

LSMS 6.0 with Eagle STP[®] LNP Database Synchronization Manual

Table of Chapters

Table of Contents

List of Figures

List of Tables

List of Flowcharts

Chapter 1. Introduction

Chapter 2. LNP Database Synchronization Overview

Chapter 3. Choosing a Database Maintenance Procedure

**Chapter 4. Preparing the NE for Non-Manual
Synchronization**

Chapter 5. Managing Resynchronization from the LSMS

**Chapter 6. Auditing and Reconciling Network Elements
from the LSMS**

Chapter 7. Managing Electronic Bulk Load from the LSMS

Chapter 8. Copying One RTDB from Another RTDB

**Chapter 9. Distributing the LNP Database after LSMS-Based
Operation or RTDB Copy**

Chapter 10. Manual LSMS-to-NE Bulk Loading

**Chapter 11. Preparing the Network Element for Manual Bulk
Loading**

Chapter 12. Manual NE-to-NE Bulk Loading

**Chapter 13. Bulk Loading Troubleshooting
and Backout Procedures**

Appendix A. LSMS GUI Messages

Appendix B. Enabling LSMS Audit on ELAP

Appendix C. LNP Database Synchronization Files

Appendix D. Synchronization Performance Estimates

Index

*LSMS Release 6.0 with
EAGLE STP*

LNP Database Synchronization Manual

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Table of Contents

Chapter 1. Introduction

Overview	1-2
Terminology Used in This Manual	1-3
48 Million Numbers Configuration	1-3
Non-48 Million Numbers Configuration	1-3
Compatibility Issues	1-3
Releases Described in This Manual	1-3
Manual Organization	1-4
Related Publications	1-6
Eagle Publications	1-6
LSMS Publications	1-11
Documentation Packaging, Delivery, and Updates	1-12
Documentation Admonishments	1-13
Technical Services and Support	1-14
Emergency Response	1-14
List of Acronyms and Abbreviations	1-15

Chapter 2. LNP Database Synchronization Overview

Introduction	2-2
LSMS Functions	2-3
LNP Configurations	2-7
Supporting Up to 6 Million Ported Numbers	2-7
Supporting Up to 12 Million Ported Numbers	2-9
Supporting Up to 48 Million Numbers	2-13
Supporting Up to 96 Million Numbers	2-13
Summary of Features and Characteristics of LNP Configurations	2-16
Overview of Synchronization Methods	2-17
Resynchronizing LSMS and Network Element Data	2-17
Auditing and Reconciling Network Element Data	2-19
Bulk Loading LNP Data	2-21

Chapter 3. Choosing a Database Maintenance Procedure

Introduction	3-2
Notifications that Database Maintenance Is Required	3-3

Choosing a Synchronization Procedure	3-4
Using Standard Features	3-5
Using Enhanced Bulk Download Features	3-6
Using ELAP LNP Configuration Features	3-7
Understanding Sequence of Procedures to Be Performed	3-9
Chapter 4. Preparing the NE for Non-Manual Synchronization	
Introduction	4-2
Configuring the Hardware and Network for	
BLM-Based or ELAP-Based Operation	4-4
Hardware Configuration of the Network Element	4-4
Network Configuration	4-4
Preparing the NE for BLM-Based or ELAP-Based Operations ..	4-7
Preparing the NE for ELAP-Based Operations	4-7
Preparing the NE for BLM-Based Operations	4-7
Terminal and User ID Requirements	4-8
Canceling the REPT-STAT-CARD Command	4-10
Adding a DCM and BLM for BLM-Based Operations	4-11
Removing the DCM Applied to LSMS BLM-Based	
Operations	4-23
Removing the BLM Applied to LSMS BLM-Based	
Operations	4-27
Preparing a Database Backup Removable Cartridge	4-31
Labeling the Removable Cartridges	4-31
Write-Enabling the Removable Cartridge	4-31
Inserting the Removable Cartridge	4-32
Removing the Removable Cartridge	4-33
Backing Up the Network Element Database	4-34
Chapter 5. Managing Resynchronization from the LSMS	
Introduction	5-2
Required Features	5-3
Features Required for Automatic Resynchronization	5-3
Features Required for User-Initiated Resynchronization	5-3
Automatic Resynchronization Process	5-4
For LNP Databases Containing ELAP LNP	
Configuration	5-4
For LNP Databases Containing Up to 12 Million	
Numbers	5-5
User-Initiated Resynchronization Overview	5-7

Table of Contents

ELAP-Based User-Initiated Resynchronization Overview	5-8
BLM-Based User-Initiated Resynchronization Overview	5-10
Managing User-Initiated Resynchronization from the LSMS	5-12
User-Initiated Resynchronization Procedure	5-12
User-Initiated Resynchronization Log File	5-21
User-Initiated Resynchronization Error Messages	5-23
Chapter 6. Auditing and Reconciling Network Elements from the LSMS	
Introduction	6-2
Types of Data to Audit and Reconcile	6-2
How Records Are Compared During an Audit	6-3
Operator Action at Network Element	6-5
Audit Restrictions	6-6
Required Features	6-8
Audit and Reconcile Overview	6-9
Audit with Reconcile Over Normal Update Connection	6-10
BLM-Based Audit/Reconcile Using Connection to DCM	6-12
Managing Audit from the LSMS GUI	6-15
Audit and Optional Reconcile from the LSMS GUI	6-15
Audit Log File	6-28
Audit Error Messages	6-30
Performing an Audit Using the Command Line	6-31
Chapter 7. Managing Electronic Bulk Load from the LSMS	
Introduction	7-2
Required Features	7-2
Electronic Bulk Load Overview	7-3
Overview of ELAP-Based Bulk Load	7-4
Overview of BLM-Based Bulk Load	7-6
Pre-Bulk Load Checks	7-8
Postpone NPA Splits Procedure	7-9
Managing Electronic Bulk Load from the LSMS	7-9
Electronic Bulk Load Procedure	7-9
Electronic Bulk Load Log File	7-23
Electronic Bulk Load Error Messages	7-25

Chapter 8. Copying One RTDB from Another RTDB	
Introduction	8-2
Copying RTDB from Mated ELAP	8-2
Copying RTDB from ELAP on Remote Mated NE	8-3
Verifying RTDB Status	8-4
Verifying RTDB Status at the Eagle Terminal	8-4
Verifying RTDB Status at the ELAP User Interface	8-5
Procedure to Copy an RTDB from the Mate ELAP	8-9
Procedure Summary	8-9
Copying an RTDB from Mate ELAP, Eagle Release 28.x with ELAP 1.0	8-10
Copying an RTDB from Mate ELAP, Eagle Release 28.x and later with ELAP 2.0/3.0	8-15
Procedure to Copy RTDB from Remote Mated NE	8-21
Copying RTDB from Remote Mated NE, Eagle Release 28.x with ELAP 1.0	8-22
Copying RTDB from Remote Mated NE, Eagle Release 28.x and later with ELAP 2.0/3.0	8-30
Chapter 9. Distributing the LNP Database after LSMS-Based Operation or RTDB Copy	
Introduction	9-2
Automatic Data Distribution	9-2
NE Database Synchronization After Copying RTDB from Mate ELAP	9-2
Other NE Database Synchronization	9-3
Distributing RTDB, Returning to Normal Service	9-3
Distributing an RTDB LNP Database to DSMs	9-3
Disabling Bulk Load	9-6
Distributing LNP Database After BLM-Based Operation	9-12
Chapter 10. Manual LSMS-to-NE Bulk Loading	
Introduction	10-2
Extracting the LNP Database from the LSMS	10-4
Loading and Distributing the LNP Database at the Eagle STP	10-13
Chapter 11. Preparing the Network Element for Manual Bulk Loading	
Introduction	11-2
Terminal and User ID Requirements	11-2
Removable Cartridges	11-4
Labeling the Removable Cartridges	11-4

Table of Contents

Write-Enabling the Removable Cartridge	11-4
Inserting the Removable Cartridge	11-5
Removing the Removable Cartridge	11-6
Preparing Removable Cartridges for LSMS-to-NE	
Bulk Loading	11-6
Preparing the Bulk Load Removable Cartridge	11-6
Preparing the Database Backup Removable Cartridge	11-19
Preparing Removable Cartridges for NE-to-NE	
Bulk Loading	11-30
Preparing the Bulk Load Removable Cartridges	11-30
Preparing the Database Backup Removable Cartridge	11-41
Chapter 12. Manual NE-to-NE Bulk Loading	
Introduction	12-2
Copying the LNP Database from Another Eagle STP	12-5
Loading and Distributing the LNP Database at the Eagle STP	12-21
Chapter 13. Bulk Loading Troubleshooting and Backout Procedures	
Introduction	13-2
Changing Translation Type Values at the Eagle STP	13-3
Troubleshooting the Database Downloading Procedure	13-4
Backing Out Using the Database Backup Removable Cartridge	13-8
Backing Out Using the Backup Database of the NE's Fixed Disk	13-27
Appendix A. LSMS GUI Messages	
Introduction	A-2
GUI Messages Start Here	A-3
Appendix B. Enabling LSMS Audit on ELAP	
Introduction	B-2
Enabling an LSMS Audit for Eagle STP Release 28.x with ELAP 1.0	B-2
Enabling an LSMS Audit for Eagle STP Release 28.x and later with ELAP 2.0/3.0	B-4
Appendix C. LNP Database Synchronization Files	
Introduction	C-2
Log Files	C-2
Location of LNP Database Synchronization Log Files	C-2

Viewing an LNP Database Synchronization Log File	C-3
LNP Database Synchronization Log File Contents	C-3
Discrepancy Files	C-14
Location of Discrepancy Files	C-14
Viewing a Discrepancy File	C-14
Discrepancy File Contents	C-15
Appendix D. Synchronization Performance Estimates	
Introduction	D-2
Recommended Network Bandwidth	D-2
Performance of LSMS to NE Operations	D-3
Performance of NE to NE Operations	D-4
Index	

List of Figures

Figure 2-1. Local Number Portability Network	2-2
Figure 2-2. LNP Configuration to Support Up to 6 Million Ported Numbers	2-7
Figure 2-3. LNP Configuration to Support Up to 12 Million Ported Numbers	2-9
Figure 2-4. LNP Configuration to Support Up to 48 Million and 96 Million Numbers	2-13
Figure 4-1. LSMS Network Connections	4-5
Figure 4-2. Write-Enabled Removable Cartridge	4-32
Figure 4-3. Inserting the Removable Cartridge to Use Side A	4-33
Figure 5-1. ELAP-Based User-Initiated Resynchronization Timeline	5-8
Figure 5-2. BLM-Based User-Initiated Resynchronization Timeline	5-10
Figure 5-3. ELAP Main Menu	5-15
Figure 5-4. Disabling LSMS Connection	5-15
Figure 5-5. Enabling Change HS Bulk Download	5-16
Figure 5-6. Re-sync Window	5-17
Figure 5-7. Abort Resynchronization Dialog	5-18
Figure 5-8. Resynchronization Complete	5-19
Figure 5-9. Browsing for Resynchronization Log Files	5-21
Figure 5-10. Example of a User-Initiated Resynchronization Log File	5-22
Figure 6-1. Timeline for ELAP-Based or OAM-Based Audit with Reconcile	6-10
Figure 6-2. Timeline for BLM-Based Audit with Reconcile Over Connection to OAP	6-11
Figure 6-3. Timeline for BLM-Based Audit with Reconcile Over Connection to DCM	6-12
Figure 6-6. Abort Operation Dialog	6-21
Figure 6-14. Reconcile Complete	6-27
Figure 6-15. Browsing for Audit Log Files	6-28

Figure 6-16. Example of an Audit Log File	6-29
Figure 7-1. ELAP-Based Bulk Load Timeline	7-4
Figure 7-2. BLM-Based Bulk Load Timeline	7-6
Figure 7-3. ELAP Main Menu	7-12
Figure 7-4. Disabling the LSMS Connection	7-12
Figure 7-5. Enabling Change HS Bulk Download	7-13
Figure 7-6. Change Simplex Mode Screen	7-13
Figure 7-7. LSMS Default TT/SSN Values	7-14
Figure 7-8. Bulk Load Window	7-17
Figure 7-9. Abort Bulk Load Operation Dialog	7-19
Figure 7-10. Bulk Load Complete Information Dialog	7-20
Figure 7-11. Bulk Load Complete	7-20
Figure 7-12. Change Simplex Mode Screen	7-22
Figure 7-13. Browsing for a Bulk Load Log Files	7-23
Figure 7-14. Example Bulk Load Log File	7-24
Figure 8-2. ELAP RTDB Status	8-8
Figure 10-1. LSMS Magneto-Optical Drive Front View	10-4
Figure 10-2. LSMS Default TT/SSN Values	10-5
Figure 11-1. Write-Enabled Removable Cartridge	11-4
Figure 11-2. Inserting the Removable Cartridge to Use Side A	11-5
Figure B-1. ELAP Main Menu	B-4
Figure B-2. Enabling Change HS Audit	B-5
Figure C-1. Header Section Example	C-4
Figure C-2. Audit Section Example	C-6
Figure C-3. Reconcile Section Example	C-7
Figure C-4. Bulk Load Section Example	C-8
Figure C-5. Resynchronization Section Example	C-10
Figure C-6. Audit Summary Section Example for NPA-NXX Range	C-12
Figure C-7. Audit Summary Section Example for Time Range	C-12
Figure C-8. Download Summary Section Example	C-13
Figure C-9. Download Commit/Discard Section Example	C-13
Figure C-10. Example of a Discrepancy File Header Section	C-15
Figure C-11. Discrepancy Section Example, Audit of NPBs	C-16
Figure C-12. Discrepancy Section Example, Audit of TNs	C-16
Figure C-13. Discrepancy Summary Section Example	C-17

List of Tables

Table 1-1. LSMS Release 6.0 Compatibility Table	1-3
Table 2-1. Summary of Features and Characteristics for LNP Configurations	2-16
Table 2-2. Resynchronization Options	2-19
Table 2-3. Audit and Reconcile Options	2-20
Table 2-4. Bulk Load Options	2-24
Table 3-1. Procedures Required for Synchronization Phases	3-10
Table 4-1. Operations External Ports and Their Use	4-6
Table 4-2. LSMS BLM-Based Operations Card Type and Card Application Combinations	4-11
Table 4-3. DCM Card Locations in Control (C) and Extension (E) Shelves	4-12
Table 6-1. LNP Data Type Attributes Included in Checksums	6-4
Table 6-2. Audit Data Discrepancies	6-5
Table 6-3. Audit and Reconcile Options	6-8
Table 6-4. Audit Range Values	6-17
Table 6-5. Audit Results Fields	6-20
Table 6-6. Parameters Used by Command-Line Interface	6-31
Table 6-7. Audit Command Parameters	6-32
Table 9-1. Performance Range for Copying the LNP Database from the BLM to the Fixed Disks	9-20
Table C-1. LNP Database Synchronization Log File Directories	C-2
Table C-2. LNP Database Synchronization Log File Contents	C-3
Table C-3. LNP Data Type Key Fields	C-5
Table C-4. LNP Data Type Key Fields	C-5
Table C-5. LNP Database Synchronization Log File Directories	C-14
Table D-1. LNP Database Synchronization Performance Estimates	D-3
Table D-2. Estimating Time to Copy RTDB Across Customer Network	D-4

List of Flowcharts

Flowchart 4-1. Adding a DCM and BLM for LSMS BLM-Based Operations	4-19
Flowchart 4-2. Removing the DCM Applied to LSMS BLM-Based Operations	4-26
Flowchart 4-3. Removing the BLM Applied to LSMS BLM-Based Operations	4-30
Flowchart 4-4. Backing Up the NE Database to the Removable Cartridge	4-36
Flowchart 9-1. Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy	9-10
Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation	9-34
Flowchart 10-1. Extracting the LNP Database from the LSMS	10-10
Flowchart 10-2. Loading the LNP Database onto the Eagle STP	10-33
Flowchart 11-1. Preparing the Bulk Load Removable Cartridge	11-15
Flowchart 11-2. Preparing the Database Backup Removable Cartridge	11-26
Flowchart 11-3. Preparing the Bulk Load Removable Cartridge	11-36
Flowchart 11-4. Preparing the Database Backup Removable Cartridge	11-44
Flowchart 12-1. Copying the LNP Database from Another Eagle STP	12-13
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP	12-37
Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge	13-19
Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk	13-46

1

Introduction

Overview	1-2
Terminology Used in This Manual	1-3
Releases Described in This Manual	1-3
Manual Organization	1-4
Related Publications.....	1-6
Eagle Publications	1-6
LSMS Publications	1-11
Documentation Packaging, Delivery, and Updates.....	1-12
Documentation Admonishments.....	1-13
Technical Services and Support	1-14
List of Acronyms and Abbreviations.....	1-15

Overview

Local Number Portability (LNP) provides a user with the ability to move the telephone service from one service provider to another without changing the telephone number. LNP is managed by Number Portability Administration Centers (NPACs), which serve different geographical regions. NPACs distribute LNP data to local service management systems (LSMSs), which, in turn, distribute the LNP data to network elements, for example, Eagle STPs. The LSMS keeps data for each NPAC region in a separate regional database. The data for any telephone number must be the same at the NPAC, the LSMS, and the network elements.

In addition, the LSMS stores locally provisioned data in a database separate from the regional databases and sends that data to all network elements. Locally provisioned data must also be the same between the LSMS and the network elements.

If the LNP databases of the LSMS and the network element get out of synchronization (for example, after an outage), the LSMS LNP database is used as the master database to synchronize the network element LNP database.

The LSMS and the network element use the following methods to synchronize their databases:

- Resynchronizing - the LSMS resends all transactions to the network element up to a maximum number of transactions (automatic resynchronization) or a maximum period of time (optional user-initiated resynchronization).
- Reconciling - after an audit of the network element LNP data, the user can reconcile any differences discovered during the audit.
- Bulk Loading - complete replacement of the network element LNP database.

Terminology Used in This Manual

48 Million Numbers Configuration

“48 million numbers configuration” is used to describe a hardware configuration that supports the following:

- The 48 Million Numbers feature
- The 96 Million Numbers feature*
- 24 to 96 million TNs

*** Note: The 48 Million Numbers feature is a prerequisite for the 96 Million Numbers feature.**

Non-48 Million Numbers Configuration

“Non-48 million numbers configuration” is used to describe a hardware configuration that supports 12 million TNs or less.

Compatibility Issues

The capacity increases are supported when all components are capable of supporting the increase capacities. This entails that to support LNP 96 Million TNs the LSMS, ELAP and Eagle must all be LNP 96 Million TNs capable and the feature-key elements enabled. The following matrix shows the capacities supported for the various combinations for LSMS 6.0.

Table 1-1. LSMS Release 6.0 Compatibility Table

	OAP/EOAP	ELAP 1.0	ELAP 2.0	ELAP 3.0
Eagle 28.x	12 Million	48 Million	48 Million	Not Compatible
Eagle 29.x	12 Million	48 Million	48 Million	Not Compatible
Eagle 30.x	12 Million	48 Million	48 Million*	96 Million

Releases Described in This Manual

Until superseded by a future release of this manual using a part number different from 910-4344, this manual describes LSMS Release 6.0 and all future releases of LSMS, as well as the following releases of the Eagle STP:

- Eagle STP Release 28.0 or higher; these Eagle STPs can communicate with the LSMS through either an MPS or through an Operations System Support Applications Processor (OAP)

Manual Organization

This manual is organized into these sections:

- Chapter 1, “Introduction,” contains general information about the organization of this manual.
- Chapter 2, “LNP Database Synchronization Overview,” presents an overview of the various methods available, depending on the features installed, for synchronizing the LNP database on the network element (NE) with the LNP database on the LSMS.
- Chapter 3, “Choosing a Database Maintenance Procedure,” describes the notifications that let you know that manual intervention is required when automatic resynchronization of the LNP databases cannot be accomplished, and guides you in choosing the most appropriate and efficient synchronization procedure, depending on the features installed at the LSMS and at the NE.
- Chapter 4, “Preparing the NE for Non-Manual Synchronization,” describes how to prepare the network element for LNP Database Synchronization operations initiated from the LSMS. Some operations are available only if certain optional features (as described in Chapter 2, “LNP Database Synchronization Overview”) are installed at the LSMS and at the network element.
- Chapter 5, “Managing Resynchronization from the LSMS,” describes how automatic resynchronization (which resends all transactions that were previously sent from the LSMS to the NE up to a maximum number of transactions) occurs and how to manage from the LSMS optional, user-initiated resynchronization (which resends all transactions that were previously sent from the LSMS to the NE over a period of time not to exceed seven days). User-initiated resynchronization is available only if certain optional features are installed at the LSMS and at the NE (as described in Chapter 2, “LNP Database Synchronization Overview”).
- Chapter 6, “Auditing and Reconciling Network Elements from the LSMS,” describes how to audit network element data. At any time, unless certain conditions exist, an audit of the subscription data contained on the network element can be initiated from the LSMS. An audit compares the subscription version data at the network element with that at the LSMS. Some audit functions are available only if certain optional features (as described in Chapter 2, “LNP Database Synchronization Overview”) are installed at the LSMS and at the network element.
- Chapter 7, “Managing Electronic Bulk Load from the LSMS,” describes how to initiate and manage an electronic bulk download at the LSMS. Bulk loading completely replaces an LNP database (all subscription version, NPA Split, Translation Type Service, default Global Title Translation and override Global Title Translation data) at a network element. Electronic bulk loading from the LSMS is available only if certain optional features (as described in Chapter 2,

“LNP Database Synchronization Overview”) are installed at the LSMS and at the network element.

- Chapter 8, “Copying One RTDB from Another RTDB,” describes how to copy the contents of the Real-Time Database (RTDB) that exists on the mated Eagle LNP Application Processor (ELAP) server to an RTDB within the same network element that needs database restoration or to copy the contents of the Real-Time Database (RTDB) that exists on an ELAP on the mated network element to an RTDB that needs database restoration. The procedures described in this chapter are available only with the 48 million numbers configuration at the LSMS and if the 48 Million Numbers feature is installed at the network element (as described in Chapter 2, “LNP Database Synchronization Overview”).
- Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy,” describes how the user distributes to all the Translation Service Modules (TSMs) or Database Service Modules (DSMs) in the network element the NE LNP database that has been changed as a result of an LNP Database Synchronization operation. The NE LNP database may have been resynchronized as a result of a user-initiated resynchronization procedure in Chapter 5, “Managing Resynchronization from the LSMS,” reconciled as a result of a procedure using a connection to a Data Communications Module (DCM) in Chapter 6, “Auditing and Reconciling Network Elements from the LSMS,” or downloaded from the LSMS as a result of a procedure in Chapter 7, “Managing Electronic Bulk Load from the LSMS.” Some of these operations are available only if certain optional features (as described in Chapter 2, “LNP Database Synchronization Overview”) are installed at the LSMS and at the network element.
- Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” describes how to prepare the network element for a manual bulk load of the LNP database from the LSMS, or for a manual bulk load of the LNP database from another network element. This chapter applies only if the network element LNP database contains 6 million or fewer ported numbers.
- Chapter 10, “Manual LSMS-to-NE Bulk Loading,” describes how to perform a bulk download of the LNP database from the LSMS using a removable cartridge. This chapter applies only if the network element LNP database contains 6 million or fewer ported numbers.
- Chapter 12, “Manual NE-to-NE Bulk Loading,” describes how to load the LNP database from a network element containing an LNP database that is in good condition using a removable cartridge. This chapter applies only if the network element LNP database contains 6 million or fewer ported numbers.
- Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,” provides some general information about changing LNP translation types that do not match the values contained in the imported LNP database and a troubleshooting procedure if the TSMs keep booting while trying to reload the imported LNP database on the TSM. This chapter also describes how to

restore the network element to its configuration before either electronic or manual bulk loading procedures were attempted. The procedures described in this chapter are available only if the 48 Million Numbers feature is not installed at the network element (as described in Chapter 2, “LNP Database Synchronization Overview”).

- Appendix A, “LSMS GUI Messages,” lists in alphabetical order the messages that can appear when you are using the LSMS graphical user interface (GUI) functions described in this manual.
- Appendix B, “Enabling LSMS Audit on ELAP,” shows how to enable an LSMS audit when it has been disabled. By default, an ELAP allows an audit from the LSMS, but the user may have disabled this ability in order to debug a problem. An LSMS audit, as described in Chapter 6, “Auditing and Reconciling Network Elements from the LSMS,” cannot be performed unless the ELAP has this setting enabled.
- Appendix C, “LNP Database Synchronization Files,” describes the files that are recorded when the various types of LNP database synchronization are performed by the user.
- Appendix D, “Synchronization Performance Estimates,” provides estimates of the transaction rates for the various LNP database synchronization operations. Using these estimates can help you decide which type of operation to use, as described in Chapter 3, “Choosing a Database Maintenance Procedure.”

Related Publications

The *LNP Database Synchronization Manual* is part of the Eagle STP and the LSMS documentation sets and may reference related manuals of these sets.

Eagle Publications

The Eagle STP documentation set consists of the following manuals:

- The *Commands Manual* contains procedures for logging into the system, logging out of the system, a general description of the terminals, printers, the disk drive used on the system, and a description of all the commands used in the system. The *Commands Manual* also contains the *Commands Pocket Guide* and the *Commands Quick Reference*.
- The *Commands Pocket Guide* is packaged with the *Commands Manual* and is also available as a separate item. This abridged version of the *Commands Manual* contains all the commands and parameters, and it shows the command-parameter syntax.
- The *Commands Quick Reference* is available as a separate item and it comes as a pocket-sized folded brochure. This brochure contains an alphabetical listing of the commands and parameters.

Introduction

- The *Commands Error Recovery Manual* contains the procedures to resolve error message conditions generated by the commands in the *Commands Manual*. These error messages are presented in numerical order.
- The *Database Administration Manual – Features* contains procedural information required to configure the system to implement these features: X.25 Gateway, STP LAN, Database Transport Access, GSM MAP Screening, and Eagle Support for Integrated Sentinel.
- The *Database Administration Manual - Gateway Screening* contains a description of the Gateway Screening (GWS) feature and the procedures necessary to configure the system to support this feature.
- The *Database Administration Manual – Global Title Translation* contains procedural information required to configure the system to implement these features: Global Title Translation, Enhanced Global Title Translation, Variable Length Global Title Translation, Interim Global Title Modification, and Intermediate GTT Load Sharing
- The *Database Administration Manual – LNP* contains procedural information required to configure the system LNP and the database to implement the local number portability (LNP) feature.
- The *Database Administration Manual – SEAS* contains the procedures that can be performed from the Signaling Engineering and Administration Center (SEAC) or a Signaling Network Control Center (SNCC) to configure the EAGLE. These procedures contain a brief description of the procedure, a reference to the procedure in either the *Database Administration Manual – SS7* or the *Database Administration Manual – Features* that contains more information on that procedure, and a flowchart showing the order that the tasks must be performed.
- The *Database Administration Manual – SS7* contains procedural information required to configure the system to implement the SS7 protocol and the SS7-IP Gateway.
- The *Database Administration Manual – System Management* contains procedural information required to manage the Eagle's database and GPLs, and to configure basic system requirements such as user names and passwords, system-wide security requirements, and terminal configurations.
- The *Database Configuration Forms* book contains forms to assist you in configuring your database. The forms are arranged alphabetically by command. Each form provides reference information on the command, its possible parameter values, and space for you to fill in the values that you use to configure your database. The forms enable you to plan the input values prior to database administration sessions. The forms also provide a record of the intended data entered for a given database object. The forms may be duplicated as required.

- The *ELAP Administration Manual* provides a definition of the user interface to the Eagle LNP Application Processor on the MPS/ELAP platform. The manual defines the methods for accessing the interface, menus, screens available to the user and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including information and error messages.
- The *EPAP Administration Manual* describes how to administer to the Eagle Provisioning Application Processor on the MPS/EPAP platform. The manual defines the methods for accessing the user interface, menus, and screens available to the user and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including messages, alarms, and status.
- The *Feature Manual - G-Flex C7 Relay* provides an overview of a feature supporting the efficient management of Home Location Registers in various networks. This manual gives the instructions and information on how to install, use, and maintain the G-Flex feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *Feature Manual - G-Port* provides an overview of a feature providing the capability for mobile subscribers to change the GSM subscription network within a portability cluster while retaining their original MSISDNs. This manual gives the instructions and information on how to install, use, and maintain the G-Port feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *Feature Manual - GR-376* provides information and instructions on how to implement and maintain the GR-376 feature.
- The *Feature Manual - INP* provides information and instructions on how to implement, utilize, and maintain the INAP-based Number Portability (INP) feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The FTP-Based Table Retrieve Application (FTRA) User Guide describes how to setup and use a PC to serve as the offline application for the Eagle FTP Retrieve and Replace feature.
- The *LNP Database Synchronization Manual* describes how to keep the LNP databases at the LSMS and at the network element (the Eagle is a network element) synchronized through the use of resynchronization, audits and reconciles, and bulk loads. This manual is contained in both the LSMS documentation set and in the Eagle documentation set.
- The *Maintenance Manual* contains procedural information required for maintaining the Eagle STP system, the IP⁷ Secure Gateway system, and the Multi-purpose Server. The maintenance manual provides preventive and corrective maintenance procedures used in maintaining the different systems. The *Maintenance Manual* also contains the *Maintenance Pocket Guide* and the *Emergency Recovery Pocket Guide*.

Introduction

- The *Maintenance Pocket Guide* is packaged with the *Maintenance Manual* and is also available as a separate item. This abridged version of the *Maintenance Manual* contains all the corrective maintenance procedures used in maintaining the Eagle STP system.
- The *Emergency Recovery Pocket Guide* is packaged with the *Maintenance Manual* and is also available as a separate item. This abridged version of the *Maintenance Manual* contains the corrective maintenance procedures for the critical and major alarms generated on the Eagle STP system.
- The *NSD Hardware Manual* contains hardware descriptions and specifications of Tekelec's Network Systems Division (NSD) products. These include the Eagle STP system, the IP⁷ Secure Gateway (SG) system, and OEM-based products which include the ASi 4000 Service Control Point (SCP), Multi-purpose Server (MPS), VXi Media Gateway Controller (MGC), and the Integrated Sentinel with Extended Services Platform (ESP) subassembly.

The *NSD Hardware Manual* provides an overview of each system and their subsystems, details of standard and optional hardware components in each system, and basic site engineering. Refer to this manual to obtain a basic understanding of each type of system and its related hardware, to locate detailed information about hardware components used in a particular release, and to help configure a site for use with the system hardware.

- The *NSD Installation Manual* contains cabling requirements, schematics, and procedures for installing the systems.
- The *IP⁷ Front End Installation Manual* provides information on the installation of a "front end or control shelf" to IP devices that require Signaling System #7 (SS7) connectivity. The IP⁷ Front End is functionally an IP⁷ Secure Gateway with modifications to the mechanical hardware. The software for the IP⁷ Front End is a subset of IP⁷ Secure Gateway. IP⁷ Front End is a product that addresses the needs of service providers who require signaling interconnection between the Public Switch Telephone Network (PSTN) and an Internet Protocol (IP) network.
- The *Provisioning Database Interface Manual* defines the programming interface that populates the Provisioning Database (PDB) for the Eagle STP features supported on the MPS/EPAP platform. The manual defines the provisioning messages, usage rules, and informational and error messages of the interface. The customer uses the PDBI interface information to write his own client application to communicate with the MPS/EPAP platform.
- The *Release Documentation* contains the following documents for a specific release of the system:

Release Notice - Describes the changes made to the system for the specified release. Lists the Generic Program Loads (GPLs) for the specified release.

Note: The most current version of this document is published on the Tekelec Secure website.

Feature Notice - Describes the features contained in the specified release. Also provides the hardware baseline for the specified release, describes the customer documentation set, provides information about customer training, and explains how to access the Customer Service website.

Technical Bulletins - Contains updates to methods or procedures used to maintain the system.

System Overview - Provides high-level information on SS7, the IP⁷ Secure Gateway, system architecture, LNP, and EOAP.

Master Glossary - Contains an alphabetical listing of terms, acronyms, and abbreviations relevant to the system.

Cross-Reference Index - Lists all first-level headings used throughout the documentation set.

- *Previously Released Features* - Contains descriptions of previously released system features.

Introduction

LSMS Publications

The LSMS documentation set includes the following publications in addition to this manual:

- The *LSMS Database Administration Manual* provides information about using the LSMS (Local Service Management System) local and web-based graphical user interface (GUI), using the command-line interface, managing NPAC relations, managing locally provisioned data, report generation, logs and measurements, and local time calculation and world time zone data.
- The *LSMS Maintenance Manual, Enterprise 450*, which describes the LSMS design for high availability, the LSMS software, and procedures for routine, preventive, and corrective maintenance. The manual also contains a reference of LSMS commands and notifications.
- The *LSMS Hardware Reference Manual, Enterprise 450*, which provides an overview of the LSMS hardware components, installation, and setup procedures and requirements, as well as detailed instructions about maintaining the hardware components.
- The *LSMS Configuration Manual* contains information you need to configure the LSMS. Topics include integrating LSMS into your network, using key lists, configuring and starting LSMS processes, configuration components and service provider contact information, working with NPAC associations, configuring optional features, and configuring the query server.

- The *LSMS Release Documentation* consists of the *Feature Notice*, *Release Notice*, and *Technical Bulletins*.
 - The *Feature Notice* describes the features for a specified release. It also includes the following information:
 - * Feature Overview
 - * Compatibility of the LSMS Release 6.0 features with the releases of interfacing systems
 - * LSMS supported hardware configurations
 - * Third party software field baseline comparison
 - * Functional changes from LSMS 5.0 to LSMS 6.0
 - * LSMS 6.0 customer documentation
 - * How to locate the LSMS *Release Notice* on the Internet
 - * How to access customer training information
 - * Technical services and support information
 - * List of acronyms used in the *Feature Notice*
 - The *Release Notice* lists the PRs that have been resolved in this release, and the PRs that are known to exist in this release.
 - The *Technical Bulletins*, published by Tekelec Technical Services, explain any LSMS technical updates.
- The Tekelec Signaling Products *Commands Error Recovery Manual* is also included in the LSMS documentation set. This manual contains detailed information about the command-rejected error messages generated by the commands used on the Eagle STP as well as error recovery procedures. This information can be helpful for the LSMS user when viewing certain exception logs.

Documentation Packaging, Delivery, and Updates

Customer documentation is provided with each system in accordance with the contract agreements.

Customer documentation is updated whenever significant changes that affect system operation or configuration are made.

Customer documentation updates may be issued in the form of an addendum, or a reissue of the affected documentation.

Introduction

The document part number is shown on the title page along with the current revision of the document, the date of publication, and the software release that the document covers. The bottom of each page contains the document part number and the date of publication.

Two types of releases are major software releases and maintenance releases. Maintenance releases are issued as addenda with a title page and change bars. On the changed pages, the date and document part number are changed. On any unchanged pages that accompany the changed pages, the date and document part number are unchanged.

In the event a software release has minimum affect on documentation, an addendum is provided. The addendum provides an instruction page, a new title page, a change history page, and replacement chapters bearing the date of publication, the document part number, and change bars.

If a new release has a major impact on documentation, such as a new feature, the entire documentation set is reissued with a new part number and a new release number.

Documentation Admonishments

Admonishments are icons and text that may appear in this and other Eagle STP and LSMS manuals that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage. Following are the admonishments, listed in descending order of priority.

	DANGER: (This icon and text indicate the possibility of <i>personal injury</i> .)
	WARNING: (This icon and text indicate the possibility of <i>equipment damage</i> .)
	CAUTION: (This icon and text indicate the possibility of <i>service interruption</i> .)

Technical Services and Support

The Tekelec Technical Services department offers a point of contact through which customers can receive support for problems that may be encountered during the use of Tekelec's products. The Tekelec Technical Services department is staffed with highly trained engineers to provide solutions to your technical questions and issues seven days a week, twenty-four hours a day. A variety of service programs are available through the Tekelec Technical Services department to maximize the performance of Tekelec products that meet and exceed customer's needs.

To receive technical assistance, call the Tekelec Technical Services department at one of the following locations:

- Tekelec, UK

Phone (within the UK) 07071 232453
(outside the UK) +44 07071 232453 or +44 1784 437067

- Tekelec, USA

Phone (within the continental US) 800-432-8919
(outside the continental US) +1 919-460-2150

Or you can request assistance by way of electronic mail at either of the following: eaglets@tekelec.com or lsmsts@tekelec.com.

Emergency Response

If a critical service situation occurs, Tekelec Technical Services offers emergency response twenty-four hours a day, seven days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure a rapid resolution to the problem.

A critical situation is defined as an Eagle STP or LSMS problem that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical problems affect service or system operation, resulting in:

- Failure in the system that prevents transaction processing
- Reduction in system capacity or in system traffic-handling capability
- Inability to restart the system
- Corruption of the database
- Inability to perform maintenance or recovery operations
- Inability to provide any required critical or major trouble notification
- Any other problem severely affecting service, capacity, traffic, and billing. Maintenance capabilities may be defined as critical by prior discussion and agreement with Tekelec Technical Services.

List of Acronyms and Abbreviations

ACM	Application Communications Module
ACTV	Active
AIN	Advanced Intelligent Network
ANSI	American National Standards Institute
APPL.....	Application
AUD.....	Audit Indicator
BIP.....	Board ID PROM
BLM	Bulk Load Module
CLLI.....	Common Language Location Identifier
CNCF.....	Calling Name Conversion Facility
CPC	Capability Point Code
DB.....	Database
DBTS.....	Database Time Stamp
DCM	Database Communication Module
DLK.....	Data Link
DPC.....	Destination Point Code
DSM	Database Services Module
DV	Digits Valid
ELAP.....	Eagle LNP Application Processor
EMS.....	Element Management System
Gbyte	Gigabyte
GLS	Gateway Loading Services — The application software for the gateway screening loading services
GPL	Generic Program Load
GSM	Global System for Mobile Communication
GT.....	Global Title Routing Indicator
GTT	Global Title Translation
GWS.....	Gateway Screening
ID.....	Identity
IMT	Interprocessor Message Transport

IN.....	Intelligent Network
INAP	IN Application Processor
INP	INAP-based Number Portability
IS-NR	In Service - Normal
ITU	International Telecommunications Union
ITU-I.....	ITU International
ITU-N.....	ITU National
JRS	Job Routing Server
LAN	Local Area Network
LFS	Link Fault Sectionalization
LIM	Link Interface Module
LNP	Local Number Portability
LRN.....	Location Routing Number
LS.....	Link Set
LSMS.....	Local Service Management System
LSN	Link Set Name
MASP	Maintenance and Administration Subsystem Processor
MDAL.....	Maintenance Disk and Alarm Card
MR.....	Message Relay
MPS	Multi-Purpose Server
NGT	New Global Title Translation Type
NPA.....	Numbering Plan Area (Area Code)
NPAC	Number Portability Administration Center
NPANXX	Area Code and Office Prefix
OAM	Operations, Administration, and Maintenance
OAP.....	Operations System Support Applications Processor
OOS.....	Out of Service
OOS-MT-DSBLD	Out of Service - Maintenance Disabled
PCA.....	ANSI Point Code
PU.....	Program Update
REPT-STAT	Report Status

Introduction

RGTA	Replace Global Title Address
RI	Routing Indicator
RMV	Remove
SA	Security Administration
SCCP	Signaling Connection Control Part – The application software for the global title translation (GTT) feature
SEAC	Signaling Engineering and Administration Center
SEAS	Signaling Engineering and Administration System
SERV	LNP Service
SLK	Signaling Link
SP	Service Provider
SSN	Subsystem Number
STDBY	Standby
STP LAN	A feature in the Eagle STP that copies MSUs selected through the gateway screening process and sends these MSUs over the ethernet to an external host computer for further processing
SYS	System Maintenance
TCAP	Transaction Capability Application Part
TCP	Transmission Control Protocol
TDM	Terminal Disk Module
TLNP	Triggerless LNP
TMOU	The maximum amount of time that a login session on a terminal port can remain idle before the user is automatically logged off
TN	Telephone Number
TSM	Translation Service Module
TT	Translation Type
TTN	Translation Type Name
UAM	Unsolicited Alarm Message
UID	User ID
UIM	Unsolicited Information Message
WNP	Wireless Number Portability
XLAT	Translate Indicator

LNP Database Synchronization Overview

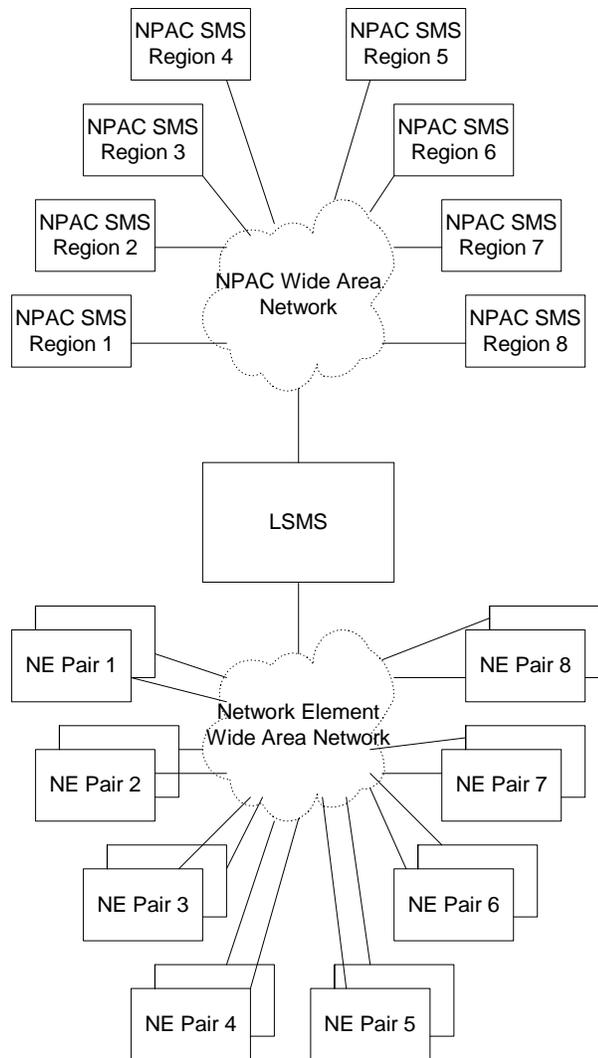
Introduction.....	2-2
LSMS Functions	2-3
LNP Configurations	2-7
Supporting Up to 6 Million Ported Numbers	2-7
Supporting Up to 12 Million Ported Numbers	2-9
Supporting Up to 48 Million Numbers	2-13
Supporting Up to 96 Million Numbers	2-13
Summary of Features and Characteristics of LNP Configurations...	2-16
Resynchronizing LSMS and Network Element Data	2-17
Auditing and Reconciling Network Element Data.....	2-19
Bulk Loading LNP Data	2-21

Introduction

Local Number Portability (LNP) provides the ability to change (port) the telephone service from one service provider to another service provider without changing the telephone number.

