Information and input messages that are boxed provide additional information to the user that may be helpful in the procedures that follow. If an input message appears in a box, the user should be aware that it is *not* necessary to enter the message(s) at that point in the procedure to continue. The user should read and be aware of the special instructions, messages, or information shown in a box. Boxes are also used to show examples.

1.9.2.4 Braces { } and Pipes |

The brace and pipe symbols are used to indicate conditions where two or more responses, options, arguments, etc., are possible. In output responses that are shown with the brace and pipe symbols, they may be used to show the different possible output responses that can be received. For example:

```
OP SYSSTAT SUMMARY{FIRST | NEXT | LAST }
```

1.9.3 ENTERING COMMANDS

1.9.3.1 Overview

When performing these procedures, it is necessary to input (or enter) machine commands to successfully complete the required task. Currently, there are two primary methods of entering commands. One method is by using an **input message**, the other is a **poke command**.

While both methods of entering data are performed from the Master Control Center (MCC), input messages are entered in the message mode; poke commands are entered in command mode. To toggle between the two modes, the **CMD/MSG** key (on the MCC keyboard) is used.

1.9.3.2 Input Messages

Input messages are given for Man-Machine Language (MML) and are as follows:

Enter MCC MSG: **INPUT MESSAGE**

Caution: *Input messages must be entered exactly as printed with regard for upper case and lower case, punctuation, and spacing. The final character of each message ";" is not actually typed, but appears when the RETURN or ENTER key is depressed to enter the message.*

Unless otherwise specified:

- All input messages and commands will be entered at the MCC.
- It is assumed that the technician will wait for a successful response from an input message or command before continuing to the next step.

1.9.3.3 Poke Commands

While input messages can be entered on the message line of any MCC page, poke commands are associated with specific MCC pages. Only poke commands that are valid for the currently displayed MCC page can be entered. Poke commands will be given in the following format:

MCC Page: **MCC page specified**

Enter Poke CMD: **poke command specified**

Examples of valid RETROPRP and Retrofit poke commands:

The following are valid Poke commands from the **MCC 1985** Procedure Status Page:

Poke CMD: **200** — (Stop the execution of the Retrofit/RETROPRP procedure)

Poke CMD: **400** — (Hold Retrofit/RETROPRP procedure)

Poke CMD: **500** — (Continue Retrofit/RETROPRP procedure)

Poke CMD: **600** — (Backout Retrofit/RETROPRP procedure)

1.9.4 TERMS UTILIZED

Some examples include **<cr>** to indicate "carriage return." In these cases, "nothing" is input; the RETURN key (or the ENTER key) is pressed.

1.9.5 TRAINING COURSES

The latest information on Lucent Technologies, *5ESS* Switch Training can be obtained by calling 1-888-LUCENT8 (1-888-582-3688), Option 2, or from our web site at: **<http://www.lucent-product-training.com/catalog>**.

1.10 USER COMMENTS

We are constantly striving to improve the quality and usability of this information product. Please use one of the following options to provide us with your comments:

- You may use the on-line comment form at **<http://www.lucent-info.com/comments>**
- You may email your comments to **comments@lucent.com**

Please include with your comments the title, ordering number, issue number, and issue date of the information product, your complete mailing address, and your telephone number.

If you have questions or comments about the distribution of our information products, see Section 1.11, Distribution.

1.11 DISTRIBUTION

For distribution comments or questions, contact your local Lucent Technologies Account Representative.

A documentation coordinator has authorization from Lucent Technologies to purchase our information products at discounted prices. To find out whether your company has this authorization through a documentation coordinator, call **1-888-LUCENT8 (1-888-582-3688)**.

Customers who are not represented by a documentation coordinator and employees of Lucent Technologies should order *5ESS* switch information products directly from Lucent Technologies.

To order, call the following telephone number:

- **1-888-LUCENT8 (1-888-582-3688)** or fax to **1-800-566-9568**; from inside the continental United States
- **1-317-322-6416** or fax to **1-317-322-6699**; from outside the continental United States.

1.12 TECHNICAL ASSISTANCE

For technical assistance, call Technical Support Services (TSS) at:

- **1-866-LUCENT8 (1-866-582-3688)**; from inside the continental United States
- **1-630-224-4672**; from outside the continental United States.

Technical Support Services is staffed 24 hours a day, 7 days a week.

1.13 DOCUMENTATION

The documentation supporting the 5E16.2 Software Release is available from the Customer Information Center and is listed in 235-001-001, *Documentation Description and Ordering Guide*. To order documentation, refer to Section 1.8. Most of the *5ESS* switch documents are available on paper as well as on electronic media (CD-ROM, magnetic tape, and on-line dial-up). Consult 235-001-001 for availability.

The following documents are referenced at various locations within this document and should definitely be on site:

- 235-070-100, *Administration and Engineering Guidelines*
- 235-080-100, *Translations Guide*
- 235-105-210, *Routine Operations and Maintenance Procedures*
- 235-105-220, *Corrective Maintenance Procedures*
- 235-105-231, *Hardware Change Procedures - Growth*
- 235-105-331, *Hardware Change Procedures - Degrowth*
- 235-105-250, *System Recovery Procedures*
- 235-118-258, *Recent Change Procedures - 5E16.2*
- 235-200-145, **5ESS Switch OneLink Manager Administrative Services Module User's Guide**
- 235-200-150, *DRM User's Guide*

Other documents that are referenced but are not required to be on site include:

- 235-040-100, *Operations, Administration, and Maintenance Planning Guide*
- 235-100-125, **5ESS Switch System Description**
- 235-105-110, *System Maintenance Requirements and Tools*
- 235-190-103, *Business and Residence Feature Description*
- 235-190-104, *Integrated Services Digital Network (ISDN) Feature Description*

- 235-190-115, *Local and Toll System Features*
- 235-600-500, *Asserts Manual*
- 235-600-700, *Input Messages Manual*
- 235-600-750, *Output Messages Manual*
- 235-700-100, *Interface Compatibility Guide*
- 235-700-200, **UNIX**¹ *RTR Operating System Reference Manual*
- 235-190-400, *Feature Descriptions*
- 254-302-841, *Common Systems - Routine Tasks (MML Formats)*

The following documents are referenced for OSPS offices:

- 250-520-105, *OSPS Toll and Assistance Video Display Terminal, Description and Operation*
- 250-570-115, *OSPS Administrative Guidelines*

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2. PLANNING

2.1 INTERVALS AND TIMING CONSTRAINTS

In addition to the standard ordering interval, there are certain Retrofit-related site activities that must be planned. Table 2-1 should be used as a guide for site activity planning. Also, refer to Table 2-2 for a high-level Retrofit timeline.

The new online preconditioning procedure, RETROPRP, will perform all the Hardware and Software prechecks that were executed manually during this planning interval in the past. In the Office Preparation Section 2.4.1, users will be given instructions to run the Hardware Prechecks (HW_PRECHK) Stage of RETROPRP. The RETROPRP procedure will identify needed hardware so that equipment orders can be placed at this time. This procedure must be run at -9 weeks to ensure enough time for ordering, delivery, and installation of required hardware. Additionally, RETROPRP will identify any ODD/ECD errors that need to be resolved prior to the database dump.

There are no longer any manual procedures printed in this planning section, all required prechecks and instructions are now handled by the RETROPRP procedure. Should a manual procedure be required, the RETROPRP Procedure will either give detailed instructions for running the procedure or refer the user to the Manual Procedures Section 8 of this document.

For planning purposes the RETROPRP HW_PRECHK Stage can be completed in one shift. There are no high risk procedures executed during this Stage. The HW_PRECHK Stage can be run at any time.

This **5ESS**[®] *Switch Software Release Retrofit Procedures 5E14 or 5E15 to 5E16.2* document will walk you through the standard 9 week interval. However, if your switch does not require any memory and/or hardware growth to support 5E16.2, when the Telephone Equipment Order (TEO) is received by Lucent Technologies, a minimum interval of 4 weeks will be supported.

The importance of meeting the time intervals shown in Table 2-1 cannot be overstated. Any slip in the initial time intervals may delay the Retrofit.

Table 2-1 — Site Activities Guide

STAGE / TIME	ACTIVITIES
RETROPRP HW_PRECHK -9 weeks	Run HW_PRECHK Stage to identify hardware needs for TEO.
	Grow in additional disk pairs if needed. Upgrade or reconfigure MHDs 2 & 3 to 2G.
	Run memory forecasting tool and ensure that office has sufficient Administration Module (AM), Communications Module (CM) and Switching Module (SM) memory.
	Run Equipment Configuration Data (ECD) audit and Hardware Check audit.
	Run ODD Retrochk audit.
	Run GSM CCS Link Configuration Check.
	Tape unit verify.
	All memory and/or hardware growth complete.
	ASM upgrade complete.
	[OSDE/NBR] Obtain login and password for Lucent Technologies DMZ, if needed.
	Run asmtrans config followed by asmtrans sendconfirm.
RETROPRP SYS_VFY -2 weeks	[OSDE] Unlock secured OSDE feature ^a .
	Final SU check.
	Perform AM OFF-LINE Boot Test
	Re-run memory forecasting tool.
	Re-run ECD audit and Hardware Check audit.
	Re-run ODD Retrochk audit.
	AM, SM and CMP diagnostics
	[OSDE and NBR] Download Office Package.
	[OSDE] Download TOOLKIT.
	SM OFF-LINE Pump Check
RETROPRP SYS_VFY -1 week	[EOSBR] SUN Blade Workstation on site.
	Database dumps
	[Tape] See Table 1-1
	[NBR] See Table 1-2
	[EOSBR] See Table 1-3 (Preliminary Dump)
	[OSDE] Run optional OSDETRIAL.
RETROPRP FINAL_PREP -1 week	Perform AM OFF-LINE Boot Test
	[OSDE] Run required OSDETRIAL within -4 days.
RETROPRP	Quiet duplex system.

See note(s) at end of table.

Table 2-1 — Site Activities Guide (Contd)

STAGE / TIME	ACTIVITIES
FINAL_PREP -3 days	CNI verification [for CNI offices only].
RETROPRP FINAL_PREP -1 day	Retrofit materials arrive on site [(Lucent Technologies Media Kit with two copies of the STR - DAT Tape), Retrofit Notes, etc.]. [NBR] Download evolved ECD/ODD via ASM. [OSDE/NBR] New 5E Text and ASM Sync Package received on ASM. [DRM] New Solaris OS/3B Emulator images received on ASM. Perform office backups. Review checklist and procedures.
System Preparation -1 day / 0 NOR	MCTSI and CMP diagnostics [EOSBR] Final database dump (See Table 1-3)
Night-of-Retrofit	Backup ODD RETROFIT Duplex tests and observation.
Note(s):	a. The OSDE/NBR feature will be turned off after the upcoming retrofit has completed. For a DRM switching complex, the OSDE/NBR feature is controlled, and turned off on the host, after the last DRM node completes its retrofit.

Table 2-2 — Activity Timeline by Retrofit Method

	<ul style="list-style-type: none"> • Tape Based • Network Based (NBR) • Enhanced OnSite BREV (EOSBR) 	<ul style="list-style-type: none"> • OSDE (Includes DRM)
Initial run RETROPRP Hardware Precheck (HW_PRECHK) Stage and repeat as required	-9 weeks	-9 weeks
Start System Verification (SYS_VFY) Stage	-2 weeks	-2 weeks
AM Offline Boot (5E only)	-2 weeks	(-2 weeks)
Hardware Diagnostic	-2 weeks	-2 weeks
SM Offline Pump	-2 weeks	-2 weeks
[EOSBR] SUN Blade Workstation trial	See Table 1-3	n/a
[Tape Based / NBR] Database Dump	See Table 1-1 (Tape Based) or Table 1-2 (NBR)	n/a
First OSDE Trial (optional)	n/a	(~ -9 days)
Start Final Preparation (FINAL_PREP) Stage	-7 days or later	~ -7 days or later
AM Offline Boot (5E only)	within -7 days	within -7 days
Final OSDE Trial	n/a	-4 days or later
[EOSBR] Final Database Dump	See Table 1-3	n/a
Night-of-Retrofit	-0 days	-0 days
Where: ~ = approximate timing () = Optional Activity n/a = Not Applicable		

2.2 RETROFIT TOOLS

2.2.1 MCC 1980 PROCEDURE SUMMARY PAGE DESCRIPTION

The automated office preconditioning procedure, or the Retrofit Procedure, are initiated from the MCC 1980 Procedure Summary Page by entering the following:

MCC Page: **1980**

Poke CMD: **3XX**

Where: **XX** = the number of the corresponding procedure as seen on the MCC 1980 Page.

RETROPRP — the Office Preconditioning procedure

RETRO — Night-of-Retrofit Software Release Retrofit

SYS EMER OVERLOAD	CRITICAL SYS INH	MAJOR AM	MINOR AM PERPH	BLDG/PWR OS LINKS	GLB FUNC SM	CKT LIM CM	SYS NORM MISC
CMD<					1980 - PROCEDURE SUMMARY		
2XX STOP PROC		3XX START PROC		4XX SHOW PROC		5XX RESUME PROC	
8XX START TOOLS PAGE							
XX = PROCEDURE NUMBER							
AVAILABLE PROCEDURES							
01 RETRO	02 UPDATE	03 LTG	04	05 PRECOND	06 CM2TOCM3	07 RETROPRP	08
09	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56

Figure 2-1 — Sample RETROPRP — MCC 1980 Procedure Summary Page

2.2.2 RETROPRP HARDWARE PRE-CHECK STAGE

Preliminary planning for Retrofit requires running several prechecks on the switch to determine hardware needs and assess software integrity. These preconditioning manual procedures have been replaced by a new automated preconditioning and system evaluation procedure called RETROPRP. RETROPRP performs preconditioning work in Four Stages:

1. SETUP STAGE
2. HARDWARE PRE-CHECK STAGE — (HW_PRECHK)
3. SYSTEM VERIFICATION STAGE — (SYS_VFY)
4. FINAL PREPARATION STAGE — (FINAL_PREP)

Only the first two stages, the Setup Stage and the Hardware Pre-Checks (HW_PRECHK) Stage must be run in the initial planning stages of the Retrofit process.

HW_PRECHK will automatically run:

- memory checks to determine if additional memory hardware must be ordered
- hardware audits to ensure that required hardware is present
- ODD and ECD database audits to verify integrity of software

The Setup/Hardware Pre-Checks Stages of the RETROPRP Procedure **must be run at -9 weeks** prior to the scheduled Night-of-Retrofit to allow time for ordering and installation of needed hardware, and to allow time for resolution of any ODD and ECD database errors.

The Setup/Hardware Pre-Checks Stages can be repeated as hardware installation or database work is completed to ensure successful completion of all hardware and software audits (All Hardware and Software checks must pass in the SYS_VFY right before the database dump).

2.3 IMPACT OF A RETROFIT

2.3.1 OVERVIEW

A Software Release Retrofit may impact the 5ESS switch in the following areas:

- Hardware
- Data (ODD/ECD)
- Operator Services Position System (OSPS)
- *PINNACLE*[®] Automatic Call Distributor (ACD/MIS)
- Advanced Communications Package (ACP)
- Applications Processor (AP) - Basic Rate Interface (BRI)
- Operations Systems (OSs)
- Service

2.3.2 HARDWARE IMPACT

2.3.2.1 Overview

The hardware required for the 5ESS switch for a Retrofit to 5E16.2 Software Release consists of sufficient AM , CMP and SM memory and sufficient disk space. Hardware Change Notices (CNs) may also need to be applied.

MHDs 2 and 3 need to be configured as 2G. If the physical capacity of the current MHDs is less than 2G, then a new physical drive will need to be ordered and installed. Refer to Manual Procedure 8.32, CONVERT SCSI MOVING HEAD DRIVE ECD TO 2GB. For the VCDX SPARC Workstation, the hard disk needs to be 9G or greater. RETROPRP will check this automatically and inform you of the size.