LNP is managed by Number Portability Administration Centers (NPACs), which serve different geographical regions. NPACs distribute LNP data to local service management systems (LSMSs) which, in turn, distribute the LNP data to network elements, for example, Eagle STPs. The Tekelec LSMS can service up to eight NPACs and up to eight pairs of network elements, as represented in Figure 2-1.

Figure 2-1. Local Number Portability Network



This manual describes the various methods used to keep data synchronized between the LSMS and the network element.

LNP Database Synchronization Overview

This manual does not describe synchronization activities between the NPAC and the LSMS. For information about how data is synchronized between the NPAC and the LSMS, refer to the *LSMS Maintenance Manual*.

LSMS Functions

The LSMS is responsible for the following functions:

- Sending normal updates to network elements
- Ensuring that supported network element's LNP database is synchronized with the LSMS LNP database

Sending Normal Updates

Normal updates sent by the LSMS consist of:

- *NPAC data* that is received from NPACs and forwarded to the network elements. The LSMS keeps data for each NPAC region in a separate regional database. The NPAC, LSMS, and the network elements all must have the same LNP data for a given region.
- *Locally provisioned data* that is entered by the customer in a centralized place (the LSMS) and then forwarded to one or more network elements. The LSMS stores locally provisioned data in the supplemental database, which is separate from the regional databases. The LSMS sends the locally provisioned data in the supplemental database to multiple network elements. Locally provisioned data must also be the same between the LSMS and the network elements.

Synchronizing LNP Databases

In this book, the term LNP database is used to mean a combination of regional and locally provisioned data:

- At the LSMS the LNP database is considered to be the combination of regional data and locally provisioned data that corresponds to the network element to be synchronized.
- At a network element the LNP database is considered to be one database which contains both regional data and data that was provisioned at the LSMS. The network element's LNP database usually has multiple copies at the network element; each configuration described in this manual specifies where in the network element the main LNP database is located. Synchronization methods between the main network element LNP database and its copies within a network element are described in other manuals; references are stated where appropriate.

The LSMS synchronizes with only a single copy of the network element's LNP database. Usually the synchronization occurs with the main network element LNP database; exceptions are noted as appropriate.

The LSMS is responsible for ensuring that the network element's LNP database is synchronized with the LNP database at the LSMS. If the LNP databases of the LSMS and network element get out of synchronization (for example, after an outage), the network element's LNP database must be synchronized to match the LSMS LNP database, which is considered to be the master database.

The LSMS and the network element use the following methods to synchronize their LNP databases. For information about which method to choose, see Chapter 3, "Choosing a Database Maintenance Procedure." Some methods require the installation of optional features at the LSMS and at the network element; required features are described in "LNP Configurations" on page 2-7 and summarized in Table 2-1 on page 2-16. Some methods permit synchronization from another network element LNP database that is known to be synchronized with the LSMS LNP database.

- *Resynchronizing*—the LSMS resends all transactions that were previously sent from the LSMS to the network element up to a maximum number of transactions or a maximum period of time. The following types of resynchronization are available (for a more detailed overview, see "Resynchronizing LSMS and Network Element Data" on page 2-17):
 - *Automatic resynchronization*—After any outage between the LSMS and a network element, the LSMS and the network element automatically attempt to resynchronize. If the number of transactions that needs to be retransmitted is less than the maximum number of transactions that can be stored in the LSMS resynchronization database (which can store a maximum of 768,000 transactions), automatic resynchronization occurs without operator intervention. For more information, see "Automatic Resynchronization Process" on page 5-4.
 - *User-initiated resynchronization*—Provided the required optional features are installed at the LSMS and at the network element, a user-initiated resynchronization can be performed. User-initiated resynchronization can be performed as long as the database time stamp (DBTS) on the network element's database is no more than seven days earlier than the current date at the LSMS. If the DBTS is within seven days, the user-initiated resynchronization retransmits all transactions that were previously sent in the last seven days.
- *Reconciling*—after an audit of network element LNP data, you can reconcile any differences discovered by the audit. Reconciling allows you to update only the LNP database records that are found to be different during an audit. An audit compares certain types of LNP data at the LSMS with the same types of data at the network element.

LNP Database Synchronization Overview

You can choose to perform only an audit, or you can perform an audit and reconcile; the options are described later in this manual (see Chapter 6, “Auditing and Reconciling Network Elements from the LSMS”). Although auditing without reconciling does not result in synchronized LNP databases, that option is also described in this manual.

The LSMS allows various types of audit and also allows you to choose to reconcile any discrepancies found during the audit. The following types of reconciling are available (for a more detailed overview, see “Auditing and Reconciling Network Element Data” on page 2-19):

- *Reconcile records sent as normal updates*—Available after any kind of audit
- *Reconcile records sent apart from normal updates*—Available as an option after an audit in a BLM-based configuration (for information about this configuration, see “Supporting Up to 12 Million Ported Numbers” on page 2-9)
- *Bulk loading*—completely replaces a network element LNP database. Sometimes so much data needs to be corrected that neither reconciling audited data nor resynchronizing the data is sufficient. The following types of bulk loading are available (for a more detailed overview, see “Bulk Loading LNP Data” on page 2-21):
 - *Electronic bulk load from the LSMS*—Available if certain optional features are installed at the LSMS and at the network element.
 - *Bulk load (reload) from RTDB on mated ELAP*—Available if certain optional features are installed at the network element.
 - *Bulk load (reload) from RTDB on mated network element’s standby ELAP*—Available if certain optional features are installed at the network element and if both network elements are treated similarly by the LSMS. This choice requires steps to be performed at the LSMS to determine whether the network elements are treated similarly by the LSMS, but actual loading of data involves only the mated network elements.
 - *Manual bulk load from the LSMS to a network element*—Available to all customers, but limited to handling a maximum of 6 million numbers in the network element’s LNP database.

This procedure cannot be used when the 48 Million or 96 Million Numbers feature is installed at the network element; instead use bulk load from RTDB on mated ELAP or bulk load from RTDB on mated NE’s standby ELAP, as described in Chapter 8, “Copying One RTDB from Another RTDB.”

- *Manual bulk load from one network element to its mate*—A practical choice if both network elements are treated similarly by the LSMS, but limited to handling a maximum of 6 million numbers in the network element's LNP database. This choice requires steps to be performed at the LSMS to determine whether the network elements are treated similarly by the LSMS, but actual loading of data involves only the mated network elements.

| This procedure cannot be used when the 48 Million or 96 Million Numbers feature is installed at the network element; instead use bulk load from RTDB on mated ELAP or bulk load from RTDB on mated NE's standby ELAP, as described in Chapter 8, "Copying One RTDB from Another RTDB."

| Additional information about synchronization methods is available in overview form in "Overview of Synchronization Methods" on page 2-17, and more detailed information about each synchronization method is presented in the remaining chapters of this manual.

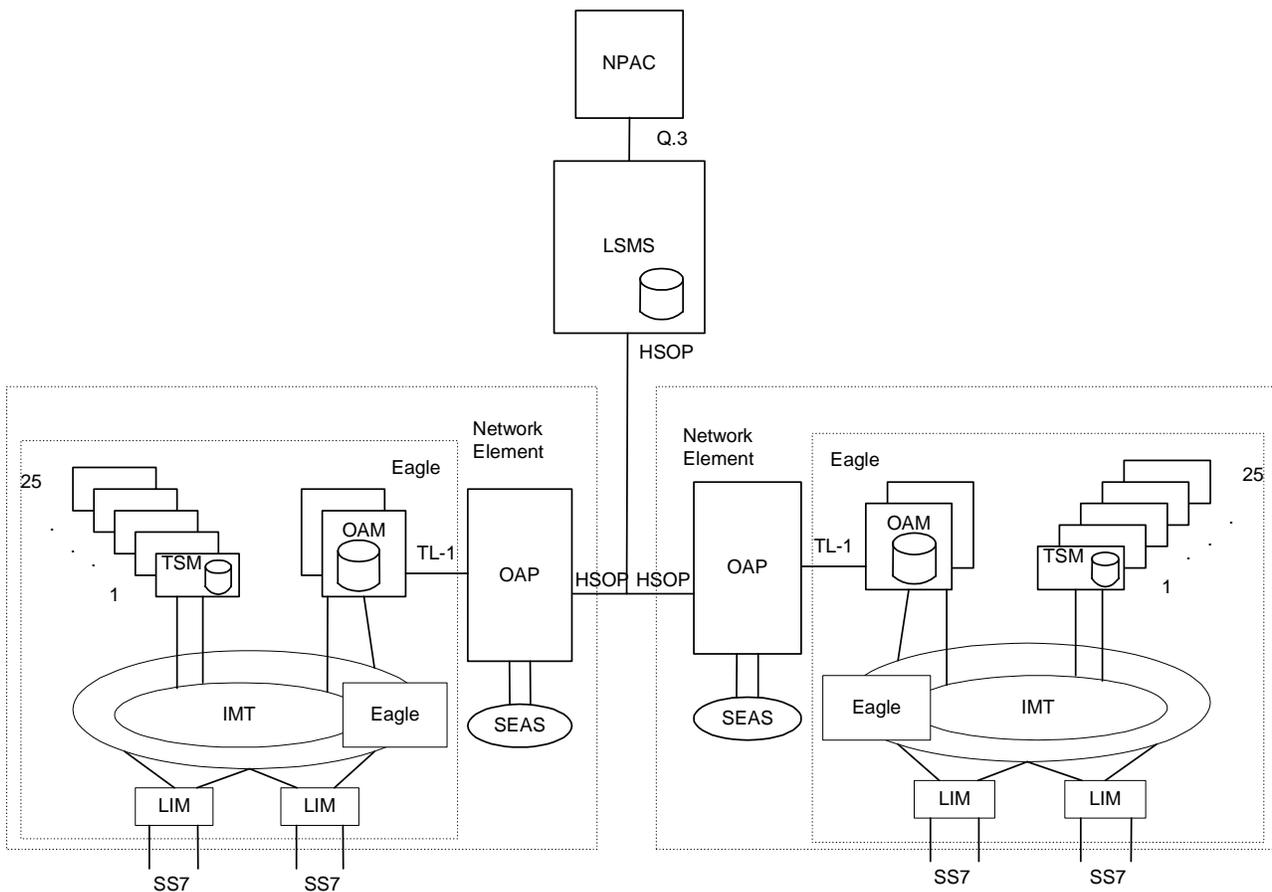
LNP Configurations

This section describes the basic configurations, required features, and functional characteristics of the LSMS/Eagle LNP system, depending on the maximum number of ported numbers to be supported in network element LNP databases. Table 2-1 on page 2-16 summarizes the differences between these configurations.

Supporting Up to 6 Million Ported Numbers

Figure 2-2 on page 2-7 shows the basic configuration used to support up to 6 million ported numbers in a given network element LNP database.

Figure 2-2. LNP Configuration to Support Up to 6 Million Ported Numbers



Features Required to Support Up to 6 Million Ported Numbers

This configuration requires only standard features. No optional features are required.

Terminology for Supporting Up to 6 Million Ported Numbers

In this manual, this configuration is called an OAM-based configuration, and LNP Database Synchronization operations that use this configuration are called OAM-based operations.

Characteristics of Configuration to Support Up to 6 Million Ported Numbers

In this configuration, the network element's main LNP database is stored on the OAM (Operations, Administration, and Maintenance), with a copy on each TSM (Translation Service Module). The network element's LNP databases can be changed as follows:

- *Normal updates* are sent from the LSMS to the OAP (Operations System Support Application Processor) over a connection that uses HSOP (High-Speed Operations Protocol). The transaction rate of this connection is dependent on the processing speed of the OAP and is about 2 telephone numbers (TNs) per second. The OAP translates the LSMS messages into a SEAS format and forwards the reformatted messages to the OAM. The updates are sent by the OAM to the TSMs through the IMT. No user action is required at the network element.
- *Resynchronization* is available only as automatic resynchronization (see "Automatic Resynchronization Process" on page 5-4). No user action is required at either the LSMS or the network element.
- *Audits with optional reconciles* are performed over the same connection as normal updates. After the audit completes, the LSMS user can specify whether any differences found should be reconciled; if so, corrections are sent over the connection to the OAP just like normal updates. No user action is required at the network element.
- *Bulk loads* (to replace the entire LNP database) must be performed manually using removable cartridges. During a manual bulk load, the TSMs are inhibited so that normal updates do not occur. A bulk load can be performed from the LSMS or from a mated network element; either method requires extensive user action at the network element in the form of a procedure (see Chapter 10, "Manual LSMS-to-NE Bulk Loading" or Chapter 12, "Manual NE-to-NE Bulk Loading").

Features Required to Support Up to 12 Million Ported Numbers

The optional features required to support this configuration depend on the number of ported numbers to be supported:

- Support of from 6 million to 8 million ported numbers requires at the network element, the Enhanced Bulk Download feature, which includes both of the following:
 - A Data Communications Module (DCM) card, to handle TCP/IP communication with the LSMS
 - A Bulk Load Module (BLM) card, to hold a copy of the network element's LNP database that can be updated separately from the other database copies on the TSMs. When a separate update of the BLM has completed, the BLM LNP database is copied to all the TSMs.
- Support of from 8 million to 12 million ported numbers requires all features required to support 6 million to 8 million ported numbers as well as the following additional optional features:
 - At the network element, the Support for 12 Million Ported Numbers feature (LNP12MIL = ON).
 - At the LSMS, the Support for 12 Million Ported Numbers feature, which is a software-only feature.

In addition to one of the combinations of optional features described in the previous items, the user can choose to install at the LSMS the optional Enhanced Audit feature, which is a software-only feature.

Terminology for Supporting Up to 12 Million Ported Numbers

In this manual, this configuration is called an BLM-based configuration, and LNP Database Synchronization operations that use this configuration are called either of the following:

- BLM-based operations for transactions that are sent to the DCM/BLM (user-initiated resynchronization, electronic bulk load, and some reconcile operations)
- OAM-based operations for transactions that are sent to the OAP/OAM (normal updates, automatic resynchronization, and some reconcile operations)

Characteristics of Configuration to Support Up to 12 Million Ported Numbers

In any of these combinations of optional features, the network element's main LNP database is stored on the OAM, with a copy on each TSM and on the BLM. Changes are sent by the LSMS to the network element's LNP databases over either the connection to the OAP/OAM or the connection to the DCM/BLM.

Changes to the OAM LNP Database

Changes sent over the connection to the OAP/OAM are made to the OAM's LNP database and then distributed to the TSMs and BLM; no user action is required at the network element. These changes are called OAM-based transactions.

Changes to the BLM LNP Database

Changes sent over the connection to the DCM/BLM are made to the BLM's LNP database and then must be distributed by the network element operator to the OAM and TSMs. When all changes to the BLM's LNP database have been made, the entire BLM LNP database is copied to the fixed disks on the OAM, and then copied from the fixed disks to all the TSMs. These changes are called BLM-based transactions.

These actions require the user to enter a `chg-db:begined1` command at the network element before the LSMS sends data and a `chg-db:finished1` command after the LSMS has finished sending data. The `chg-db:finished1` command causes normal updating to the TSMs to be suspended until the BLM's LNP database has been copied to all TSMs.

Types of Changes to the LNP Database

The following types of changes are made to the network element's LNP database:

- *Normal updates* occur in the same way as for the configuration that supports up to 6 million ported numbers.
- *Resynchronization* is attempted after any outage first as automatic resynchronization over the connection to the OAP/OAM (see "Automatic Resynchronization Process" on page 5-4). For automatic resynchronization, the resynchronizing updates are sent just like normal updates, and no user action is required at either the LSMS or the network element.

The LSMS user can also choose a user-initiated resynchronization over the connection to the DCM/BLM; the resynchronizing updates are sent to the BLM only; the TSMs can receive normal updates at the same time. When the BLM's LNP database has been resynchronized, the entire BLM LNP database is copied to the fixed disks on the OAM, and then copied from the fixed disks to all the TSMs. This type of resynchronization requires user action at the network element as described in "Changes to the BLM LNP Database" on page 2-11.

- *Audits with optional reconciles* are performed in the same way as for the configuration that supports up to 6 million ported numbers. After the audit

has completed, if differences are found, the LSMS user can choose any one of the following options:

- Do not reconcile
- Reconcile differences over the connection to the OAP/OAM (see “Audit with Reconcile Over Normal Update Connection” on page 6-10). In this case, records to be reconciled are sent like normal updates; no user action is required at the network element.
- Reconcile differences over the connection to the DCM/BLM (see “BLM-Based Audit/Reconcile Using Connection to DCM” on page 6-12). In this case, records to be reconciled are sent to the BLM only; the TSMs can receive normal updates at the same time. When the BLM’s LNP database has been reconciled, the entire BLM LNP database is copied to the fixed disks on the OAM, and then copied from the fixed disks to all the TSMs. This type of reconcile requires user action at the network element as described in “Changes to the BLM LNP Database” on page 2-11.
- *Bulk loads* (to replace the entire LNP database) must be performed over the connection to the DCM/BLM. During a bulk load, the LSMS sends records to the BLM only; the TSMs can receive normal updates at the same time. When the BLM’s LNP database has been completely replaced, the BLM LNP database is copied to the fixed disks on the OAM, and then copied from the fixed disks to all the TSMs. This type of bulk load requires user action at the network element as described in “Changes to the BLM LNP Database” on page 2-11.

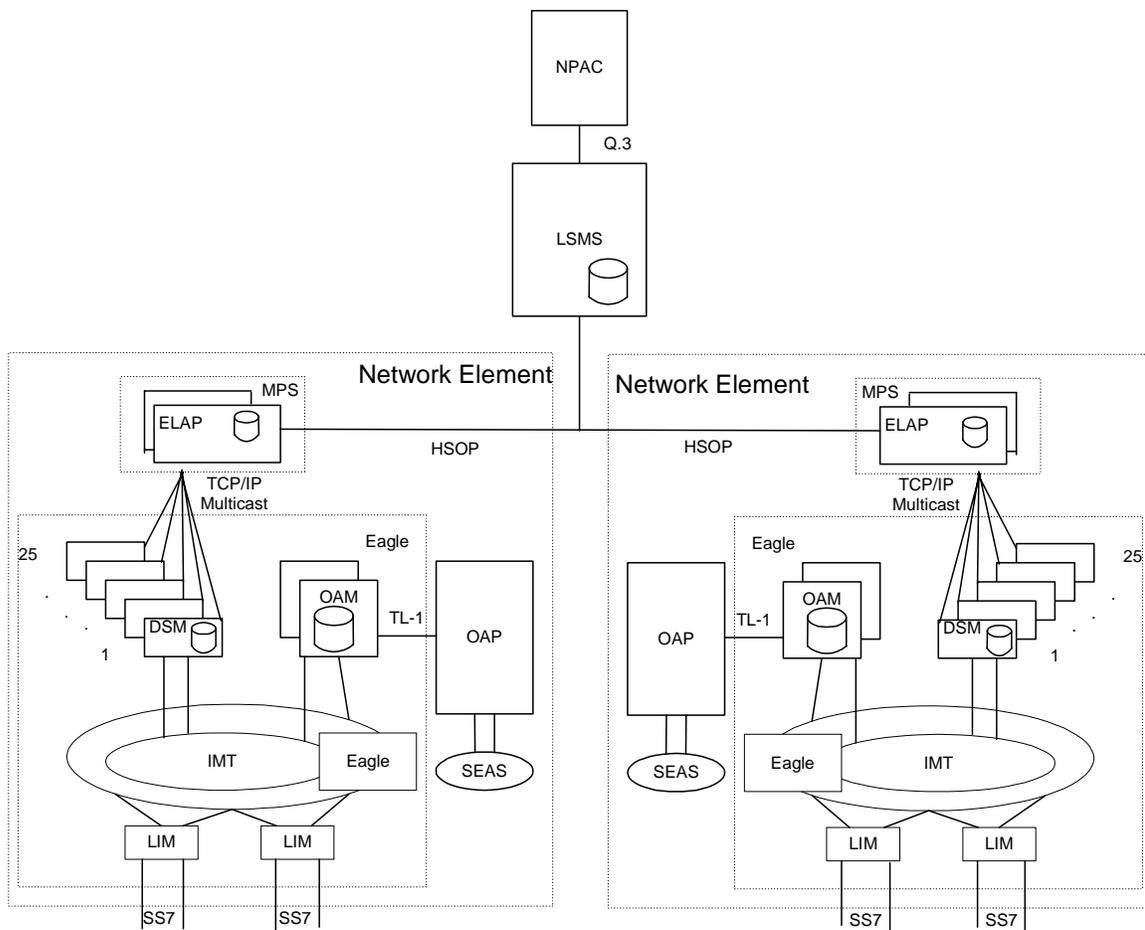
Supporting Up to 48 Million Numbers

Figure 2-4 shows the configuration needed for the LSMS to support up to 48 and 96 million numbers in a given network element LNP database. This configuration also requires hardware additions and changes for both the LSMS and the network element, as described in “Features Required to Support Up to 48 Million Numbers” on page 2-14.

Supporting Up to 96 Million Numbers

Figure 2-4 shows the configuration needed for the LSMS to support up to 96 million numbers in a given network element LNP database. This feature increases the EAGLE single node LNP number capacity from 48 Million to 60, 72, 84, or LNP 96 Million TNs.

Figure 2-4. LNP Configuration to Support Up to 48 Million and 96 Million Numbers



Features Required to Support Up to 48 Million Numbers

This configuration requires the following optional features:

- At the network element, the 48 Million Numbers feature (first available in Eagle Release 27.0), which includes:
 - Replacement of TSMs by Data Services Module (DSM) cards (for more information, refer to the *Eagle Installation Manual*).
 - A Multi-Purpose Server (MPS) system. An MPS system consists of two (redundant) MPS servers, each of which is loaded with Eagle LNP Application Processor (ELAP) software. In this manual, an MPS server loaded with ELAP software is called an ELAP server, or simply an ELAP. One ELAP server is active, and one is standby.

For more information about the MPS, refer to the *MPS Hardware Manual*; for more information about the ELAP servers, refer to the *ELAP Administration Manual*.
 - A generic program load (GPL) caused by turning on the feature bit (LNP48MIL = ON)
- At the LSMS, the 48 million numbers configuration, which includes three additional D1000 disks for additional database storage (for more information, refer to the *LSMS Hardware Reference Manual*)

In addition to these optional features which must be installed to support 48 million numbers, the user can choose to install at the LSMS the optional Enhanced Audit feature, which is a software-only feature.

Features Required to Support Up to 96 Million Numbers

This configuration requires the following optional features:

- Eagle Release 30.0 must be up and running.
- At the network element, the 96 Million Numbers feature (first available in Eagle Release 30.0), which includes:
 - ELAP 3.0
 - Replacement of 1G, 2G, and 3G DSM cards with 4G DSM cards (for more information, refer to the *Eagle Installation Manual*).
 - Conversion of Feature Bits to Feature Keys for all configurations.
 - Feature Key for 60, 72, 84, or 96 Million Numbers.
 - Feature Key for 150,000 or 300,000 NPANXXs.
 - Feature Key for 100,000 or 150,000 LRNs.
- At the LSMS, support for the LNP 96 Million TNs configuration.

Terminology for Supporting Up to 48 Million and Up to 96 Million Numbers |

In this manual, this configuration is called an ELAP-based configuration, and LNP Database Synchronization operations that use this configuration are called ELAP-based operations.

Characteristics of Configuration to Support Up to 48 Million and Up to 96 Million Numbers |

In this configuration, the network element's main LNP database is stored in a Real-Time Database (RTDB) on the active ELAP, with an RTDB copy on each DSM. (The standby ELAP also contains an RTDB which is kept synchronized with the active ELAP's RTDB.)

The network element's LNP databases can be changed as follows:

- *Normal updates* are sent from the LSMS to the active ELAP at a rate of 25 TNs per second over a connection that uses the HSOP over TCP/IP protocol. The ELAP forwards the messages to all the DSMs using a IP multicast protocol (for more information, refer to the *ELAP Administration Manual*). No user action is required at the network element.
- *Resynchronization* is attempted after any outage first as automatic resynchronization (see "Automatic Resynchronization Process" on page 5-4). For automatic resynchronization, the resynchronizing updates are sent just like normal updates, and no user action is required at either the LSMS or the network element.

The LSMS user can also choose to a user-initiated resynchronization. To protect against accidental initiation of a user-initiated resynchronization, user action is required at the network element to allow this action (see step 2 on page 5-13).

- *Audits with optional reconciles* are performed over the connection to the ELAP. After the audit has completed, the LSMS user can specify whether differences found should be reconciled using the connection to the ELAP just like normal updates (see step 6 on page 6-21). No user action is required at the network element.
- *Bulk loads* (to replace the entire LNP database) are performed over the connection to the ELAP just like normal updates. However, to protect against accidental initiation of a bulk load (which requires 48 hours for a database that contains 48 million numbers), user action is required at the network element to allow a bulk load (see step 1 on page 7-10). |

Summary of Features and Characteristics of LNP Configurations

Table 2-1 summarizes the features and characteristics of the various possible LNP configurations:

Table 2-1. Summary of Features and Characteristics for LNP Configurations

Number of Numbers to Be Supported	Optional Features Required	See Figure:	Transport Mechanism Used		
			Normal Updates	Audit	Bulk Load
Up to 6 million	No optional features required	2-2	HSOP	HSOP	Cartridge
Up to 8 million	<ul style="list-style-type: none"> At the NE, Enhanced Bulk Download and Audit 	2-3	HSOP	HSOP	HSOP
Up to 12 million	<ul style="list-style-type: none"> At the NE: <ul style="list-style-type: none"> Support for 12 Million Ported Numbers (LNP12MIL = ON) Enhanced Bulk Download and Audit At the LSMS: <ul style="list-style-type: none"> Support for 12 Million Ported Numbers Option to add Enhanced Audit 	2-3	HSOP	HSOP	HSOP
Up to 48 million	<ul style="list-style-type: none"> At the NE, 48 Million Numbers (LNP48MIL = ON) At the LSMS, the 48 million numbers configuration 	2-4	HSOP	HSOP	HSOP
Up to 96 million	<ul style="list-style-type: none"> At the NE, ELAP LNP Configuration Feature (ENABLE-CTRL-FEAT) At the LSMS, support for the LNP 96 Million TNs feature 	2-4	HSOP	HSOP	HSOP

Overview of Synchronization Methods

The following sections provide an overview of the basic resynchronization methods. More detailed information is available in the remainder of this manual.

Resynchronizing LSMS and Network Element Data

The LSMS stores data that is sent to network elements in the following ways; this stored data enables the LSMS and network element to resynchronize, either automatically or by user initiation:

- A resynchronization database that stores all NPAC and locally provisioned data sent to any network element. This database holds a maximum of 768,000 entries. This database is used for automatic resynchronization, as described in “Automatic Resynchronization” on page 2-17.
- For each network element, a log file that records all NPAC and locally provisioned data sent to that network element for the last seven days. These log files are used for user-initiated resynchronization, as described in “User-Initiated Resynchronization” on page 2-18.

While resynchronization is occurring, any new updates received at the LSMS are stored in the pending queue. When an automatic resynchronization is complete and normal traffic between the LSMS and network element resumes, the updates in the pending queue are transmitted as normal updates.

Automatic Resynchronization

The LSMS and network element attempt to resynchronize automatically after any outage between the LSMS and a network element. When the LSMS and network element reconnect, the network element sends the LSMS the Database Time Stamp (DBTS) of the last update it received before the outage. If the LSMS finds that DBTS in the LSMS resynchronization database, it begins automatic resynchronization using the same protocol as is used for normal updates.

For information about the actions performed by the LSMS and network element during automatic resynchronization, see “Automatic Resynchronization Process” on page 5-4. If the LSMS determines that automatic resynchronization cannot be performed because the DBTS is not found in the resynchronization database, notifications are posted at both the LSMS and the network element (see “Notifications that Database Maintenance Is Required” on page 3-3). If those notifications are posted, you can choose among various options for proceeding with synchronization (see “Choosing a Synchronization Procedure” on page 3-4).

Automatic resynchronization uses the same protocol as is used for normal updates.

NOTE: In a BLM-based configuration, the connection to the OAP used for normal updates is much slower than the connection to the BLM. In some cases, automatic resynchronization (which uses the connection to the OAP) may be significantly slower than other synchronization procedures. After an outage in a BLM-based configurations, it is recommended that you perform an audit as soon as the LSMS and network element reconnect. If the number of discrepancies is greater than 21,000, performing a reconcile over the connection to the DCM/BLM is likely to complete faster than an automatic resynchronization would. For more information, see “Managing Audit from the LSMS GUI” on page 6-15, especially step 8 on page 6-23.

User-Initiated Resynchronization

This optional method of resynchronization can be initiated by the LSMS user when automatic resynchronization cannot be performed because more transactions need to be retransmitted than can be accommodated by automatic resynchronization. The number of transactions accommodated by user-initiated resynchronization is limited only by the fact that the log files are maintained only for seven days. This type of resynchronization is available when either of the following configurations has been installed:

- BLM-based (see “Supporting Up to 12 Million Ported Numbers” on page 2-9)
- ELAP-based (see “Supporting Up to 48 Million Numbers” on page 2-13)
- ELAP-based (see “Features Required to Support Up to 96 Million Numbers” on page 2-14)

Table 2-2 compares the resynchronization options available.

Table 2-2. Resynchronization Options

Resynchronization Type	See Page:	Installed Options Required	User Action at:	
			LSMS	Network Element
Automatic resynchronization	5-4	Standard	No	No
User-initiated BLM-based resynchronization	5-12	Enhanced Bulk Download and Audit feature at the NE	Yes	Yes
User-initiated ELAP-based resynchronization	5-12	The 48 million numbers configuration at the LSMS and 48 Million Numbers feature at the NE (LNP48MIL = ON)	Yes	Yes
		The 96 million numbers configuration at the LSMS and Up to 96 Million Numbers feature at the NE (ENT-CTRL-FEAT)		

Auditing and Reconciling Network Element Data

You can initiate from the LSMS an audit of various types of data at any time except as noted in “Audit Restrictions” on page 6-6. An audit compares the record for the specified data type at the network element with that at the LSMS. You can also choose to reconcile any discrepancies found during an audit.

The following types of audit and reconcile are available; if appropriate optional features are installed, both types can be performed simultaneously (for more information about possible configurations and features required, see “LNP Configurations” on page 2-7):

- *Audit and optional reconcile of SVs by TN range and/or NPBs by NPA-NXX-X range, or of SVs and/or NPBs by time range,* —This type of audit uses the normal update channel (to either the OAM or ELAP) to compare a checksum for each subscription version or number pool block record within a range of numbers or within a time range in the LSMS LNP database to the checksum of the corresponding record in the BLM’s LNP database. If the checksums match, it is assumed that the records are the same.

After the audit completes, if differences were found, the LSMS user can choose to view the full records of each encountered difference. In addition, the LSMS user can specify whether any differences found should be reconciled. If

only this type of data needs to be reconciled, no user action is required at the network element.

Features Required: Available as standard feature in any configuration. This type of audit and optional reconcile requires no optional features.

- *All other audit and optional reconcile (for example of DGTT, OGTT, and NPA Splits, of all TNs and/or NPBs)* —This type of audit uses either the BLM or ELAP channel to compare the checksum for each specified record in the LSMS LNP database to the checksum of the corresponding record in the BLM’s LNP database. If the checksums match, it is assumed that the records are the same. For information about the types of data that can be audited with this type of audit, see “Types of Data to Audit and Reconcile” on page 6-2.

After the audit has completed, the LSMS user can specify whether differences found should be reconciled. User action is required only for differences found in a BLM-based configuration after the reconcile or user action at the NE.

Features Required: Installation at the network element of either the Enhanced Bulk Download and Audit feature, the 48 Million Numbers feature and installation at the LSMS of the Enhanced Audit feature, or the Up to 96 Million Numbers feature and installation at the LSMS of the Enhanced Audit feature.

Table 2-3 compares the various audit and reconcile options available. Only the BLM-based audit feature with reconcile over the connection to the DCM/BLM requires operator intervention at the network element.

Table 2-3. Audit and Reconcile Options

Audit Type	Reconcile Options	Installed Options Required	User Action at:	
			LSMS	NE
Audit over normal update channel of a range of SVs by TN range or NPBs by NPA-NXX-X range or of all SVs and/or NPBs within a given time period	No reconcile or reconcile using the same connection as normal updates	Standard	Yes	No
BLM-based audit of DGTT, OGTT, and NPA Split data	No reconcile or reconcile over normal channel	Enhanced Audit feature at the LSMS and Enhanced Bulk Download and Audit feature at the NE	Yes	No
	Reconcile over connection to BLM		Yes	Yes

Table 2-3. Audit and Reconcile Options

Audit Type	Reconcile Options	Installed Options Required	User Action at:	
			LSMS	NE
ELAP-based audit of DGTT, OGTT, and NPA Split data	No reconcile or reconcile over normal channel	48 Million Numbers feature at the NE (LNP48MIL = ON) and both the 48 million numbers configuration and the Enhanced Audit feature at the LSMS	Yes	No
		The ELAP LNP Configuration feature at the NE (ENT-CTRL-FEAT) and both the 96 million numbers configuration and the Enhanced Audit feature at the LSMS		

Bulk Loading LNP Data

Bulk loading completely replaces the main LNP database at a network element. The LNP database consists of regional and locally provisioned data. Bulk loading is required in the following situations:

- The network element is being initialized for one of the following reasons:
 - Bringing the network element into the system for the first time
 - Modifying the network element’s area of service by reconfiguring EMS routing
- A user-initiated resynchronization is not possible for one of the following reasons:
 - A failure at the LSMS causes loss of resynchronization logs
 - A bulk download from the NPAC to the LSMS has been performed. For more information on resynchronizing the NPAC and LSMS databases, refer to the *LSMS Maintenance Manual*.

The following types of bulk loading are available:

- *Electronic bulk load from the LSMS to BLM*—extracts the LNP database from the LSMS and downloads it to the Bulk Load Module (BLM) of the network element. The transmission from the LSMS to the BLM requires about one hour for each million numbers in the LNP database. The distribution of the LNP database from the BLM to the Translation Service Modules (TSMs) is part of a

separate procedure (see “Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy” on page 9-10).

Features Required: Installation of the Enhanced Bulk Download and Audit feature at the network element.

- *Electronic bulk load from the LSMS to ELAP*—extracts the LNP database from the LSMS and downloads it to the RTDB of the active ELAP at the network element. The transmission from the LSMS to the ELAP requires about one hour for each million numbers in the LNP database. The distribution of the LNP database from the active ELAP to the standby ELAP and to the Database Services Modules (DSMs) is part of a separate procedure (see “Distributing RTDB, Returning to Normal Service” on page 9-3).

Features Required: Installation of the 48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS.

or

Installation of the ELAP LNP Configuration feature at the network element (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS.

- *Bulk load (reload) from RTDB on mated ELAP*—copies the RTDB on the ELAP mate to the RTDB that needs restoration. This type of bulk loading usually takes under ten minutes.

Features Required: Installation of the 48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS.

or

Installation of the ELAP LNP Configuration feature at the network element (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS.

- *Bulk load (reload) from RTDB on mated network element's standby ELAP*—copies the RTDB on standby ELAP at the mated network element to the RTDB that needs restoration. This choice requires steps to be performed at the LSMS to determine whether the network elements are treated similarly by the LSMS, but actual loading of data involves only the mated network elements.

Features Required: Installation of the 48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS.

or

Installation of the ELAP LNP Configuration feature at the network element (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS.

In addition, both network elements must be treated similarly by the LSMS.

- *Manual bulk load from LSMS to NE*—copies the LNP database from the LSMS to a removable cartridge, uploads the database to the network element's fixed

LNP Database Synchronization Overview

disks, and distributes the database to the TSMs (see Chapter 10, “Manual LSMS-to-NE Bulk Loading”).

Features Required: This type of bulk loading is available as a standard feature, but only when the LNP database at the network element contains 6 million or fewer ported numbers and not an ELAP.

- *Manual bulk load from NE to NE*—copies the LNP database from a mated NE to a removable cartridge, uploads the database to the NE’s fixed disks, and distributes the database to the TSMs (see Chapter 12, “Manual NE-to-NE Bulk Loading”).

Features Required: This type of bulk loading is available as a standard feature, but only when the LNP database at the network element contains 6 million or fewer ported numbers and not an ELAP.

Table 2-4 compares the various bulk load options available.

Table 2-4. Bulk Load Options

Bulk Load Type	See Chapter:	Installed Options Required	User Action at:	
			LSMS	NE
Electronic bulk load from the LSMS to BLM	4, 7, and 9	Enhanced Bulk Download and Audit feature at the NE	Yes	Yes
Electronic bulk load from the LSMS to ELAP	4, 7, and 9	48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS	Yes	Yes
		ELAP LNP Configuration feature at the NE (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS		
Reload from mated ELAP RTDB	8 and 9	48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS	No	Yes
		ELAP LNP Configuration feature at the NE (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS		
Reload from standby ELAP's RTDB on mated network element	8 and 9	48 Million Numbers feature at the network element (LNP48MIL = ON) and the 48 million numbers configuration at the LSMS	No	Yes
		ELAP LNP Configuration feature at the NE (ENABLE-CTRL-FEAT) and the 96 million numbers configuration at the LSMS		
Manual bulk load from LSMS to NE	11 and 10	Standard (uses removable cartridge), but not available when the LNP database at the NE contains more than 6 million ported numbers or with ELAP LNP Configuration	Yes	Yes
* The LSMS user must verify that the two NEs are configured as mated NEs (for more information, see step 1 on page 12-2)				

LNP Database Synchronization Overview

Table 2-4. Bulk Load Options

Bulk Load Type	See Chapter:	Installed Options Required	User Action at:	
			LSMS	NE
Manual bulk load from an NE to its mate	11 and 12	Standard (uses removable cartridge), but available only if 48 Million Numbers feature is not installed at the NE (LNP48MIL = OFF) or ELAP LNP Configuration is OFF	Yes *	Yes
* The LSMS user must verify that the two NEs are configured as mated NEs (for more information, see step 1 on page 12-2)				

LNP Database Synchronization Overview

3

Choosing a Database Maintenance Procedure

Introduction.....	3-2
Notifications that Database Maintenance Is Required.....	3-3
Choosing a Synchronization Procedure	3-4
Using Standard Features	3-5
Using Enhanced Bulk Download Features	3-6
Using ELAP LNP Configuration Features.....	3-7
Understanding Sequence of Procedures to Be Performed.....	3-9

Introduction

This chapter describes how you can determine that an LNP database needs to be restored, and assists you in choosing one of the methods that can be used to complete the restoration. Chapter 2, “LNP Database Synchronization Overview” provides an overview of the variety of methods available; this chapter helps you determine when you need to perform one of the methods and helps you choose which method is most appropriate.

Once you have decided which restoration method to use, see “Understanding Sequence of Procedures to Be Performed” on page 3-9 for a summary of the various procedures you must perform in the order indicated. The remainder of this manual provides the detailed instructions for the procedures to be performed.

An LNP database in a given network element needs to be restored when a condition occurs that has caused the LNP database to be corrupted or back-level. The following are examples of conditions that cause a need to restore an LNP database:

- A network outage occurs
- A hardware failure occurs at the system where the network element’s LNP database resides
- Software that controls LNP databases has been stopped

When the condition has been repaired, the LSMS and network element attempt to perform automatic resynchronization, which requires no user action. For information about the actions performed by the LSMS and network element during automatic resynchronization, see “Automatic Resynchronization Process” on page 5-4.

When the LSMS and network element reconnect, the network element sends the LSMS the Database Time Stamp (DBTS) of the last update it received before the outage. If the LSMS finds that DBTS in the LSMS resynchronization database, it begins automatic resynchronization using the same protocol as is used for normal updates.

Choosing a Database Maintenance Procedure

If the LSMS determines that automatic resynchronization cannot be performed because the DBTS cannot be found in the LSMS resynchronization database, notifications are posted at both the LSMS and the network element (see “Notifications that Database Maintenance Is Required” on page 3-3). If those notifications are posted, you can choose among various options for proceeding with synchronization (see “Choosing a Synchronization Procedure” on page 3-4).

NOTE: In a BLM-based configuration, the connection to the OAP used for normal updates is much slower than the connection to the BLM. In some cases, automatic resynchronization (which uses the connection to the OAP) may be significantly slower than other synchronization procedures. After an outage in a BLM-based configurations, it is recommended that you perform an audit as soon as the LSMS and network element reconnect. If the number of discrepancies is greater than 21,000, performing a reconcile over the connection to the DCM/BLM is likely to complete faster than an automatic resynchronization would. For more information, see “Managing Audit from the LSMS GUI” on page 6-15, especially step 8 on page 6-23.