If the office is upgrading from CM2 to CM3, the CM2 – CM3 Conversion Procedure must be completed prior to starting the final run of the HW_PRECHK Stage of the RETROPRP Procedure at -2 weeks.

If the office is equipped with an ASM, the ASM upgrade to Release 6.0 **MUST** be performed prior to starting the SYS_VFY Stage of the RETROPRP Procedure at -2 weeks.

Lucent Technologies requires that the memory requirements for the 5E16.2 Software Release be determined well in advance of the database dump interval to allow sufficient time for ordering and installation. If memory or disk growth is required, the growth procedures must be completed before the SYS_VFY Stage.

The HW_PRECHK Stage of RETROPRP is initially run at -9 weeks to assess memory needs and identify disk upgrade requirements. When hardware audits identify

hardware needs, RETROPRP provides detailed instructions to the user. Refer to Section 3.2 for detailed RETROPRP Procedure information.

Refer to the 5E16.2 Hardware Requirements Summary Table 2-3 for a list of required hardware and memory for the 5E16.2 Software Release.

Refer to the 5ESS Switch Signaling Configuration Table 2-4 for supported signaling configurations for 5E16.2 Software Release.

Table 2-3 — 5E16.2 Hardware Requirements Summary Table

AM 3B21D Disk Drives – Equipage and Configuration	
Base — (MHDs 0-3)	2GB ^a
Optional — (MHDs 4-13) — (MHDs 14-15)	1GB or 2GB ^a 2GB ^b
VCDX	9 GB
AM 3B21D Main Memory	
Current Usage	88 MB
Physically Equipped	128 MB
Communications Module Processor Memory	
CM-2	51 MB
CM-3	128 MB
Classic SM Memory^c	
Basic	48 MB
Standard Wireline	52 MB
Standard OSPS	52 MB
Loaded Wireline	80 MB
Loaded OSPS	76 MB
Signaling	80 MB
SM-2000 Memory^c	
SM-2000 (Wireline)	192 MB
GSM	192 MB
VCDX	192 MB
Administrative Services Module (if equipped) ASM Release 6.0^d with Solaris 8.0 OS^d	
ASM1 - Legacy Simplex ASM	Netra t1120
ASM2 - Standard ASM (Model 2)	Netra t1120 D130 External Disk Terminal Server (V3.035) ^d
HA-ASM 1 - High Availability	Two - Netra t1120s 2 — D130 External Disks 2 — Terminal Servers (V3.035) ^d
ASM3 - Simplex	Netra 20 S1 External Disk Terminal Server (V3.035) ^d
HA-ASM3 - High Availability	Two - Netra 20s 2 — S1 External Disks 2 — Terminal Servers (V3.035) ^d
Note(s):	
a. Refer to Section 3.13 MHD Disk Properties.	
b. Required to be 2GB because these disks backup the Base MHDs.	

Table 2-3 — 5E16.2 Hardware Requirements Summary Table (Contd)

<p>Note(s): (Contd)</p> <p>c. Reflects the recommended physical equipage for SMs representing the 90th percentile. In other words, the recommended equipage is designed to accommodate 90% of the SMs (therefore, some SMs may require different sizes than the values stated for each SM type and might differ from the op:memsize report). The numbers listed are meant for switch owners who prefer not to do detailed SM memory engineering and can use the values listed in this table as the recommended size. If detailed engineering is preferred, refer to Section 8.13, Verify SM Memory Equipage and base the recommended size from the memory forecasting output.</p> <p>d. Required Software Level</p>

Table 2-4 — 5ESS Switch Signaling Configurations Supported on 5E16.2 Software Release

CNI/SSI without DLN
CNI/IRN2 without DLN30
CNI/IRN2 with DLN30
Global Signaling Module (GSM) — PSU/SS7

2.3.2.2 Memory Requirement References

Refer to the following for information on memory requirements and procedures for growing AM/CM/SM and Disk Memory:

- 235-070-100, *Administration and Engineering Guidelines*, for the 5E16.2 memory and disk requirements.
- 235-105-231, *Hardware Change Procedures - Growth*, for procedures for growing AM/CM/SM memory.

2.3.2.3 Applications Processor (AP)

The AP product line consists of a Hewlett Packard computer connected to the 5ESS switch to provide administrative and maintenance functionality. This functionality is provided through Advanced Communications Package (ACP) software, Basic Communications Package (BCP) software, or Telecommunications Management System (TMS-5) software.

2.3.2.4 (5E only) AM — 3B21D Processor

The AM provides centralized support for the 5ESS switch software which provides global functionality across the entire system. The recommended main memory of the 3B21D Processor should be 128 MB.

Refer to Section 3.13 for detailed information on disk equipage and disk configuration.

2.3.2.5 (5E only) CM — (CM2/CM3)

The CM provides pathways for the SMs for the 5ESS switch software which provides global functionality across the entire system.

CM3 is designed to replace the current CM2 and provide the foundation for increased capacity and future evolution. A CM2 to CM3 Conversion Procedure has been developed to accomplish the installation of the new CM3 hardware. For offices

upgrading to a CM3, the AM must be a 3B21 and SS7 Signaling software must be based on the PSU. CM3 does support Classic SM architecture, so SM upgrades to SM-2000 are not required. The 5E16.2 Software Release does support both CM2 and CM3 platforms, so while CM2 to CM3 Conversion prior to upgrading to 5E16.2 is preferred, it is not required.

Note: CM2 to CM3 Conversion must be completed before the running of HW_PRECHK stage of RETROPRP at -2 weeks.

The CM1 platform is NOT supported on the 5E16.2 Software Release.

2.3.2.6 SM

In the 5E16.2 Software Release, the 5ESS switch supports the following SM configurations:

- Basic
- Standard
- Loaded/Integrated Services Digital Network (ISDN)
- Signaling
- SM-2000
- Global Signaling Module (GSM)
 - Host GSM
 - Island GSM

Refer to Table 2-3 5E16.2 Hardware Requirements Summary Table for memory requirements.

2.3.3 DATA IMPACT (DATABASE DUMP)

2.3.3.1 Overview

The ODD and ECD databases must be updated for compatibility with the new Software Release by using the ECD and ODD evolution tools. The dumped data must be received by Lucent Technologies -3/-2 business days before the Retrofit. This off-site evolution converts the ODD and ECD databases to a format compatible with the new 5E16.2 Software Release. For the EOSBR Method, the evolution of the ODD and ECD databases to a format compatible with the new 5E16.2 Software Release is done on site via a Lucent supplied SUN Blade Workstation.

After the dump is made, RC activity should be minimized.

- Any critical recent changes made after the final database dump will temporarily impact service (e.g., E911 and other critical services) while these changes are being reapplied during the RC reapplication process after the SwitchForward. In the case of the EOSBR Method, RC activity can remain normal until the final database dump. Double logging does not start until the final dump.
- For non-VCDX Tape Based offices with greater than 3000 Recent Changes, an optional service known as OFFRCR can be performed at -2 days. This allows for off-site application of all recent changes made since the database dump. Any critical recent changes made after OFFRCR will temporarily impact service (e.g., E911 and other critical services) while these changes are being reapplied during the RC reapplication process after Switchforward.

2.3.3.2 Recent Change (RC) and Customer Originated Recent Change (CORC) Evolution and Reapplication

RCs and CORCs entered after the final database dump is performed must be logged for reapplication to the new Software Release. A process known as double-logging is activated automatically upon completion of the database dump. The "logged" RCs and CORCs are evolved for reapplication to the new Software Release.

RC/CORC evolution occurs automatically at the end of each ODD Backup during the double logging interval. Evolution can be requested manually (CNVT:CORCLOG and CNVT:RCLOG) to reduce the evolution time on the Night-of-Retrofit for offices processing large numbers of RC/CORCs.