Notifications that Database Maintenance Is Required

During an attempt to automatically resynchronize, if the LSMS cannot access necessary log files or cannot find the network element’s DBTS in the LSMS resynchronization database, the following actions occur:

1. The LSMS sends one of the following notifications (with event number 0002 or 8043) to the LSMS graphical user interface (in addition, Surveillance notifications with the same event numbers are posted):

```
[Critical]: <Timestamp> 0002 <CLLI> NE DB maintenance required
```

```
[Critical]: <Timestamp> 8043 <CLLI>: Log File  
(/usr/local/LSMS/logs/ems/<CLLI>.log) Invalid State, NE DB maintenance required
```

2. The LSMS informs the network element that database maintenance is required.
3. The network element displays the following notification on the network element terminal (the number `xxxx` indicates how many other notifications have already been displayed at the terminal):

```
rlghncxa03w 01-09-07 11:50:04 GMT Rel 28.0.0  
*C xxxx.0041 *C LSMS SYSTEM LNP DB Maintenance Required.
```

After any of these notifications, the LSMS administrator and the network element operator should confer and choose one of the synchronization options described in “Choosing a Synchronization Procedure” on page 3-4.

Choosing a Synchronization Procedure

When the LSMS and the network element require database maintenance (see “Notifications that Database Maintenance Is Required” on page 3-3), the LSMS and network element operators should confer to decide on the method they will use to perform the database restoration. After they have agreed which method to use, they work together to complete one or more procedures (see “Understanding Sequence of Procedures to Be Performed” on page 3-9).

The variety of methods that they can use depends on which features are installed; see one of the following sections for a prioritized list of procedures recommended for restoring the LNP database:

- If the LNP database on the network element contains 6 million or fewer ported numbers and does not have an ELAP, you need only standard features.
 - For a description of this configuration, see “Supporting Up to 6 Million Ported Numbers” on page 2-7
 - For a prioritized list of recovery procedures, see “Using Standard Features” on page 3-5
- If the LNP database on the network element contains more than 6 million ported numbers, but no more than twelve million and does not have an ELAP, you must install the Enhanced Bulk Download and Audit feature at the network element. (In addition, if the LNP database contains more than eight million ported numbers, you must install the Support for 12 Million Numbers feature both at the LSMS and at the network element.)
 - For a description of this configuration, see “Supporting Up to 12 Million Ported Numbers” on page 2-9
 - For a prioritized list of recovery procedures, see “Using Enhanced Bulk Download Features” on page 3-6
- If the LNP database on the network element contains more than twelve million numbers, you must have the ELAP LNP Configuration at both the LSMS and the network element.
 - For a description of this configuration, see “Supporting Up to 48 Million Numbers” on page 2-13 or “Features Required to Support Up to 96 Million Numbers” on page 2-14.
 - For a prioritized list of recovery procedures, see “Using ELAP LNP Configuration Features” on page 3-7

Choosing a Database Maintenance Procedure

Using Standard Features

If only standard features have been installed (available when the network element's database contains no more than 6 million ported numbers), choose one of the following methods to restore an LNP database, listed in recommended priority:

1. *Manual bulk load from compatible NE to its mate*—This method requires the following:
 - Two Eagle STP-formatted Bulk Load removable cartridges
 - One Database Backup removable cartridge
 - User action at the LSMS to verify that the mated network element is configured properly as a mate
 - LNP database must be copied from compatible network element to Bulk Load removable cartridges (duplicates)
 - Removable cartridges must be carried to the mated network element
 - The LNP database must be uploaded and then distributed to the TSM cards (see Chapter 12, “Manual NE-to-NE Bulk Loading”)
2. *Manual bulk load from LSMS to NE*—This method requires the following:
 - One Eagle STP-formatted Bulk Load removable cartridge, one Database Backup removable cartridge
 - LNP database must be copied to Bulk Load cartridge
 - Removable cartridges must be carried to the network element
 - The LNP database must be uploaded to the fixed disks and then distributed to the TSM cards (see Chapter 10, “Manual LSMS-to-NE Bulk Loading”)

Using Enhanced Bulk Download Features

If the Enhanced Bulk Download feature has been installed at the network element (available when the network element's database contains no more than twelve million ported numbers), choose one of the following procedures to restore an LNP database, listed by priority of least elapsed time and operator intervention (for more information about performance estimates for various methods, see Appendix D, "Synchronization Performance Estimates"):

1. *User-initiated resynchronization from the LSMS to the BLM*—This method requires the following:
 - The Enhanced Bulk Download and Audit feature must be installed at the network element
 - The database time stamp (DBTS) received from the network element must be within the last seven days. If the LSMS determines that the DBTS is older than seven days, the user-initiated resynchronization attempt is rejected, and you must choose another option.
 - The LNP database must be distributed to the TSMs

For more information about this procedure, see "BLM-Based User-Initiated Resynchronization Overview" on page 5-10.

2. *Electronic bulk load from LSMS to the BLM*—This method requires the following:
 - The Enhanced Bulk Download and Audit feature must be installed at the network element
 - The LNP database must be distributed to the TSMs

For more information about this procedure, see "Overview of BLM-Based Bulk Load" on page 7-6.

3. *Manual bulk load from compatible network element to its mate*—This method requires the following:
 - Two Eagle STP-formatted Bulk Load removable cartridges
 - One Database Backup removable cartridge
 - User action at the LSMS to verify that the mated network element is configured properly as a mate
 - LNP database must be copied from compatible network element to Bulk Load removable cartridges (duplicates)
 - Removable cartridges must be carried to the mated network element

Choosing a Database Maintenance Procedure

- The LNP database must be uploaded and then distributed to the TSM cards

For more information about this procedure, see Chapter 12, “Manual NE-to-NE Bulk Loading.”

4. *Manual bulk load from LSMS to NE*—This method requires the following:

- One Eagle STP-formatted Bulk Load removable cartridge, one Database Backup removable cartridge
- LNP database must be copied to Bulk Load cartridge
- Removable cartridges must be carried to the network element
- The LNP database must be uploaded to the fixed disks and then distributed to the TSM cards

For more information about this procedure, see Chapter 10, “Manual LSMS-to-NE Bulk Loading.”

Using ELAP LNP Configuration Features

If you have the 48 million or 96 million numbers configuration at the LSMS and if you have installed the matching numbers configuration feature at the network element, choose one of the following procedures to restore an LNP database, listed by priority of least elapsed time and operator intervention (for more information about performance estimates for the various methods, see Appendix D, “Synchronization Performance Estimates”):

1. *Copy the RTDB from the ELAP mate*—If the RTDB on the mate ELAP is current or can be automatically resynchronized with the LSMS, copy the mate ELAP’s RTDB to the RTDB that requires restoration. This method can be completed in about 9 minutes; it requires:
 - Determination that the mate ELAP’s RTDB is current with the LSMS (indicated by the EMS status indicator displaying yellow for this network element on the LSMS graphical user interface). If the EMS status indicator displays red, you must choose one of the other methods shown below.
 - Disconnection of both mated ELAPs from the LSMS for about nine minutes during the copy of the current RTDB to the RTDB that requires restoration.

For a detailed description of this method, see “Procedure to Copy an RTDB from the Mate ELAP” on page 8-9

2. *Perform an audit and reconcile*—If you have the Enhanced Audit feature installed at the LSMS, perform an audit. Performing the audit alone requires about 30 minutes per million records in the NE’s LNP database (assuming that half the bandwidth of a T-1 link is used). When the audit has completed, it

reports how many records are different at the network element. Reconciling will require about one hour for every million records that are different, but this method allows the network element to stay in service.

Choose either this method or the next one, based on how many records need to be reconciled versus how long it will take to copy the entire RTDB from one network element to its mate over the customer network (see Table D-2 on page D-4 for an estimate of copying times based on network speed).

This method requires:

- The Enhanced Audit feature must be installed at the LSMS
- User action at NE to allow a user-initiated resynchronization or electronic bulk load from the LSMS to occur (this action prevents an inadvertent initiation of a user-initiated resynchronization)
- User action at the LSMS GUI to initiate and manage the resynchronization

For instructions on performing an audit and reconcile, see “Managing Audit from the LSMS GUI” on page 6-15

3. *Copy the RTDB from the standby ELAP on the mated network element*—If the mated network element (NE) has both RTDBs synchronized with the LSMS (as indicated by the EMS status indicator for the mated network element displaying green on the LSMS graphical user interface), copy the standby RTDB from the mated NE to the RTDB that requires restoration. This method requires:

- Determination that the mated NE's standby ELAP RTDB is current with the LSMS (indicated by the EMS status indicator displaying green for the mated network element on the LSMS graphical user interface). If the EMS status indicator displays yellow or red, you must choose one of the other methods shown below.
- User action at the LSMS to verify that the mated NE is configured properly as a mate
- Sufficient bandwidth in the customer network, which connects the mated NEs
- Stopping software both on the ELAP from which the RTDB is being copied and also on the ELAP to which the RTDB is being copied

This method is recommended when both RTDBs at a given NE require recovery (after one RTDB has been restored, its mate can be restored by copying the newly restored RTDB). The time required to complete this method depends on the bandwidth of the customer network, as shown in

Choosing a Database Maintenance Procedure

Table D-2 on page D-4 (then add approximately 9 minutes to copy to the local network element's mate RTDB).

For a detailed description of this method, see "Procedure to Copy RTDB from Remote Mated NE" on page 8-21.

4. *Attempt a user-initiated resynchronization from the LSMS*—User-initiated resynchronization is possible as long as the database time stamp (DBTS) in the RTDB that requires restoration is no more than seven days older than the current time at the LSMS. This method requires:
 - User action at NE to allow a user-initiated resynchronization or electronic bulk load from the LSMS to occur (this action prevents an inadvertent initiation of a user-initiated resynchronization)
 - User action at the LSMS GUI to initiate and manage the resynchronization

For instructions on performing a user-initiated resynchronization, see "Managing User-Initiated Resynchronization from the LSMS" on page 5-12

5. *Perform an electronic bulk load from the LSMS*—If none of the other methods described here is possible, perform an electronic bulk load from the LSMS. This method requires:
 - User action at NE to allow a user-initiated resynchronization or electronic bulk load from the LSMS to occur (this action prevents an inadvertent initiation of an electronic bulk load)
 - User action at the LSMS GUI to initiate and manage the electronic bulk load

For instructions on performing a electronic bulk load, see "Managing Electronic Bulk Load from the LSMS" on page 7-9

Understanding Sequence of Procedures to Be Performed

For most synchronization methods, the following phases must be completed:

1. Preparing for synchronization
2. Preparing and transporting data to be used for synchronization
3. Distributing LNP database synchronization at the network element

Some phases are accomplished automatically by the LSMS and network element, and some phases require operator intervention. Table 3-1 summarizes, for the various synchronization methods described in this manual, which phases are required for each method and where those phases are described in this manual.

Table 3-1. Procedures Required for Synchronization Phases

	Method	Phase 1 Preparing NE	Phase 2 Initiating or Completing Data Transport	Phase 3 Distributing Data
Resynchronization Methods	Automatic resynchronization	Not required	Automatic, as described in “Automatic Resynchronization Process” on page 5-4	
	User-initiated BLM-based resynchronization	“Preparing the NE for BLM-Based Operations” on page 4-7	“Managing User-Initiated Resynchronization from the LSMS” on page 5-12	“Distributing LNP Database After BLM-Based Operation” on page 9-12
	User-initiated ELAP-based resynchronization	“Preparing the NE for ELAP-Based Operations” on page 4-7		“Distributing RTDB, Returning to Normal Service” on page 9-3
Reconcile Methods	OAM-based or ELAP-based audit and reconcile	Not required	“Managing Audit from the LSMS GUI” on page 6-15	Automatic
	BLM-based audit followed by OAM-based reconcile	Not required		Automatic
	BLM-based audit followed by BLM-based reconcile	“Preparing the NE for BLM-Based Operations” on page 4-7		“Distributing LNP Database After BLM-Based Operation” on page 9-12

Choosing a Database Maintenance Procedure

Table 3-1. Procedures Required for Synchronization Phases

	Method	Phase 1 Preparing NE	Phase 2 Initiating or Completing Data Transport	Phase 3 Distributing Data
Bulk Load Methods	Reload from mated ELAP RTDB	Verify that EMS Status Indicator on the LSMS is yellow	“Procedure to Copy an RTDB from the Mate ELAP” on page 8-9	“Distributing RTDB, Returning to Normal Service” on page 9-3
	Reload from standby ELAP’s RTDB on mated network element	Verify that EMS Status Indicator on the LSMS for mated network element is green or yellow	“Procedure to Copy RTDB from Remote Mated NE” on page 8-21	“Distributing RTDB, Returning to Normal Service” on page 9-3
	Electronic bulk load from the LSMS to ELAP	“Preparing the NE for ELAP-Based Operations” on page 4-7	“Electronic Bulk Load Procedure” on page 7-9	“Distributing RTDB, Returning to Normal Service” on page 9-3
	Electronic bulk load from the LSMS to BLM	“Preparing the NE for BLM-Based Operations” on page 4-7		“Distributing LNP Database After BLM-Based Operation” on page 9-12
	Manual LSMS-to-NE bulk load	Chapter 11, “Preparing the Network Element for Manual Bulk Loading”	“Extracting the LNP Database from the LSMS” on page 10-4	“Loading and Distributing the LNP Database at the Eagle STP” on page 10-13
	Manual NE-to-NE bulk load		“Copying the LNP Database from Another Eagle STP” on page 12-5	

Choosing a Database Maintenance Procedure

Preparing the NE for Non-Manual Synchronization

Introduction.....	4-2
Configuring the Hardware and Network for BLM-Based or ELAP-Based Operation	4-4
Hardware Configuration of the Network Element	4-4
Network Configuration	4-4
Preparing the NE for BLM-Based or ELAP-Based Operations.....	4-7
Preparing the NE for ELAP-Based Operations	4-7
Preparing the NE for BLM-Based Operations.....	4-7
Terminal and User ID Requirements	4-8
Canceling the REPT-STAT-CARD Command.....	4-10
Adding a DCM and BLM for BLM-Based Operations.....	4-11
Removing the DCM Applied to LSMS BLM-Based Operations.....	4-23
Removing the BLM Applied to LSMS BLM-Based Operations.....	4-27
Preparing a Database Backup Removable Cartridge	4-31
Labeling the Removable Cartridges	4-31
Write-Enabling the Removable Cartridge.....	4-31
Inserting the Removable Cartridge.....	4-32
Removing the Removable Cartridge	4-33
Backing Up the Network Element Database	4-34

Introduction

This chapter describes how to prepare the network element for non-manual synchronization operations performed at the LSMS. These operations are described in the following chapters:

- Chapter 5, “Managing Resynchronization from the LSMS”
- Chapter 6, “Auditing and Reconciling Network Elements from the LSMS,” reconciling over the connection to the DCM/BLM after a BLM-based audit
- Chapter 7, “Managing Electronic Bulk Load from the LSMS”

As described in “Overview of Synchronization Methods” on page 2-17, the following non-manual synchronization operations require the feature combinations indicated:

- Automatic resynchronization and audit and reconciles of SV and NPB data are available as standard features. No preparation at the NE is required for these operations.
- User-initiated resynchronization, electronic bulk loading, and audit and reconcile of DGTT, OGTT, and NPA Split data require either of the following feature combinations to be installed:
 - Enhanced Audit at the LSMS and the Enhanced Bulk Download and Audit feature at the network element; this feature combination can support an NE LNP database containing up to 12 million ported numbers
 - Enhanced Audit and the 48 million numbers configuration at the LSMS and the 48 Million Numbers feature at the network element; this feature combination can support an NE LNP database containing up to 48 million numbers

This chapter describes the activities required to prepare the NE for any of these operations.

For more information about the various configurations, see Chapter 2, “LNP Database Synchronization Overview.”

Preparing the NE for Non-Manual Synchronization

This chapter provides:

- An overview of how to configure the network and hardware (see “Network Configuration” on page 4-4)
- An overview of preparation steps needed for:
 - A configuration that contains ELAP servers and can support up to 48 million numbers (see “Preparing the NE for ELAP-Based Operations” on page 4-7)
 - A configuration that contains a BLM card and can support up to 12 million ported numbers (see “Preparing the NE for BLM-Based Operations” on page 4-7)
- Procedures needed for preparing for a BLM-based operation

After any BLM-based or some ELAP-based operations are performed, the LNP database is distributed throughout the network element. This distribution requires operator action at the network element using one of the procedures in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy,” except after a reconcile when the 48 Million Numbers feature is installed.

Configuring the Hardware and Network for BLM-Based or ELAP-Based Operation

This section provides an overview of configuring the network and the network element hardware for using BLM-based or ELAP-based operations. For more complete information about configuring the network, refer to the *LSMS Configuration Manual* and the *Eagle Installation Manual*.

Hardware Configuration of the Network Element

The hardware required at the network element depends on which features the network element supports:

- The Enhanced Bulk Download and Audit feature (needed to support up to 12 million ported numbers) includes Database Communications Module (DCM) and Bulk Load Module (BLM) cards to be installed and configured at the network element. For more information, see “Adding a DCM and BLM for BLM-Based Operations” on page 4-11.
- The ELAP LNP Configuration feature (which includes LNP 48 million and LNP 96 million) includes a Multi-Purpose Server (MPS) system (loaded with ELAP software) and Data Services Module (DSM) cards to be installed and configured at the network element. For more information, refer to the *Eagle Installation Manual*.

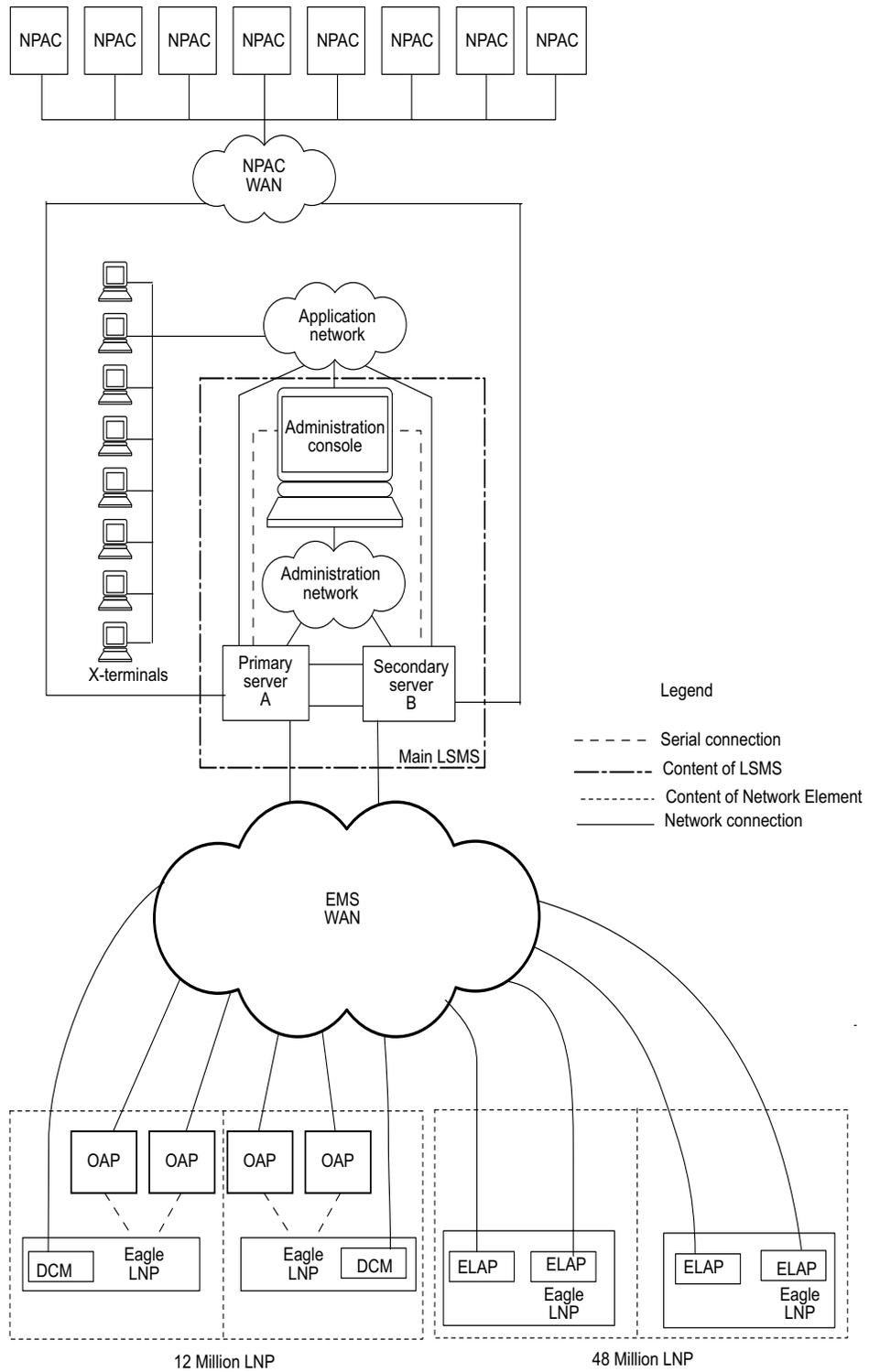
Network Configuration

Figure 4-1 illustrates the network connections that can occur between the LSMS and network elements:

- The connections between the LSMS and the OAPs are used for normal updates, automatic resynchronization, and audits and reconciles of SVs and NPBs and supports about two telephone numbers (TNs) per second.
- The connections between the LSMS and the DCMs or between the LSMS and the MPS are used for user-initiated resynchronizations, electronic bulk loads, and audits and reconciles of DGTT, OGTT, and NPA Split data from the LSMS to the network element. These operations require a data pipe of up to 0.4 Mb. Tekelec recommends that the LSMS-to-DCM connections be on the same subnet as the LSMS-to-OAP connections.

Preparing the NE for Non-Manual Synchronization

Figure 4-1. LSMS Network Connections



Firewall and Router Filtering

Firewall protocol filtering for the interface between the network element's DCM or MPS and the LSMS is defined in Table 4-1.

Table 4-1. Operations External Ports and Their Use

Interface	TCP/IP Port	Use	Inbound	Outbound
To LSMS 100BASE-TX	1030	HSOP Traffic	Yes	Yes
	7	UDP Echo (ping)	Yes	Yes
	N/A	ARP (Address Resolution Protocol)*	Yes	Yes
* ARP is used to provide TCP communication. The customer network will provide this information as appropriate.				

Preparing the NE for BLM-Based or ELAP-Based Operations

Depending on the configuration used for BLM-based or ELAP-based operations (for more information about the possible configurations, see “LNP Configurations” on page 2-7), certain activities must be performed to ensure that the network element is prepared to participate in LNP database synchronization operations.

Preparing the NE for ELAP-Based Operations

All actions necessary to prepare the hardware for ELAP-based operations have been performed during installation of the MPS. No additional hardware configuration is necessary. In addition, it is not necessary to prepare backout materials because the redundant RTDBs located at the network element and at the mated network element can be used to restore an RTDB to a previously existing database content.

Preparing the NE for BLM-Based Operations

The network element must be prepared prior to any BLM-based operation. Depending on the BLM-based operation type and existing features and hardware, the following steps are required:

- Set terminal and user ID command input class assignments and unsolicited output message group assignments as outlined in the “Terminal and User ID Requirements” section on page 4-8.
- Configure the DCM and BLM cards if applicable (see “Adding a DCM and BLM for BLM-Based Operations” on page 4-11). These cards are used by the network element to perform the BLM-based bulk download procedure.
 - The DCM card must be entered as card type `dcm` and running the `ebdadcm` GPL.
 - The BLM card is a TSM card but must be entered as card type `asm` and running the `ebdablm` GPL.
- Prepare a Database Backup removable cartridge for backing out of a BLM-based operation if an error occurs while distributing the LNP database from the fixed disk to the TSM cards, as described in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.” (The same procedure is used to prepare for bulk loading from the Bulk Load removable cartridge, as described in Chapter 10, “Manual LSMS-to-NE Bulk Loading” or Chapter 12, “Manual NE-to-NE Bulk Loading.”)

Terminal and User ID Requirements

Set terminal and user ID command input class assignments and unsolicited output message group assignments to perform any of the procedures that require terminal use at the network element, for example, the procedures in this chapter or in Chapter 9. These procedures can only be performed if the user and the terminal used for the changes have been assigned to the following network element command classes:

- Database Administration
- Debug
- Link Maintenance
- LNP Basic
- LNP Database Administration
- LNP Subscription
- Program Update
- System Maintenance

You can verify the command class assignments for the terminals with the `rtrv-secu-trm` command; the command class assignments for the user ID that is currently logged onto a specific terminal with the `rtrv-user` command; and the command class assignments for all user IDs, or specific user IDs, whether they are logged on or not, with the `rtrv-secu-user` command.

To change a command class assignment for a terminal with the `chg-secu-trm` command, refer to the procedure “Changing Terminal Command Class Assignments” in Chapter 4 of the *Eagle STP Database Administration Manual - System Management*. To change the command class assignments for user IDs with the `chg-user` command, refer to the procedure “Changing User Information” in Chapter 4 of the *Eagle STP Database Administration Manual - System Management*.

Preparing the NE for Non-Manual Synchronization

The terminal being used to perform the procedures at the network element should be assigned to these unsolicited message output groups:

- Database Administration
- Link Maintenance
- LNP Database Administration
- LNP Subscription
- Program Update
- System Maintenance

You can verify the unsolicited output message group assignments for the terminals with the `rtrv-trm` command.

To change the unsolicited output message group assignments, refer to the procedure “Changing Terminal Characteristics” in Chapter 4 of the *Eagle STP Database Administration Manual - System Management*.

For more information on network element commands used in this chapter, refer to the *Eagle STP Commands Manual*.

The Global Title Translation (GTT) feature and the Local Number Portability (LNP) feature must be on. Verify the feature status with the `rtrv-feat` command. To turn on one or both of these features, refer to procedure “Activating the LNP Feature” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP*.

NOTE: Before turning on the Global Title Translation (GTT) feature and the Local Number Portability (LNP) feature, make sure you have purchased these features. If you are not sure whether you have purchased the LNP and GTT features, contact your Tekelec Sales or Account Representative.

Once a feature has been turned on with the `chg-feat` command, the feature cannot be turned off.

Canceling the `REPT-STAT-CARD` Command

Because the `rept-stat-card` command used in the procedures in this chapter can output information for a long period of time, the `rept-stat-card` command can be canceled and the output to the terminal stopped. There are three ways to cancel the `rept-stat-card` command:

- Press the **F9** function key on the keyboard at the terminal where the `rept-stat-card` command was entered.
- Enter the `canc-cmd` without the `trm` parameter at the terminal where the `rept-stat-card` command was entered.
- Enter the `canc-cmd:trm=<xx>`, where `<xx>` is the terminal where the `rept-stat-card` command was entered, from another terminal other than the terminal where the `rept-stat-card` command was entered. To enter the `canc-cmd:trm=<xx>` command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the `rtrv-secu-trm` command. The user's permissions can be verified with the `rtrv-user` or `rtrv-secu-user` commands.

For more information about the `canc-cmd` command, refer to the *Eagle STP Commands Manual*.

Adding a DCM and BLM for BLM-Based Operations

Any BLM-based operation performed at the LSMS requires that the network element is equipped with a Database Communications Module (DCM) running the `ebdadcm` GPL and a Translation Service Module (TSM) running the `ebdablm` GPL. The TSM running the `ebdablm` GPL is called a Bulk Load Module (BLM). Enter the DCM and BLM into the database using the `ent-card` command.

The `ent-card` command uses these parameters:

Mandatory

- `:loc` – The location of the card being added to the database
- `:type` – The type of card being added to the database
- `:appl` – The application software or GPL that is assigned to the card

Optional

- `:force` – Allow the LIM to be added to the database even if there are not enough cards running the SCCP GPL (either ASM or TSM) in the system to support the number of Link Interface Modules (LIMs) in the system. This parameter does not apply to configuring the DCM and TSM for the BLM-based bulk load procedure and should not be used

Table 4-2 shows the valid card type (`type`) and card application (`appl`) combinations for the cards being added to the database and the names and part numbers of the hardware. This can be used to verify that the DCM or BLM being added to the database matches the card physically installed in the network element.

Table 4-2. LSMS BLM-Based Operations Card Type and Card Application Combinations

Card Name	Card Type (:type)	Application Type (:appl)
DCM	dcm	ebdadcm
TSM (BLM)	asm	ebdablm

The network element can only contain one DCM running the `ebdadcm` application and one TSM running the `ebdablm` application.

The DCM card can only be installed in an odd-numbered card slot and requires two slots (the higher numbered slot adjacent to the DCM card must be empty). The DCM card is connected to the network through the odd numbered card slot connector. For possible card locations, refer to Table 4-3.

Table 4-3. DCM Card Locations in Control (C) and Extension (E) Shelves

Shelf	Location of the DCM	Empty Card Location	Shelf	Location of the DCM	Empty Card Location
C/E	Slot 01	Slot 02	C/E	Slot 11	Slot 12
C/E	Slot 03	Slot 04	E	Slot 13	Slot 14
C/E	Slot 05	Slot 06	E	Slot 15	Slot 16
C/E	Slot 07	Slot 08	E	Slot 17	Slot 18

The shelf to which the DCM and BLM are to be added, must already be in the database. This can be verified with the `rtrv-shlf` command. If the shelf is not in the database, refer to the “Adding a Shelf” procedure in the *Eagle STP Database Administration Manual - SS7*.

The DCM or BLM cannot be added to the database if the specified card location already has a card assigned to it.

The examples in this procedure add to the database the BLM in card slot 1215 and the DCM running the `ebdadcm` application in card slot 1217.

Procedure

1. Enter the `rept-stat-card` command to verify the hardware configuration of the network element. Two cards are required for this procedure, a DCM running the `EBDADCM GPL`, and a BLM (a TSM running the `EBDABLM GPL`). After you have determined that these two cards are present, you can cancel the command (see “Canceling the REPT-STAT-CARD Command” on page 4-10).

The following example of the possible output shows that the DCM and BLM are not yet installed.

```
rlghncxa03w 01-09-04 12:57:21 GMT Rel 28.0.0
CARD  VERSION      TYPE  APPL    PST     SST      AST
1101  002-201-000    ASM   SCCP    IS-NR   Active   -----
1102  002-201-000    ASM   GLS     IS-NR   Active   -----
1113  002-202-000    MASP  OAM     IS-NR   Active   -----
1114  -----        TDM   ----- IS-NR   Active   -----
1115  -----        MASP  OAM     IS-NR   Active   -----
1116  -----        TDM   ----- IS-NR   Active   -----
1117  -----        MDAL  ----- IS-NR   Active   -----
1201  002-202-000    LIM0CU SS7ANSI IS-NR   Active   -----
1202  002-202-000    LIMV35 SS7ANSI IS-NR   Active   -----
1203  002-202-000    LIMDS0 SS7ANSI IS-NR   Active   -----
1204  002-202-000    LIMDS0 SS7ANSI IS-NR   Active   -----
1205  002-201-000    LIMDS0 CCS7ITU IS-NR   Active   -----
1206  002-202-000    ASM   SCCP    IS-NR   Active   -----
1207  002-201-000    LIMV35 SS7GX25 IS-NR   Active   -----
1208  002-201-000    LIMV35 SS7GX25 IS-NR   Active   -----
1213  002-201-000    ASM   SCCP    IS-NR   Active   -----
1214  002-201-000    ASM   SCCP    IS-NR   Active   -----
1216  002-201-000    ACMENET STPLAN  IS-NR   Active   -----
1301  002-201-000    LIMATM ATMANSI IS-NR   Active   -----
1304  002-201-000    ACMENET STPLAN  IS-NR   Active   -----
1305  002-202-000    LIMDS0 SS7ANSI IS-NR   Active   -----
1308  002-201-000    LIMDS0 SS7GX25 IS-NR   Active   -----
1314  002-201-000    LIMDS0 SS7GX25 IS-NR   Active   -----
1315  002-201-000    DCM   SS7IPGW IS-NR   Active   -----
1317  002-201-000    ACMENET STPLAN  IS-NR   Active   -----
1318  002-201-000    LIMATM ATMANSI IS-NR   Active   -----
2107  002-201-000    DCM   EMDC    IS-NR   Active   -----
2111  002-201-000    DCM   EMDC    IS-NR   Active   -----
Command Completed.
```

If the DCM is not in the system, go to step 2.

If the BLM (a TSM running the `EBDABLM GPL`) is not in the system, go to step 13.

If both cards are in the system, go to step 15.

- Verify that the GTT and LNP features are turned on (`gtt=on` or `lnp=on`) by entering the `rtv-feat` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
EAGLE FEATURE LIST
GTT          = on      GWS          = off      NRT          = off
X25G        = off     LAN          = off     CRMD         = off
SEAS        = off     LFS          = off     MTPRS        = off
LNP       = on     FAN          = off     DSTN4000     = off
WNP         = off     CNCF         = off     LNP12MIL    = off
TLNP        = off     SCCPCNV      = off     TCAPCNV     = off
X252000     = off     PLNP         = off     NCR          = off
ITUMTPRS    = off     SLSOCB       = off     EGGT         = off
IPI SUP     = off     DYNRTK       = off     PVGTT        = off
PRFXDLGT    = off     MPC          = off     INP          = off
ITUDUPPC    = off
```

If both features are turned on, go to step 3.

To turn on the LNP feature or to turn on the LNP and the GTT features, refer to procedure “Activating the LNP Feature” in the *Database Administration Manual - LNP*. Then return to step 3.

- Verify that the DCM and BLM have been physically installed into their proper locations.



CAUTION: If the version of the BPDCM GPL on the DCM card does not match the BPDCM GPL version in the database when the DCM is inserted into the card slot, UAM 0002 is generated indicating that these GPL versions do not match. If UAM 0002 has been generated, perform the alarm clearing procedure for UAM 0002 in the *Eagle STP Maintenance Manual* before proceeding with this procedure.

- Add the DCM to the system by entering this command:

```
ent-card:type=dcm:appl=ebdadcm:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
ENT-CARD: MASP A - COMPLTD
```

- Enter the host name that is associated with the DCM's IP address with the `ent-ip-host` command. For this example, enter this command:

```
ent-ip-host:host=EBDADCM.NC.TEKELEC.COM:ipaddr=255.245.34.61
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
ENT-IP-HOST: MASP A - COMPLTD
```

Preparing the NE for Non-Manual Synchronization

6. Enter the `chg-ip-card` command with the location of the DCM (`loc`), the host table search order (`srchordr`), the name of the domain server (`domain`), and the IP address of the default router (`defrouter`). For this example, enter this command:

```
chg-ip-card:loc=1217:domain=nc.tekelec.com
:defrouter=255.245.34.75:srchordr=local
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
CHG-IP-CARD: MASP A - COMPLTD
```

7. Enter the `chg-ip-lnk` command with the location of the DCM (`loc`), the port on the DCM (`port`), the IP address assigned to the DCM (`ipaddr`), the subnet mask IP address (`submask`), and the bandwidth of the IP link in megabits per second (`speed`). Only port A on the DCM can be used with the bulk download feature. For this example, enter this command.

```
chg-ip-lnk:loc=1217:port=a:ipaddr=255.245.34.61
:submask=255.245.56.61:speed=100
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
CHG-IP-LNK: MASP A - COMPLTD
```

8. Initiate the download of the approved version of the `bpdc`m flash GPL to the DCM using the `init-flash` command. For this example, enter this command:

```
init-flash:code=appr:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 00-02-05 11:11:28 GMT Rel 26.0.0
FLASH Memory Downloading for card 1217 Started.
;
rlghncxa03w 00-02-05 11:11:28 GMT Rel 26.0.0
BPDCM Downloading for card 1217 Complete.
;
rlghncxa03w 00-02-05 11:11:28 GMT Rel 26.0.0
Command Completed.
```

The card reboots; a minor alarm occurs indicating that the card is running a non-activated flash GPL:

```
0030.0004 * GPL SYSTEM BPDCM Card is running non-activated GPL
```

The flash GPL is activated later with the `act-flash` command (see step 11).

- Place the DCM into service with the `rst-card` command and specifying the card location of the DCM. For this example, enter this command:

```
rst-card:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
Card has been allowed.
```

- Verify that the approved `bpdc` GPL from step 8 has loaded and that the card has returned to its in-service normal (IS-NR) status using the `rept-stat-card` command. For this example, enter this command:

```
rept-stat-card:loc=1217
```

This is an example of the possible output:

```
rlghncxa03w 01-09-05 11:11:28 GMT Rel 26.0.0
CARD  VERSION      TYPE  APPL      PST      SST      AST
1217  002-202-000     DCM   EBDADCM   IS-NR    Standby  -----
ALARM STATUS      = No Alarms.
FLASH GPL version = 002-123-004+
IMT BUS A         = Conn
IMT BUS B         = Conn
CLOCK A           = Idle
CLOCK B           = Active
CLOCK I           = Idle
MBD BIP STATUS    = valid
DBD BIP STATUS    = -----
DB STATUS         = valid
TROUBLE TEXT VER. = -----
```

The '+' symbol indicates a non-activated Flash GPL.

- Activate the `bpdc` GPL loaded onto the DCM in step 8 using the `act-flash` command. This command makes the flash GPL change permanent on the card. For this example, enter this command.

```
act-flash:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-05 11:11:28 GMT Rel 28.0.0
FLASH Memory Activation for card 1217 Completed.

rlghncxa03w 01-09-05 11:11:28 GMT Rel 28.0.0
Command Completed.
```

- Verify that the `bpdc` GPLs on the fixed disk and on the card match using the `rept-stat-gpl:appl=bpdc` command. This is an example of the possible output:

```
rlghncxa03w 01-09-05 11:40:26 GMT Rel 28.0.0
APPL  CARD  RUNNING      APPROVED      TRIAL
BPDCM 1217  002-202-000  002-202-000  002-203-000
Command Completed
```

Preparing the NE for Non-Manual Synchronization

13. Add the BLM to the system by entering this command.