For more detailed information refer to the RC/CORC Evolution and Reapplication Section 3.15.

2.3.3.3 Trunk Status Information

Trunk Status Mapping (TSM) is an automatic retrofit tool which maps OOS trunk data across the Software Release. The tool is initially run during preconditioning to encourage office personnel to restore any CADN-OOS trunks prior to performing the database dump. If these trunks are put INSERVICE after the database dump, they will be returned to the CADN-OOS state during the Switchforward Stage on the Night-of-Retrofit.

TSM runs again in the Proceed Stage on the Night-of-Retrofit to build a file containing the current list of OOS trunks. After SwitchForward, during the POSTBOOT Stage, TSM automatically runs to build a file containing a list of OOS trunks on the new software release. TSM compares the "old release" OOS list with the "new release" OOS to generate two trunk status reports: OOS Summary and CADN Summary.

The OOS Summary identifies trunks that were OOS prior to Switchforward but are INSERVICE on the new Software Release. This occurs when trunks that were INSERVICE at the time of the database dump are later removed from service (usually due to hardware faults). These faulty trunks can be removed from service by running the TSMRMV tool.

The CADN Summary identifies trunks that were INSERVICE prior to SwitchForward but are OOS-CADN on the new Software Release. This usually occurs when trunks that were OOS-CADN at the time of the database dump are later put INSERVICE. Technicians can use the RST:TRK command to restore the trunks.

For more detailed information refer to the Trunk Status Information Section 3.14.

2.3.4 OSPS IMPACT

The Operator Services Position System (OSPS) Administrative Processor (OAP) requires preloading new release software while still on the old release to support the Retrofit to the new release. To order the 5E16.2 application software, use J-drawing J5D008Y-3 List 9 equipped with M14. The procedure for loading the application software is packaged with the software.

For more detailed information regarding the OAP growth procedures, refer to 250-570-115J2, *OSPS Administrative Processor Maintenance and Growth Procedures*. For additional information refer to the *SUN*¹ owners manuals and installation manuals.

Offices will need to upgrade their RAF/SAS firmware prior to activating SFID 275 (Feature Interactions with 10-digit Dialing Plans) or 198 (Local Number Portability NPA-NXX Growth). The RAF/SAS firmware supports a new phrase ID of 178 (Pre-Query Screening for OHD Triggers) for the RAF application to be added on Recent Change View 8.63. Offices activating SFIDs 275 or 198 without the RAF/SAS upgrades could experience RAF/SAS LOW LEVEL FIRMWARE ERROR interrupts. Enough of these interrupts occurring could result in the RAF/SAS going OOS.

The RAF/SAS firmware upgrades for SFIDs 275 and 198 are shown in Table 2-5.

Table 2-5 — RAF/SAS Firmware

Unit	Circuit pack	Upgrade
RAF	TN1053	MC5D142A3,
SAS	TN1053	108065137 (10MB)

The OSPS services and their associated standard RAF/SAS firmware are shown in Table 2-6. For Toll and Assistance, some customers may have RAFs or Service Announcement Systems (SAS) which support custom firmware or flashcards. Questions on custom firmware or flashcards should be directed to regional coordinators or account representatives.

1. Registered trademark of Sun Microsystems, Inc.

Table 2-6 — RAF/SAS Firmware

OSPS FEATURE	5E14 or 5E15	5E16.2
DA	MC5D087A1, List 4	MC5D087A1, List 4
	MC5D087A1, List 4	MC5D087A1, List 4
800DA	MC5D144A1, List 11	MC5D144A1, List 11
T&A	MC5D114A4, List 21 (TN1053)	MC5D114A4, List 21 (TN1053)
	MC5D172A2, List 26 (TN1054)	MC5D172A2, List 26 (TN1054)

2.3.5 PINNACLE ACD/MIS OFFICE IMPACT

The *PINNACLE* Automatic Call Distributor (ACD) / Management Information System (MIS) processors need to be upgraded to the following software levels before the *5ESS* switch retrofits to the new Software Release. This includes any Audio Interface Unit (AIU) or MIS processor regardless of the platform.

Note: Without these software packages, RC/VFY functionality will be limited when the switch initializes on the new Software Release. These packages can be loaded prior to the Retrofit. If you need assistance, please contact your regional customer service representative.

- ACD/MIS Release 14.0 must be loaded prior to Retrofitting to the 5E16.2 Software Release in any offices having AIU/MIS.

Reference the following documentation for the procedures to perform the upgrades:

- 475-550-136, *PINNACLE ACD Installation Upgrade Guide for Sun Computers.*
- 475-550-107, *PINNACLE ACD/MIS Application Initial Installation/Upgrade Guide.*

2.3.6 AP SOFTWARE IMPACT

If your office is equipped with an Application Processor (AP), the ACP, BCP, and TMS-5 software versions must be compatible with the new *5ESS* Switch Software Release. The compatible versions for the 5E16.2 Software Release are as follows:

SOFTWARE PKG.	COMPATIBLE VERSION
Advanced Communications Package (ACP)	Module 10
Basic Communications Package (BCP)	Module 10
Telecommunications Management System (TMS-5)	Interim Module

The Applications Processor must be running on these versions before the Retrofit to 5E16.2.

If your AP is not equipped with the compatible software versions, it must be upgraded. If an upgrade is necessary to any of the AP software packages, allow approximately **8 weeks** for planning, engineering, and installation. Any AP version upgrades should be started at **-9 weeks** and completed prior to the SYS_VFY Stage.

2.3.7 OS IMPACT

The operating company is responsible for verifying that the new *5ESS* Software Release is compatible with the Software Releases for all Operations System (OS) facilities connected to this office. Table 2-7 contains a Lucent Technologies OS Software Release summary to use as a guideline.

For more complete information regarding OS compatibility with the 5E16.2 Software Release, refer to 235-700-100, *Interface Compatibility Guide*.

Table 2-7 — Compatible 5ESS Switch OS Software Releases

OS	SOFTWARE RELEASE
	5E16.2
NETPARTNER®	1NP3.1
NETPARTNER	BILLDATS II Release 6.3
TDM	TDM R4.2
MACSTAR ^a I System	MAC 9.2
LoopCare	R2.1
NetMinder NTP	9.1
NetMinder NTM	Net 12
PREDICTOR (ALIT)	Gen. 9/10
RMAS/OM-SP	A product purchased by RAM Tech Corp. with deployment of MAC9.2 there will be no need to have RMAS as the FE.
MTS	2.1.1.3
SES	2SE5.6
Navis Network Fault Manager (NFM)	13.0
Navis Voice Activation Manager (NVAM)	9.0
a. Registered trademark of Comtech Corp.	

2.3.8 SERVICE IMPACT

2.3.8.1 Overview

The following assumptions can be made regarding the impact on service during the Retrofit:

- a. The disk subsystem will be simplex for 8 to 10 hours during the Retrofit procedure. This time is determined by several factors: MHD load time during the Enter Stage, and the duration of the acceptance testing in the Soak Stage.
- b. All SMs will be simplex for 2 to 4 hours during the Retrofit procedure.
- c. A subset of line and trunk RC forms and all CORCs will be carried over (evolved) to the new Software Release. See Section 3.15, RC/CORC Evolution and Reapplication. Recent Change Updates will be inhibited throughout the Retrofit implementation interval. The CORCs will be inhibited briefly prior to the SwitchForward.

Recent changes will be applied at a rate of approximately 400 to 800 per hour using the RC batch insert mechanism. Reapplication time is dependent on the complexity of the RC view to be applied, the number of RCs to be applied, and the amount of traffic.

The CORCs will be applied at a rate of approximately 4,000 to 5,000 per hour depending on office size and equipage.

d. During the AM and/or SM Switch Forward:

- Calls maintained over the switch to the new Software Release are those 2-port calls in the talking state of the following types:
 - Analog line calls (voice or data).
 - Analog or digital trunk calls (for DCS, trunk calls will **NOT** be preserved over the Switch Forward).
 - Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) circuit-switched voice and data calls.
 - ISDN Primary Rate Interface (PRI) circuit-switched voice and data calls.

All other calls will be routed to reorder. Packet switched calls are not saved during the initialization on the new Software Release. All calls that are saved can only disconnect. They cannot activate features and cannot be billed.

- Transient call processing will be suspended for a short period of time. ISDN call processing may not be available for a longer period of time depending on equipage. New originations will be routed to reorder.
- All pending billing data residing in buffers which have not been written to disk will be lost. Billing data for stable calls will be lost.
- All pending traffic and plant measurement data will be lost.
- Out-Of-Service (OOS) status for all faulty equipment will be lost. Lists dumped during the Postboot Stage can be used to manually remove the previous OOS equipment after the system recovers.
- For each GSM with a duplex CCS link configuration, the CCS links will be simplex during the GSM switch forward for up to 5 minutes.

2.3.8.2 ACSR Customer Notification

All Automatic Customer Station Rearrangement (ACSR) customers will be impacted by the transition and therefore should be notified in advance. The ACSR feature is inhibited from the Begin Stage until the End Stage. When notified, advise the customers of the date of your upcoming Retrofit so they can adjust their schedules accordingly. They should not move their terminal equipment (i.e. use ACSR) on the day or the weekend of the Retrofit.

2.3.9 BILLING RECORD CHANGES

Check with your billing center to see if they are already processing billing records from other sites currently on the new Software Release. If not, the AMA Test Tape and companion document may be ordered and given to the billing center. The tape contains test records of the different call types and structure codes supported on the new Software Release. If the billing center can read and process the test tape, then they will also be able to process the real data from the site after the Retrofit.

2.3.10 TECHNICIAN IMPACT

The 5E16.2 Software Release provides several areas of change that affect technician interaction with the switch. These changes are necessary to accommodate new features and capabilities available with this Software Release. Areas that are affected include:

- Master Control Center (MCC) Pages

- Input and Output messages
- Recent Change and Verify (RC/V) views
- New terms.

MCC PAGES

With the 5E16.2 Software Release, there are new MCC pages, changed pages, and others that remain the same as in previous Software Releases. Refer to 235-105-110, *System Maintenance Requirements and Tools*, for more information on the MCC page displays that are new or changed for the 5E16.2 Software Release.

Input and Output Messages

Another area of change is the Input/Output (I/O) messages. Some 5ESS switch I/O messages will be impacted by the Retrofit to the new Software Release. To become familiar with any differences in input and output messages before the Retrofit, refer to *each feature's* Maintenance Section in 235-190-400, *Feature Descriptions*.

For a complete definition of I/O messages, refer to 235-600-700, *Input Messages Manual* and 235-600-750, *Output Messages Manual*.

Recent Change and Verify (RC/V) Views

The RC/V subsystem provides new RC/V views to support the new and modified features and capabilities for the 5E16.2 Software Release. Refer to the Lucent Technologies RC/V manual 235-118-258, *Recent Change References – 5E16.2* for more information on the 5E16.2 Software Release:

New Terms

With the availability of new features, new terms and concepts are introduced. Refer to the following document for information on new features:

- 235-190-400, *Feature Descriptions*.

2.4 OFFICE PREPARATION AND SUPPORT

2.4.1 IDENTIFY OFFICE NEEDS: RETROPRP — SETUP AND HW_PRECHK STAGES

Planners should instruct office personnel to run the first two stages [Setup Stage and HW_PRECHK Stage] of the automated preconditioning procedure, RETROPRP, **at -9 weeks** prior to the scheduled Night-of-Retrofit date. This procedure will identify hardware needs so that necessary hardware can be ordered now.

This procedure replaces any manual commands that were previously run in this planning section to assess hardware needs and identify software problems.

The HW_PRECHK Stage of RETROPRP can be completed in one shift. There are no high risk procedures executed during this stage, so the HW_PRECHK Stage can be run at any time.

Planners should instruct office personnel to read Section 4 to get a general understanding of RETROPRP before starting the procedure.

Once RETROPRP is started from the MCC 1980 Page, the Setup Stage will display the MCC 1989 Options Page.

Note: Only the Setup/HW_PRECHK Stages are needed during this planning interval.

Planners should inform office personnel to select **Y** for the “Run Hardware Pre-Check Only” option on the MCC 1989 Page.

Setting the “Run Hardware Pre-Check Only” option to **Y** on the MCC 1989 Procedure Options Page will instruct RETROPRP to execute the HW_PRECHK Stage and then completely exit from the RETROPRP Procedure. In order to repeat the HW_PRECHK Stage, the user will need to re-start RETROPRP from the 1980 page, as though running RETROPRP for the first time.

SYS EMER OVERLOAD	CRITICAL SYS INH	MAJOR AM	MINOR AM PERPH	BLDG/PWR OS LINKS	GLB FUNC SM	CKT LIM CM	SYS NORM MISC
CMD< █							
3XX - CLEAR OPTION XX				4XX - CHANGE OPTION XX		500 - RESUME	
XX = OPTION NUMBER							
CONFIGURE OPTIONS AND USE RESUME TO CONTINUE							
Retrofit Method	01.						
Target Release	02.162						
Run Hardware Pre-Check Only	03.Y						
Data Dump Destination	04.MTO						
	05.						
	06.						
	07.						
	08.						
	09.						
	10.						
	11.						
	12.						

<

Figure 2-2 — Sample RETROPRP — MCC 1989 Procedure Options Page

Users **MUST** follow all instructions given during the implementation of RETROPRP.

At -9 weeks run the RETROPRP Setup Stage and the HW_PRECHK Stage only. **DO NOT CONTINUE PAST THE HW_PRECHK STAGE AT THIS TIME !**

Use the results from the HW_PRECHK Procedure to order needed equipment and identify software problems at this time.

The HW_PRECHK Stage can be repeated as hardware is installed and database problems are resolved to assist in identification of additional hardware or software issues.

At -2 weeks RETROPRP will be started *with the Run Hardware Pre-Check Only option set to N* in the Setup Stage. With this option set to **N** the RETROPRP Procedure will complete the Setup Stage, run the HW_PRECHK Stage, and then continue into

the SYS_VFY Stage upon completion of the HW_PRECHK Stage. At this point, **the user should be following the instructions from the online RETROPRP procedure until the successful completion of RETROPRP at -1 day.**

At -9 weeks, advise office personnel to go to Section 4 to start RETROPRP, run the Setup Stage and the HW_PRECHK Stage ONLY.

2.4.2 CRITICAL ITEM LIST

Table 2-8 contains a listing of preconditioning items that are critical to performing a Software Release Retrofit from 5E14 or 5E15 to 5E16.2. The operating company has responsibility for ensuring that all items listed in Table 2-8 have been performed for the Retrofit.

Table 2-8 — 5E16.2 Retrofit Critical Item List

ITEM	INFORMATION
Ensure required Hardware on switch	On-Switch Hardware Audit performed during RETROPRP — HW_PRECHK STAGE.
Ensure error-free ECD Database	On-Switch ECD Audit performed during RETROPRP — HW_PRECHK STAGE.
Ensure ODD critical relations are error-free	ODD Retrochk tool performed during RETROPRP — HW_PRECHK STAGE.
Ensure office has sufficient AM/CM/SM Memory	Refer to the output from the memory forecasting tool performed during RETROPRP — HW_PRECHK STAGE.
Ensure office has proper Disk Equipage and Configuration.	Refer to instructions given during RETROPRP — HW_PRECHK STAGE.
Run OP:RETROCHK	Performed during RETROPRP — HW_PRECHK STAGE
Ensure successful AM off-line boot	AM Off-line Boot performed during RETROPRP — SYS_VFY and FINAL_PREP STAGE.
Ensure successful SM off-line pump	SM off-line pump performed during RETROPRP — SYS_VFY STAGE.
Ensure ATP Diagnostics on CUs/MHDs/DFCs/MSGs/MCTSIs/BTSR/ONTC/CMPs	Performed during RETROPRP — SYS_VFY STAGE.
Tape Unit	At least one tape unit is required, Model 35470A, NCR Specification NCR006-3503341/60, Rev. A.
Blank Tapes	Refer to J5D008T-1 (latest issue)
Software Update Level	Obtain latest Retrofit Notes for current SU information. (Refer to Section 1.7 for procedure).
5E16.2 Documents	235-001-001, <i>Documentation Description and Ordering Guide</i>
5E16.2 Text and ODD/ECD Data	[Tape Based or EOSBR] STR Tape containing Text and ODD/ECD. [NBR] Text and ODD/ECD via ASM. [OSDE] Text via ASM, (ODD/ECD evolved on Night-of-Retrofit).
[ASM Equipped Only] Ensure ASM-to-5E connectivity	Performed during RETROPRP HW_PRECHK and SYS_VFY Stages.