```
ent-card:type=asm:appl=ebdablm:loc=1215
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
ENT-CARD: MASP A - COMPLTD
```

14. Place the BLM into service with the `rst-card` command and specifying the card location of the BLM. For this example, enter this command:

```
rst-card:loc=1215
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
Card has been allowed.
```

15. Verify that the states of the DCM and BLM are IS-NR using the `rept-stat-card` command. This is an example of the possible output:

```
rlghncxa03w 01-09-04 12:57:21 GMT Rel 28.0.0
CARD  VERSION      TYPE  APPL  PST  SST  AST
1101  002-201-000  ASM   SCCP  IS-NR  Active  -----
1102  002-201-000  ASM   GLS   IS-NR  Active  -----
1113  002-202-000  MASP  OAM   IS-NR  Active  -----
1114  -----      TDM   -----  IS-NR  Active  -----
1115  -----      MASP  OAM   IS-NR  Active  -----
1116  -----      TDM   -----  IS-NR  Active  -----
1117  -----      MDAL  -----  IS-NR  Active  -----
1201  002-202-000  LIMOCU SS7ANSI IS-NR  Active  -----
1202  002-202-000  LIMV35 SS7ANSI IS-NR  Active  -----
1203  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1204  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1205  002-201-000  LIMDS0 CCS7ITU IS-NR  Active  -----
1206  002-202-000  ASM   SCCP  IS-NR  Active  -----
1207  002-201-000  LIMV35 SS7GX25 IS-NR  Active  -----
1208  002-201-000  LIMV35 SS7GX25 IS-NR  Active  -----
1213  002-201-000  ASM   SCCP  IS-NR  Active  -----
1214  002-201-000  ASM   SCCP  IS-NR  Active  -----
1215  002-202-000  ASM   EBDABLM IS-NR  Active  -----
1216  002-201-000  ACMENET STPLAN IS-NR  Active  -----
1217  002-202-000  DCM   EBDADCM IS-NR  Active  -----
1301  002-201-000  LIMATM ATMANSI IS-NR  Active  -----
1304  002-201-000  ACMENET STPLAN IS-NR  Active  -----
1305  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1308  002-201-000  LIMDS0 SS7GX25 IS-NR  Active  -----
1314  002-201-000  LIMDS0 SS7GX25 IS-NR  Active  -----
1317  002-201-000  ACMENET STPLAN IS-NR  Active  -----
1318  002-201-000  LIMATM ATMANSI IS-NR  Active  -----
2107  002-201-000  DCM   EMDC  IS-NR  Active  -----
2111  002-201-000  DCM   EMDC  IS-NR  Active  -----
Command Completed.
```

If either the DCM or BLM are not IS-NR, contact Tekelec Technical Services. See “Technical Services and Support” on page 1-14.

16. Back up the new changes using the `chg-db:action=backup:dest=fixed` command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.  
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.  
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.  
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

17. Make sure that the DCM has been connected to the network. For information on the cabling requirements for the DCM, refer to the “Populating the System” section of Chapter 4, “Site Engineering” of the *Eagle STP Installation Manual*.
-

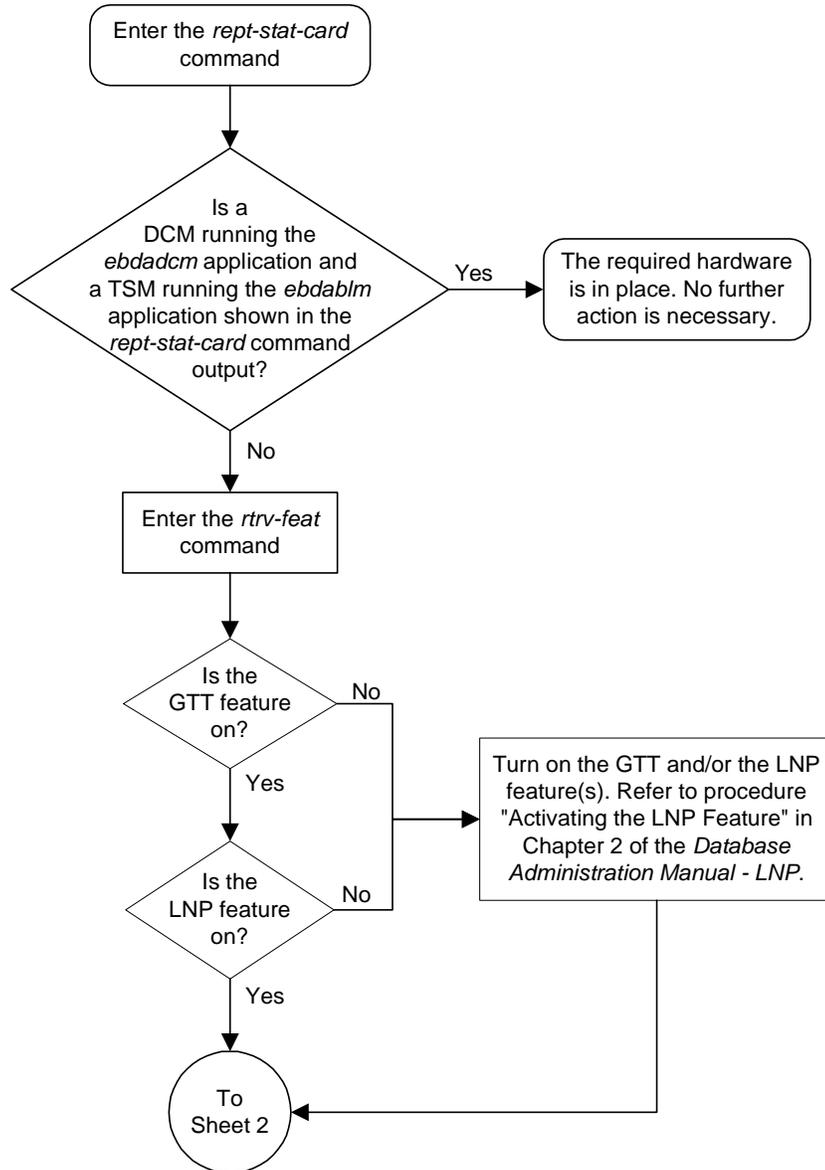
18. Have the LSMS operator execute the `ping` command from the LSMS to verify that the DCM is connected to the LSMS. For more information on executing the `ping` command from the LSMS, refer to Chapter 4, “Preventive Maintenance,” in the *LSMS Maintenance Manual*.
-

You have now completed this procedure.

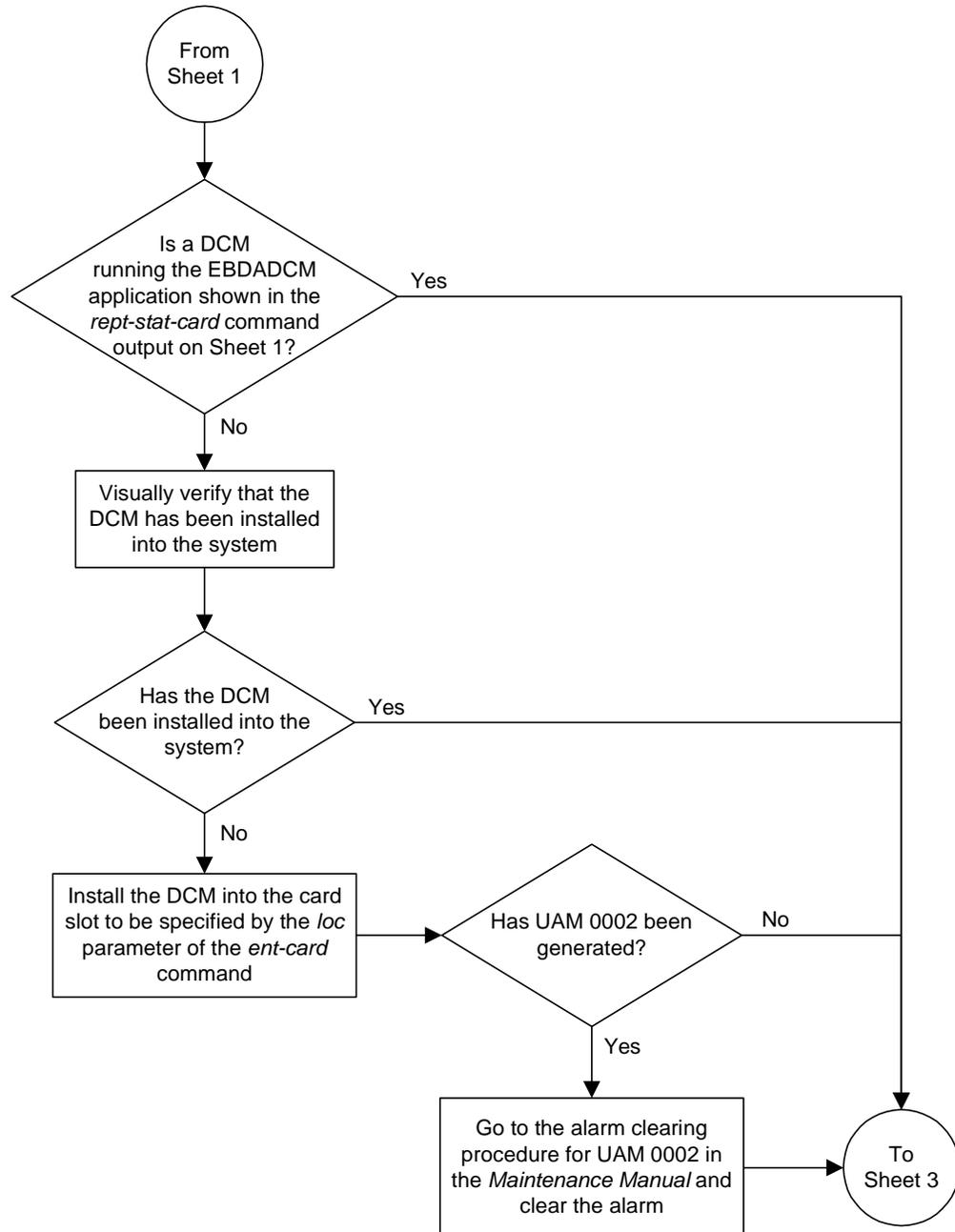
Preparing the NE for Non-Manual Synchronization

Flowchart 4-1. Adding a DCM and BLM for LSMS BLM-Based Operations (Sheet 1 of 4)

NOTE: Before executing this procedure, make sure you have purchased the Global Title Translation (GTT) feature and the Local Number Portability (LNP) feature. If you are not sure whether you have purchased these features, contact your Tekelec Sales or Account Representative.

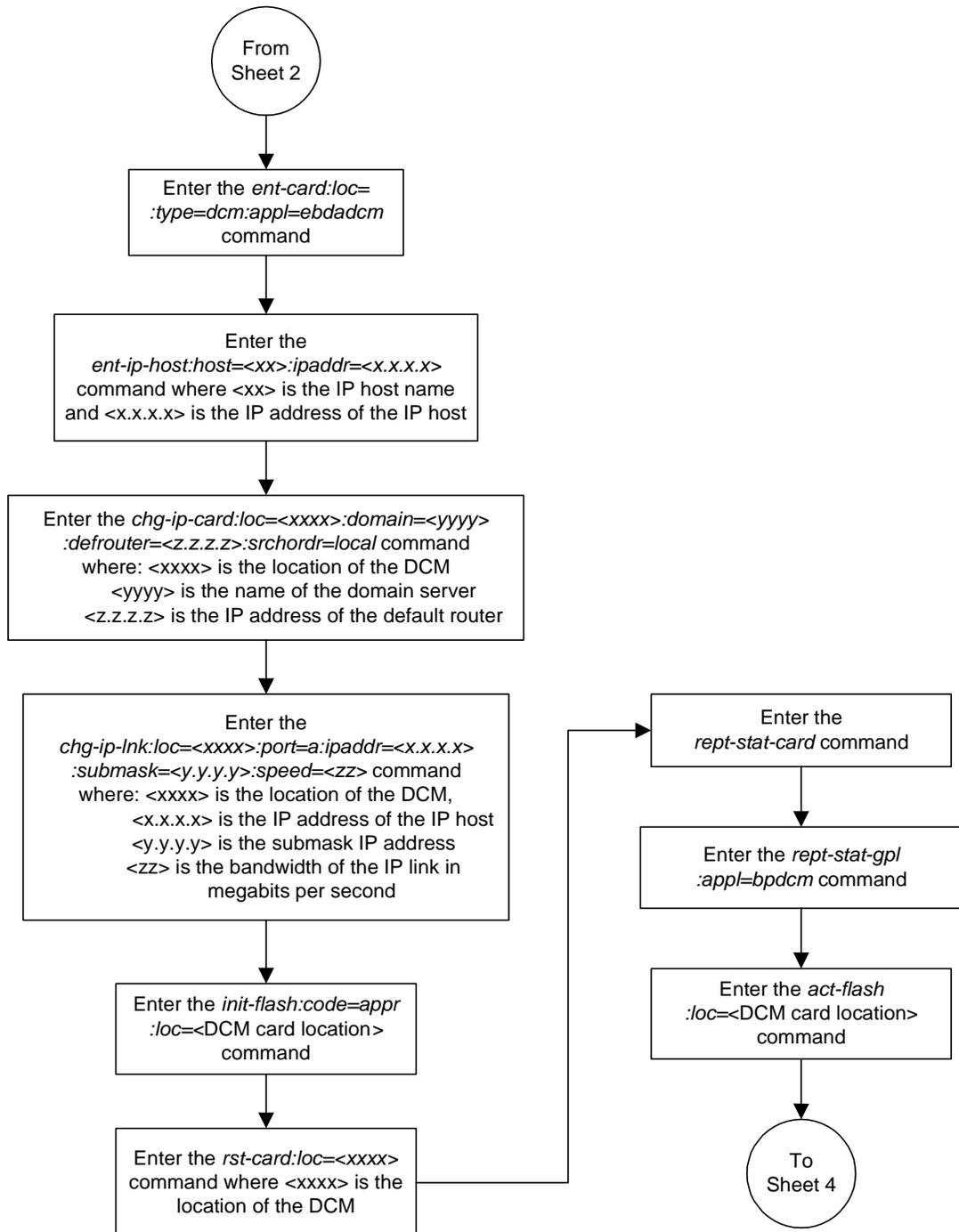


Flowchart 4-1. Adding a DCM and BLM for LSMS BLM-Based Operations
(Sheet 2 of 4)

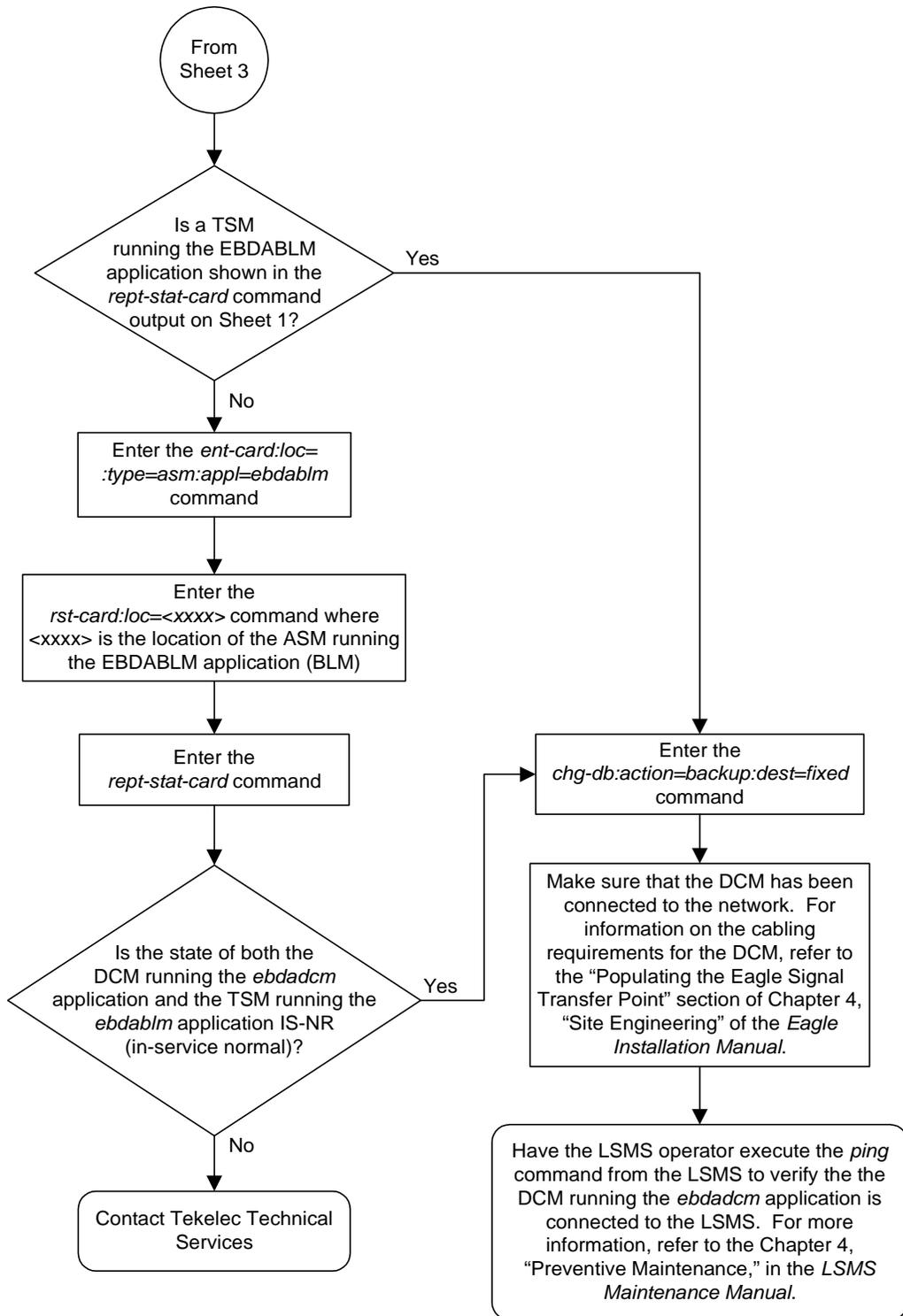


Preparing the NE for Non-Manual Synchronization

Flowchart 4-1. Adding a DCM and BLM for LSMS BLM-Based Operations
(Sheet 3 of 4)



Flowchart 4-1. Adding a DCM and BLM for LSMS BLM-Based Operations
(Sheet 4 of 4)



Removing the DCM Applied to LSMS BLM-Based Operations

Use this procedure to remove the Database Communications Module (DCM) from the database using the `dlc-card` command.

The DCM runs the `ebdadcm` application and supports BLM-based operations performed from the LSMS. The DCM is shown in the database with the entries `DCM` in the TYPE field and `EBDADCM` in the APPL field of the `rept-stat-card` command output.

The card cannot be removed if it does not exist in the database.

The DCM must be out of service (OOS-MT-DSBLD) before it can be removed from the database.



CAUTION: Removing this DCM from the database will prevent any BLM-based operations from the LSMS from being performed.

Procedure

1. Display the state of the DCM running the `ebdadcm` application with the `rept-stat-card` command. The state of the DCM is shown in the PST field of the `rept-stat-card` command output. After you have determined that these two cards are present, you can cancel the command (see “Canceling the REPT-STAT-CARD Command” on page 4-10).

This is an example of the possible output:

```
rlghncxa03w 01-09-04 12:57:21 GMT Rel 28.0.0
CARD  VERSION      TYPE      APPL      PST      SST      AST
1101  002-201-000    ASM      SCCP      IS-NR    Active   -----
1101  002-201-000    ASM      GLS       IS-NR    Active   -----
1113  002-202-000    MASP     OAM       IS-NR    Active   -----
1114  -----        TDM     -----   IS-NR    Active   -----
1115  -----        MASP     OAM       IS-NR    Active   -----
1116  -----        TDM     -----   IS-NR    Active   -----
1117  -----        MDAL     -----   IS-NR    Active   -----
1201  002-202-000    LIM0CU   SS7ANSI   IS-NR    Active   -----
1202  002-202-000    LIMV35   SS7ANSI   IS-NR    Active   -----
1203  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1204  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1205  002-201-000    LIMDS0   CCS7ITU   IS-NR    Active   -----
1206  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1207  002-201-000    LIMV35   SS7GX25   IS-NR    Active   -----
1208  002-201-000    LIMV35   SS7GX25   IS-NR    Active   -----
1213  002-201-000    ASM      SCCP      IS-NR    Active   -----
1214  002-201-000    ASM      GLS       IS-NR    Active   -----
1215  002-201-000    ASM      EBDABLM   IS-NR    Active   -----
1216  002-201-000    ACMENET  STPLAN    IS-NR    Active   -----
1217  002-202-000    DCM      EBDADCM   IS-NR    Active   -----
1301  002-201-000    LIMATM   ATMANSI   IS-NR    Active   -----
1304  002-201-000    ACMENET  STPLAN    IS-NR    Active   -----
1305  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1308  002-201-000    LIMDS0   SS7GX25   IS-NR    Active   -----
1314  002-201-000    LIMDS0   SS7GX25   IS-NR    Active   -----
1317  002-201-000    ACMENET  STPLAN    IS-NR    Active   -----
1318  002-201-000    LIMATM   ATMANSI   IS-NR    Active   -----
2107  002-201-000    DCM      EMDC      IS-NR    Active   -----
2111  002-201-000    DCM      EMDC      IS-NR    Active   -----
Command Completed.
```

If the state of the DCM is not `OOS-MT-DSBLD`, go to step 2.

If the state of the DCM is `OOS-MT-DSBLD`, go to step 3.

-
2. Place the DCM out of service using the `rmv-card` command and specifying the card location. For this example, enter this command:

```
rmv-card:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0
Card has been inhibited.
```

Preparing the NE for Non-Manual Synchronization

3. Remove the IP link from the DCM running the **EBDADCM** application by entering the **chg-ip-lnk** command and specifying the IP address 0.0.0.0. For this example, enter this command:

```
chg-ip-lnk:loc=1217:port=a:ipaddr=0.0.0.0
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0  
CHG-IP-LNK: MASP A - COMPLTD
```

4. Remove the DCM using the **dlt-card** command with the card location of the card to be removed. The **dlt-card** command has only one parameter, **loc**, which is the location of the card. For this example, enter this command:

```
dlt-card:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0  
DLT-CARD: MASP A - COMPLTD
```

5. Verify the changes using the **rtrv-card** command specifying the card that was removed in step 4. For this example, enter this command:

```
rtrv-card:loc=1217
```

After successful completion of this command, the system returns the following output:

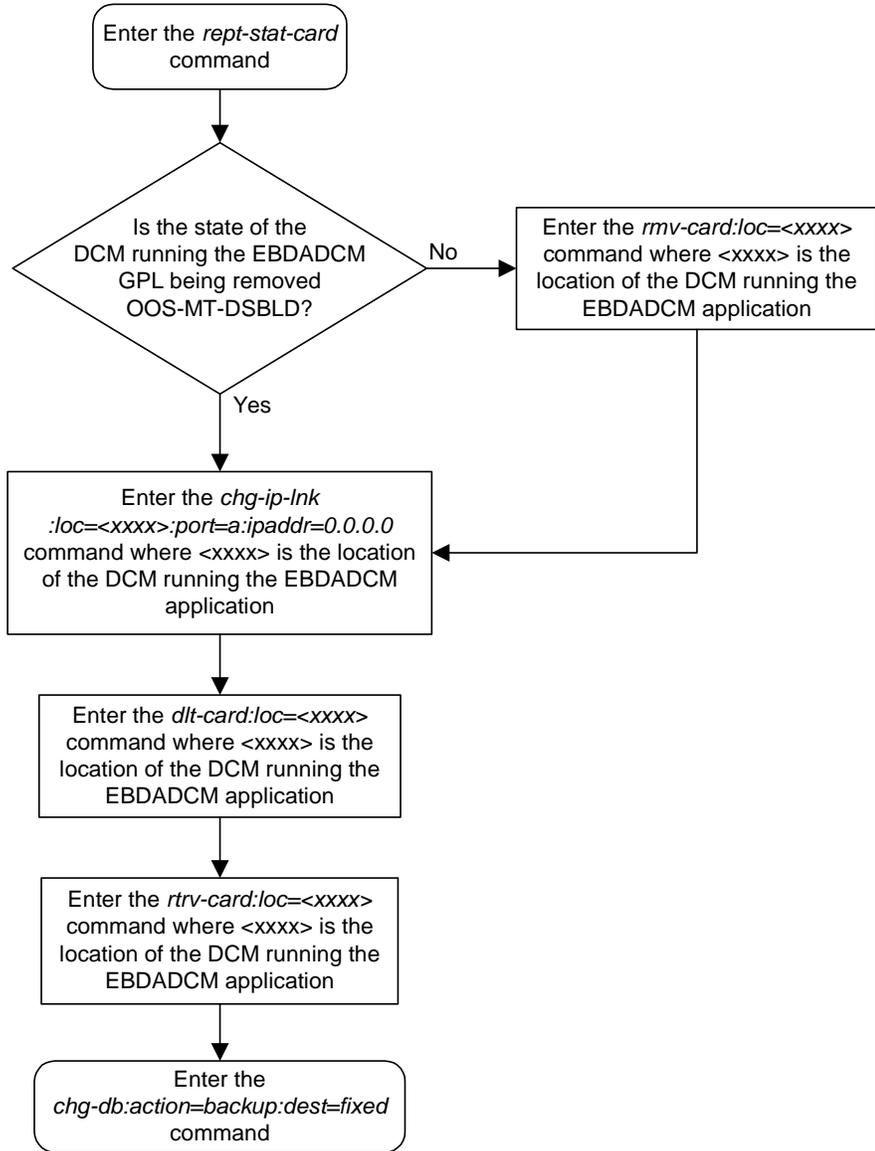
```
E2144 Cmd Rej: Location invalid for hardware configuration
```

6. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.  
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.  
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.  
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

You have now completed this procedure.

Flowchart 4-2. Removing the DCM Applied to LSMS BLM-Based Operations



Removing the BLM Applied to LSMS BLM-Based Operations

Use this procedure to remove the Bulk Load Module (BLM) applied to LSMS BLM-based operations from the database using the `dlt-card` command.

The BLM, which is a TSM entered as card type `asm` and running the `ebdablm` application, supports BLM-based operations performed from the LSMS. The BLM is shown in the database with the entries `ASM` in the TYPE field and `EBDABLM` in the APPL field of the `rept-stat-card` command output.

The card cannot be removed if it does not exist in the database.

The BLM must be out of service (OOS-MT-DSBLD) before it can be removed from the database.



CAUTION: Removing the BLM from the database will prevent any BLM-based operations from the LSMS.

Procedure

1. Display the state of the BLM (a TSM of card type ASM and running the EBDABLM application) with the `rept-stat-card` command. The state of the BLM is shown in the PST field of the `rept-stat-card` command output. After you have determined that these two cards are present, you can cancel the command (see “Canceling the REPT-STAT-CARD Command” on page 4-10).

This is an example of the possible output:

```
rlghncxa03w 01-09-04 12:57:21 GMT Rel 28.0.0
CARD  VERSION      TYPE      APPL      PST      SST      AST
1101  002-201-000    ASM      SCCP      IS-NR    Active   -----
1101  002-201-000    ASM      GLS       IS-NR    Active   -----
1113  002-202-000    MASP     OAM       IS-NR    Active   -----
1114  -----         TDM     -----   IS-NR    Active   -----
1115  -----         MASP     OAM       IS-NR    Active   -----
1116  -----         TDM     -----   IS-NR    Active   -----
1117  -----         MDAL     -----   IS-NR    Active   -----
1201  002-202-000    LIMOCU   SS7ANSI   IS-NR    Active   -----
1202  002-202-000    LIMV35   SS7ANSI   IS-NR    Active   -----
1203  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1204  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1205  002-201-000    LIMDS0   CCS7ITU   IS-NR    Active   -----
1206  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1207  002-201-000    LIMV35   SS7GX25   IS-NR    Active   -----
1208  002-201-000    LIMV35   SS7GX25   IS-NR    Active   -----
1213  002-201-000    ASM      SCCP      IS-NR    Active   -----
1214  002-201-000    ASM      GLS       IS-NR    Active   -----
1215  002-202-000    ASM      EBDABLM   IS-NR    Active   -----
1216  002-201-000    ACMENET  STPLAN   IS-NR    Active   -----
1217  002-201-000    DCM      EBDADCM   IS-NR    Active   -----
1301  002-201-000    LIMATM   ATMANSI   IS-NR    Active   -----
1304  002-201-000    ACMENET  STPLAN   IS-NR    Active   -----
1305  002-202-000    LIMDS0   SS7ANSI   IS-NR    Active   -----
1308  002-201-000    LIMDS0   SS7GX25   IS-NR    Active   -----
1314  002-201-000    LIMDS0   SS7GX25   IS-NR    Active   -----
1317  002-201-000    ACMENET  STPLAN   IS-NR    Active   -----
1318  002-201-000    LIMATM   ATMANSI   IS-NR    Active   -----
2107  002-201-000    DCM      EMDC      IS-NR    Active   -----
2111  002-201-000    DCM      EMDC      IS-NR    Active   -----
Command Completed.
```

If the state of the BLM is not `OOS-MT-DSBLD`, go to step 2.

If the state of the BLM is `OOS-MT-DSBLD`, go to step 3.

Preparing the NE for Non-Manual Synchronization

2. Place the BLM out of service using the `rmv-card` command and specifying the card location. For this example, enter this command:

```
rmv-card:loc=1215
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0  
Card has been inhibited.
```

3. Remove the card from the database using the `dlt-card` command. The `dlt-card` command has only one parameter, `loc`, which is the location of the card. For this example, enter this command:

```
dlt-card:loc=1215
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-12 09:12:36 GMT Rel 28.0.0  
DLT-CARD: MASP A - COMPLTD
```

4. Verify the changes using the `rtrv-card` command and specifying the card that was removed in step 3. For this example, enter this command.

```
rtrv-card:loc=1215
```

After successful completion of this command, the system returns the following output:

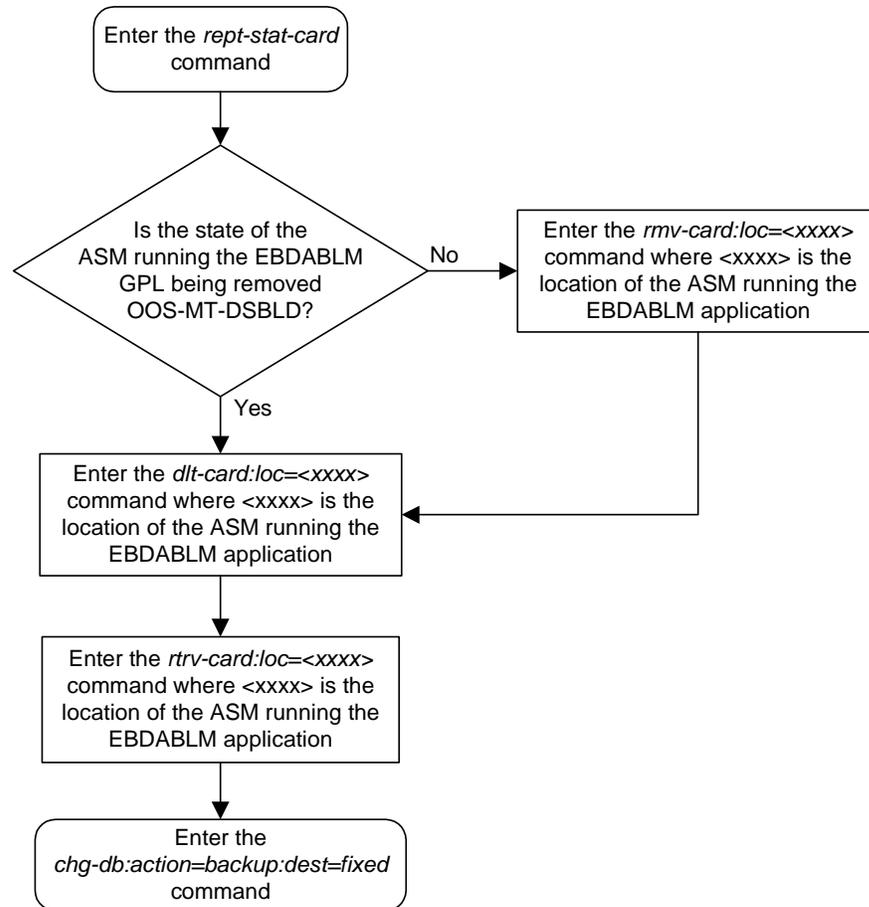
```
E2144 Cmd Rej: Location invalid for hardware configuration
```

5. Back up the new changes using the `chg-db:action=backup:dest=fixed` command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.  
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.  
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.  
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

You have now completed this procedure.

Flowchart 4-3. Removing the BLM Applied to LSMS BLM-Based Operations



Preparing a Database Backup Removable Cartridge

NOTE: This section applies only for network element LNP databases that contain 6 million or fewer ported numbers.

Use this procedure to prepare a Database Backup removable cartridge for the Bulk Loading Backout procedure that requires a removable cartridge.

The Eagle STP currently uses a 2.3 Gbyte removable cartridge for its removable cartridge drive. The drive is located on the Maintenance Disk and Alarm (MDAL) card in slot location 1117 of the control shelf.

The backout procedure restores the network element to the configuration prior to the BLM-based bulk download attempt and is described in “Backing Out Using the Database Backup Removable Cartridge” on page 13-8.

NOTE: It is not necessary to have a backout cartridge for BLM-based reconciling or resynchronization operations.

The BLM-based bulk download procedure is described in Chapter 7, “Managing Electronic Bulk Load from the LSMS,” section “Managing Electronic Bulk Load from the LSMS” on page 7-9.

The following sections describe how to handle the removable cartridge used in this procedure.

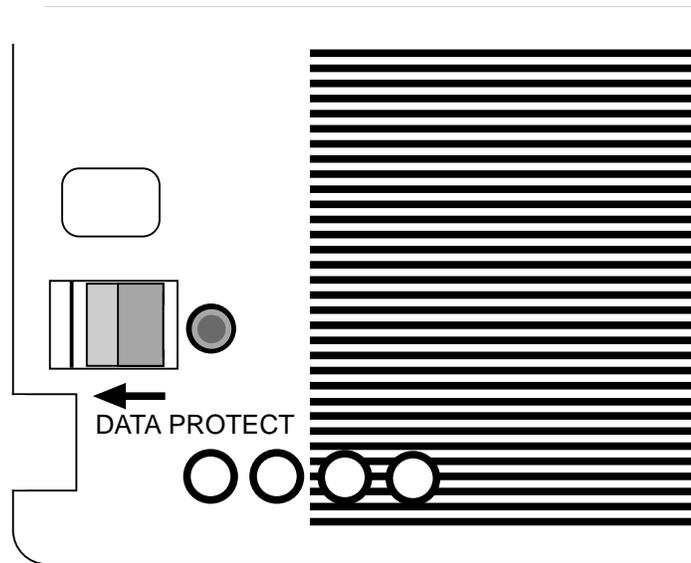
Labeling the Removable Cartridges

Avoid any confusion over which removable cartridge is being used in this procedure by labeling the removable cartridge as the Database Backup removable cartridge. Label the removable cartridge with an adhesive label affixed to the cartridge or with a marker capable of writing on the surface of the cartridge.

Write-Enabling the Removable Cartridge

The removable cartridges used with the manual bulk load procedures must be write-enabled. To write enable the removable cartridge, slide the tab in the lower left corner of the cartridge to the right, the opposite direction of the arrow, until it snaps into place. The hole to the right of the tab should be filled with a red dot. See Figure 4-2.

Figure 4-2. Write-Enabled Removable Cartridge

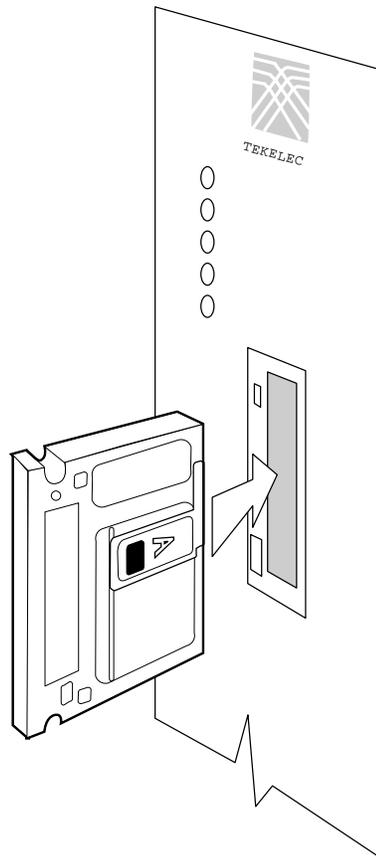


Inserting the Removable Cartridge

The removable cartridge is a two sided cartridge with each side designated as side A or side B. The removable cartridge drive can access only one side of the cartridge at a time, which side is accessed depends on how the cartridge is inserted into the removable cartridge drive. The side indicator is located on the shutter on each side of the removable cartridge.

To insert the removable cartridge to access side A, insert the removable cartridge into the cartridge insertion slot of the drive with the indicator for side A on the shutter facing to the right side of the drive and away from the side with the LED and the eject button, as shown in Figure 4-3.

Figure 4-3. Inserting the Removable Cartridge to Use Side A



To insert the removable cartridge to access side B, insert the removable cartridge into the cartridge insertion slot of the drive with the indicator for side A on the shutter facing to the left side of the drive and toward the side with the LED and the eject button.

When the removable cartridge is inserted into the removable cartridge drive, the LED is yellow while the cartridge is spinning up. When the cartridge is finished spinning up and ready to use, the LED is green.

Removing the Removable Cartridge

To remove the removable cartridge from the removable cartridge drive, the LED should be green. If the LED is yellow, the drive is being accessed by the Eagle STP and the cartridge cannot be removed from the drive. Wait until the LED is green before attempting to remove the cartridge from the drive. When the LED is green, push the eject button on the removable cartridge drive. While the cartridge is being ejected from the drive, the LED is yellow. The LED is off when the cartridge is fully ejected from the drive. The cartridge can then be removed from the drive.

Backing Up the Network Element Database

Procedure

1. At the network element, insert the Database Backup removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. See “Inserting the Removable Cartridge” on page 4-32 and Figure 4-3.
2. Enter the `rept-stat-db:display=version` command and examine its output to verify the characteristics described in the following substeps. This is an example of the output; examine the fields shown in bold:

```

rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP   C  LEVEL      TIME LAST BACKUP
      -----
FD BKUP  Y          35 01-09-06 10:19:18 GMT  Y          35 01-09-06 10:19:18 GMT
FD CRNT  Y          106                    Y          106
      MDAL 1117
      -----
RD BKUP  Y          247 01-09-02 14:29:03 GMT

CARD/APPL  LOC  C  T  LEVEL      TIME LAST UPDATE  VERSION      STATUS
-----
TDM-CRNT  1114 Y  N  106      01-09-06 23:15:06 026-000-500 NORMAL
LNP                                000-006-000
TDM-BKUP   1114 Y  -  35      01-09-06 10:19:18 026-000-500  NORMAL
LNP                                000-006-000
TDM-CRNT  1116 Y  N  106      01-09-06 23:47:05 026-000-500 NORMAL
LNP                                000-006-000
TDM-BKUP   1116 Y  -  35      01-09-06 10:19:18 026-000-500  NORMAL
LNP                                000-006-000
MDAL      1117 Y  -  247      01-09-02 14:29:03 026-000-500 NORMAL
LNP                                000-006-000

```

- a. Verify that the database status indicates **OK**.
- b. Verify that the current databases (**FD CRNT** for both the **ACTV TDM** and the **STDBY TDM**) are coherent. A database is shown as coherent by the letter **Y** displayed in the **C** field of the upper part of the example output. If the current databases are not coherent, shown by the letter **N** in the **C** field, refer to the section “Verifying the Database” in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.
- c. Verify that the proper versions of the LNP databases are shown in the **VERSION** column for the fixed disks (**TDM-CRNT** and **TDM-BKUP** at locations **1114** and **1116**).

Preparing the NE for Non-Manual Synchronization

- d. Verify that the version of the LNP database shown in the VERSION column for the Database Backup removable cartridge (MDAL) matches the version number of the LNP database on the fixed disks. If the LNP database version numbers match, go to step 4. If the LNP database versions do not match, format the Database Backup removable cartridge, go to step 3.
-

3. Format the Database Backup removable cartridge for system data by entering the `format-disk:type=system` command. After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 09:39:05 GMT Rel 28.0.0
Format-disk of system removable cartridge started.
Extended processing required, please wait.
```

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
Format-disk of system removable cartridge completed.
```

NOTE: If the removable cartridge to be formatted contains network element data, the `force=yes` parameter must be specified with the `format-disk` command. All data on the removable cartridge will be lost.

This command takes approximately 31 minutes to execute. It may take longer depending on other system activity that is in progress when this command is entered.

4. Copy the approved GPLs and the system release table from the active fixed disk to the Database Backup removable cartridge with the `copy-gpl` command. Specify the location of the active fixed disk (`sloc`) and the removable cartridge (`dloc`). The location of the active fixed disk is shown in the `rept-stat-db` command output, shown in step 2, with the indicator (`ACTV`) next to the location of the TDM. The location of the removable cartridge is the location of the MDAL card. For this example, enter this command:

```
copy-gpl:sloc=1116:dloc=1117
```

During command execution, these messages appear:

```
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

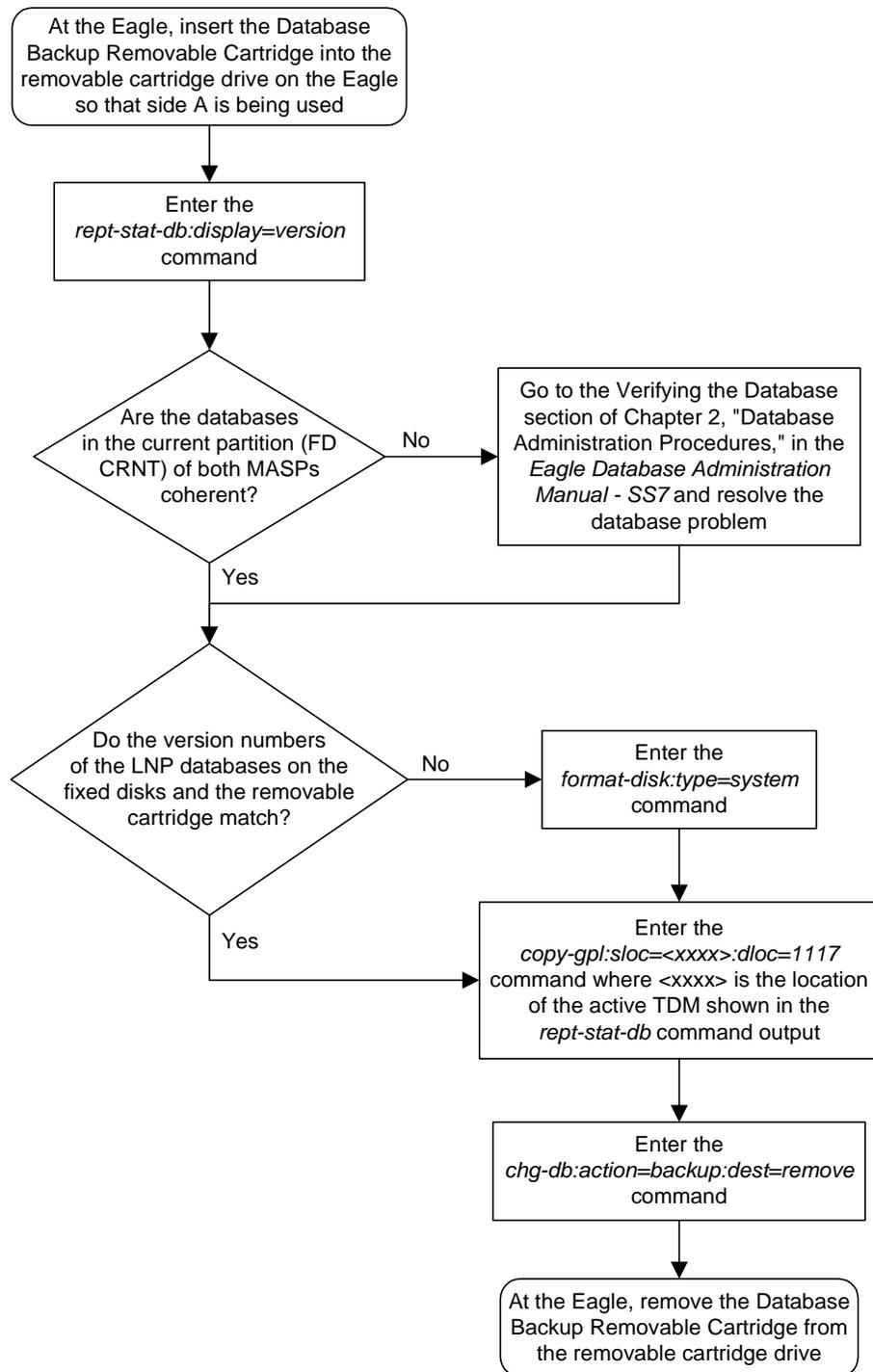
5. Back up the network element database to the Database Backup removable cartridge using the `chg-db:action=backup:dest=remove` command. These messages appear:

```
BACKUP (REMOVABLE) : MASP B - Backup starts on active MASP.
BACKUP (REMOVABLE) : MASP B - Backup to removable cartridge complete.
```

6. Remove the Database Backup removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 4-33.
-

You have now completed this procedure.

Flowchart 4-4. Backing Up the NE Database to the Removable Cartridge



5

Managing Resynchronization from the LSMS

Introduction.....	5-2
Required Features.....	5-3
Features Required for Automatic Resynchronization.....	5-3
Features Required for User-Initiated Resynchronization	5-3
Automatic Resynchronization Process	5-4
For LNP Databases Containing Up to 12 Million Numbers	5-5
For LNP Databases Containing ELAP LNP Configuration	5-4
User-Initiated Resynchronization Overview	5-7
ELAP-Based User-Initiated Resynchronization Overview.....	5-8
BLM-Based User-Initiated Resynchronization Overview	5-10
Managing User-Initiated Resynchronization from the LSMS.....	5-12
User-Initiated Resynchronization Procedure	5-12
User-Initiated Resynchronization Log File	5-21
User-Initiated Resynchronization Error Messages	5-23

Introduction

This chapter describes the features required for resynchronization, the resynchronization types, and how to initiate and manage resynchronization from the Local Service Management System (LSMS). Resynchronization resends all transactions that were previously sent from the LSMS to the network element up to a maximum number of transactions or a maximum period of time. The following types of resynchronization are available:

- *Automatic resynchronization*—After any network outage, the LSMS and network elements automatically attempt to resynchronize (see “Automatic Resynchronization Process” on page 5-4). This resynchronization occurs without operator intervention when the number of transactions that need to be retransmitted is less than or equal to the number that can be transmitted normally during a four-hour period under maximum provisioning load.
- *User-initiated resynchronization*—Provided certain optional features are installed at the LSMS and at the network element, the user can initiate a resynchronization under the following conditions:
 - In a BLM-based configuration (see “Supporting Up to 12 Million Ported Numbers” on page 2-9), whenever the connection to the OAP is not active
 - In an ELAP-based configuration (see “Supporting Up to 48 Million Numbers” on page 2-13 and “Features Required to Support Up to 96 Million Numbers” on page 2-14), after the network element operator has enabled the ability to receive a user-initiated resynchronization or electronic bulk load

In either of these configurations, user-initiated resynchronization is used usually as a alternative to a bulk load.

Required Features

This section describes the features required for various types of resynchronization.

Features Required for Automatic Resynchronization

Automatic resynchronization is available as a standard feature for the LSMS and Eagle STP.

Features Required for User-Initiated Resynchronization

To start a user-initiated resynchronization, you must have one of the following feature combinations installed:

- To support a network element LNP database that contains up to 12 million (and no ELAP) ported numbers, you must have installed the Enhanced Download and Audit feature at the network element. This feature includes the following hardware and software to support it:
 - Database Communication Module (DCM) card with the EBDADCM generic program load (GPL)
 - Bulk Load Module (BLM) card with the EBDABLM GPL
- To support a network element LNP database that contains ELAP Configuration, you must have:
 - The 48 million numbers configuration at the LSMS and
 - Installed 48 Million Numbers feature at the Eagle STP
 - or
 - The 96 million numbers configuration at the LSMS and
 - Installed Up to 96 Million Numbers feature at the Eagle STP

For information about configuring the LSMS for these features, refer to the *LSMS Configuration Manual*. For information about configuring the network element for these features, see Chapter 4, “Preparing the NE for Non-Manual Synchronization.”

Automatic Resynchronization Process

Automatic resynchronization is the process of automatically resending transactions that have occurred during an outage up to the number of transactions that could occur under the maximum provisioning load during an outage of up to four hours.

After any problem has been resolved that caused network outage between the LSMS and the network element, the LSMS and the network element's Element Management System (EMS) perform the actions described in the following sections to begin automatic resynchronization (also called "short synchronization"). The process differs slightly depending on which Million Numbers feature is installed. Neither process requires operator intervention unless it is unsuccessful, in which case notifications are posted, as described in "Notifications that Database Maintenance Is Required" on page 3-3.

For LNP Databases Containing ELAP LNP Configuration

To support ELAP LNP Configuration in a network element's LNP database, you must have the 48 million or ELAP Configuration feature at the LSMS and you must install the 48 or 96 Million Numbers feature at the network element. If so, the following actions are part of the automatic resynchronization process:

1. The Job Routing Server (JRS) of the active ELAP determines the database time stamp (DBTS) of both RTDBs (one on the active server and one on the standby server) and sends the DBTS that is the older of the two. An RTDB's DBTS represents the last time the RTDB received an update from the LSMS.
2. The LSMS determines how many transactions in the log file have a time stamp equal to or after the DBTS and does one of the following:
 - If the LSMS detects that the number of transactions requiring resynchronization exceeds the number that can be sent in four hours under maximum provisioning load, the LSMS posts at the LSMS notifications that database maintenance is required and sends a message to the network element indicating the automatic resynchronization cannot be performed. The active ELAP then sends the more recent DBTS of the two RTDBs (if the DBTS values were different), and this step is repeated. (If the more recent RTDB can be automatically resynchronized, you can copy the other RTDB from it after it has been automatically resynchronized, as described in Chapter 8, "Copying One RTDB from Another RTDB.")
 - If the LSMS detects that the number of transactions requiring resynchronization is less than or equal to the number that can be sent in four hours under maximum provisioning load, the LSMS and EMS

Managing Resynchronization from the LSMS

proceed with automatic resynchronization as described in steps 3 through 6.

3. The LSMS displays the following notification at the LSMS user interface:

```
[Major]: <Timestamp> 8054 <CLLI>: Short Synchronization Started
```

NOTE: All notifications displayed during steps 3 through 6 are for information only; no user action is necessary.

4. The LSMS stores all new updates arriving at the LSMS in the pending queue.
5. In chronological order, the LSMS sends all transactions stored in the log file specific to the network element's area of service. The chronological order starts at the first record that has a time stamp equal to or before the database time stamp (DBTS). For more information about DBTS, see step 2. Although the resynchronization may result in duplicate messages, duplicate messages do not result in database errors. Also, if the LSMS is able to perform automatic resynchronization based on the older DBTS, any transactions sent to update the older RTDB but not needed by the newer RTDB are ignored by the newer RTDB.
6. When resynchronization is complete, the LSMS displays the following notification at the LSMS user interface:

```
[Cleared]: <Timestamp> 8059 <CLLI>: Short Synchronization Complete
```

Automatic resynchronization is now complete; any updates stored in the LSMS pending queue are transmitted to the network element. Automatic resynchronization can occur for multiple network elements simultaneously.

For LNP Databases Containing Up to 12 Million Numbers

If the 48 Million Numbers feature is not installed at the network element, the following actions are part of the automatic resynchronization process:

1. The EMS requests an association with resynchronization mode enabled.
2. EMS requests download of updates by specifying a start time based on the time of the last successful LNP database update received from the LSMS. This time is called the database time stamp (DBTS). The database time stamp is reset only by updates received from the LSMS; it is not affected by LNP changes administered locally at the network element.
3. The LSMS determines how many transactions in the log file have a time stamp equal to or after the DBTS and does one of the following:
 - If the LSMS detects that the number of transactions requiring resynchronization exceeds the number that can be sent in four hours under maximum provisioning load, the LSMS sends notifications to the

administrator and to the Eagle STP that database maintenance is required. The notification process is described in “Notifications that Database Maintenance Is Required” on page 3-3. Upon receiving this notification, you can choose to perform one of several procedures, as described in “Choosing a Synchronization Procedure” on page 3-4.

- If the LSMS detects that the number of transactions requiring resynchronization is less than or equal to the number that can be sent in four hours under maximum provisioning load, the LSMS and EMS proceed with automatic resynchronization as described in steps 4 through 10.
4. The LSMS acknowledges the request from the EMS to establish an association.
 5. The LSMS displays the following notification at the LSMS user interface:

```
[Major]: <Timestamp> 8054 <CLLI>: Short Synchronization Started
```

NOTE: All notifications displayed during steps 5 through 10 are for information only; no user action is necessary.

6. The network element terminals display the following notification immediately and at half-hour intervals during the resynchronization process (the number `xxxx` indicates how many other notifications have already been displayed at the terminal).

```
rlghncxa03w 01-09-07 11:50:02 GMT Rel 28.0.0  
xxxx.1099 LSMS SYSTEM LSMS resynchronization in progress.
```

7. The LSMS stores all new updates arriving at the LSMS in the pending queue.
8. In chronological order, the LSMS sends all transactions stored in the log file specific to the network element’s area of service. The chronological order starts at the first record that has a time stamp equal to or before the database time stamp (DBTS). For more information about DBTS, see step 2. Although the resynchronization may result in duplicate messages, duplicate messages do not result in database errors.
9. When resynchronization is complete, the LSMS displays the following notification at the LSMS user interface:

```
[Cleared]: <Timestamp> 8059 <CLLI>: Short Synchronization Complete
```

10. The network element terminal displays the following indication (the number `xxxx` indicates how many other notifications have already been displayed at the terminal):

```
rlghncxa03w 01-09-07 11:56:04 GMT Rel 28.0.0  
xxxx.1099 LSMS SYSTEM LSMS resynchronization complete.
```

Managing Resynchronization from the LSMS

Automatic resynchronization is now complete; any updates stored in the LSMS pending queue are transmitted to the network element. Automatic resynchronization can occur for multiple network elements simultaneously.

User-Initiated Resynchronization Overview

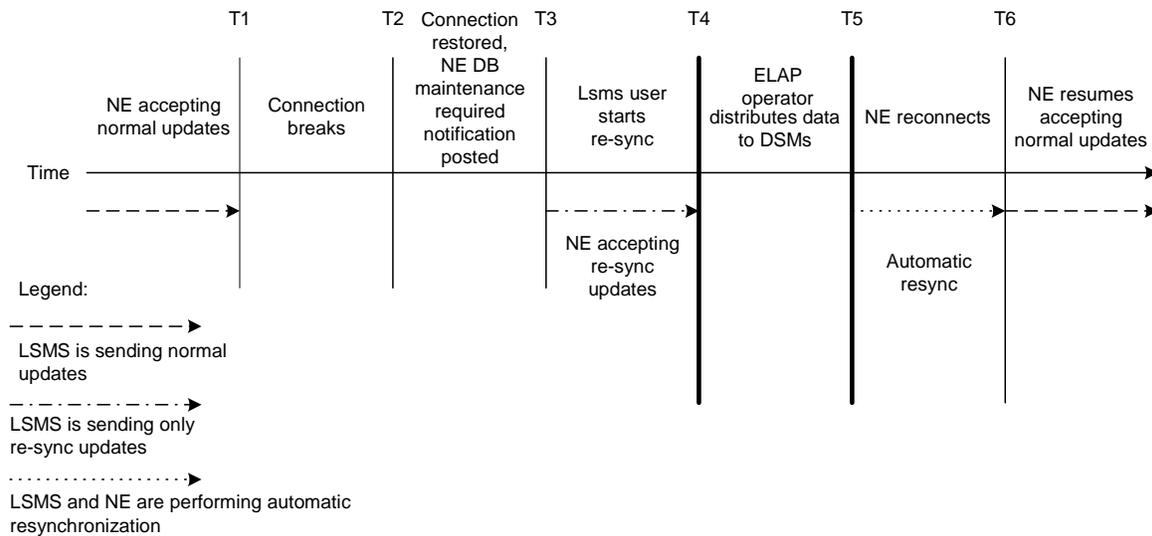
User-initiated resynchronization is the process of resending from the LSMS to the network element all transactions of the past seven days whose timestamp is later than the database timestamp (DBTS) which was received from the network element. The sequence of events that occurs during a user-initiated resynchronization depends on the features installed at the LSMS and the network element:

- If you have the 48 or 96 million numbers configuration at the LSMS and the ELAP LNP Configuration at the network element, resynchronization occurs as described in “ELAP-Based User-Initiated Resynchronization Overview” on page 5-8.
- If the Enhanced Bulk Download and Audit feature is installed at the network element, resynchronization occurs as described in “BLM-Based User-Initiated Resynchronization Overview” on page 5-10.

ELAP-Based User-Initiated Resynchronization Overview

Figure 5-2 illustrates how data is sent to a network element before, during, and after an ELAP-based user-initiated resynchronization.

Figure 5-1. ELAP-Based User-Initiated Resynchronization Timeline



The ELAP-based user-initiated resynchronization stages occur as follows:

- T1** *Outage occurs between the LSMS and NE:* The connection between the network element and LSMS is broken due to a network failure or a failure at either the LSMS or network element.
- T2** *Automatic resynchronization attempted:* When the connection between the LSMS and the network element is restored, both the LSMS and network element attempt an automatic resynchronization as described in section “Automatic Resynchronization Process” on page 5-4. If the LSMS cannot find the network element’s database timestamp (DBTS) in the LSMS resynchronization database, notifications are posted that database maintenance is required. For more information, see “Notifications that Database Maintenance Is Required” on page 3-3.
- T3** *User-initiated resynchronization stage begins:* The LSMS user and network element operator decide to perform a user-initiated resynchronization as a result of receiving database maintenance required notifications. As long as the DBTS received from the network element is not older than seven days, user-initiated resynchronization can be used instead of bulk downloading. For more information on choosing a procedure, see “Choosing a Synchronization Procedure” on page 3-4.

Managing Resynchronization from the LSMS

To start the user-initiated resynchronization at the LSMS, use the procedure described in “Managing User-Initiated Resynchronization from the LSMS” on page 5-12. The first few steps of that procedure direct you to ensure that the network element is ready to receive user-initiated resynchronization updates.

All NPAC and locally provisioned data updates with timestamps later than the NE’s DBTS until the current time are downloaded to the NE in the order in which they were received.

Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands rejected by the network element are recorded in the resynchronization log file (see “User-Initiated Resynchronization Log File” on page 5-21).

At any time during this stage, the LSMS user can choose to abort the resynchronization. If aborted, this operation can be either restarted or terminated.

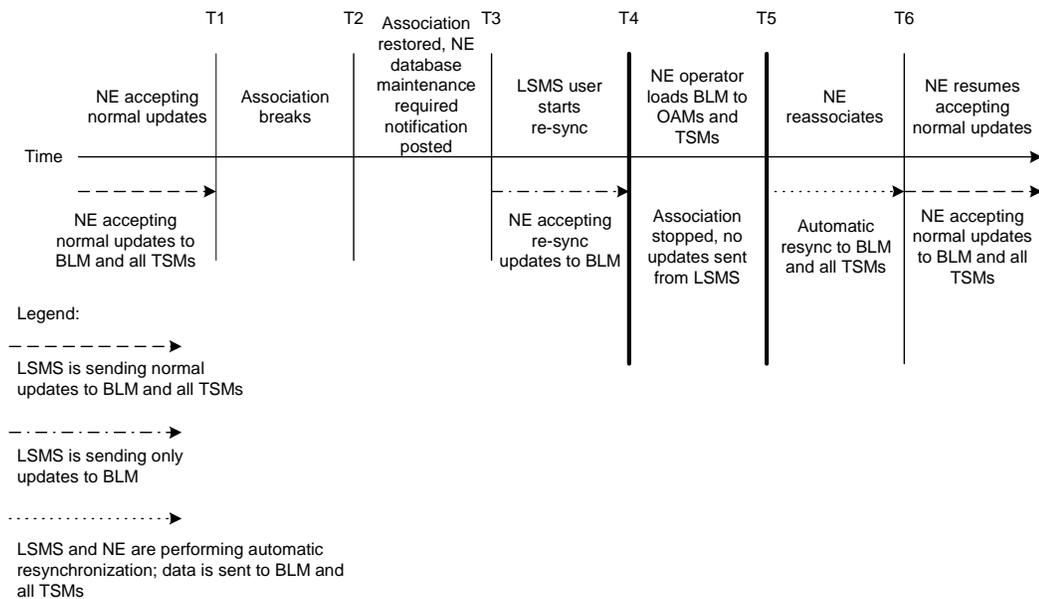
When this stage is complete, the LSMS user has the option to commit or discard the LNP data that was downloaded to the network element. If the user chooses to commit the changes, the NE’s DBTS is set to the time that this stage began. If the user chooses to discard the changes, the NE’s LNP database is left in a Database Maintenance Required (DMR) state.

- T4** *Network element database distribution stage begins:* If the LSMS user chooses in stage T3 to commit the data downloaded to the NE’s database, he should inform the ELAP that the resynchronization has completed. Then the ELAP operator must disable the ability to receive a user-initiated resynchronization or electronic bulk load, copy the newly restored ELAP RTDB to the mate ELAP, and then distribute the data to the DSMs, as described in “Distributing RTDB, Returning to Normal Service” on page 9-3.
- T5** *Automatic resynchronization stage begins:* At this stage, the user-initiated resynchronization procedures are complete. The LSMS and network element reconnect and begin the normal automatic resynchronization described in “Automatic Resynchronization Process” on page 5-4. During this stage, the LSMS sends all NPAC updates or locally provisioned data updates that have occurred since stage T4.
- T6** *Normal operations resume.*

BLM-Based User-Initiated Resynchronization Overview

Figure 5-2 illustrates how data is sent to a network element before, during, and after a BLM-based user-initiated resynchronization.

Figure 5-2. BLM-Based User-Initiated Resynchronization Timeline



The user-initiated resynchronization stages occur as follows:

- T1** *Outage occurs between the LSMS and the network element:* The connection between the network element and LSMS is broken due to a network failure or a failure at either the LSMS or network element.
- T2** *Automatic resynchronization attempted:* When the connection between the LSMS and the network element is restored, both LSMS and network element attempt an automatic resynchronization as described in section “Automatic Resynchronization Process” on page 5-4. If the LSMS cannot find the network element’s database timestamp (DBTS) in the LSMS resynchronization database, notifications are posted that database maintenance is required. For more information, see “Notifications that Database Maintenance Is Required” on page 3-3.
- T3** *User-initiated resynchronization stage begins:* The LSMS user and network element operator decide to perform a user-initiated resynchronization as a result of receiving database maintenance required notifications. As long as the DBTS received from the network element is not older than seven days, user-initiated resynchronization can be used instead of bulk downloading. For more information on choosing a procedure, see “Choosing a Synchronization Procedure” on page 3-4.

Managing Resynchronization from the LSMS

To start the user-initiated resynchronization at the LSMS, use the procedure described in “Managing User-Initiated Resynchronization from the LSMS” on page 5-12. The first few steps of that procedure direct you to ensure that the network element is ready to receive user-initiated resynchronization updates.

All NPAC and locally provisioned data updates with timestamps later than the NE's DBTS until the current time are downloaded to the NE in the order in which they were received.

Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands rejected by the network element are recorded in the resynchronization log file (see “User-Initiated Resynchronization Log File” on page 5-21).

At any time during this stage, the LSMS user can choose to abort the user-initiated resynchronization. If aborted, this operation can be either restarted or terminated.

When this stage is complete, the LSMS user has the option to commit or discard the LNP data downloaded to the network element. If the user chooses to commit the changes, the NE's DBTS is set to the time that this stage began. If the user chooses to discard the changes, the network elements BLM will automatically reboot and resynchronize with the OAM and TSM LNP databases.

- T4** *Network element database distribution stage begins:* If the LSMS user chooses in stage T3 to commit the data downloaded to the NE's database, the network element operator must distribute the LNP database from the BLM to all Operations, Administration, and Maintenance (OAM) cards and Translation Service Modules (TSMs) as described in “Distributing LNP Database After BLM-Based Operation” on page 9-12.
- T5** *Automatic resynchronization stage begins:* At this stage, the user-initiated resynchronization procedures are complete. The LSMS and network element reconnect and begin the normal automatic resynchronization described in “Automatic Resynchronization Process” on page 5-4. During this stage, the LSMS sends all NPAC updates or locally provisioned data updates that have occurred since stage T4.
- T6** *Normal operations resume.*

Managing User-Initiated Resynchronization from the LSMS

This section includes the procedure for starting a user-initiated resynchronization, the viewing of user-initiated resynchronization log files, and understanding user-initiated resynchronization error messages.

User-Initiated Resynchronization Procedure

Use the following procedure to manage user-initiated resynchronization from the LSMS user interface.

NOTE: If you attempt to start a user-initiated resynchronization for a network element (NE) when the normal connection to the NE exists, the following error message appears, where <CLLI> is the Common Language Location Indicator for the NE:

```
Re-sync operation is not permitted while the LSMS is connected  
with the NE.
```

While a normal connection exists, either an automatic resynchronization has already been performed or is in progress (for more information, see “Automatic Resynchronization Process” on page 5-4). If the normal connection exists and you think the LSMS and NE databases may be out of synchronization, and you have the Enhanced Audit feature installed, try performing an audit and reconcile of All Database Objects using the normal update channel (use the procedure described in “Managing Audit from the LSMS GUI” on page 6-15, select All Database Objects in step 4 on page 6-16, and for a BLM-based configuration, choose the connection to the OAP for reconciling). If the reconcile seems to be taking too long, cancel the operation, disassociate from the network element (for information, refer to the LSMS Configuration Manual), and then try a user-initiated resynchronization.

Procedure

1. At the LSMS, ensure that the icon for the EMS that you plan to resynchronize is red; red indicates that a normal connection between the LSMS and the NE does not exist.

-
2. Ensure that the network element is prepared to receive user-initiated resynchronization updates by doing a or b or c, depending on the installed Eagle release and features:
 - a. If the network element has a DCM and BLM (it supports the Enhanced Bulk Download and Audit feature), ensure that a DCM running the EBDADCM application and a BLM running the EBDABLM application have been configured in the network element as described in procedure “Adding a DCM and BLM for BLM-Based Operations” on page 4-11, and then at the network element, enter the `chg-db:action=beginedl` command.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
BEGINEDL : MASP A - Electronic Bulk Download from LSMS may proceed.
Note: Issue CHG-DB:ACTION=FINISHEDL or CANCELEDL to resume.
```

- b. If the network element has Eagle Release 28.x with ELAP 1.0 and an MPS (it supports the 48 Million Numbers feature), log into the ELAP user interface; enter the “`elapmaint`” user name and password. (The password is not displayed as you enter it.)

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

Enter the ELAP to work on (A or B); select the active ELAP. (If you select the standby ELAP, you can choose the `Select Mate ELAP` menu item to change the selected ELAP to the active ELAP.)

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu is displayed. The banner above the menu indicates the active/standby status of the ELAP selected. The status should be active.

Managing Resynchronization from the LSMS

ELAP {*ELAP GPL number*} user interface (MPS platform version {*platform version*})

User "elapmaint" logged in to ELAP A (ACTIVE).

ELAP A (ACTIVE) is currently selected.

LSMS Bulk Download is disabled. Provisioning is allowed.

```
/---- ELAP Maintenance Menu -----\  
/-----\  
| 1 | Select Mate ELAP  
|-----|  
| 2 | Force ELAP to Become Standby  
|-----|  
| 3 | Remove Standby Restriction  
|-----|  
| 4 | Turn RTDB Audit On (currently ON)  
|-----|  
| 5 | Turn RTDB Audit Off (currently ON)  
|-----|  
| 6 | Start ELAP Software  
|-----|  
| 7 | Stop ELAP Software  
|-----|  
| 8 | Display Release Levels  
|-----|  
| 9 | Transaction Log  
|-----|  
|10 | Decode Eagle Output of MPS Alarms  
|-----|  
|11 | Toggle LSMS HS Audit  
|-----|  
|12 | Display LSMS HS Audit  
|-----|  
|13 | Toggle LSMS HS Bulk Download/LSMS HS Resync  
|-----|  
|14 | Toggle LSMS Connection (currently ENABLED)  
|-----|  
| e | Exit  
|-----\  
\-----\  
/
```

Enter Choice:

Choose the Toggle LSMS Connection menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

Enter Choice: 14

NOTE: Choosing the next selection causes the RTDB to enter a state of requiring database maintenance. Unless you are able to complete the procedure by committing the changes (as described in step 6), the RTDB continues to be in a state of requiring database maintenance.

Choose the Toggle LSMS HS Bulk Download/LSMS HS Resync menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

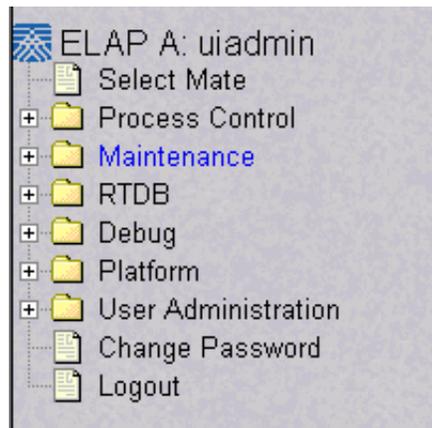
Enter Choice: 13

Managing Resynchronization from the LSMS

- c. If the network element has Eagle Release 28.x with ELAP 2.0 or later and an MPS (it supports the 48 Million Numbers feature or the Up to 96 Million Numbers feature), connect your web browser to the ELAP user interface. Log in with the name and password of any user who is authorized to use the menu items contained in this procedure (for more information about connecting to the ELAP GUI and user authorization, refer to the *Eagle ELAP Administration Manual*).

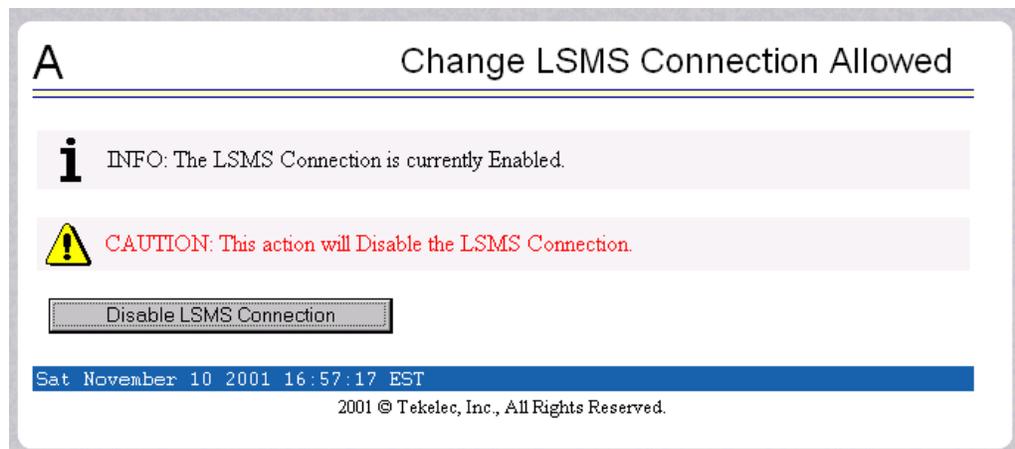
The ELAP GUI displays, as shown in Figure 5-3.

Figure 5-3. ELAP Main Menu



Select **Maintenance>LSMS Connection>Change Allowed**. The window shown in Figure 5-4 displays.

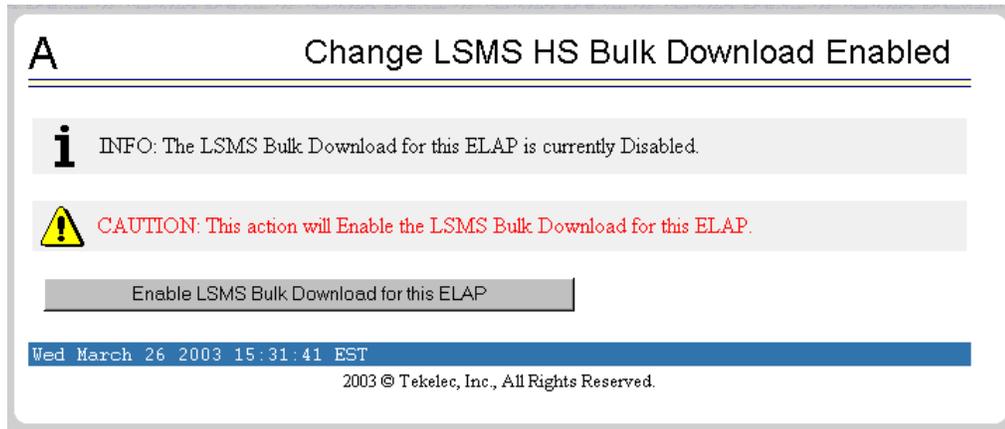
Figure 5-4. Disabling LSMS Connection



Click the Disable LSMS Connection button.

Next, select **Maintenance>LSMS HS Bulk Download>Change Enabled**. See Figure 5-5 for the screen showing the successful disabling of the LSMS connection.

Figure 5-5. Enabling Change HS Bulk Download



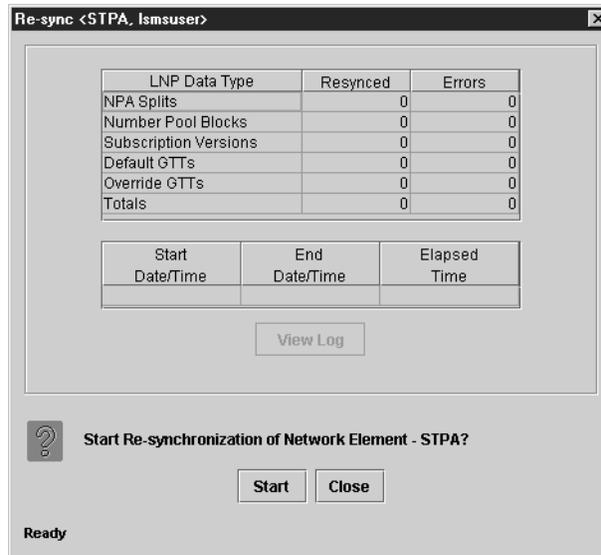
NOTE: Performing this step causes the RTDB to enter a state of requiring database maintenance. Unless you are able to complete the procedure by committing the changes (as described in step 6), the RTDB continues to be in a state of requiring database maintenance.

If the Information field indicates that the LSMS Bulk Download for this ELAP is currently Disabled (as shown in Figure 5-5, and which is the default condition for an ELAP), click the Enable LSMS Bulk Download for this ELAP button. (If the Information field indicates that the LSMS Bulk Download for this ELAP is Enabled, the ELAP is already prepared for the user-initiated resynchronization.)

-
3. At the LSMS, log in as a member of the `lsmsuser`, `lsmsuext` or `lsmsall` group.
-
4. Start the Re-sync window using either of the following:
 - From the main menu on the LSMS Console window, select **LSMS-> LNP Database Synchronization->Re-sync-><CLLI>**, where <CLLI> is the Common Language Location Identifier for the network element that requires the user-initiated resynchronization.
 - Right-click the LSMS Console window's EMS status icon that corresponds to the network element requiring the user-initiated resynchronization so that the icon is highlighted, and select **LNP Database Synchronization->Re-sync**.

The Re-sync window displays. Figure 5-6 on page 5-17 shows an example of this window.

Figure 5-6. Re-sync Window



5. To initiate resynchronization, click the Start button. Progress is indicated by start time, elapsed time, and numbers appearing in the Resynced and Errors columns, and status is reported in the status field at the bottom of the window. The Close button becomes nonselectable while the resynchronization is in progress.

Table 5-1 on page 5-18 shows the meaning of each of the fields that appears in this window.

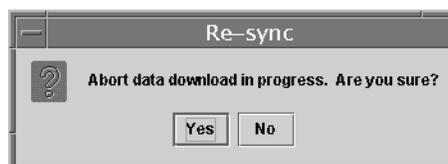
Table 5-1. Fields in Re-sync Window

Field	Description	Possible Values
Resynced	Total number of commands that were successfully transmitted and applied to the NE's LNP database during the resynchronization operation.	0—99,999,999
Errors	Total number of commands that were successfully transmitted but rejected by the NE during the resynchronization operation.	0—99,999,999
Start Date/Time	Time at which the resynchronization operation was started by the user.	MM/DD hh:mm:ss ¹
End Date/Time	Time at which the resynchronization operation completed successfully or terminated abnormally.	MM/DD hh:mm:ss ¹
Elapsed Date/Time	Amount of time the resynchronization operation took to complete or the amount of time it ran before the user aborted it.	hh:mm:ss ¹ [A F] ²
Status	Appears as text at the bottom left of the window to indicate the current status of the resynchronization operation.	Varies
<p>¹ MM indicates month, range 01—12 DD indicates day, range 01—31 hh indicates hour, range 00—23 mm indicates minute, range 00—59 ss indicates second, range 00—59</p> <p>² A is appended at the end of the time if the operation is aborted. F is appended at the end of the time if the operation fails.</p>		

To view the user-initiated resynchronization log file, click the View Log button. For more information about the log file, see “User-Initiated Resynchronization Log File” on page 5-21.

To abort while resynchronization is in progress, click the Abort button. A confirmation dialog displays, as shown in Figure 5-7 on page 5-18.

Figure 5-7. Abort Resynchronization Dialog

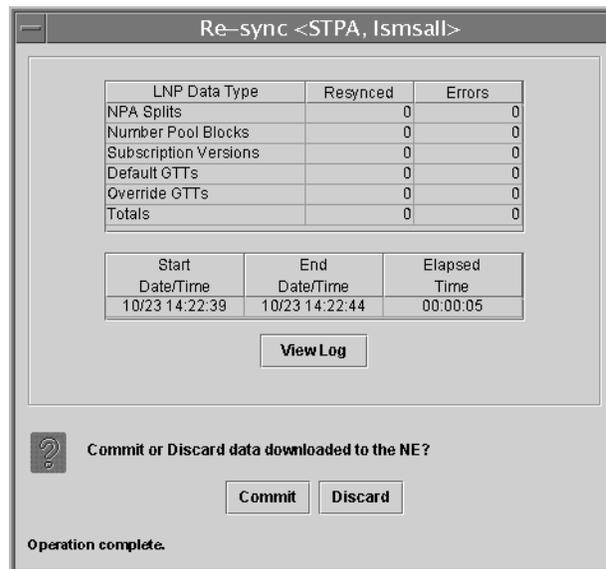


Managing Resynchronization from the LSMS

- Click the Yes button to immediately terminate the operation in progress.
- Click the No button to close the Abort confirmation dialog and return back to the main Re-sync window with no other effect.

6. When the resynchronization completes or is terminated (as indicated in the status field and by a value appearing in the End Date/Time field), the Abort and Close buttons are replaced by Commit and Discard buttons, as shown in Figure 5-8.

Figure 5-8. Resynchronization Complete



Before you click the Commit or Discard button, you can view the bulk load log file by clicking the View Log button (for more information about the file, including how to view it at other times, see “User-Initiated Resynchronization Log File” on page 5-21).

To conclude the user-initiated resynchronization operation, you must click one of the following buttons:

- Click the Discard button to end the resynchronization application (closing the Re-sync window) and to send the NE a discard command that results in one of the following:

- If the NE has a BLM installed (for information about this configuration, see “Supporting Up to 12 Million Ported Numbers” on page 2-9), the NE displays a message that the operation is to be discarded. Upon seeing this message, the NE operator must cancel the user-initiated resynchronization by discarding the changes made to the BLM, as described in “Canceling a BLM-Based Operation” on page 9-12. (If you are performing this procedure because you have received one of the notifications described in “Notifications that Database Maintenance Is Required” on page 3-3, NE database maintenance is still required.)
- If the NE has an MPS installed (for information about this configuration, see “Supporting Up to 48 Million Numbers” on page 2-13 and “Features Required to Support Up to 96 Million Numbers” on page 2-14), changes have already been made to the ELAP’s RTDB, and they cannot be undone. (For whatever reason you are performing this procedure, the ELAP’s RTDB is now in a state of requiring database maintenance, but the user-initiated resynchronization application is no longer running.)
- Click the Commit button to end the resynchronization application (closing the Re-sync window) and to send the NE a command that informs the NE that the download operation is finished and the changes made are ready to be distributed. This command results in one of the following:
 - If the NE has a BLM installed (for information about this configuration, see “Supporting Up to 12 Million Ported Numbers” on page 2-9), the NE displays a message that the user-initiated resynchronization is finished. Upon seeing this message, the NE operator must cause the LNP database to be distributed, as described in “Distributing LNP Database After BLM-Based Operation” on page 9-12.
 - If the NE has an ELAP installed (for information about this configuration, see “Supporting Up to 48 Million Numbers” on page 2-13 and “Supporting Up to 96 Million Numbers” on page 2-13), changes have already been made to the ELAP’s RTDB. The NE operator must cause the LNP database to be distributed and return the NE to normal operation as follows:
 1. Distribute the data to the DSMs, as described in “Distributing an RTDB LNP Database to DSMs” on page 9-3.
 2. Copy the newly restored RTDB to its mate ELAP’s RTDB, as described in “Copying RTDB from Mated ELAP” on page 8-2.
 3. Disable another user-initiated resynchronization or bulk load, as described in “Disabling Bulk Load” on page 9-6.

You have now completed this procedure.

User-Initiated Resynchronization Log File

This section describes the following topics:

- Viewing the Resynchronization Log File (see page 5-21)
- Resynchronization Log File Contents (see page 5-22)

Viewing the Resynchronization Log File

Any time after the user-initiated resynchronization has begun, you can view the user-initiated resynchronization log file by clicking the View Log button. The browser window used for displaying reports and logs (if this window is not already opened, it is opened automatically) displays the log file *LsmsResync.log.<MMDD>*, located in the directory */usr/local/LSMS/logs/<CLLI>*, where *<CLLI>* is the Common Language Location Identifier of the network element receiving the user-initiated resynchronization and *<MMDD>* is the timestamp that contains month and day that the file was created.

You can also use one of the following methods to open the window shown in Figure 5-9 used to browse for this log:

Figure 5-9. Browsing for Resynchronization Log Files



- Select **Logs>Other...** from the main menu of the LSMS Console window.
- Click on the LSMS Console window's EMS Status Icon that corresponds to the network element receiving the user-initiated resynchronization so that the icon is highlighted. Right-click and select **Logs>LNP Database Synchronization>Re-sync**.

Scroll down to find the folder that has the *<CLLI>* name for the NE that was resynchronized. Double-click the folder name, and then double click the file name *LsmsResync.log.<MMDD>* that corresponds to the month and day you desire. Log files are maintained for seven days after they are created; then they are automatically removed from the LSMS.

Resynchronization Log File Contents

Whenever a user-initiated resynchronization is started, the resynchronization log file for that day is appended (if this is the first user-initiated resynchronization of the day, the file is created). For each user-initiated resynchronization performed on that day, the resynchronization log file contains information similar to the information displayed on the Re-sync main window, such as start and end times for the user-initiated resynchronization, and numbers of resynchronized records and errors in various LNP categories.

The resynchronization log file contains the following sections:

- Header Section (see page C-4)
- Resynchronization Section (see page C-10)
- Summary Section (see page C-11)
- Download Commit/Discard Section (see page C-13)

Figure 5-10, on page 5-22 shows an example of a user-initiated resynchronization log file.

Figure 5-10. Example of a User-Initiated Resynchronization Log File

```
Thu Oct 23 16:51:21 EST 2001

Username: lsmsall
NE CLLI: STPB

-----

Thu Oct 23 16:51:20 EST 2001
Connection established with network element (192.168.61.202:1030)

Re-sync started on Tue Oct 23 17:07:09 EDT 2001

Old NE LNP Database Time Stamp: Mon Oct 22 14:38:33 EDT 2001

Thu Oct 23 16:52:20 EST 2001
E3261 Cmd Rej: NMRGT# Translation Type is not a reserved service for LNP
```

Managing Resynchronization from the LSMS