Table 2-8 — 5E16.2 Retrofit Critical Item List (Contd)

ITEM	INFORMATION
[DRM Offices Only] Ensure that the Appendix A1, Distinctive Remote Module Retrofit work has been done prior to starting the DRM Node Implementation.	Refer to Appendix A1, Distinctive Remote Module Retrofit. This section must only be used to perform a 5E14 or 5E15 Software Release upgrade of a DRM switching complex Node.
SUN Blade Workstation	[EOSBR] Generates STR Tape containing text and ODD/ECD.
Retrofit Notes	Obtain latest Issue. (Refer to Section 1.7 for procedure).
Foreign Exchange Lines	There must be at least two FX lines in the central office. A third FX line is required for offices using the EOSBR Method. There should also be one at each remote site and at least one FX for each NXX in the office. These FX lines are for use on the day of the Retrofit.

2.4.3 SOFTWARE UPDATE AND CN LEVELS

The office must attain a level of Software Updates (SUs) and hardware Change Notices (CNs) to ensure a successful Retrofit. In general, SU application should be finished before the database dump. Offices must be at the SU level indicated in the Software Update Compatibility Notice before the dump. Contact the SUMS Center or access the web at <https://support.lucent.com/portal/olcsHome.do> to obtain current information about the minimum requirements. If any additional SUs, CFTs, or TMPs are needed after the dump, contact the SUMS center to determine if these can be loaded into your office. If inappropriate updates (SU, CFTs or TMPs) are loaded, there is a possibility that critical fixes will be overwritten.

2.4.4 GROWTH ITEMS

All required growth must be completed before the database dump so that any database errors introduced by the growth can be detected and corrected. If any units (other than exceptions listed below) are in a growth state at the database dump, these units will cause initialization problems on the new software generic and will be OOS after the ODD evolution.

Some hardware units are allowed to be in the "growth" state without jeopardizing the Retrofit.

For example, the CNI-UCB forms (UNODS, UNQD, RPCD) and the Module Message Processor (MMP) Synchronous Data Line Controller (SDLC) can be in one of three states: operational, growth, or special growth. The MMP SDLC may be in a growth state and the office Retrofitted. For offices with a CM3, the TMS links can be in the growth state. For offices with a CNI, the signaling links can be in the growth state.

If any units other than the above mentioned units are in any growth state (that is, unequipped, grow, special grow, etc.), there are two available options:

1. Make the unit fully operational.

2. Degrow the unit.

Use 235-105-231, *Hardware Change Procedures - Growth*, and 235-105-331, *Hardware Change Procedures - Degrowth*, for any required unit growth and/or degrowth.

2.4.5 TAPE DRIVE

One tape drive is required to perform a Retrofit. The tape drive will be used for writing the database dumps to tape and for reading in the new Software Release Text, ODD and ECD for the Tape Based and EOSBR Retrofit Methods.

A functioning tape drive is also required for writing backup tapes which can be used in the event of recovery.

2.4.6 TEST LINES

At least one test line per SM should be defined in the office database before the database dump takes place. These lines should be single-party lines. Do not use multiline hunt lines.

As a further check, every exchange in the office should be tested.

2.4.7 FX LINES

Two Foreign Exchange (FX) lines are mandatory for the central office on the Night-of-Retrofit. Lucent Technologies cannot give total support to its customers without them. The FX lines are used for voice and data (ROP) communication with off-site support centers during the Retrofit. One FX line should also be supplied for each remote site [that is, Remote Switching Module (RSM), Multimodule Remote Switching Module (MMRSM), Optically Remote Module (ORM), etc.]. For offices using the EOSBR Method, an additional FX line is required for modem access to the SUN Blade Workstation. Lucent will access the workstation to perform the ODD/ECD evolution and make the STR tape containing the 5E16.2 text and evolved ODD/ECD.

Plans should be made now to have these lines available before the Retrofit.

Data sets may be required to support any FX lines. The following data set, adapter, and cable (or equivalents) may be used:

- ITE-6134 212AR data set.
- ITE-9839A Adapter for 212A data set.
- ITE-8962 Read-only printer data cable.

8.32 CONVERT SCSI MOVING HEAD DRIVE ECD TO 2GB

OVERVIEW

Beginning with the 5E16.2 release, both the primary and secondary Moving Head Drive (MHD) disk pairs (RT0 -- MHDs 0 & 1 and RT1 -- MHDs 2 & 3) will utilize a two gigabyte (2GB) Volume Table of Contents (VTOC). Also optional disk pairs that have a physical size of 2GB or greater may have their Equipment Configuration Database (ECD) converted to allow installation of a 2GB VTOC. Any Software Backup Disks (MHDs 14 and/or 15) in the office also **MUST** have their ECD modified to accept a 2GB VTOC. If this procedure is being executed for MHDs 0 & 1, then MHDs 14 and 15, if present and targeted for continued use as software back up, also **MUST** be modified.

Note: In this procedure, you are preparing MHDs 2 and 3 to accept a 2GB VTOC. It is not until the Retrofit is performed that a 2GB VTOC actually will be used. ***The op:version command reports the VTOC currently in use.*** This means that if you execute this command on 5E14 or 5E15, even after performing the MHD ECD changes, the output of op:version will still display a 2010 configuration. It is not until you Retrofit to 5E16.2 that op:version will display a configuration of 2020.

The following procedure must be performed prior to a 5E16.2 Retrofit. During a Retrofit to 5E16.2, 2GB VTOCs will be installed on the secondary disk pair. This may only be performed after the Unit Control Block (UCB) of the secondary disk pair's ECD has been converted to reflect equipage and diagnostic values corresponding to a size of 2GB.

This procedure also must be performed on any existing optional disk pair for which 2GB VTOCs are desired. Once the optional disk pair ECD has been converted to reflect 2GB values, the pair may then undergo a Disk Reconfiguration procedure to install actual 2GB VTOCs.

Conversion of MHD ECDs to 2GB must be performed a pair at a time. That is, if MHD2 is targeted for conversion, MHD3 must be converted within the same procedure interval. Similarly, if an optional disk pair is targeted for conversion, both members of that mated pair must be converted one after the other in the same procedure interval.

Two methods (METHOD 1 or METHOD 2) may be used to update the Equipment Configuration Database (ECD) to convert a SCSI MHD to make it 2GB VTOC compatible for 5E16.2.

METHOD 1 is the Extended Remote Technical Service (ERTS) named "UCB-Doctor: Pre-5E16.2 1GB to 2GB Disk-Reconfiguration". This new "mechanized delivery service" is available (for a cost) and can be used to update the ECD values for a MHD to make it 2GB VTOC compatible for 5E16.2.

This simple to use service requires much less time to perform and may be used outside the maintenance window. It lessens customer risk by eliminating MHD simplex time, as well as saves the customer time and money. A down-loadable file for this service is available through Lucent NARTAC with the purchase of the "UCB-Doctor: Pre-5E16.2 1GB to 2GB Disk-Reconfiguration" ERTS. A customer Purchase Order number is required to purchase this ERTS.

The service provides access to the service and instructions. When executed, it will update the ECD values for a specified MHD without removing it from service, providing the equipped MHD hardware size is sufficient.