```
UPDATE-OVERRIDE-GTT:
  LRN:      1234567890
  SPID:     tklc
  TT:       001
  DPC:     000000000
  SSN:     000
  RI:       G
  NGT:     000
  RGTA:    T
  TT:       004
  DPC:     000000000
  SSN:     000
  RI:       G
  NGT:     000
  RGTA:    L
  TT:       003
  DPC:     000000000
  SSN:     000
  RI:       G
  NGT:     000
  RGTA:    T
  TT:       002
  DPC:     000000000
  SSN:     000
  RI:       G
  NGT:     000
  RGTA:    L
```

New NE LNP Database Time Stamp: Tue Oct 23 17:07:10 EDT 2001

Re-sync completed on Tue Oct 23 17:07:10 EDT 2001

NPA Splits	1 Downloaded	0 errors
Number Pool Blocks	0 Downloaded	0 errors
Subscription Versions	0 Downloaded	0 errors
Default GTTs	0 Downloaded	0 errors
Override GTTs	0 Downloaded	1 errors
Total	1 Downloaded	1 errors

Discard completed on Tue Oct 23 17:07:21 EDT 2001.

User-Initiated Resynchronization Error Messages

For a listing of error messages that can appear on the GUI, along with explanation of possible cause and suggested recovery, see Appendix A, "LSMS GUI Messages."

6

Auditing and Reconciling Network Elements from the LSMS

Introduction.....	6-2
Types of Data to Audit and Reconcile	6-2
How Records Are Compared During an Audit	6-3
Operator Action at Network Element	6-5
Audit Restrictions.....	6-6
Required Features.....	6-8
Audit and Reconcile Overview	6-9
Audit with Reconcile Over Normal Update Connection.....	6-10
BLM-Based Audit/Reconcile Using Connection to DCM	6-12
Managing Audit from the LSMS GUI.....	6-15
Audit and Optional Reconcile from the LSMS GUI.....	6-15
Audit Log File.....	6-28
Audit Error Messages.....	6-30
Performing an Audit Using the Command Line	6-31

Introduction

This chapter describes auditing and optional reconciling of network element data. An audit compares the LNP data at the network element with that at the LSMS. At any time, except as noted in “Audit Restrictions” on page 6-6, you can initiate from the LSMS an audit of LNP data at the network element.

You can also choose to reconcile any discrepancies found during an audit. Reconciling allows you to update only the LNP database records that are found to be different during an audit.

Although auditing without reconciling does not result in synchronized LNP databases, you can perform an audit without a reconcile for information purposes.

Types of Data to Audit and Reconcile

You can audit one or more of the following types of LNP data:

- One or both of the following types of regional data received from NPACs and stored at the LSMS in regional databases (one database per NPAC region supported). These types of data can be audited by time range or by the value range shown:
 - Subscription version data
 - All TNs in the network element’s LNP database
 - All TNs within a TN range
 - All TNs within an NPA-NXX range
 - Number pool block data
 - All NPBs in the network element’s LNP database
 - All NPBs within an NPA-NXX-X range
 - All NPBs within an NPA-NXX range
- One or more of the following types of locally provisioned data entered by the user at the LSMS, and stored in one database, called the supplemental database (to audit these data types, you must have installed the Enhanced Audit feature at the LSMS):
 - NPA Split data
 - All TNs in the network element’s LNP database with a specified Old NPA
 - All TNs within a specified Old NPA range

Auditing and Reconciling Network Elements from the LSMS

- Default GTT data
 - All default GTTs in the network element's LNP database with a specified NPA-NXX
 - All default GTTs within an NPA-NXX range
- Override GTT data
 - All override GTTs in the network element's LNP database with a specified LRN
 - All override GTTs within an LRN range

For more information about these types of data, refer to the *LSMS Database Administration Manual*.

How Records Are Compared During an Audit

LNP data is determined to be out of synchronization by calculating a CRC (Cyclic Redundancy Check)-32 checksum for each specified type of LNP data record at both the LSMS and at the network element, and then comparing the checksums. If the checksums do not match, it is assumed that the records do not match.

Because some network element LNP database objects may contain attributes that are not stored in the LSMS LNP database, and vice versa, the computation of a checksum may not include all attributes. In addition, some attributes, such as LNP type, that are common to both the LSMS and network element LNP databases but which have different values, are not included in the computation of the checksums. Table 6-1 on page 6-4 shows which attributes are included in checksums for each type of LNP data object.

Table 6-1. LNP Data Type Attributes Included in Checksums

LNP Data Type	Attributes Included in Checksum	Attributes Not Included in Checksum
NPA Split	<ul style="list-style-type: none"> • Old NPA (Numbering Plan Area) • New NPA • NXX 	<ul style="list-style-type: none"> • Start PDP (Permissive Dialing Period) • End PDP
Number Pool Block	<ul style="list-style-type: none"> • NPA-NXX-X • LRN (Location Routing Number) • SPID (Service Provider Identification) • DPC (Destination Point Code) • SSN (Subsystem Number) 	<ul style="list-style-type: none"> • LNP (Local Number Portability) type
Subscription Version	<ul style="list-style-type: none"> • TN (Telephone Number) • LRN • SPID • DPC • SSN 	<ul style="list-style-type: none"> • LNP type
Default GTT	<ul style="list-style-type: none"> • NPA-NXX • AIN (Advanced Intelligent Network) • IN (Intelligent Network) • TT (Translation Type) • DPC • SSN • RI (Routing Indicator) 	<ul style="list-style-type: none"> • XLAT (Translate Indicator) • NGT (New Global Title Translation Type); the LSMS stores the NGT as part of the NPA-NXX object, while the NE stores the NGT per point code
Override GTT	<ul style="list-style-type: none"> • LRN • SPID • TT • DPC • SSN • RI • NGT • RGTA (Replace Global Title Address) 	<ul style="list-style-type: none"> • XLAT

Discrepancies Detected by Audit

An audit can detect the discrepancies shown in Table 6-2. Each discrepancy is counted, displayed on the GUI, and recorded in the audit log file (see “Audit Log File” on page 6-28).

Table 6-2. Audit Data Discrepancies

Discrepancy Type	Description
Different	Mismatching checksums indicate that the network element has the LNP data object in its database; however, on or more attributes of the object are different from the equivalent attributes on the LSMS.
Missing	The network element’s LNP database does not contain this object, but the LSMS LNP database does contain it; the LSMS did not receive a checksum for this object.
Extra	The network element’s LNP database contains an object that the LSMS LNP database does not contain; the LSMS received a checksum for an object not in its database.

Duplicate Data Detected by Audit

In addition to detecting these discrepancies, all types of audit except auditing by time range also detect whether duplicate data resides in the LSMS and network element LNP databases. Duplicate data is not considered to be a discrepancy and cannot be corrected by performing a reconcile operation. Each duplicate LNP data object detected is counted and recorded in the audit log file. If duplicate LNP data is detected, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

NOTE: It is recommended that you correct any duplicates as soon as they are found, even before you perform a reconcile. If the duplicates are not corrected, future audits may show these duplicates as different types of discrepancies at different times, and it will be more difficult to determine whether the discrepancies have been caused by originally duplicate data.

Operator Action at Network Element

For most types of audit and reconcile, no operator action needs to occur at the network element. The following sections describe the exceptions.

Operator Action for Audit

An audit does not require any operator action at the network element. However, if the network element has ELAPs (the 48 or 96 Million Numbers feature is installed), it is possible for the NE operator to disable the ability to process an audit. This is sometimes necessary when the NE operator is trying to debug a problem. If the NE operator has disabled the ability to process an audit, the LSMS will receive a rejection that is posted on the GUI as the following error message:

```
Connection already in use or operation not enabled at NE '<IP address>'
```

If this message occurs, perform one of the procedures described in Appendix B, “Enabling LSMS Audit on ELAP,” depending on which release of Eagle STP is installed.

Operator Action for Reconcile

Operator action at the network element is required only when the LSMS user chooses to use a connection to the DCM/BLM for reconciling data (for more information, see step 8 on page 6-23). All other reconcile data is sent over the normal update channel and requires no operator action at the network element.

Audit Restrictions

Before starting any audit, consider the following restrictions:

- Only one audit of a given network element can be performed at a time. If you attempt to start an audit of a network element that is already being audited or reconciled, an error message will be posted and no additional audit action will occur.
- A maximum of four of any of the following synchronizations can be run simultaneously:
 - Audits, with or without reconcile
 - User-initiated resynchronizations (see “Managing User-Initiated Resynchronization from the LSMS” on page 5-12)
 - Electronic bulk loads (see “Managing Electronic Bulk Load from the LSMS” on page 7-9); only two of these operations can be run simultaneously
- An OAM-based audit cannot be performed when synchronization is occurring between the LSMS and the network element. (For more information about when this synchronization occurs, see “Resynchronizing LSMS and Network Element Data” on page 2-17.) If you attempt to start an audit of a network element that is performing resynchronization, the following message will be posted, and no audit action will occur:

Auditing and Reconciling Network Elements from the LSMS

Network element is currently being re-synced with the LSMS. Operation terminated.

- A BLM-based or ELAP-based audit performed at the same time that automatic resynchronization is occurring between the LSMS and the network element may result in false discrepancies because some of the LSMS data may not have been sent yet over the normal update connection to the network element. At the end of a BLM-based or ELAP-based audit, it is recommended that you determine whether an automatic resynchronization (also called short resynchronization) has occurred (look at the notifications area of the GUI). If an automatic resynchronization has occurred or is currently running, it is recommended that you perform another audit when the automatic resynchronization has completed.
- An audit may time out at other times, for example, when the network element is busy or when synchronization is occurring between the Number Portability Administration Center (NPAC) and the LSMS. (For more information about when NPAC-to-LSMS synchronization occurs, refer to the *LSMS Maintenance Manual*.) If the LSMS is processing a lot of other data, the audit may eventually time out, a time-out message will be posted, and no audit action will occur.

In addition, consider the following usage notes about Audit by Time Range, which compares the LSMS's SVs and/or NPBs during a specified time period in the previous seven days to the corresponding network element's data during the same period. You can also choose to reconcile any differences found.

- If you do not have the ELAP LNP Configuration at the LSMS and if you have not installed the ELAP LNP Configuration feature at the NE, the LSMS can receive data from the Number Portability Administration Center (NPAC) at a faster rate than the network element (NE) can receive data from the LSMS. Therefore, approximately an hour may elapse between the time that SV and/or NPB information is received by the LSMS and the time that this information is forwarded to the NE. If connectivity was lost between the LSMS and the NE, set the end point of the audit time range to at least an hour before the connection failed.
- This function performs an audit on the current LSMS database contents of each SV and/or NPB found to have been created, modified, or deleted by the LSMS between the start and end date and time for the audit. Except in the case of a SV and/or NPB that has been deleted, the SV and/or NPB to audit will be retrieved from the LSMS database. For the case where an NPA Split has been created that changes the SV and/or NPB residing in the LSMS database, this feature will only audit the new, post-split SV and/or NPB. This is the case both during the NPA Splits's permissive dialing period and after the period ends. For more information about NPA Splits, refer to the *LSMS Database Administration Manual*.

Required Features

Table 6-3 shows the types of LNP data that can be audited and reconciled, as well as any software and hardware optional features that you must install in order to audit them.

Table 6-3. Audit and Reconcile Options

Audit Type	Installed Options Required
Subscription version (SV) and number pool block data (NPB) objects in a specified time range (the time range must fall within the last seven days)	Standard
Range of SVs from specified starting TN to specified ending TN (the TN range must be within a single NPA-NXX)	
Range of NPBs from specified starting NPA-NXX-X to specified ending NPA-NXX-X (the NPA-NXX-X range must be within a single NPA-NXX)	
Range of SVs from specified starting NPA-NXX to specified ending NPA-NXX	At the network element, either of the following features: <ul style="list-style-type: none"> • Enhanced Bulk Download and Audit • 48 Million Numbers • ELAP LNP Configuration
Range of NPBs from specified starting NPA-NXX to specified ending NPA-NXX	
Range of NPA Splits from one specified Old NPA to another specified Old NPA	At the LSMS, the Enhanced Audit feature and at the network element, either of the following features: <ul style="list-style-type: none"> • Enhanced Bulk Download and Audit • 48 Million Numbers • ELAP LNP Configuration
Range of Default GTTs from one specified NPA-NXX to another specified NPA-NXX	
Range of Override GTTs from one specified LRN to another specified LRN	

For information about configuring the LSMS for these features, refer to the *LSMS Configuration Manual*. For information about configuring the network element for these features, see Chapter 4, “Preparing the NE for Non-Manual Synchronization.”

Audit and Reconcile Overview

This section provides an overview of how audit and reconcile is performed using the GUI. You can also perform an audit and reconcile of TNs or NPBs or both using the *lsmsclaa* AUDIT function (see “Performing an Audit Using the Command Line” on page 6-31).

The sequence of events that occurs during an audit and reconcile depends on the features installed at the LSMS and the network element:

- For either an OAM-based configuration (using only standard features) or an ELAP-based configuration (if you have the 48 or 96 million numbers configuration at the LSMS and if you have installed the 48 or ELAP LNP Configuration feature at the network element), an audit and reconcile occur as described in “Audit with Reconcile Over Normal Update Connection” on page 6-10.
- For a BLM-based configuration (the Enhanced Bulk Download and Audit feature is installed at the network element), an audit and reconcile occurs as one of the following:
 - If the LSMS user chooses to reconcile over the normal update connection (see step 8 on page 6-23), the audit and reconcile occur as described in “Audit with Reconcile Over Normal Update Connection” on page 6-10.
 - If the LSMS user chooses to reconcile over the connection to the DCM/BLM (see step 8 on page 6-23), the audit and reconcile occur as described in “BLM-Based Audit/Reconcile Using Connection to DCM” on page 6-12.

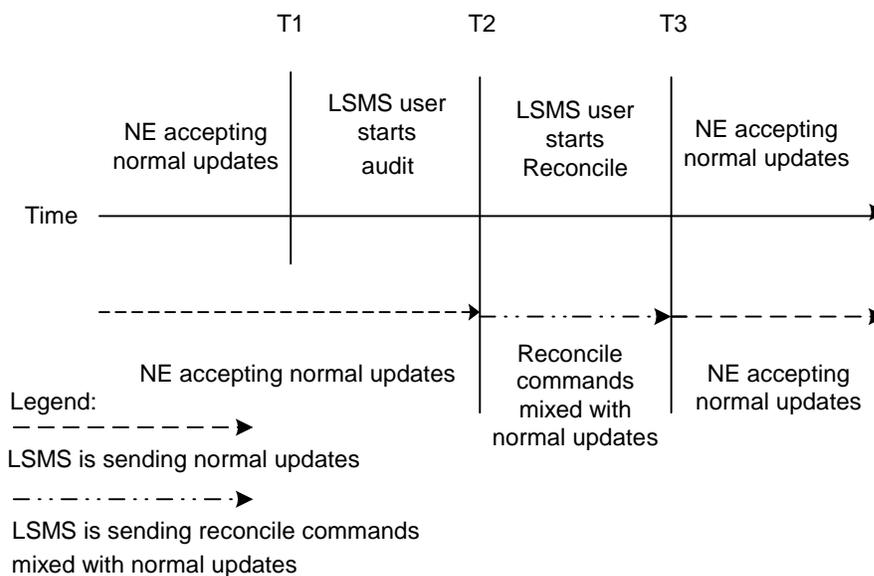
Audit with Reconcile Over Normal Update Connection

Figure 6-1 on page 6-10 illustrates how data is sent to a network element before, during, and after an audit followed by a reconcile over the normal update connection.

For information about the configuration required to support this type of audit and reconcile, see either of the following:

- “Supporting Up to 6 Million Ported Numbers” on page 2-7
- “Supporting Up to 48 Million Numbers” on page 2-13
- “Features Required to Support Up to 96 Million Numbers” on page 2-14

Figure 6-1. Timeline for ELAP-Based or OAM-Based Audit with Reconcile

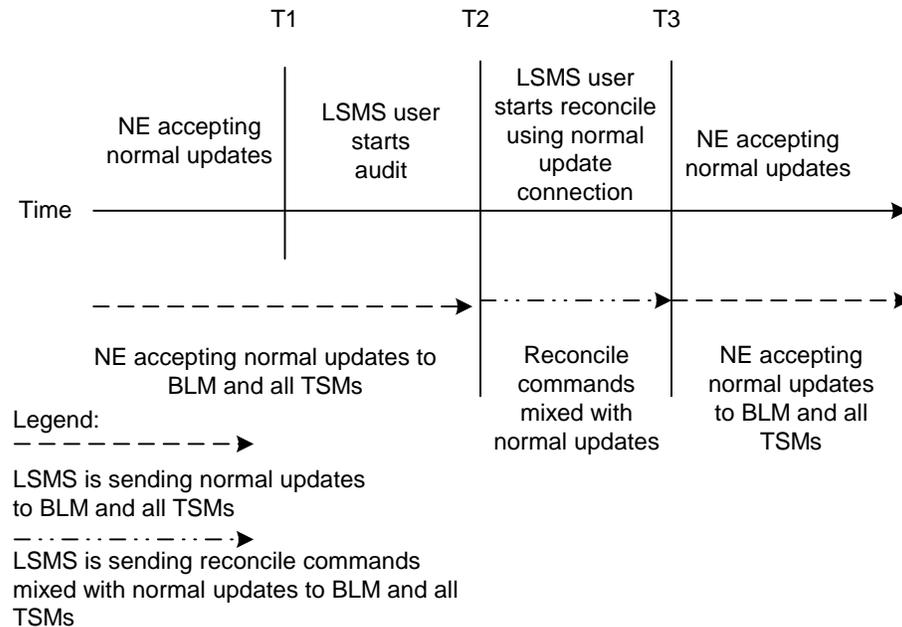


The same sequence of audit and reconcile functions is also performed for a BLM-based audit followed by reconcile over the connection to the OAP, as illustrated in Figure 6-2 on page 6-11. Reconciling over the connection to the OAP is the recommended method when the number of discrepancies is 21,000 or less.

For information about the configuration required to support this type of audit and reconcile, see the following:

- “Supporting Up to 12 Million Ported Numbers” on page 2-9

Figure 6-2. Timeline for BLM-Based Audit with Reconcile Over Connection to OAP



The following describes the stages in more detail:

T1 *Audit begins:* The LSMS user decides to initiate an audit. To start the audit at the LSMS, see “Managing Audit from the LSMS GUI” on page 6-15. No action is required at the network element.

At any time during this stage, the LSMS user can choose to abort the operations. If aborted, this operation can be either restarted or terminated.

When this stage is complete, the LSMS user can choose to reconcile discrepancies that were found in the network element’s LNP database, start another audit, or terminate the audit session.

T2 *Reconcile:* The LSMS user decides to reconcile. To choose to reconcile, see step 7 on page 6-21 and step 9 on page 6-24. No action is required at the network element.

During this stage, modify commands are sent to the network element for all data identified as different and missing in the NE’s database, and delete commands are sent to the NE for all data identified as being extra in the NE’s LNP database (but not existing in the LSMS LNP database).

Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands

rejected by the network element are recorded in the audit log file (see “Audit Log File” on page 6-28).

At any time during this stage, the LSMS user can choose to abort the operations. If aborted, this operation can be either restarted or terminated.

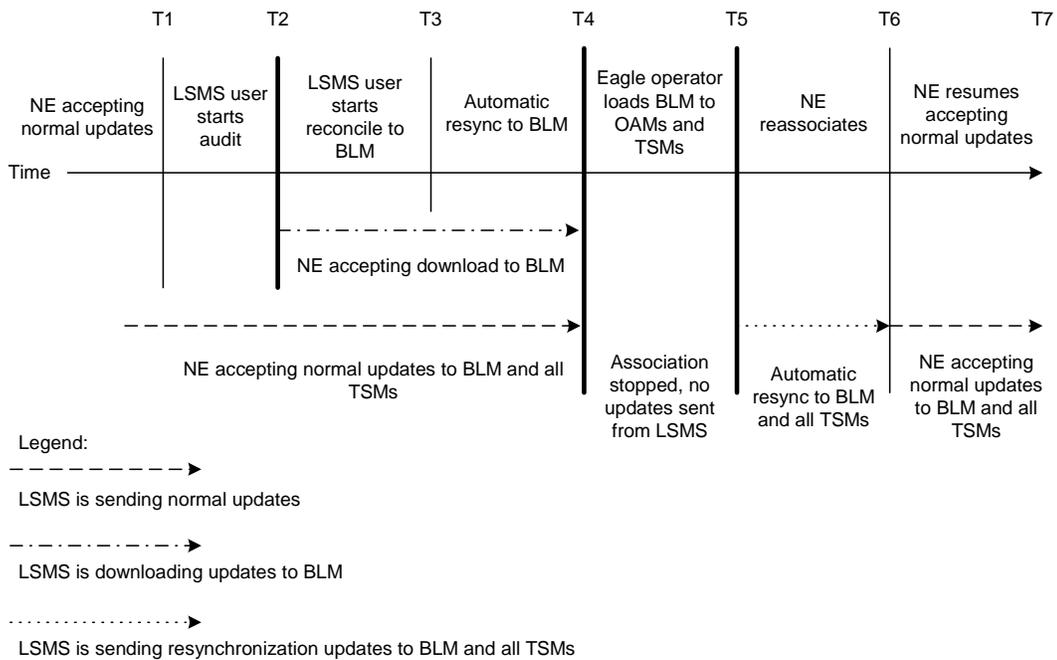
T3 *Normal operations resume.*

BLM-Based Audit/Reconcile Using Connection to DCM

Figure 6-3 illustrates how data is sent to a network element before, during, and after a BLM-based audit followed by reconcile data sent over the connection to the DCM. Reconciling over the connection to the DCM is the recommended method when the number of discrepancies is greater than 21,000.

For information about the configuration required to support this type of audit and reconcile, see “Supporting Up to 12 Million Ported Numbers” on page 2-9.

Figure 6-3. Timeline for BLM-Based Audit with Reconcile Over Connection to DCM



Auditing and Reconciling Network Elements from the LSMS

The following describes the stages in more detail:

- T1** *Audit begins:* The LSMS user decides to initiate an audit. No action is required at the network element.
- At any time during this stage, the LSMS user can choose to abort the operations. If aborted, this operation can be either restarted or terminated.
- When this stage is complete, the LSMS user can choose to reconcile discrepancies that were found in the network element's LNP database, start another audit, or terminate the audit session.
- T2** *Reconcile begins:* The LSMS user decides to reconcile feature over the connection to the DCM (see step 8 on page 6-23).
- During this stage, modify commands are sent to the network element for all data identified as different and missing in the NE's database, and delete commands are sent to the NE for all data identified as being extra in the NE's LNP database (but not existing in the LSMS LNP database).
- Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands rejected by the network element are recorded in the audit log file (see "Audit Log File" on page 6-28).
- At any time during this stage, the LSMS user can choose to abort the operations. If aborted, this operation can be either restarted or terminated.
- T3** *Automatic resynchronization stage begins:* As soon as the previous stage completes, the LSMS automatically begins an automatic resynchronization to update the BLM with any updates received from NPACs or any data locally provisioned since T2.
- This stage can also result in commands rejected from the network element. Any rejected commands during this phase are stored in the audit log file (see "Audit Log File" on page 6-28). If errors occur during this stage, a Re-sync button will appear on the Audit window to enable this stage to begin again.
- At any time during this stage, the LSMS user can choose to abort the operations. If aborted, this operation can be either restarted or terminated.
- When this stage is complete, the LSMS user has the option to commit or discard the LNP data that was downloaded to the BLM. If the user chooses to commit the changes, the NE's database timestamp (DBTS) is set to the time that this stage began. If the user chooses to discard the changes, the NE's BLM will automatically reboot and resynchronize with the OAM and TSM LNP databases.

Auditing and Reconciling Network Elements from the LSMS

- T4** *Network element database distribution stage begins:* If the LSMS user chooses in stage T3 to commit the data downloaded to the BLM, the network element operator must distribute the LNP database from the BLM to all OAM and TSM cards, as described in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy.”
- T5** *Automatic resynchronization stage begins:* The LSMS and network element reconnect and begin the normal automatic resynchronization described in “Automatic Resynchronization Process” on page 5-4. During this stage, the LSMS sends all NPAC updates or locally provisioned data updates that have occurred since T4.
- T6** *Normal operations resume.*

Managing Audit from the LSMS GUI

This section includes the procedure to perform an audit with optional reconcile, the viewing of audit log files, and understanding audit error messages. You can also perform an audit and reconcile of TNs or NPBs or both using the *lsmsclaa* AUDIT function (see “Performing an Audit Using the Command Line” on page 6-31).

Audit and Optional Reconcile from the LSMS GUI

Use the following procedure to manage from the LSMS user interface an audit and optional reconcile of data at a network element.

Procedure

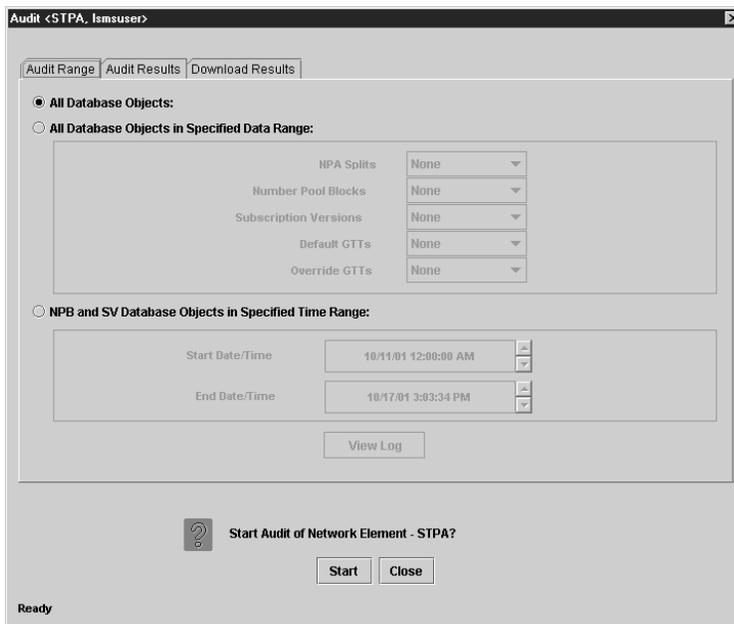
1. Ensure that none of the restricted situations described in “Audit Restrictions” on page 6-6 is occurring.

2. Log in as a member of the *lsmsadm*, *lsmsuser*, *lsmsuext*, *lsmsview*, or *lsmsa11* user group. If you plan to perform a reconcile if one is needed, log in as a member of the *lsmsuser*, *lsmsuext*, or *lsmsa11* user group.

3. Start the Audit window using either of the following:
 - From the main menu on the LSMS Console window, select **LSMS-> LNP Database Synchronization->Audit-><CLLI>**, where <CLLI> is the Common Language Location Identifier for the network element to be audited.
 - Right-click the LSMS Console window’s EMS status icon that corresponds to the network element to be audited, and select **LNP Database Synchronization->Audit**.

The Audit Range tab of the Audit window displays. If a different tab displays, click the Audit Range tab. An example of this window is shown in Figure 6-4 on page 6-16.

Figure 6-4. Audit Window, Audit Range Tab



4. Select the data you want to audit by doing one of the following:
 - Click the All Database Objects radio button to audit all objects in the network element's LNP database.
 - To audit all subscription versions and number pool blocks within a specified time range, click the NPB and SV Database Objects in Specified Time Range radio button. The Start Date/Time and End Date/Time fields become active and display in the form MM/DD/YY hh:mm:ss <AM | PM>, where MM represents month, DD represents day, YY represents year, hh represents hour, mm represents minute, and ss represents second. To change any of these values, double click on the value so that it is highlighted and then click the up or down arrow to increment or decrement the value by one for each click on the arrow. For example to change 10/09/01 12:00:00 AM to 10/12/01 12:00:00 PM, double click the day field (09) and click the up arrow 3 times, then double-click the AM field and click the up arrow once. These fields have the following constraints:
 - The Start Date/Time must be seven days or less than the current date and time.
 - The End Date/Time must be equal to or greater than the Start Date/Time.

Auditing and Reconciling Network Elements from the LSMS

- The End Date/Time must be equal to or less than the current date and time.
- To audit a subset of all objects in the network element's LNP database, click the All Database Objects in Specified Data Range radio button, and then for each data type, click the pull-down arrow at the right of the box, and select the desired data range for that object. Table 6-4 on page 6-17 shows the possible values available in the pull-down for each data type.

Table 6-4. Audit Range Values

Data Type	Pull-down Values	Constraints	Results
NPA Splits	<ul style="list-style-type: none"> • None • All • Old NPA Range 	<p>If OLD NPA Range is selected, two fields appear; specify a range by entering the starting OLD NPA value in the first field and enter the ending OLD NPA value in the second field. Each value must consist of 3 numeric digits in the range 200—999.</p>	<p>Only those NPA Splits within the specified range will be audited. If no ending value is specified, the ending value defaults to the same value as the starting value.</p>
Number Pool Blocks*	<ul style="list-style-type: none"> • None • All • NPA-NXX Range • NPA-NXX-X Range 	<p>If NPA-NXX Range or NPA-NXX-X Range is selected, two fields appear; specify a range by entering the starting NPA-NXX or NPA-NXX-X value in the first field and enter the ending NPA-NXX or NPA-NXX-X value in the second field.</p> <p>For NPA-NXX Range, each value must consist of 6 numeric digits in the range 200000—999999 (do not use hyphens or periods).</p> <p>For NPA-NXX-X Range, the NPA-NXX must be the same for the starting and ending NPA-NXX-X values and each value must consist of 7 numeric digits in the range 2000000—9999999 (do not use hyphens or periods). An audit of this type is performed only over the normal update connection.</p>	<p>Only those Number Pool Blocks that have an NPA-NXX or NPA-NXX-X within the specified range will be audited. If no ending value is specified, the ending value defaults to the same value as the starting value.</p>
<p>* If any value other than None is selected for Subscription Versions, Number Pool Blocks, or Default GTTs, you must either select All for NPA Splits or select Old NPA and specify a range of 200—999.</p>			

Table 6-4. Audit Range Values

Data Type	Pull-down Values	Constraints	Results
Subscription Versions*	<ul style="list-style-type: none"> • None • All • NPA-NXX Range • TN Range 	<p>If NPA-NXX Range or TN Range is selected, two fields appear; specify a range by entering the starting NPA-NXX or TN value in the first field and enter the ending NPA-NXX or TN value in the second field.</p> <p>For NPA-NXX Range, each value must consist of 6 numeric digits in the range 200000—999999 (do not use hyphens or periods).</p> <p>For TN Range, the NPA-NXX must be the same for the starting and ending TN values and each value must consist of 10 numeric digits in the range 2000000—9999999 (do not use hyphens or periods). An audit of this type is performed only over the normal update connection.</p>	<p>Only those Subscription Versions that have an NPA-NXX or TN within the specified range will be audited. If no ending value is specified, the ending value defaults to the same value as the starting value.</p>
Default GTTs*	<ul style="list-style-type: none"> • None • All • NPANXX Range 	<p>If NPANXX Range is selected, two fields appear; specify a range by entering the starting NPA-NXX value in the first field and enter the ending NPA-NXX value in the second field.</p> <p>Each value must consist of 6 numeric digits in the range 200000—999999 (do not use hyphens or periods).</p>	<p>Only those Default GTTs that have an NPA-NXX within the specified range will be audited. If no ending value is specified, the ending value defaults to the same value as the starting value.</p>
Override GTTs	<ul style="list-style-type: none"> • None • All • LRN Range 	<p>If LRN Range is selected, two fields appear; specify a range by entering the starting LRN value in the first field and enter the ending LRN value in the second field.</p> <p>Each value must consist of 10 numeric digits in the range 0000000000—9999999999 (do not use hyphens or periods).</p>	<p>Only those Override GTTs that have an LRN within the specified range will be audited. If no ending value is specified, the ending value defaults to the same value as the starting value.</p>
<p>* If any value other than None is selected for Subscription Versions, Number Pool Blocks, or Default GTTs, you must either select All for NPA Splits or select Old NPA and specify a range of 200—999.</p>			

Auditing and Reconciling Network Elements from the LSMS

- To initiate the audit, click the Start button. The display automatically changes to the Audit Results tab (shown in Figure 6-5), and the Start button is replaced by the Abort button.

NOTE: It is generally not necessary to perform any action at the network element before starting an audit. However, for an ELAP-based audit, it is possible for the NE operator to disable the ELAP's ability to be audited. If the following error message is returned, contact the NE operator to request that the procedure described in Appendix B, "Enabling LSMS Audit on ELAP" be performed:

Connection already in use or operation not enabled at NE '<IP address>'

The progress is indicated by start time, elapsed time, numbers appearing in the various columns for the selected data types, and status reported in the status field at the bottom of the window.

Figure 6-5. Audit Window, Audit Results Tab

LNP Data Type	LSMS Total	NE Total	Same	Missing	Extra	Different	Discrepancy Total
NPA Splits	0	0	0	0	0	0	0
Number Pool Blocks	1	1	1	0	0	0	0
Subscription Versions	0	0	0	0	0	0	0
Default GTTs	0	0	0	0	0	0	0
Override GTTs	0	0	0	0	0	0	0
Totals	1	1	1	0	0	0	0

Start Date/Time	End Date/Time	Elapsed Time
10/23 13:56:33		00:00:07

Full Record Discrepancy Log

LNP DB Object Type:

Click 'Abort' to Stop Operation.

Audit in progress, please wait...

Table 6-5 on page 6-20 describes the meaning of the fields in this window.

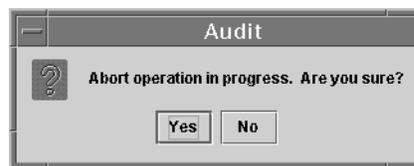
Table 6-5. Audit Results Fields

Field	Description	Possible Values
LSMS Total	Number of data records that have been audited in the LSMS LNP database	00000000—99999999
NE Total	Number of data records that have been audited in the NE LNP database	00000000—99999999
Same	Number of LNP data records that are identical in both the LSMS and the NE LNP databases	00000000—99999999
Missing	Number of LNP data records that are present in the LSMS LNP database, but not in the NE LNP database	00000000—99999999
Extra	Number of LNP data records that are present in the NE LNP database, but not in the LSMS LNP database	00000000—99999999
Different	Number of LNP data records that are present in both the LSMS LNP database and the NE LNP database, but with different checksums	00000000—99999999
Discrepancy Total	Total number of LNP data record discrepancies (Missing, Extra, and Different)	00000000—99999999
Start Date/Time	Time the audit phase was started	MM/DD hh:mm:ss ¹
End Date/Time	Time the audit phase completed successfully or was abnormally terminated	MM/DD hh:mm:ss ¹
Elapsed Time	Amount of time the audit took to complete or the amount of time the audit had run before the user aborted it or a failure occurred.	hh:mm:ss ¹ [A F] ²
Full-Record Discrepancy Combobox	List of LNP database objects whose full-record discrepancy file from the previous audit is available for viewing	Number Pool Blocks or Subscription Versions
<p>¹ MM indicates month, range 01—12 DD indicates day, range 01—31 hh indicates hour, range 00—23 mm indicates minute, range 00—59 ss indicates second, range 00—59</p> <p>² A is appended at the end of the time is the operation is aborted. F is appended at the end of the time is the operation fails.</p>		

To view the audit log file, click the View Log button. For more information about the log file, see “Audit Log File” on page 6-28.

To abort while an audit is in progress, click the Abort button. A confirmation dialog displays, as shown in Figure 6-6 on page 6-21.

Figure 6-6. Abort Operation Dialog



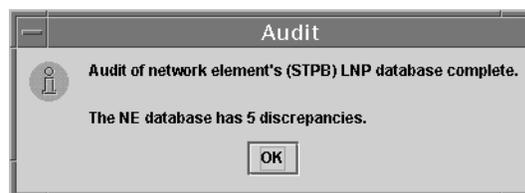
- Click the Yes button to immediately terminate the operation in progress. Go to the step 7 as if the audit had completed.

NOTE: If the LSMS has already started to create full-record discrepancy files, the operation does not stop until the full-record discrepancy files are fully created.

- Click the No button to close the Abort confirmation dialog and return back to the main Audit window with no other effect.

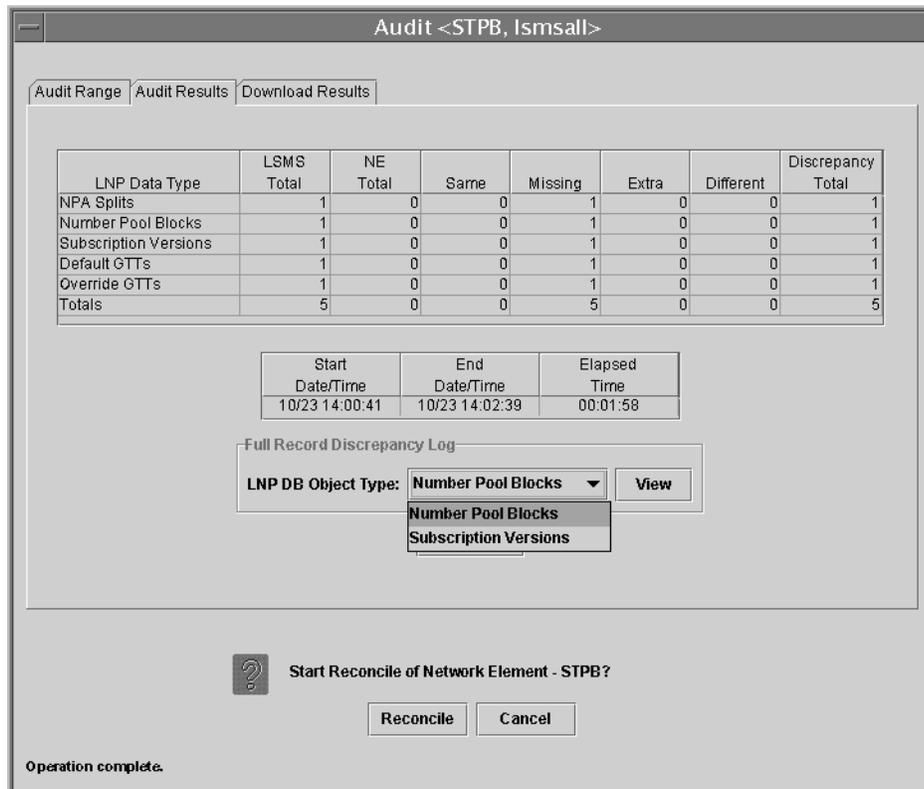
-
6. When the audit completes, an information dialog similar to Figure 6-7 displays.

Figure 6-7. Audit Complete Information Dialog



-
7. When the audit completes or is terminated, the Audit window displays similar to the example shown in Figure 6-8 on page 6-22. In this example, discrepancies in TNs and NPBs have been found, so a discrepancy file for each category has been created, the Full-Record Discrepancy Log area has become selectable, and the pull-down allows you to select which discrepancy file you would like to view. If you wish to view both files, first view one file, then view the other. For more information about the discrepancy files, see "Discrepancy Files" on page C-14.

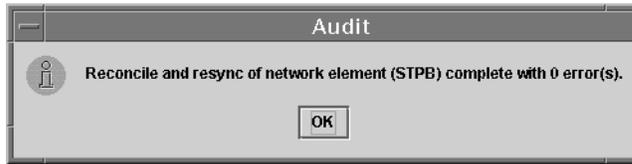
Figure 6-8. Audit Complete



Examine the Audit Results tab to determine whether any objects are listed as Missing, Extra, or Different and decide if you want to reconcile them.

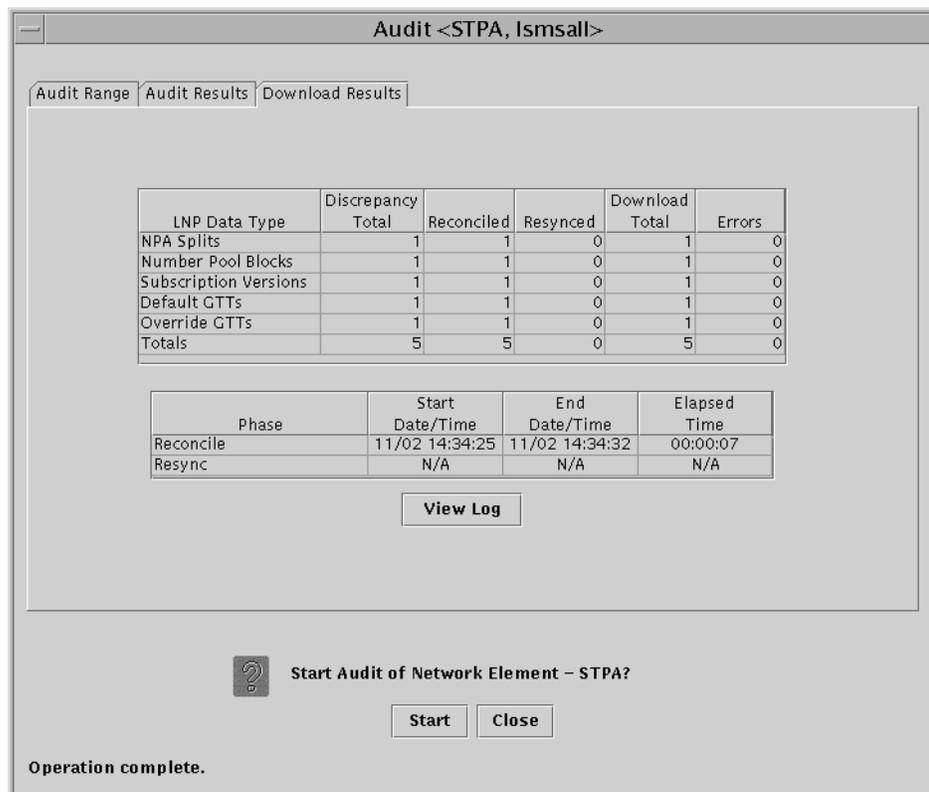
- If you choose not to reconcile, click the Cancel button; you have now completed this procedure.
- If you choose to reconcile, click the Reconcile button. (This button is selectable only if you have logged in as a member of the `lsmsuser`, `lsmsuext`, or `lsmsall` user group.)
 - If the network element being audited has a DCM/BLM (it has the Enhanced Bulk Download feature installed), go to step 8.
 - If the network element being audited does not have a DCM/BLM (either it has no optional database synchronization features installed or it has an ELAP because the 48 or 96 Million Numbers feature is installed), reconcile updates will be sent over the same connection as normal updates. When the reconcile completes, a window similar to the example shown in Figure 6-9 on page 6-23 displays.

Figure 6-9. OAM-Based or ELAP-Based Reconcile Complete



Click **OK**; a window similar to the example shown in Figure 6-10 displays.

Figure 6-10. OAM-Based or ELAP-Based Reconcile Complete



Click **OK**; you have now completed this procedure.

8. For a BLM-based audit, when you click the Reconcile button in step 7, the window shown in Figure 6-11 on page 6-24 displays.

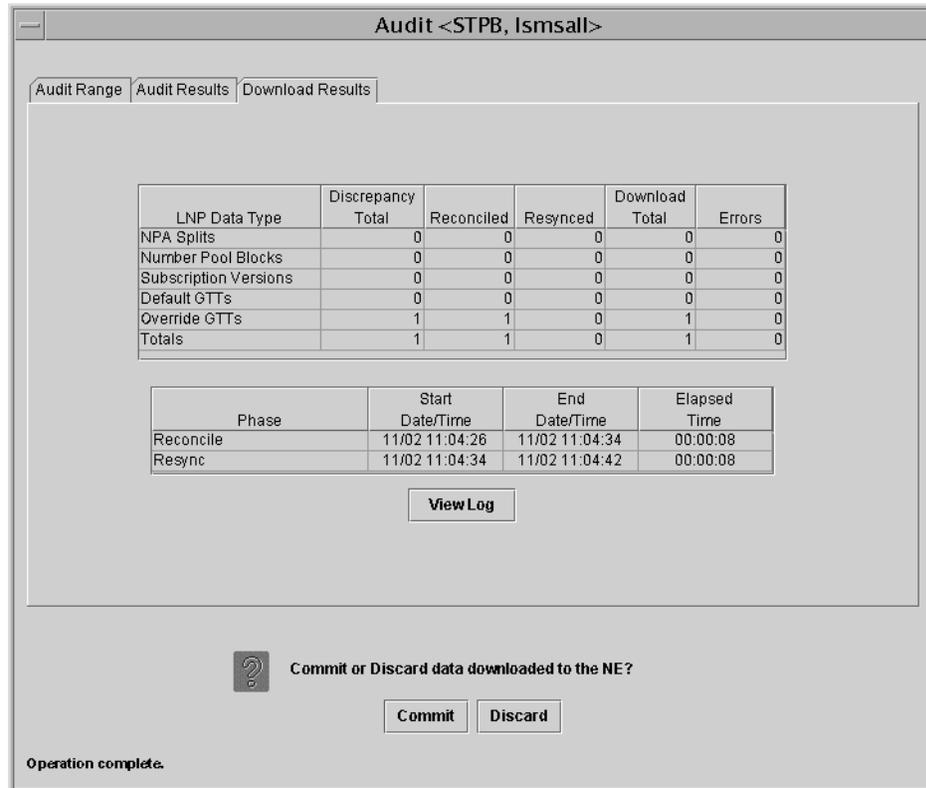
Figure 6-11. Select Connection Window for BLM-Based NE



This window recommends a reconciling either over the connection to the OAP (the normal update connection) or over the connection to the DCM/BLM, based on how many data objects were listed as Missing, Extra, or Different in step 6. When the total number of data object discrepancies is 21,000 or less, the reconcile over the connection to the OAP is generally accomplished more quickly than a reconcile over the connection to the DCM/BLM because a reconcile over the connection to the DCM/BLM requires user action prepare the network element (see steps 10 and 11) and to distribute reconciled data at the network element (see “Distributing LNP Database After BLM-Based Operation” on page 9-12).

-
9. Choose one of the buttons shown in Figure 6-11:
- If you choose to cancel the operation, click the Cancel button. No additional action is necessary; you have now completed this procedure.
 - If you choose to reconcile differences over the connection to the DCM, go to step 10.
 - If you choose to reconcile differences over the connection to the OAP (which causes the reconcile records to be sent in the same stream as normal updates), click the Normal Update button. When the reconcile completes, the window shown in Figure 6-12 on page 6-25 displays, and you have completed this procedure.

Figure 6-12. Reconcile to DCM/BLM Complete



10. Ensure that a DCM running the EBDADCM application and a BLM running the EBDABLM application have been configured in the network element, as described in “Adding a DCM and BLM for BLM-Based Operations” on page 4-11.

11. At the network element, enter the `chg-db:action=beginedl` command.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
BEGINEDL : MASP A - Electronic Bulk Download from LSMS may proceed.
Note: Issue CHG-DB:ACTION=FINISHEDL or CANCELEDL to resume.
```

12. At the Select Connection window (Figure 6-11 on page 6-24), click the DCM/BLM button.

13. Reconcile over the connection to the DCM/BLM begins, and the Audit window automatically changes to the Download Results tab.

To abort, click the Abort button, and click the Yes button to confirm the abort. You have now completed this procedure; the BLM will automatically reboot and resynchronize itself with the OAM and TSM LNP databases.

14. When the *Reconcile* stage completes, the *Re-sync* stage begins. The Abort and View Log buttons are selectable; all other buttons are nonselectable.

To abort the reconcile at this point, click the Abort button and click the Yes button to confirm the abort. You have now completed this procedure; the BLM will automatically reboot and resynchronize itself with the OAM and TSM LNP databases.

15. When the *Reconcile* and *Re-sync* stages complete, the message shown in Figure 6-13 displays.

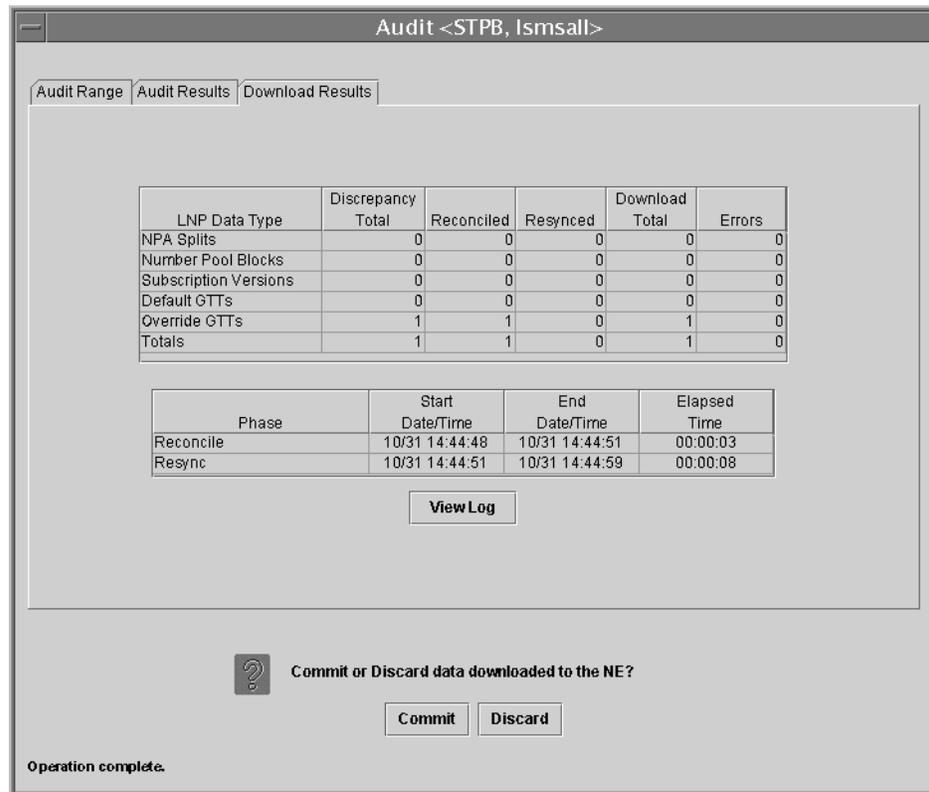
Figure 6-13. Reconcile and Resync Complete Message



Click OK.

16. In the Download Results tab, the Abort and Close buttons are replaced by Commit and Discard buttons, as shown in Figure 6-14 on page 6-27.

Figure 6-14. Reconcile Complete



Before you click the Commit or Discard button, you can view the audit log file by clicking the View Log button (for more information about the file, including how to view it at other times, see “Audit Log File” on page 6-28).

To conclude reconcile operation, do one of the following:

- Click the Discard button to send the network element a command to discard whatever changes were made to the network element.

Upon receipt of this command at the network element, the network element operator will cancel the reconcile by discarding the changes made to the BLM, as described in “Canceling a BLM-Based Operation” on page 9-12. The Audit window also closes.

- Click the Commit button to send the network element a command that informs the NE that the reconcile operation is finished and the changes made to the BLM are ready to be distributed. Upon receipt of this command at the network element, the network element operator will distribute the LNP database, as described in “Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy” on page 9-10 The Audit window also closes.

You have now completed this procedure.

Audit Log File

Any time after an audit has begun, you can view the audit log file by clicking the View Log button. The browser window used for displaying reports and logs (if this window is not already opened, it is opened automatically) displays the log file *LsmsAudit.log.<MMDD>*, where *<MMDD>* is the timestamp that contains month and day. This log file is located in the directory */usr/local/LSMS/logs/<CLLI>*, where *<CLLI>* is the Common Language Location Identifier of the network element being audited.

You can also use one of the following methods to open the window shown in Figure 6-15 used to browse for this log:

Figure 6-15. Browsing for Audit Log Files



- Select **Logs>Other...** from the main menu of the LSMS Console window.
- Click on the LSMS Console window's EMS Status Icon that corresponds to the network element being audited so that the icon is highlighted. Right-click and select **Logs>LNP Database Synchronization>Audit**.

Scroll down to find the folder that has the *<CLLI>* name for the NE that is being audited. Double-click the folder name, and then double click the file name *LsmsAudit.log.<MMDD>* that corresponds to the month and day you desire. Log files are maintained for seven days after they are created; then they are automatically removed from the LSMS.

Audit Log File Contents

Whenever an audit is started, the audit log file for that day is appended (if this is the first audit of the day, the file is created). For each audit performed on that day, the audit log file contains information similar to the information displayed on the Audit Range, Audit Results, and Download Results tabs, such as start and end times for each stage, and numbers of missing, extra, and different objects in various LNP categories. The log and window also record whether database entries are present at the LSMS but missing at the NE, present at the NE but missing at the LSMS, or present at both the LSMS and NE but containing different values.

The audit log file contains the following sections:

- Header Section (see page C-4)
- Audit Section (see page C-5)
- Reconcile Section (see page C-7)
- Resynchronization Section (see page C-10), present only when the user chooses to reconcile over the connection to the DCM (see step 9 on page 6-24)
- Summary Section (see page C-11)
- Download Commit/Discard Section (see page C-13), present only when the user chooses to reconcile over the connection to the DCM (see step 9 on page 6-24)

Figure 6-16 shows an example of an audit log file that contains two separate audits and reconciles performed on the same day.

Figure 6-16. Example of an Audit Log File

```
Thu Nov 1 13:36:16 EST 2001

Username: lsmsuser
NE CLLI: LARCH

-----

Thu Nov 1 13:36:15 EST 2001
Connection established with network element (192.168.61.202:1030)

Audit of Override GTTs started on Thu Nov 1 13:36:20 EST 2001

2000000000 MISSING

Audit of Override GTTs completed on Thu Nov 1 13:36:20 EST 2001

0000000000 LRN Start
9999999999 LRN End
    5 Total audited on LSMS
    4 Total audited on NE
    4 Same on Both
    0 Different on NE
    1 Missing on NE
    0 Extra on NE
    1 Total Discrepancies
```

Auditing and Reconciling Network Elements from the LSMS

Reconcile started on Thu Nov 1 13:37:40 EST 2001

Reconcile completed on Thu Nov 1 13:37:44 EST 2001

NPA Splits	0 Downloaded	0 errors
Number Pool Blocks	0 Downloaded	0 errors
Subscription Versions	0 Downloaded	0 errors
Default GTTs	0 Downloaded	0 errors
Override GTTs	1 Downloaded	0 errors
Total	1 Downloaded	0 errors

Audit Error Messages

For a listing of error messages that can appear on the GUI, along with explanation of possible cause and suggested recovery, see Appendix A, "LSMS GUI Messages."

Performing an Audit Using the Command Line

Use the following procedure to perform a network element audit and optional reconcile of subscription versions (SVs) or Number Pool Blocks (NPBs) through the LSMS command line interface (*lsmsclaa*). The *lsmsclaa* command does not display a progress bar or provide a way to cancel the audit while in progress. Results of the audit performed by this command are stored in the *LsmsAudit.log* file (see “Audit Log File” on page 6-28) and in discrepancy files (see “Discrepancy Files” on page C-14).

For more information about using the *lsmsclaa* command, refer to the *LSMS Maintenance Manual*.

Procedure

1. Ensure that none of the restricted situations are described in section “Audit Restrictions” on page 6-6 is occurring.

2. To perform an audit only, log into the LSMS as a member of any user group. If you need to perform a reconcile, log in as a member of the *lsmsadm*, *lsmsuser*, *lsmsuext*, or *lsmsall* user group.

3. Start the command-line interface by entering the following command with parameters as defined in Table 6-6:

```
% $LSMS_DIR/install/start_cmdLine <SPID> <REGION> [<COMMANDFILE>]
```

Table 6-6. Parameters Used by Command-Line Interface

Parameter	Description	Required?	Characters
<SPID>	Service Provider ID	Yes	4
<REGION>	Name of NPAC region	Yes (Note)	6 to 11
<COMMANDFILE>	Full name of a text file that contains a series of commands to be run by the command-line interface utility	No	1 to 256

Note: To start the LSMS command line interface, you must specify one of the following values for <REGION> even though this value is not used by the AUDIT action: Canada, Midwest, MidAtlantic, Southeast, Southwest, Northeast, Western, or WestCoast.

4. The following prompt indicates that the command-line interface has started:

```
Enter command ->
```

5. Enter the following command at the command-line interface prompt:

```
Enter Command -> audit <CLLI> <StartValue> [<EndValue>]
[<ObjectType>] [reconcile] [details]
```

where the parameters are as shown in Table 6-7 on page 6-32.

Table 6-7. Audit Command Parameters

Argument Name	Description	Required ?	Values
<CLLI>	Common Language Location Identifier of the network element whose LNP database is to be audited and optionally reconciled.	Yes	1–11 alphanumeric
<StartValue>	Starting value for the range of objects to be audited: <ul style="list-style-type: none"> • Must have the same NPA-NXX value as the <EndValue> parameter value 	Yes	<ul style="list-style-type: none"> • For NPB, 7 numeric characters in range 2000000 to 9999999 • For SV or ALL, 10 numeric characters in range 2000000000 to 9999999999
<EndValue>	Ending value of the range of objects to be audited: <ul style="list-style-type: none"> • Must be greater than (or equal to) the <StartValue> parameter value • Must have the same NPA-NXX value as the <StartValue> parameter value 	No	<ul style="list-style-type: none"> • For NPB, 7 numeric characters in range 2000000 to 9999999 • For SV or ALL, 10 numeric characters in range 2000000000 to 9999999999

Table 6-7. Audit Command Parameters

<ObjectType>	<p>One of the following to indicate which data types in the specified range to audit:</p> <ul style="list-style-type: none"> • NPB—audit only Number Pool Blocks. • SV—audit only subscription versions. • ALL—audit both Number Pool Blocks and subscription versions. <p>Default is one of the following:</p> <ul style="list-style-type: none"> • If <startValue> has 7 digits, the default is NPB • If <startValue> has 10 digits, the default is ALL 	No	NPB or SV or ALL
reconcile	<p>If this parameter is present, any discrepancies found by the audit are reconciled. (If the user is not a member of the <code>lsmsuser</code>, <code>lsmsuext</code>, or <code>lsmsall</code> groups, this parameter is ignored.)</p>	No	N/A
details	<p>If this parameter is present, status information is output every 5 seconds and includes audit discrepancy and reconcile download statistics.</p>	No	N/A

6. The command-line interface displays a message to indicate whether the audit or audit with reconcile was successful. For more information about the possible messages, refer to the *LSMS Maintenance Manual*.

You have now completed this procedure.

Auditing and Reconciling Network Elements from the LSMS

Managing Electronic Bulk Load from the LSMS

Introduction.....	7-2
Required Features.....	7-2
Electronic Bulk Load Overview.....	7-3
Pre-Bulk Load Checks.....	7-8
Postpone NPA Splits Procedure	7-9
Managing Electronic Bulk Load from the LSMS.....	7-9
Electronic Bulk Load Procedure.....	7-9
Electronic Bulk Load Log File	7-23
Electronic Bulk Load Error Messages	7-25

Introduction

This chapter describes the features required for electronic bulk load and how to initiate and manage electronic bulk load from the Local Service Management System (LSMS). Bulk loading completely replaces an LNP database (all subscription version, number pool block, NPA Split, Translation Type Service, default Global Title Translation, and override Global Title Translation data) at a network element.

Bulk loading is required when:

- The network element is being initialized for one of the following reasons:
 - Bringing the network element into the system for the first time
 - Modifying the network element's area of service by reconfiguring EMS routing
 - The network element's LNP database is corrupted and cannot be recovered using other synchronization methods
- The user-initiated resynchronization is not possible for one of the following reasons:
 - An outage between the LSMS and the network element exceeds seven days
 - A hardware failure at the LSMS causes loss of resynchronization logs
 - A bulk download from the NPAC to the LSMS has been performed. For more information on resynchronizing the NPAC and LSMS databases, refer to the *LSMS Maintenance Manual*.

For information about procedures that may be used instead of bulk loading, see "Choosing a Synchronization Procedure" on page 3-4.

Required Features

To use electronic bulk loading, you must have one of the following features combinations installed:

- To support a network element LNP database that contains up to 12 million ported numbers, you must have installed the Enhanced Bulk Download and Audit feature at the network element. This feature includes the following hardware and software to support it:
 - Database Communication Module (DCM) card with the EBDADCM generic program load (GPL)
 - Bulk Load Module (BLM) card with the EBDABLM GPL

A electronic bulk load performed with this feature set installed is called a BLM-based bulk load.

Managing Electronic Bulk Load from the LSMS

- To support a network element LNP database that contains up to 48 million numbers, you must have installed:
 - The 48 million numbers configuration at the LSMS.
 - 48 Million Numbers feature at the network element.
 - The Enhanced Bulk Download.

An electronic bulk load performed with this feature set installed is called a ELAP-based bulk load.

- To support a network element LNP database that contains up to 96 million numbers, you must have installed:
 - The 96 million numbers configuration at the LSMS.
 - 96 Million Numbers feature at the network element.
 - The Enhanced Bulk Download.

An electronic bulk load is also performed with this feature set installed is called a ELAP-based bulk load.

For information about configuring the LSMS for these features, refer to the *LSMS Configuration Manual*. For information about configuring the network element for these features, see Chapter 4, “Preparing the NE for Non-Manual Synchronization.”

Electronic Bulk Load Overview

Electronic bulk loading is the process of extracting the LNP database from the LSMS and sending the extracted data over a communications link to the network element, where it is loaded into the main LNP database. The electronic bulk load fully replaces the network element’s main LNP database.

The distribution of the LNP database within the network element is part of a separate procedure (see Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”).

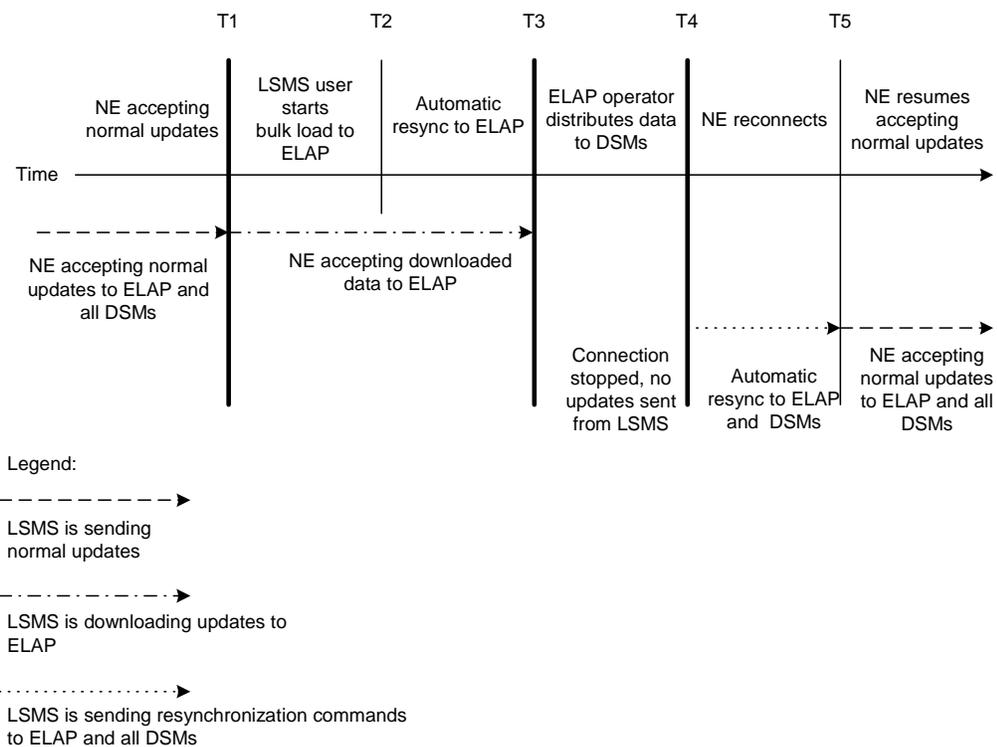
The actions performed to bulk load the data and then to distribute the data at the network element differ according to which feature set is installed at the LSMS and at the network element; see the following sections:

- “Overview of ELAP-Based Bulk Load” on page 7-4
- “Overview of BLM-Based Bulk Load” on page 7-6

Overview of ELAP-Based Bulk Load

Figure 7-1 illustrates how data is sent to a network element before, during, and after an ELAP-based bulk load. For information about the configuration required to support this type of bulk load, see “Supporting Up to 48 Million Numbers” on page 2-13 or “Features Required to Support Up to 96 Million Numbers” on page 2-14.

Figure 7-1. ELAP-Based Bulk Load Timeline



The ELAP-based bulk load stages occur as follows:

T1 *Initial bulk load stage begins:* The LSMS user and network element operator decide to initiate an electronic bulk load as a result of:

- One of the reasons listed in “Introduction” on page 7-2
- Receiving a notification that NE database maintenance is required. For more information, see “Notifications that Database Maintenance Is Required” on page 3-3 and “Choosing a Synchronization Procedure” on page 3-4.

Before starting the electronic bulk load at the LSMS, ensure that the network element has the 48 or 96 Million Numbers feature installed. To start the electronic bulk load at the LSMS, see “Managing Electronic Bulk Load from the LSMS” on page 7-9.

Managing Electronic Bulk Load from the LSMS

During the bulk load, the network element's LNP database is cleared (all LNP database entries are deleted), and the entire LSMS LNP database is downloaded to the network element.

Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands rejected by the network element are recorded in the bulk load log file (see "Electronic Bulk Load Log File" on page 7-23) and can be viewed by clicking the View Log button on the Bulk Load dialog (see Figure 7-8, on Page 7-17).

At any time during this stage, the LSMS user can choose to abort the bulk load. If aborted, this operation can be either restarted or terminated.

- T2** *Automatic resynchronization stage begins:* As soon as the previous stage completes, the LSMS automatically begins a resynchronization to update the network element with any updates received from NPACs or any data locally provisioned since stage T1.

This stage can also result in download commands being rejected by the NE. All commands rejected by the network element are recorded in the bulk load log file (see "Electronic Bulk Load Log File" on page 7-23) and can be viewed by clicking the View Log button on the Bulk Load dialog (see Figure 7-8, on Page 7-17).

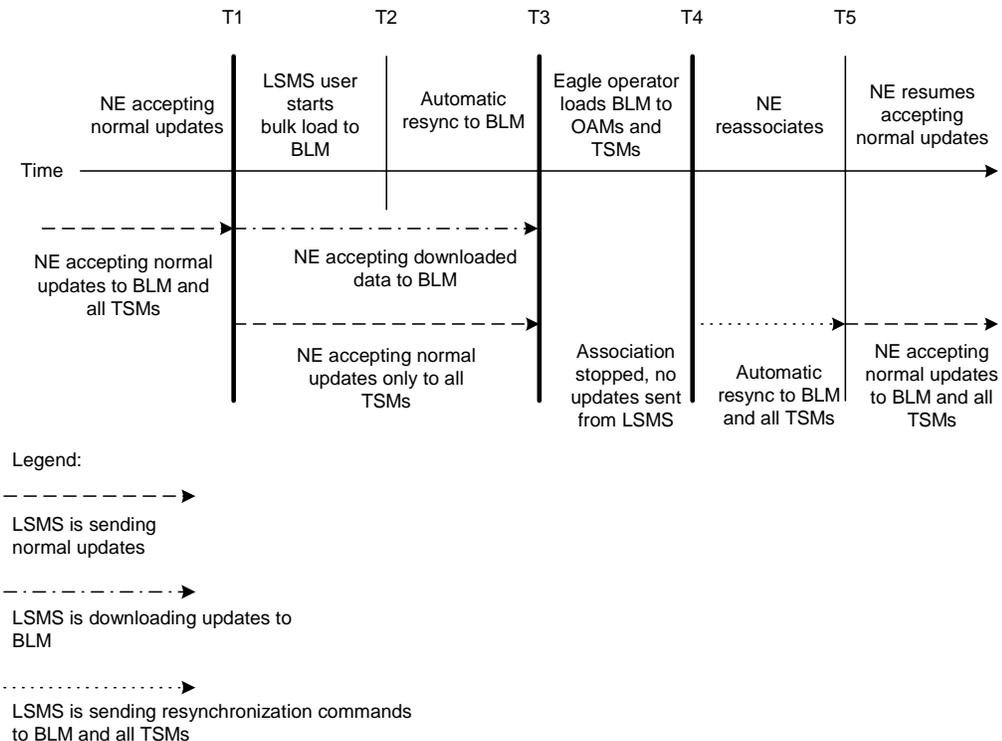
When this stage is complete, the user has the option to commit or discard the LNP data downloaded to the network element. If the user chooses to commit the changes, the DBTS is set to the time that this stage began. If the user chooses to discard the changes, the network element's LNP database is left in a Database Maintenance Required (DMR) state.

- T3** *Network element database distribution stage begins:* If the LSMS user chooses in the previous stage to commit the data downloaded to the NE's database, the ELAP operator copies the newly restored ELAP RTDB to the mate ELAP, and then distributes the data to the Data Services Module (DSM) cards as described in Chapter 9, "Distributing the LNP Database after LSMS-Based Operation or RTDB Copy."
- T4** *Automatic resynchronization stage begins:* At this stage, the electronic bulk load procedures are complete, and the LSMS and network element reconnect and begin the normal automatic resynchronization described in "Automatic Resynchronization Process" on page 5-4. During this stage, the LSMS sends all NPAC updates or locally provisioned data updates that have occurred since stage T2.
- T5** *Normal operations resume.*

Overview of BLM-Based Bulk Load

Figure 7-2 illustrates how data is sent to a network element before, during, and after a BLM-based bulk load. For information about the configuration required to support this type of bulk load, see “Supporting Up to 12 Million Ported Numbers” on page 2-9.

Figure 7-2. BLM-Based Bulk Load Timeline



The BLM-based bulk load stages occur as follows:

T1 *Initial bulk load stage begins:* The LSMS user and network element operator decide to initiate an electronic bulk load as a result of:

- One of the reasons listed in “Introduction” on page 7-2
- Receiving a bulk load notification. For more information, see “Notifications that Database Maintenance Is Required” on page 3-3 and “Choosing a Synchronization Procedure” on page 3-4.

Before starting the electronic bulk load at the LSMS, ensure that the network element is prepared for it, as described in Chapter 4, “Preparing the NE for Non-Manual Synchronization.” To start the electronic bulk load at the LSMS, see “Managing Electronic Bulk Load from the LSMS” on page 7-9.

Managing Electronic Bulk Load from the LSMS

During the bulk load, the network element's LNP database is cleared (all LNP database entries are deleted), and the entire LSMS LNP database is downloaded to the network element.

Some differences between the LSMS and NE databases (such as capacity) may cause the NE to reject some of the downloaded commands. These rejections would also occur during a normal update. All commands rejected by the network element are recorded in the bulk load log file (see "Electronic Bulk Load Log File" on page 7-23) and can be viewed by clicking the View Log button on the Bulk Load dialog (see Figure 7-8, on Page 7-17).

At any time during this stage, the LSMS user can choose to abort the bulk load. If aborted, this operation can be either restarted or terminated.

- T2** *Automatic resynchronization to the BLM stage begins:* As soon as the previous stage completes, the LSMS automatically begins a resynchronization to update the BLM with any updates received from NPACs or any data locally provisioned since stage T1.

This stage can also result in download commands being rejected by the NE. All commands rejected by the network element are recorded in the bulk load log file (see "Electronic Bulk Load Log File" on page 7-23) and can be viewed by clicking the View Log button on the Bulk Load dialog (see Figure 7-8, on Page 7-17).

At any time during this stage, the LSMS user can choose to abort the bulk load. If aborted, this operation can be either restarted or terminated.

When this stage is complete, the user has the option to commit or discard the LNP data downloaded to the network element. If the user chooses to commit the changes, the DBTS is set to the time that this stage began. If the user chooses to discard the changes, the network element's BLM will automatically reboot and resynchronize itself with the Operations, Administration, and Maintenance (OAM) and Translation Service Module (TSM) LNP databases.

- T3** *Network element database distribution stage begins:* If the LSMS user chooses in the previous stage to commit the bulk load, the network element operator must distribute the LNP database from the BLM to all OAM cards and TSMs as described in Chapter 9, "Distributing the LNP Database after LSMS-Based Operation or RTDB Copy."
- T4** *Automatic resynchronization to the OAM stage begins:* At this stage, the electronic bulk load procedures are complete, and the LSMS and network element reconnect and begin the normal automatic resynchronization described in "Automatic Resynchronization Process" on page 5-4. During this stage, the LSMS sends all NPAC updates or locally provisioned data updates that have occurred since stage T3.
- T5** *Normal operations resume.*

Pre-Bulk Load Checks

Use the following procedure to determine whether NPA Splits exist that may be activated during the period in which an Electronic Bulk Load will occur.

Procedure

1. Determine the total number of Subscription Version and NumberPoolBlock objects in the LSMS regional databases.

- a. As lsmsadm, execute the following lsmsdb commands to output the counts for both Subscription Version and NumberPoolBlock objects:

```
% cd $LSMS_DIR/tools
% lsmsdb -c counts | grep SubscriptionVersion
1,012,345 ... CanadaDB.SubscriptionVersion
5,434,123 ... MidAtlanticDB.SubscriptionVersion
7,111,222 ... MidwestDB.SubscriptionVersion
6,333,999 ... NortheastDB.SubscriptionVersion
8,044,000 ... SoutheaststDB.SubscriptionVersion
4,999,800 ... SouthwestDB.SubscriptionVersion
6,500,000 ... WestCoastDB.SubscriptionVersion
5,250,500 ... WesternDB.SubscriptionVersion
% lsmsdb -c counts | grep NumberPoolBlock
1,205 ..... CanadaDB.NumberPoolBlock
10,400 ..... MidAtlanticDB.NumberPoolBlock
8,005 ..... MidwestDB.NumberPoolBlock
4,000 ..... NortheastDB.NumberPoolBlock
7,500 ..... SoutheaststDB.NumberPoolBlock
1,225 ..... SouthwestDB.NumberPoolBlock
7,700 ..... WestCoastDB.NumberPoolBlock
5,500 ..... WesternDB.NumberPoolBlock
```

- b. Total the counts listed in the first column of the output from both commands in Step 1, substep a. Divide this total by 2 million, to determine the estimated number of hours for the Electronic Bulk Load.
2. Generate an NPA Split Report. Refer to the *LSMS Database Administration Manual*, (Chapter 5, "LSMS Reports"), for information about the procedures for creating and viewing the NPA Split Data Reports. Select **Pending** for Status and **All NPAC Regions** for NPAC Region.
3. Determine if NPA Splits are scheduled to be activated during the Bulk Load to be performed:
 - a. If no Pending NPA Splits were listed in the report in Step 2, continue with the Electronic Bulk Load Procedure.
 - b. If Pending NPA Splits exist, examine the PDP Start Date for each. If the Date falls within the time frame required to complete the Bulk Load, continue with the Postpone NPA Split Procedure. Otherwise, continue

Managing Electronic Bulk Load from the LSMS

with the Electronic Bulk Load Procedure.

You have now completed this procedure.

Postpone NPA Splits Procedure

Use the following procedure to postpone a Pending NPA Split so that it will not be activated during the performance of an Electronic Bulk Load.

Procedure

1. Determine the date on which you want the NPA Splits to be activated. This should be the next day after the completion of the Electronic Bulk Load Procedure. (Based on the start date/time anticipated and the estimated length of the Bulk Load procedure, from Step 1, substep b of “Pre-Bulk Load Checks” on page 7-8.)

For example, if the Bulk Load is estimated to require 24 hours to complete and the Bulk Load planned to be performed starting at 12 noon on April 1st, the Split should be postponed until April 3rd.

2. Refer to the *LSMS Database Administration Manual* (Chapter 4, “Modify NPA Split” section) for information about how to postpone the split.
 3. Perform the procedure described in “Managing Electronic Bulk Load from the LSMS” on page 7-9.
-

You have now completed this procedure.

Managing Electronic Bulk Load from the LSMS

This section includes the procedure for performing an electronic bulk load, the viewing of electronic bulk load log files, and understanding electronic bulk load error messages.

Electronic Bulk Load Procedure

Use the following procedure to manage an electronic bulk load from the LSMS user interface.

NOTE: Before starting this procedure, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14) to be readily available for assistance if you encounter any problems while performing this procedure.

Procedure

1. Ensure that the network element is prepared to receive an electronic bulk load by doing a or b or c, depending on the installed Eagle release and features:
 - a. If the network element has a DCM and BLM (it supports the Enhanced Bulk Download and Audit feature), go to step 2.
 - b. If the network element has Eagle Release 28.x with ELAP 1.0 and an MPS (it supports the 48 Million Numbers feature), ensure that the network element is prepared to receive electronic bulk load updates by logging into the ELAP user interface; enter the “elapmaint” user name and password. (The password is not displayed as you enter it.)

```
login: elapmaint  
Password:  
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

Enter the ELAP to work on (A or B); select the active ELAP. (If you select the standby ELAP, you can choose the `Select Mate ELAP` menu item to change the selected ELAP to the active ELAP.)

```
Please select an ELAP to work on [A]: {AaBb}
```

Managing Electronic Bulk Load from the LSMS

The maintenance menu is displayed. The banner above the menu indicates the active/standby status of the ELAP that you selected. The status should be active.

```
ELAP {ELAP GPL number} user interface (MPS platform version {platform version})
```

```
User "elapmaint" logged in to MPS A (ACTIVE).
```

```
ELAP A (ACTIVE) is currently selected.
```

```
LSMS Bulk Download is disabled. Provisioning is allowed.
```

```

/---- ELAP Maintenance Menu -----\
/-----\
| 1 | Select Mate ELAP                |
|----|-----|
| 2 | Force ELAP to Become Standby    |
|----|-----|
| 3 | Remove Standby Restriction      |
|----|-----|
| 4 | Turn RTDB Audit On (currently ON)|
|----|-----|
| 5 | Turn RTDB Audit Off (currently ON)|
|----|-----|
| 6 | Start ELAP Software             |
|----|-----|
| 7 | Stop ELAP Software              |
|----|-----|
| 8 | Display Release Levels          |
|----|-----|
| 9 | Transaction Log                 |
|----|-----|
|10 | Decode Eagle Output of MPS Alarms|
|----|-----|
|11 | Toggle LSMS HS Audit            |
|----|-----|
|12 | Display LSMS HS Audit           |
|----|-----|
|13 | Toggle LSMS HS Bulk Download/LSMS HS Resync|
|----|-----|
|14 | Toggle LSMS Connection (currently ENABLED)|
|----|-----|
| e | Exit                            |
\-----/
```

```
Enter Choice:
```

Choose the `Toggle LSMS Connection` menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

```
Enter Choice: 14
```

Next, choose the `Toggle LSMS HS Bulk Download/LSMS HS Resync` menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

```
Enter Choice: 13
```

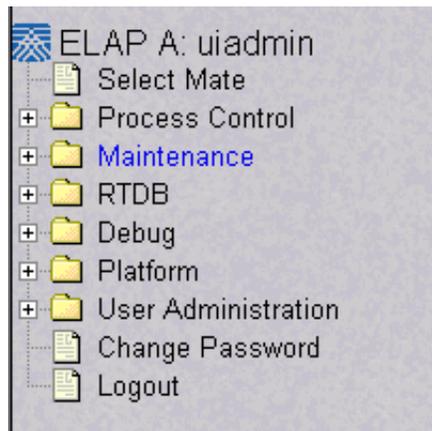
NOTE: Performing this step causes the RTDB to enter a state of requiring database maintenance. Unless you are able to complete the procedure by committing the changes (as described in step 8), the RTDB continues to be in a state of requiring database maintenance.

Go to step 5.

- c. If the network element has Eagle Release 28.x with ELAP 2.0 or later and an MPS (it supports the 48 or 96 Million Numbers feature), connect your web browser to the ELAP user interface (for more information, refer to the *Eagle ELAP Administration Manual*). Log in with the user name and password for a user who is authorized to access the menu items shown in this procedure.

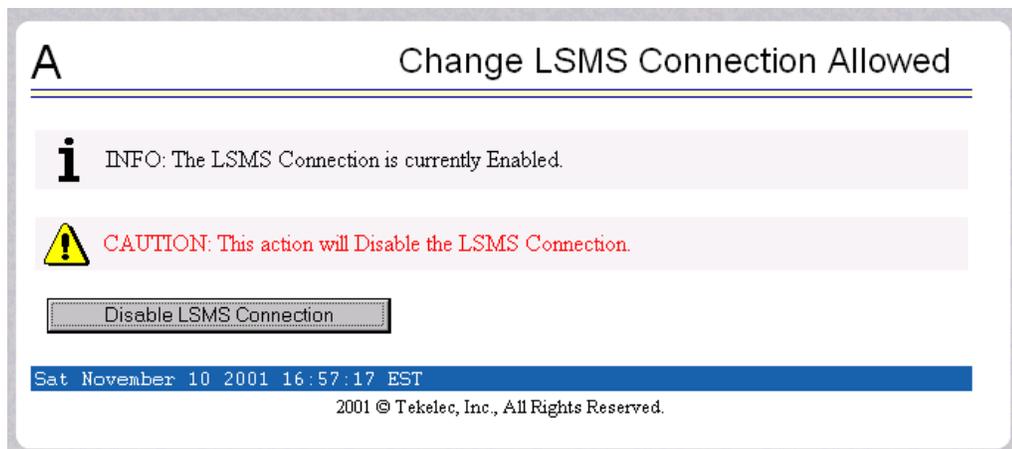
The ELAP GUI displays, as shown in Figure 7-3.

Figure 7-3. ELAP Main Menu



Select **Maintenance>LSMS Connection>Change Allowed**. The window shown in Figure 7-4 on page 7-12 displays.

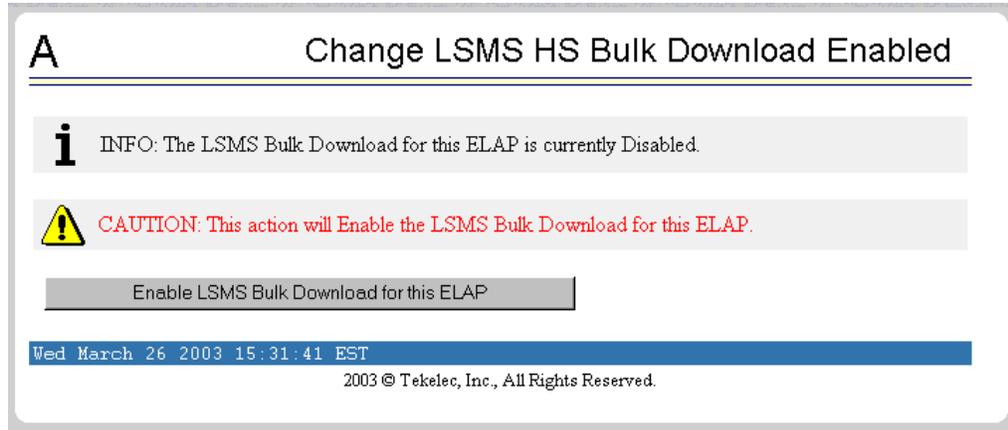
Figure 7-4. Disabling the LSMS Connection



Click the Disable LSMS Connection button.

Next, select **Maintenance>LSMS HS Bulk Download>Change Enabled**. The window shown in Figure 7-5 displays.

Figure 7-5. Enabling Change HS Bulk Download



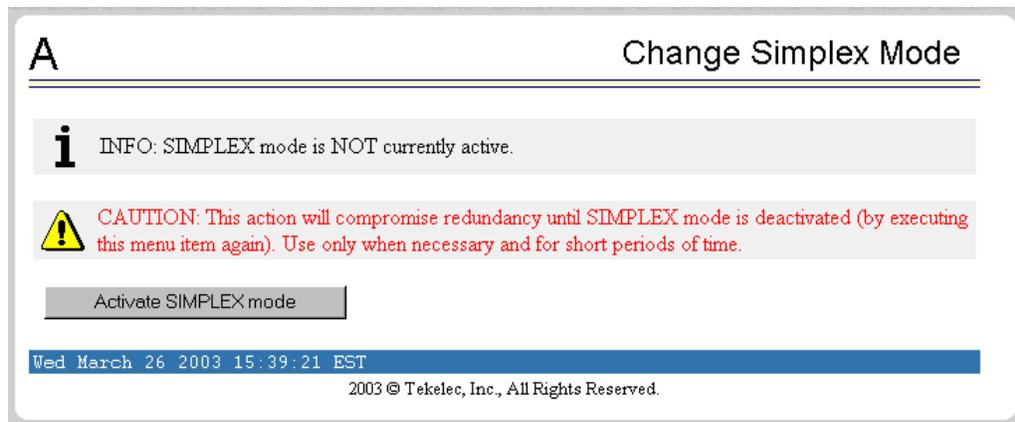
NOTE: Performing this step causes the RTDB to enter a state of requiring database maintenance. Unless you are able to complete the procedure by committing the changes (as described in step 8), the RTDB continues to be in a state of requiring database maintenance.

If the Information field indicates that the LSMS Bulk Download for this ELAP is currently Disabled (as shown in Figure 7-5, and which is the default condition for an ELAP), click the Enable LSMS Bulk Download for this ELAP button. (If the Information field indicates that the LSMS Bulk Download for this ELAP is Enabled, the ELAP is already prepared for the user-initiated resynchronization.)

Next activate the SIMPLEX mode as follows:

Select **Maintenance>Simplex Mode>Change Change Status**. The window shown in Figure 7-6 displays.

Figure 7-6. Change Simplex Mode Screen

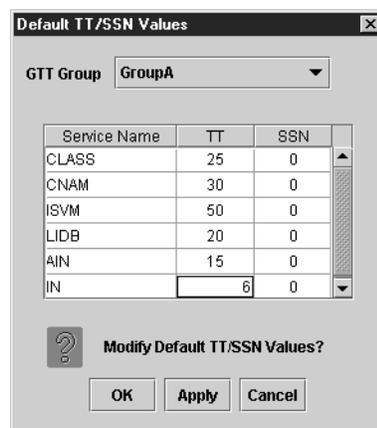


Click the Activate SIMPLEX mode button.

Go to step 5.

-
2. Ensure that a DCM running the EBDADCM application and a BLM running the EBDABLM application have been configured in the network element as described in “Adding a DCM and BLM for BLM-Based Operations” on page 4-11 and ensure that a Database Backup removable cartridge has been prepared as described in “Preparing a Database Backup Removable Cartridge” procedure on page 4-31 (this step is performed only when the network element supports the Enhanced Bulk Download and Audit feature).
-
3. Verify that the translation types defined at the LSMS and at the network element match (this step is performed only for a BLM-based electronic bulk load for a network element that supports the Enhanced Bulk Download and Audit feature):
 - a. Record the translation type (TT) values used by the LSMS by logging into the LSMS GUI as a user in the **lsmsadm** or **lsmsall** groups, or as a user in the **lsmsuext** group (a user in the **lsmsuext** group must have authority to access the SPID assigned to the GTT group; for more information about SPID security, refer to the LSMS Database Administration Manual.)
 - b. Select **Configure>TT/SSN Values**; a window similar to the example shown in Figure 7-7 displays.

Figure 7-7. LSMS Default TT/SSN Values



Record the translation type value associated with each LNP service.

- c. At the network element, display the LNP translation type services in the network element database with the **rtrv-lnp-serv** command. This is

Managing Electronic Bulk Load from the LSMS

an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV      TT      TTN      DV      ALIAS
AIN       15      AINGTE   TCAP    235
          236
IN        6       INGTE    TCAP    ---
LIDB     20      LIDB     SCCP    ---
WNP      22      WNPGE    TCAP    ---
PCS      11      PCS11    TCAP    ---
CLASS    25      CLASSGTE SCCP    ---
CNAM     30      CNAM     SCCP    ---
ISVM     50      ISVM     SCCP    ---
UDF1     201     UDF1     SCCP    ---
```

```
LNP-SERV TABLE IS (9 of 256) 4% FULL
```

Record the translation type values in the TT field, as shown in bold, for the LNP services AIN, IN, LIDB, CLASS, CNAM, and ISVM.