Note: If the MHD is not of sufficient size the tool will report accordingly. The MHD hardware will need to be replaced by following the files output message and then this file will need to be re-executed. Command usage is provided in the necessary documentation.

MHDs 2 & 3 and any optional disk pairs targeted for 2GB VTOCs must physically be at least 2GB in size.

PROCEDURE

8.32.1 Method 1 – ERTS

1. Request the “UCB-Doctor: Pre-5E16.2 1GB to 2GB Disk-Reconfiguration” ERTS from NARTAC.
2. Run the ucdoctor tool using the instructions provided.

8.32.2 Method 2 – Manual

Caution: This procedure should be performed in its entirety, during off-peak hours.

It is necessary to simplex the secondary disk pair when modifying the ECD of each. The chances of a service-impacting outage, though small, are increased whenever disk pairs are simplexed. Performing this procedure in its entirety and with minimal interruptions lessens the time during which the secondary disks are operating in simplex mode while each mate is out-of-service (OOS) and having its ECD updated.

Note: Doubling the size of a disk’s VTOC from 1GB to 2GB effectively doubles the restoration time of the drive. 2GB of space is *required* in the 5E16.2 release on the base disk pair and the secondary disk pair to accommodate feature and memory requirements. Optional drive pairs that are physically 2GB or greater *may* be reconfigured to have 2GB VTOCs and double their previous storage capacity, but this should be done as needed and keeping in mind the doubled restore time for each disk in a targeted pair.

8.32.2.1 Verify the Drive Capacities

1. Verify the drive capacities by viewing the KS and listing numbers for a drive on the ROP. To view the KS and listing numbers, at the MCC or STLWS, enter message:

Enter MCC MSG: **OP:MHD=x,INFO**

Where: x = MHD number of each of the office’s disk drives

Table 8.32-1 — MHD Equipage ECD Values

Circuit pack #	KS List #	Physical size	equipage	mv
UN375, UN375B	KS23908L20	1GB	0x10	0x3
UN375C	KS23908L21	1GB	0x10	0x3
UN375D	KS23908L30	2GB	0x11	0x13*
UN375E	KS23908L41	4GB	0x11	0x13*
UN375F	KS23908L50	9GB	0x11	0x13*
UN375G	KSST373207LW	73GB	0x11	0x13*

* This table assumes the presence of Disk File Controller version3 (DFC3) in the AM (circuit pack code=UN580, u_model=9). In the presence of a DFC2 (circuit pack code=UN373, u_model=8), the MHD mv value is 0x12.

Table 8.32-1 shows MHD circuit pack numbers, "KS" serial and listing numbers, corresponding disk physical sizes (based upon the listing numbers), and UCB view *equipage* and *mv* values necessary to designate the maximum storage capacity of the disk drives. It is the *equipage* and *mv* values that determine disk capacity within the constraints of the actual disk size. In other words, a disk drive may have an actual physical size of 4GB, as determined by the KS and listing number, but may only have a capacity of 2GB as determined by the *equipage* and *mv* UCB values in the device's ECD. VTOCs in excess of 2GB are not available at this time.

Note that, even though a disk's physical size may exceed 2GB, the maximum allowable VTOC size is 2GB and the *equipage* and *mv* values are necessary to enforce this. Also, simply using *equipage* and *mv* values corresponding to a 2GB size on a 1GB device will not expand the device size or storage capacity, but will cause diagnostic and disk restore failures.

8.32.2.2 Identify DFC u_model Field

Invoke Incore Data Base Low-level Recent Change and Verify. The following steps will enter RCV in Review mode to identify the **u_model** of the DFC in this office.

1. Locate a Supplementary Trunk & Line Workstation (STLWS) and ensure that it is in CMD mode (cursor in upper left-hand corner of screen).
2. Type and enter command **199** to enter the ECD
Response: **RCV ECD Parameter info** view displayed. Cursor at **database_name:** attribute.
3. Type and enter: **incore**
Response: Cursor at **reviewonly:** attribute.
4. Type and enter: **y**.
Response: Cursor at **journaling:** attribute
5. Type and enter: *****
Response: **executing... VIEW EXECUTED**. Cursor at **Enter Form Name:** attribute.
6. Enter the Unit Control Block (ucb) view. Type and enter: **ucb**

- Response: Blank ucb view displayed with field names.
7. Type and enter two CARRIAGE RETURNS until the cursor is at field number 3, **k_unit_name**. Type and enter: **DFC**
Response: Cursor moves to field 4, **k_unit_number**
 8. Type and enter: **0**. (DFC1 will be of the same vintage as DFC0 and will have a *u_model* value identical to DFC0.)
Response: Remaining fields get filled in. **Enter Review, Validate, screen#, or Print:**
 9. Type and enter: **4** to move to screen number 4.
Response: Screen number 4 is displayed.
 10. Note the value of field number 66, the *u_model* field. If the number is **9**, then any MHD subunits should have their *equipage* value set to **0x11** and their *mv* value set to **0x13**. If the number is **8**, then any MHD subunits should have their *equipage* value set to **0x11** and their *mv* value set to **0x12**. Note the appropriate *equipage* and *mv* values. These will be used in the following section.
 11. To exit RCV, at the **Enter Review, Validate, screen#, or Print:** prompt, type and enter: **<**
Response: **Enter Form Name:**
 12. Type and enter: **<**
Response: RCV is exited. STLWS screen is back to normal with cursor at the CMD prompt.

8.32.2.3 Remove even-numbered MHDs

The following steps will enter RCV in Update mode to modify the *equipage* and *mv* values for MHD2, or any even-numbered optional drives targeted for reconfiguration to a 2GB VTOC (MHD4, MHD6, etc.).

1. At the STLWS, toggle the input mode from "CMD" to "MSG" mode. (Cursor is now at the bottom of the screen.)
2. At the STLWS, remove the MHD about to be converted by typing and entering:
RMV:MHD=x;
Response: **RMV MHD x Started**
RMV MHD x Completed
Where: x = MHD2 or a targeted even-numbered optional MHD.
3. At the STLWS, toggle the input mode from "MSG" to "CMD" mode.
4. Poke MCC Page **123** to confirm removal of MHDx.

8.32.2.4 Invoke Incore Data Base Low-level Mode Recent Change and Verify

Enter the ECD and prepare a transaction block.

1. Type and enter command **199**

- Response: **RCV ECD Parameter info** view displayed. Cursor at **database_name:** attribute.
2. Type and enter: **incore**
Response: Cursor at **reviewonly:** attribute.
 3. Type and enter: **n**
Response: Cursor at **journaling:** attribute.
 4. Type and enter: *****
Response: **executing... VIEW EXECUTED.** Cursor at **Enter Form Name:** attribute.
 5. Prepare transaction block. Type and enter: **trbegin**
Response: **Transaction Begin** view displayed. Cursor moves to **tr_name:** attribute.
 6. Press **CARRIAGE RETURN.**
Response: **Enter Execute, Change, Substitute, Validate, or Print:**
 7. Type and enter: **e**
Response: **executing... VIEW EXECUTED.** Cursor at **Enter Form Name:** attribute.

8.32.2.5 Update the Even-Numbered MHD *equipage* and *mv* Fields.

1. Type and enter: **ucb**
Response: **Enter Database Operation. I=Insert R=Review U=Update D=Delete:**
2. Type and enter: **u**
Response: Cursor at **k_complex_name:** attribute.
3. Press **CARRIAGE RETURN.**
Response: Cursor at **k_complex_number:** attribute.
4. Press **CARRIAGE RETURN.**
Response: Cursor at **k_unit_name:** attribute.
5. Type and enter: **MHD**
Response: Cursor at **k_unit_number:** attribute.
6. Type and enter: **2**. If updating an even-numbered optional drive, enter its number.
Response: **System completes remainder of view. Enter Update, Change, Substitute, Validate, Screen#, or Print:**
7. Type and enter: **c**
Response: **Change Field:**
8. Type and enter: **22**
Response: Cursor moves to **equipage:** attribute.
9. Type and enter: **0x11**

- Response: **Change Field:**
10. Type and enter: **27**
Response: Cursor moves to **mv:** attribute.
 11. Type and enter the appropriate value saved from the previous RCV review of DFC equipage: **0x13** for a 2GB VTOC in the presence of DFC3 or, **0x12** for a 2GB VTOC in the presence of DFC2.
Response: **Change Field:**
 12. Press **CARRIAGE RETURN**
Response: **Enter Update, Change, Substitute, Validate, Screen#, or Print:**
 13. Type and enter: **u**
Response: **updating... VIEW UPDATED.** Cursor moves to **k_complex_name** attribute.
 14. End the transaction. Type and enter: **<**
Response: Cursor at **Enter Form Name:** attribute.
 15. Complete the transaction. Type and enter **:trend**
Response: Transaction End view displayed. Cursor at **tr_name:** attribute.
 16. Press **CARRIAGE RETURN.**
Response: Cursor at **dis_cf_checks:** attribute.
 17. Type and enter: *****
Response: **executing... VIEW EXECUTED**
If RCV errors were encountered, seek technical assistance. Otherwise, continue with the next section and copy the incore ECD changes to the root database.

8.32.2.6 Copy the Incore Changes to the Root Database

1. At the terminal on which the ECD is still being accessed, type and enter:**activate** at the **Enter Form Name:** attribute prompt.
Response: **activate view** with cursor at **copy_inc_to_disk:YES**
2. Press **CARRIAGE RETURN.**
Response: **Enter Execute, Change, Substitute, Validate, or Print:**
3. Type and enter: **e**
Response: **executing... VIEW EXECUTED.** Cursor at **Enter Form Name:** attribute.
4. Type and enter: **<**
5. At the STLWS, toggle the input mode from "CMD" to "MSG" mode. (Cursor is now at the bottom of the screen.)
6. At the STLWS, restore the even-numbered MHD just converted by typing and entering:
RST:MHD=x;
Response: **RST MHD x Started**

RST MHD x Completed

Where: x = MHD2 or the targeted even-numbered optional MHD.

At the STLWS, toggle the input mode from "MSG" to "CMD" mode. Poke Page 123 to monitor the restoration of MHDx to the ACTIVE state.

WARNING: Do not continue until the even-numbered MHD is restored!

Once the even-numbered MHD has been restored to service, its odd-numbered mate may be converted.

8.32.2.7 Modify ECD for Odd-Numbered MHD

The following steps will enter RCV in Update mode to modify the *equipage* and *mv* values for MHD3 or any odd-numbered optional drives targeted for reconfiguration to a 2GB VTOC (MHD5, MHD7, etc.).

1. At the STLWS, toggle the input mode from "CMD" to "MSG" mode. (Cursor is now at the bottom of the screen.)
2. At the STLWS, remove the MHD about to be converted by typing and entering:

RMV:MHD=x;

Response: **RMV MHD x Started**

RMV MHD x Completed

Where: x = MHD3 or a targeted odd-numbered optional MHD that is the mate of the even-numbered MHD just converted.

3. At the STLWS, toggle the input mode from "MSG" to "CMD" mode.
4. Poke MCC Page **123** to confirm removal of MHDx.

8.32.2.8 Invoke Incore Data Base Low-level Mode Recent Change and Verify

1. Type and enter command: **199**
Response: **RCV ECD Parameter info** view displayed. Cursor at **database_name:** attribute.
2. Type and enter: **incore**
Response: Cursor at **reviewonly:** attribute.
3. Type and enter: **n**
Response: Cursor at **journaling:** attribute.
4. Type and enter: *****
Response: **executing... VIEW EXECUTED.** Cursor at **Enter Form Name:** attribute.
5. Prepare transaction block. Type and enter: **trbegin**
Response: **Transaction Begin** view displayed. Cursor moves to **tr_name:** attribute.
6. Press **CARRIAGE RETURN.**
Response: **Enter Execute, Change, Substitute, Validate, or Print:**

7. Type and enter: **e**
Response: **executing... VIEW EXECUTED.** Cursor at **Enter Form Name:** attribute.

8.32.2.9 Update the Odd-Numbered MHD *equipage* and *mv* Fields.

1. Type and enter: **ucb**
Response: **Enter Database Operation. I=Insert R=Review U=Update D=Delete:**
2. Type and enter: **u**
Response: Cursor at **k_complex_name:** attribute.
3. Press **CARRIAGE RETURN.**
Response: Cursor at **k_complex_number:** attribute.
4. Press **CARRIAGE RETURN.**
Response: Cursor at **k_unit_name:** attribute.
5. Type and enter: **MHD**
Response: Cursor at **k_unit_number:** attribute.
6. Type and enter: **3.** If updating an odd-numbered optional drive, enter its number.
NOTE: If MHD2 was updated in the previous update step, MHD3 should now be updated. In general, disk drives should be updated in pairs: MHD5 with MHD4.
Response: **System completes remainder of view. Enter Update, Change, Substitute, Validate, Screen#, or Print:**
7. Type and enter: **c**
Response: **Change Field:**
8. Type and enter: **22**
Response: Cursor moves to **equipage:** attribute.
9. Type and enter: **0x11**
Response: **Change Field:**
10. Type and enter: **27**
Response: Cursor moves to **mv:** attribute.
11. Type and enter the appropriate value saved from the previous RCV review of DFC equipage: **0x13** for a 2GB VTOC in the presence of DFC3 or, **0x12** for a 2GB VTOC in the presence of DFC2.
Response: **Change Field:**
12. Press **CARRIAGE RETURN**
Response: **Enter Update, Change, Substitute, Validate, Screen#, or Print:**
13. Type and enter: **u**
Response: **updating... VIEW UPDATED.** Cursor moves to **k_complex_name** attribute.
14. End the transaction. Type and enter: **<**

- Response: Cursor at **Enter Form Name:** attribute.
15. Complete the transaction. Type and enter: **trend**
Response: Transaction End view displayed. Cursor at **tr_name:** attribute.
 16. Press **CARRIAGE RETURN**.
Response: Cursor at **dis_cf_checks:** attribute.
 17. Type and enter: *****
Response: **executing... VIEW EXECUTED**. Cursor at **Enter Form Name:** attribute.
If RCV errors were encountered, seek technical assistance. Otherwise, continue with the next section and copy the incore ECD changes to the root database. This will copy the incore ECD out to disk.

8.32.2.10 Copy the Incore Changes to the Root Database

Copying the incore ECD changes to the root database will copy the incore ECD out to disk.

1. At the terminal on which the ECD is still being accessed, type and enter: **activate** at the **Enter Form Name:** attribute prompt.
Response: **activate view** with cursor at **copy_inc_to_disk:YES**
2. Press **CARRIAGE RETURN**.
Response: **Enter Execute, Change, Substitute, Validate, or Print:**
3. Type and enter: **e**
Response: **executing... VIEW EXECUTED**. Cursor at **Enter Form Name:** attribute.
4. Type and enter: **<**
5. At the STLWS, toggle the input mode from "CMD" to "MSG" mode. (Cursor is now at the bottom of the screen.)
6. At the STLWS, restore the odd-numbered MHD just converted by typing and entering:
RST:MHD=x;
Response: **RST MHD x Started**
RST MHD x Completed
Where: x = MHD3 or the targeted odd-numbered optional MHD that is the mate of the even-numbered drive just converted.
7. At the STLWS, toggle the input mode from "MSG" to "CMD" mode.
8. Poke MCC Page **123** to monitor the restoration of MHDx to the ACTIVE state.
CAUTION: The disk pair being converted will not be duplexed until the odd-numbered MHD is restored.

Once the odd-numbered MHD has been restored to service, the procedure is complete. If the secondary disk pair (MHDs 2 & 3) was converted, they are now ready to accept a 2GB VTOC as part of a Retrofit to 5E16.2. Following a Retrofit to 5E16.2, if an optional disk pair was converted, they may now be reconfigured to accept a 2GB VTOC if desired.

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