- d. Compare the translation type values for the LNP services displayed in step b with the values recorded from the `rtrv-lnp-serv` command output. The translation type values displayed in step b and the `rtrv-lnp-serv` command output should be the same.

NOTE: If the translation type values in the network element and the LSMS do not match, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14) to resolve the differences in the translation type values between the network element and the LSMS. See “Technical Services and Support” on page 1-14.

- e. Also record the values for any of the following data contained in the `rtrv-lnp-serv` command output.
 - Translation type names, as shown by the values in the TTN field.
 - Alias translation types, as shown in the ALIAS field
 - User defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field
 - Wireless number portability translation types, as shown by the entry `WNP` in the SERV field
 - PCS 1900 number portability translation types, as shown by the entry `PCS` in the SERV field

The LSMS does not support these functions, and this data will not be in the LNP services table when the LNP database is bulk loaded from the LSMS. These values can be restored to the LNP services table in the network element as described in “Distributing LNP Database After BLM-Based Operation” on page 9-12

4. Prepare for starting the electronic bulk load of the LNP database from the LSMS by entering the `chg-db:action=beginedl` command (this step is performed only for a BLM-based electronic bulk load when the network element supports the Enhanced Bulk Download and Audit feature).

After successful completion of this command, the system returns the following output:

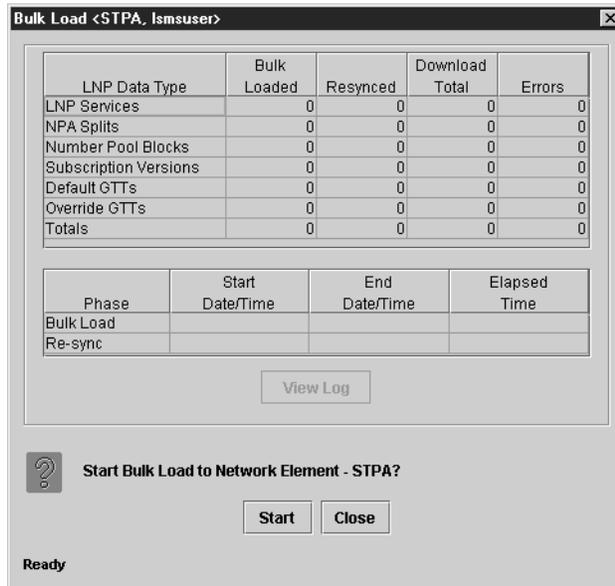
```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0  
BEGINEDL : MASP A - Electronic Bulk Download from LSMS may proceed.  
Note: Issue CHG-DB:ACTION=FINISHEDL or CANCELEDL to resume.
```

5. At the LSMS, log in as a member of the `lsmsuser`, `lsmsuext`, or `lsmsall` user group.
-

6. Start the Bulk Load window using either of the following:
 - From the main menu on the LSMS Console window, select **LSMS-> LNP Database Synchronization->Bulk Load-><CLLI>**, where <CLLI> is the Common Language Location Identifier for the network element that requires the bulk load.
 - Right-click the LSMS Console window's EMS status icon that corresponds to the network element requiring the bulk load, and select **LNP Database Synchronization->Bulk Load**.

The Bulk Load window displays. An example of this window is shown in Figure 7-8 on page 7-17.

Figure 7-8. Bulk Load Window



- To initiate the electronic bulk load, click the Start button. The Start button is replaced by the Abort button, and the View Log button becomes selectable. Progress is indicated by start time, elapsed time, numbers of successful and failed update commands, and status reported in the status field at the bottom of the window. When the bulk load phase completes (as indicated in the status field and by a value appearing in the End Date/Time field for the Bulk Load phase), the Re-sync phase begins and progress continues to be indicated in the same ways. All other buttons become nonselectable.

Table 7-1 on page 7-18 shows the meaning of each of the fields that appears in this window.

Table 7-1. Fields in Bulk Load Window

Field	Description	Possible Values
Bulk Loaded	Total number of LNP commands that were successfully transmitted and applied to the NE's LNP database during the initial download phase of the bulk load operation.	0—99,999,999
Resynced	Total number of LNP commands that were successfully transmitted and applied to the NE's LNP database during the resynchronization phase of the bulk load operation.	0—99,999,999
Download Total	Total number of LNP commands that were successfully transmitted and applied to the NE's LNP database during initial download and the resynchronization phases of the bulk load operation.	0—99,999,999
Errors	Total number of commands that were successfully transmitted but rejected by the NE during the initial download and the resynchronization phases of the bulk load operation.	0—99,999,999
Bulk Load Start Date/Time	Time at which the initial download phase of the bulk load operation was started by the user.	MM/DD hh:mm:ss ¹
Bulk Load End Date/Time	Time at which the initial download phase of the bulk load operation completed successfully or terminated abnormally.	MM/DD hh:mm:ss ¹
Bulk Load Elapsed Date/Time	Amount of time the initial download phase of the bulk load operation took to complete or the amount of time it ran before the user aborted it.	MM/DD hh:mm:ss ¹ [A F] ²
Re-sync Start Date/Time	Time at which the resynchronization phase of the bulk load operation was started by the user.	MM/DD hh:mm:ss ¹
Re-sync End Date/Time	Time at which the resynchronization phase of the bulk load operation completed successfully (with or without command rejections at the NE) or terminated abnormally.	MM/DD hh:mm:ss ¹
¹ MM indicates month, range 01—12 DD indicates day, range 01—31 hh indicates hour, range 00—23 mm indicates minute, range 00—59 ss indicates second, range 00—59 ² A is appended at the end of the time if the operation is aborted. F is appended at the end of the time if the operation fails.		

Table 7-1. Fields in Bulk Load Window

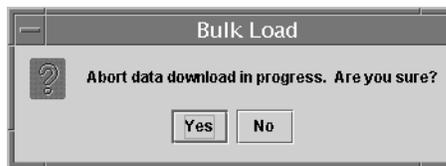
Field	Description	Possible Values
Re-sync Elapsed Date/Time	Amount of time the resynchronization phase of the bulk load operation took to complete or the amount of time it ran before the user aborted it.	hh:mm:ss ¹ [A F] ²
Status	Appears as text at the bottom left of the window to indicate the current status of the resynchronization operation.	Varies
¹ MM indicates month, range 01—12 DD indicates day, range 01—31 hh indicates hour, range 00—23 mm indicates minute, range 00—59 ss indicates second, range 00—59 ² A is appended at the end of the time if the operation is aborted. F is appended at the end of the time if the operation fails.		

The time required to download a database from the LSMS to the BLM on the network element varies depending on the number of records provisioned in the database and the quality of the transmission and connections. For more information about estimated time, see Table D-1 on page D-3.

To view the bulk load log file, see “Electronic Bulk Load Log File” on page 7-23.

To abort during either the bulk load phase or the resynchronization phase of an electronic bulk load is in progress, click the Abort button. A confirmation dialog displays, as shown in Figure 7-9.

Figure 7-9. Abort Bulk Load Operation Dialog



- Click the Yes button to immediately terminate the operation in progress. Go to the step 9 as if the bulk load had completed.
- Click the No button to close the Abort confirmation dialog and return back to the main Bulk Load window with no other effect.

8. When the electronic bulk load operation completes, the information dialog shown in Figure 7-10 on page 7-20 displays.

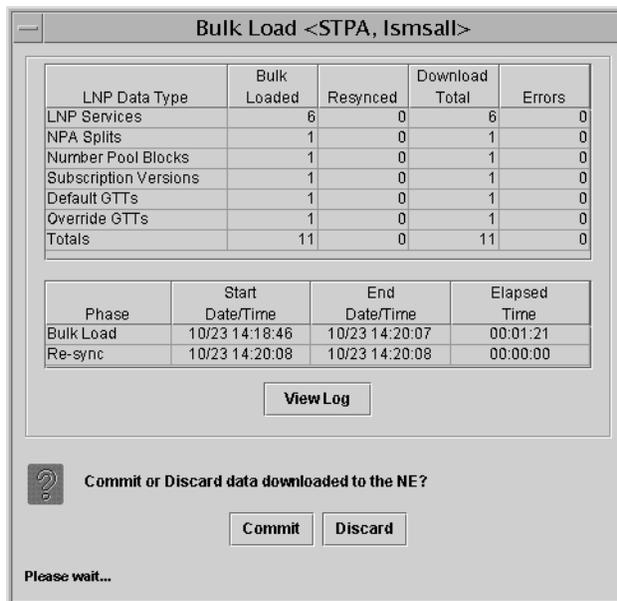
Figure 7-10. Bulk Load Complete Information Dialog



Click OK.

9. When the electronic bulk load operation completes or is aborted, the Abort and Close buttons are replaced by Commit and Discard buttons, as shown in Figure 7-11 on page 7-20.

Figure 7-11. Bulk Load Complete



Before you click the Commit or Discard button, you can view the bulk load log file by clicking the View Log button (for more information about the file, including how to view it at other times, see “Electronic Bulk Load Log File” on page 7-23).

Managing Electronic Bulk Load from the LSMS

To conclude the bulk load operation, you must click one of the following buttons:

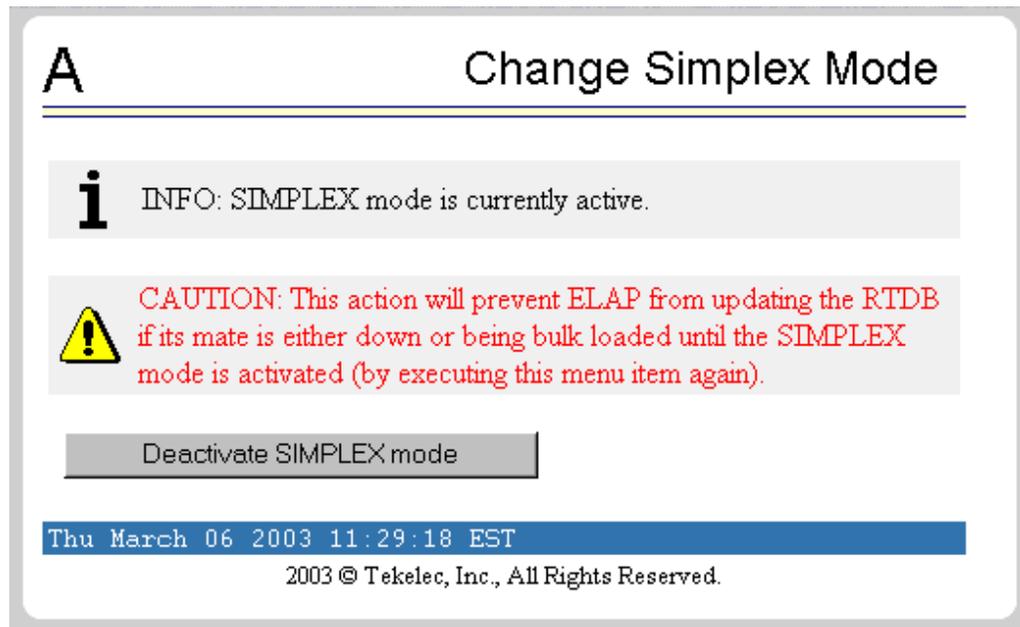
- Click the Discard button to end the electronic bulk load application (closing the Bulk Load window) and to send the NE a discard command that results in one of the following:
 - For a BLM-based bulk load (the NE has the Enhanced Bulk Download and Audit feature installed as described in “Supporting Up to 12 Million Ported Numbers” on page 2-9), the NE displays a message that the electronic operation is to be discarded. Upon seeing this message, the NE operator must cancel the electronic bulk load by discarding the changes made to the BLM, as described in “Canceling a BLM-Based Operation” on page 9-12. (If you are performing this procedure because you have received one of the notifications described in “Notifications that Database Maintenance Is Required” on page 3-3, NE database maintenance is still required, but the electronic bulk load application is no longer running.)
 - For an ELAP-based bulk load (the NE has the 48 Million Numbers feature installed as described in “Supporting Up to 48 Million Numbers” on page 2-13 or “Features Required to Support Up to 96 Million Numbers” on page 2-14), changes have already been made to the ELAP’s RTDB, and they cannot be undone. (For whatever reason you are performing this procedure, the ELAP’s RTDB is now in a state of requiring database maintenance, but the electronic bulk load application is no longer running.)
- Click the Commit button to end the electronic bulk load application (closing the Bulk Load window) and to send the NE a command that informs the NE that the download operation is finished and the changes made are ready to be distributed. This command results in one of the following:
 - For a BLM-based bulk load (the NE has the Enhanced Bulk Download and Audit feature installed as described in “Supporting Up to 12 Million Ported Numbers” on page 2-9), the NE displays a message that the electronic operation is finished. Upon seeing this message, the NE operator must cause the LNP database to be distributed, as described in “Distributing the BLM LNP Database After BLM-Based Operation” on page 9-34.

- For an ELAP-based bulk load (the NE has the 48 Million Numbers feature installed as described in “Supporting Up to 48 Million Numbers” on page 2-13 or “Features Required to Support Up to 96 Million Numbers” on page 2-14), changes have already been made to the ELAP’s RTDB. (The Commit button is not selectable (it is grayed out) if you have aborted the electronic bulk load.) The NE operator must cause the LNP database to be distributed and return the NE to normal operation as follows:

NOTE: On the active MPS, verify that the DB Status is Coherent and the RTDB Level is greater than zero before copying the newly downloaded database to the mated ELAP.

1. Copy the newly restored RTDB to its mate ELAP’s RTDB, as described in “Copying RTDB from Mated ELAP” on page 8-2.
2. Distribute the data to the DSMs, as described in “Distributing an RTDB LNP Database to DSMs” on page 9-3.
3. Deactivate the SIMPLEX mode as follows:
Select **Maintenance>Simplex Mode>Change Change Status**.The window shown in Figure 7-12 displays.

Figure 7-12. Change Simplex Mode Screen



Click the Deactivate SIMPLEX mode button.

4. Disable another user-initiated resynchronization or bulk load, as described in “Disabling Bulk Load” on page 9-6.

You have now completed this procedure.

Electronic Bulk Load Log File

This section describes the following topics:

- Viewing the Bulk Load Log File (see page 7-23)
- Bulk Load Log File Contents (see page 7-24)

Viewing the Bulk Load Log File

Any time after the user-initiated resynchronization has begun, you can view the electronic bulk load log file by clicking the View Log button. The browser window used for displaying reports and logs (if this window is not already opened, it is opened automatically) displays the log file *LsmsBulkload.log.<MMDD>*, located in the directory */usr/local/LSMS/logs/<CLLI>*, where *<CLLI>* is the Common Language Location Identifier of the network element receiving the bulk load and *<MMDD>* is the timestamp that contains month and day that the file was created.

You can also use one of the following methods to open the window shown in Figure 7-13 used to browse for this log:

Figure 7-13. Browsing for a Bulk Load Log Files



- Select **Logs>Other...** from the main menu of the LSMS Console window.
- Click on the LSMS Console window's EMS Status Icon that corresponds to the network element receiving the bulk load so that the icon is highlighted. Right-click and select **Logs>LNP Database Synchronization>Bulk Load**.

Scroll down to find the folder that has the *<CLLI>* name for the NE that was bulk loaded. Double-click the folder name, and then double click the file name *LsmsBulkload.log.<MMDD>* that corresponds to the month and day you desire. Log files are maintained for seven days after they are created; then they are automatically removed from the LSMS.

Bulk Load Log File Contents

Whenever a bulk load is started, the bulk load log file for that day is appended (if this is the first bulk load of the day, the file is created). For each bulk load performed on that day, the bulk load log file contains information similar to the information displayed on the Bulk Load main window, such as start and end times for the bulk load, and numbers of successes and failures in various LNP categories.

The bulk load log file contains the following sections:

- Header Section (see page C-4)
- Bulk Load Section (see page C-8)
- Resynchronization Section (see page C-10)
- Summary Section (see page C-11)
- Download Commit/Discard Section (see page C-13)

Figure 7-14, on page 7-24 shows an example of a bulk load log file.

Figure 7-14. Example Bulk Load Log File

```

Wed Oct 31 14:02:03 EST 2001

Username: lsmsall
NE CLLI: STPB
-----

Wed Oct 31 14:02:02 EST 2001
Connection established with network element (192.168.61.202:1030)

Bulk download started on Wed Oct 31 14:02:13 EST 2001

Bulk download completed on Wed Oct 31 14:02:27 EST 2001

      LNP Services           6 Downloaded           0 errors
      NPA Splits             1 Downloaded           0 errors
Number Pool Blocks         2 Downloaded           0 errors
Subscription Versions     1004 Downloaded         0 errors
      Default GTTs           1 Downloaded           0 errors
      Override GTTs          1 Downloaded           0 errors
      Total                   1015 Downloaded        0 errors
    
```

Managing Electronic Bulk Load from the LSMS

Re-sync started on Wed Oct 31 14:02:29 EST 2001

New NE LNP Database Time Stamp: Wed Oct 31 14:02:30 EST 2001

Re-sync completed on Wed Oct 31 14:02:30 EST 2001

NPA Splits	0 Downloaded	0 errors
Number Pool Blocks	0 Downloaded	0 errors
Subscription Versions	0 Downloaded	0 errors
Default GTTs	0 Downloaded	0 errors
Override GTTs	0 Downloaded	0 errors
Total	0 Downloaded	0 errors

Commit completed on Wed Oct 31 14:02:48 EST 2001.

Username: lsmsall

NE CLLI: STPB

Bulk download started on Wed Oct 31 15:04:54 EST 2001

Bulk download completed on Wed Oct 31 15:05:09 EST 2001

LNP Services	6 Downloaded	0 errors
NPA Splits	1 Downloaded	0 errors
Number Pool Blocks	2 Downloaded	0 errors
Subscription Versions	1004 Downloaded	0 errors
Default GTTs	1 Downloaded	0 errors
Override GTTs	1 Downloaded	0 errors
Total	1015 Downloaded	0 errors

Re-sync started on Wed Oct 31 15:05:19 EST 2001

New NE LNP Database Time Stamp: Wed Oct 31 15:05:20 EST 2001

Re-sync completed on Wed Oct 31 15:05:20 EST 2001

NPA Splits	0 Downloaded	0 errors
Number Pool Blocks	0 Downloaded	0 errors
Subscription Versions	0 Downloaded	0 errors
Default GTTs	0 Downloaded	0 errors
Override GTTs	0 Downloaded	0 errors
Total	0 Downloaded	0 errors

Discard completed on Wed Oct 31 15:10:55 EST 2001.

Electronic Bulk Load Error Messages

For a listing of error messages that can appear on the GUI, along with explanation of possible cause and suggested recovery, see Appendix A, "LSMS GUI Messages."

8

Copying One RTDB from Another RTDB

Introduction.....	8-2
Verifying RTDB Status	8-4
Procedure to Copy an RTDB from the Mate ELAP	8-9
Procedure to Copy RTDB from Remote Mated NE.....	8-21

| Introduction

This chapter describes the procedures for copying an Eagle LNP Application Processor (ELAP) Real-Time Database (RTDB) from another ELAP RTDB to reload a corrupted or backlevel RTDB. The following types of copy are covered by this chapter:

- Copying RTDB from Mated ELAP
- Copying RTDB from ELAP on Remote Mated NE

For more information about when to perform the procedures in this chapter, see “Choosing a Synchronization Procedure” on page 3-4.

Copying RTDB from Mated ELAP

An ELAP RTDB can be copied from the RTDB on the mate ELAP.

The following conditions are necessary in order to perform a copy from the RTDB on the mate ELAP:

- The 48 Million or the ELAP LNP Configuration feature must be installed on the network element
- The mate RTDB is currently synchronized with the LSMS (the EMS status indicator on the LSMS graphical user interface for this network element is yellow)

This copy is the fastest way to restore an RTDB. The RTDB can be reloaded from the mate in about 9 minutes. Provisioning will be interrupted while the copy occurs.

No user action is required at the LSMS, other than to verify the status of the network element’s EMS status indicator.

For instructions on performing this type of RTDB copy, see “Procedure to Copy an RTDB from the Mate ELAP” on page 8-9.

Copying One RTDB from Another RTDB

Copying RTDB from ELAP on Remote Mated NE

An ELAP RTDB can be copied from either ELAP RTDB on the remote mated network element (NE). However, copying from either of the remote mated NE's RTDBs interrupts provisioning on the remote mated network element, so this method should be chosen only when other methods for synchronizing the RTDBs on the local network element are not feasible. For more information about alternate methods, see Chapter 3, "Choosing a Database Maintenance Procedure."

The following conditions are necessary in order to perform a copy from the RTDB on the mated network element:

- The 48 or the ELAP LNP Configuration feature must be installed on both network elements
- The EMS status indicator on the LSMS graphical user interface for the remote mated network element is green or yellow, which indicates that one or both of the RTDBs on the remote mated network element is currently synchronized with the LSMS

The procedure can be used when both local RTDBs need reloading. If at least one of the remote RTDBs is currently synchronized, you can copy a remote RTDB to one of the local RTDBs. This copy may be faster than performing a user-initiated resynchronization or electronic bulk load from the LSMS to the network element that requires restoration, and, depending on the bandwidth of the customer network, may be faster than performing an audit and reconcile from the LSMS. The mate RTDB on the local network element can then be reloaded from the newly reloaded mate in about nine minutes, and then the DSMs must be rebooted, as described in "Distributing RTDB, Returning to Normal Service" on page 9-3.

The time required to accomplish this method depends on the bandwidth of the customer network. For an estimate of the time required, see Table D-2, "Estimating Time to Copy RTDB Across Customer Network," on page D-4.

No user action is required at the LSMS, other than to verify the status of the network elements' EMS status indicators.

Verifying RTDB Status

Before or after executing the procedure, verify the status of the RTDBs using either or both of the following methods:

- Verifying RTDB Status at the Eagle Terminal
- Verifying RTDB Status at the ELAP User Interface

Verifying RTDB Status at the Eagle Terminal

To verify the status of the ELAP RTDBs at the Eagle terminal, enter the `rept-stat-db:db=mps` command.

The command output displays database timestamp (DBTS) of both ELAP RTDBs in the **RTDB-EAGLE** field, as shown in bold in the following example. The DBTS indicates the last time an update was received by this RTDB from the LSMS. If the two DBTS values are not the same, the RTDB with the lower DBTS may need database maintenance.

```

                ELAP A ( ACTV )
                C  BIRTHDATE          LEVEL      EXCEPTION
                -  -----
RTDB           Y  00-05-01 10:19:18    17283      -
RTDB-EAGLE    00-05-03 16:01:48    17283      -

                ELAP B ( STDBY )
                C  BIRTHDATE          LEVEL      EXCEPTION
                -  -----
RTDB           Y  00-05-01 10:19:18    17283      -
RTDB-EAGLE    00-05-03 16:01:48    17283      -

```

Verifying RTDB Status at the ELAP User Interface

To verify the status of ELAP RTDBs at the ELAP user interface, view the status of the databases, using either of the following procedures, depending on which release of Eagle STP is installed:

- “Procedure - View the Status of RTDBs for Eagle STP Release 28.x with ELAP 1.0” on page 8-5
- “Procedure - View the Status of RTDBs for Eagle Release 28.x and later with ELAP 2.0/3.0” on page 8-7

Then, after you have viewed the status, interpret the status of the database as recommended.

Viewing RTDB Status at the ELAP User Interface on Eagle STP Release 28.x with ELAP 1.0

To verify the status of ELAP RTDBs at the ELAP user interface when the network element has Eagle Release 28.x with ELAP 1.0, use the `View RTDB Status` menu item in the ELAP database menu by performing the following procedure:

Procedure - View the Status of RTDBs for Eagle STP Release 28.x with ELAP 1.0

1. Log into the ELAP user interface, enter the “`elapdatabase`” user name and password. The password is not displayed as you enter it.

```
login: elapdatabase
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

2. Enter either the ELAP (A or B), and press Return.

```
Please select an ELAP to work on [A]: {AaBb}
```

The database menu is displayed. The banner above the menu indicates the Active/Standby status of the ELAP that you selected.

Copying One RTDB from Another RTDB

```
ELAP {ELAP GPL number} user interface (MPS platform version {platform version})
User "elapdatabase" logged in to MPS A (ACTIVE).
ELAP B (STANDBY) is currently selected.
```

```
/--- ELAP Database Menu ---\
/-----\
| 1 | Select Mate ELAP      |
|---|-----|
| 2 | View RTDB Status     |
|---|-----|
| 3 | Reload RTDB from remote ELAP |
|---|-----|
| 4 | View Database Maintenance Log |
|---|-----|
| 5 | Retrieve RTDB Records |
|---|-----|
| e | Exit                 |
\-----/
```

Enter Choice:

-
3. Choose the View RTDB Status menu item. Enter the number of the menu item after the **Enter Choice** prompt and press Return.

Enter Choice: 2

The output indicates the RTDB Level and RTDB Birthday for the selected ELAP.

```
Status:
RTDB Level=258576, RTDB Birthday=3/10/2000 14:05:25
```

```
Record Counts:
TNs=1046, NPANXXs=2494, LRNs=575, SPs=187
```

```
RTDB Audit is not currently running.
```

```
LSMS HS Bulk Download/LSMS HS Resync is not in progress.
```

NOTE: The values displayed for RTDB Level (should be greater than zero) and RTDB Birthday.

-
4. To view the status of the mate ELAP RTDB, choose the Select Mate ELAP menu item to change the selected ELAP.

Enter Choice: 1

-
5. Choose the View RTDB Status menu item. Enter the number of the menu item after the **Enter Choice** prompt and press Return.

Enter Choice: 2

Output similar to that shown in step 3 displays. Note the values displayed for RTDB Level and RTDB Birthday.

Copying One RTDB from Another RTDB

6. To exit the database menu, enter “e” after the Enter Choice prompt and press Return.

You have now completed this procedure.

Viewing RTDB Status at the ELAP User Interface on Eagle STP Release 28.x and later with ELAP 2.0/3.0

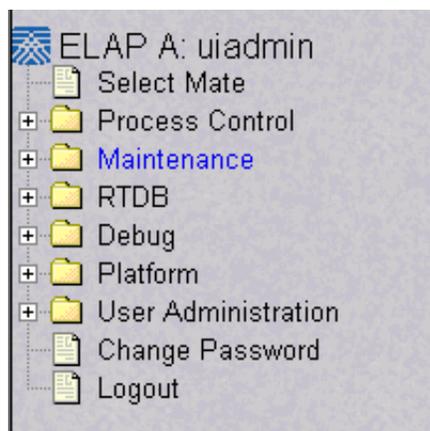
To verify the status of ELAP RTDBs at the ELAP user interface when the network element has Eagle Release 28.x and later with ELAP 2.0/3.0, perform the following procedure:

Procedure - View the Status of RTDBs for Eagle Release 28.x and later with ELAP 2.0/3.0

1. Open a browser window and connect your web browser to the ELAP graphical user interface (for more information about connecting to the ELAP GUI, refer to the *Eagle ELAP Administration Manual*). Log in with the user name and password for a user who is authorized to access the menu items shown in this procedure.

The ELAP GUI displays, as shown in Figure 8-1. This figure shows the entire ELAP GUI; remaining figures in this book show only as much of the workspace area (at the lower right) as contains information. For more information about the other areas displayed on this window, refer to the *Eagle ELAP Administration Manual*.

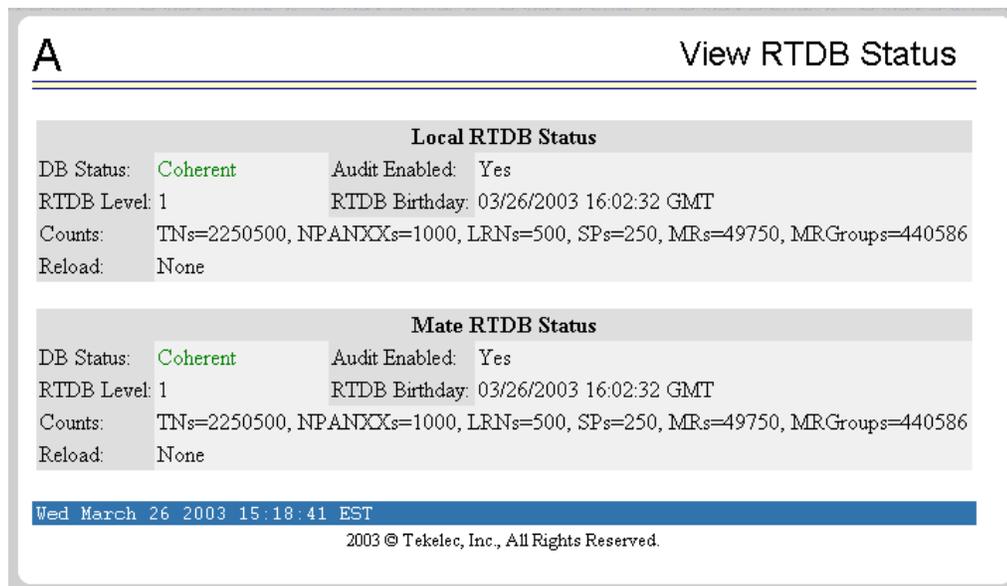
Figure 8-1. ELAP Main Menu



2. Select **RTDB>View RTDB Status**.

The ELAP GUI workspace displays the RTDB status, as shown in Figure 8-2.

Figure 8-2. ELAP RTDB Status



Note the values displayed for RTDB Level (should be greater than zero) and RTDB Birthday for both the local RTDB and the mate RTDB.

You have now completed this procedure.

Interpreting the Database Status from the ELAP Interface

To verify that both RTDBs are ready for normal service, ensure that:

- The status for both RTDBs displays
- Both RTDBs are coherent
- Both RTDBs have the same birthday
- Both RTDBs have the same level (if provisioning is occurring, the levels might be different by a very small number)

If you are not sure how to interpret the status of the RTDBs, contact Tekelec Technical Services (see page 1-14).

Procedure to Copy an RTDB from the Mate ELAP

To reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the mate ELAP, use either of the following procedures, depending on which release of Eagle STP is installed:

- “Procedure - Copy the RTDB from Mate ELAP (Eagle Release 28.x with ELAP 1.0)” on page 8-10
- “Procedure - View the Status of RTDBs for Eagle Release 28.x and later with ELAP 2.0/3.0” on page 8-7

Procedure Summary

These procedures differ only in the appearance of the ELAP user interface. Each procedure performs the following basic functions:

1. Log into the ELAP whose RTDB needs restoration
2. Verify the status of both RTDBs to determine which RTDB needs restoration
3. Disable the connection to the LSMS so that normal updates are not received
4. Stop the ELAP software
5. Switch to the mate ELAP
6. Repeat functions 3 and 4 on the mate ELAP
7. Switch back to the ELAP whose RTDB needs restoration
8. Reload the RTDB from the mate ELAP
9. Start the ELAP software
10. Enable the connection to the LSMS
11. Switch to the mate ELAP
12. Repeat functions 9 and 10 on the mate ELAP

When this procedure is finished, the next step depend on why you started this procedure, as follows:

- When you copy an RTDB its mate ELAP after you have copied from an RTDB on a remote mated network element (as described in “Procedure to Copy RTDB from Remote Mated NE” on page 8-21) or after an LSMS-initiated procedure (as described in “User-Initiated Resynchronization Procedure” on page 5-12 or “Electronic Bulk Load Procedure” on page 7-9), you will have

distributed the data to the DSMs prior to this procedure and, after this procedure, you must disable the bulk load or resynchronization (as described in “Disabling Bulk Load” on page 9-6).

- When this restoration procedure is performed by itself, no other action is necessary (it is not necessary to distribute the data to the DSMs because they are already synchronized with the RTDB that was used to restore from).

Copying an RTDB from Mate ELAP, Eagle Release 28.x with ELAP 1.0

Use the following procedure to reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the mate ELAP for a network element that has Eagle STP Release 28.x with ELAP 1.0 installed. For more information about when to perform this procedure, see “Copying RTDB from Mated ELAP” on page 8-2.

Procedure - Copy the RTDB from Mate ELAP (Eagle Release 28.x with ELAP 1.0)

1. Log into the ELAP user interface; enter the “`elapdatabase`” user name and password. The password is not displayed as you enter it.

```
login: elapdatabase
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

2. Verify the status of both RTDBs at this network element, using the procedure described in “Verifying RTDB Status” on page 8-4. Determine which RTDB is backlevel or corrupted.
-

3. Exit the database menu; enter “e” after the `Enter Choice` prompt, and press Return.

```
Enter Choice: e
```

4. Perform this step through step 13 to stop the software on both ELAPs. Log into the ELAP user interface; enter the “`elapmaint`” user name and password. The password is not displayed as you enter it.

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

5. Enter the ELAP to work on (A or B) that needs to have the RTDB restored, and press Return.

Copying One RTDB from Another RTDB

Please select an ELAP to work on [A]: {AaBb}

The maintenance menu is displayed. The banner above the menu indicates the Active/Standby status of the ELAP that you selected and the status of any LSMS-initiated bulk load or resynchronization. The banner should not include the statement, "LSMS HS Bulk Download/HS Resync is enabled. Provisioning is not allowed."

ELAP {*ELAP GPL number*} user interface (MPS platform version {*platform version*})

User "*elapmaint*" logged in to MPS **A** (**ACTIVE**).

ELAP **B** (**STANDBY**) is currently selected.

```

/---- ELAP Maintenance Menu -----\
/-----\
| 1 | Select Mate ELAP                |
|---|-----\
| 2 | Force ELAP to Become Standby   |
|---|-----\
| 3 | Remove Standby Restriction     |
|---|-----\
| 4 | Turn RTDB Audit On (currently ON)|
|---|-----\
| 5 | Turn RTDB Audit Off (currently ON)|
|---|-----\
| 6 | Start ELAP Software            |
|---|-----\
| 7 | Stop ELAP Software             |
|---|-----\
| 8 | Display Release Levels         |
|---|-----\
| 9 | Transaction Log               |
|---|-----\
|10 | Decode Eagle Output of MPS Alarms|
|---|-----\
|11 | Toggle LSMS HS Audit          |
|---|-----\
|12 | Display LSMS HS Audit         |
|---|-----\
|13 | Toggle LSMS HS Bulk Download/LSMS HS Resync|
|---|-----\
|14 | Toggle LSMS Connection (currently ENABLED)|
|---|-----\
| e | Exit                          |
\-----/

```

Enter Choice:

-
6. If the `Toggle LSMS Connection` menu item shows that the status is currently **DISABLED**, skip to step 7. If the `Toggle LSMS Connection` menu item shows that the status is currently **ENABLED**, enter the number of the `Toggle LSMS Connection` menu item after the `Enter Choice` prompt, and press `Return`.

Enter Choice: 14

-
7. Choose the `Stop ELAP Software` menu item. Enter the number of the `Stop ELAP Software` menu item after the `Enter Choice` prompt, and press `Return`.

Enter Choice: 7

8. The following warning appears; enter `v` after prompt, and press Return.

WARNING!! This action will stop all ELAP software processes, and will prevent the selected ELAP from updating the RTDB until the ELAP software is re-started (by executing the "Start ELAP Software" menu item.

Are you sure you want to stop the ELAP software? [N]: Y

9. An additional question appears; press Return to accept the default answer of Yes.

Do you want ELAP processes to automatically start after reboot? [Y]:

Press return to continue...

10. Select the mate ELAP; enter the number of the `Select Mate ELAP` menu item after the `Enter Choice` prompt, and press Return.

Enter Choice: 1

11. Ensure that the banner does not include the statement, "LSMS HS Bulk Download/HS Resync is enabled. Provisioning is not allowed."

If this statement is included, choose the `Toggle LSMS HS Bulk Download/LSMS HS Resync` menu item. Enter the number of the `Toggle LSMS HS Bulk Download/LSMS HS Resync` menu item after the `Enter Choice` prompt, and press Return.

Enter Choice: 13

12. Repeat steps 7 through 9 on this ELAP.
-

13. Exit the maintenance menu. Enter "e" after the `Enter Choice` prompt, and press Return.

Enter Choice: e

14. Log into the ELAP user interface; enter the "elapdatabase" user name and password. The password is not displayed as you enter it.
-

15. Enter the ELAP (A or B) that needs to have the RTDB restored, and press Return.

Please select an ELAP to work on [A]: {AaBb}

The database menu is displayed as shown in step 2 on page 8-5. The status should be Standby.

Copying One RTDB from Another RTDB



CAUTION: Performing this procedure on the active ELAP results in temporary loss of provisioning. Do not perform this procedure on the active ELAP.

-
16. Choose the Reload RTDB from remote ELAP menu item to copy the RTDB from the mate of the selected ELAP. Enter the number of the menu item after the Enter Choice prompt and press Return.

```
Enter Choice: 3
```

-
17. Press Return to accept the default of “mate” in response to the prompt.

```
Enter the IP address of the remote MPS server with RTDB to copy: (mate)
```

-
18. Enter Y in response to the next prompt to start the reload.

```
Are you sure you want to reload the RTDB from remote MPS server? [N]: Y
```

The ELAP software prepares to copy the current RTDB to the one requiring restoration by first disconnecting from the LSMS so that updates are not attempted to either RTDB.

The ELAP software copies the current RTDB to the one that requires restoration. This process requires about 9 minutes.

The following output is an example of what can appear while the reload is in progress.

```
Reloading /usr/rt/RTDB_DBMM.TBL
Reloading /usr/rt/RTDB_DBSTAT.TBL
Reloading /usr/rt/RTDB_LNP4DIG1.TBL
Reloading /usr/rt/RTDB_LNP4DIG2.TBL
Reloading /usr/rt/RTDB_LNP4DIG3.TBL
Reloading /usr/rt/RTDB_LNP4DIG4.TBL
Reloading /usr/rt/RTDB_LNP4DIG5.TBL
Reloading /usr/rt/RTDB_LNP4DIG6.TBL
Reloading /usr/rt/RTDB_LNP4DIG7.TBL
Reloading /usr/rt/RTDB_LNP4DIG8.TBL
Reloading /usr/rt/RTDB_LNP_DBMM.TBL
Reloading /usr/rt/RTDB_LNP_LRN.TBL
Reloading /usr/rt/RTDB_LNP_MR.TBL
Reloading /usr/rt/RTDB_LNP_NPANXX.TBL
Reloading /usr/rt/RTDB_LNP_SP_ID.TBL
Reloading /usr/rt/RTDB_RBLOG.TBL
```

Messages might appear at the Eagle terminal indicating that the ELAP software is unavailable for both ELAPs.

When the reload is complete, the following output appears.

```
RTDB successfully reloaded from remote ELAP (192.168.2.200)
Press Return to continue...
```

19. Exit the database menu; enter “e” after the Enter Choice prompt and press Return.

Enter Choice: e

20. Perform this step through step 24 to start the software and enable connection to the LSMS on both ELAPs. Log into the ELAP user interface; enter the “elapmaint” user name and password. The password is not displayed as you enter it.

login: *elapmaint*
Password:
Last login: Wed Feb 2 14:30:42 from 192.168.61.56

21. Enter the ELAP (A or B) that just had the RTDB restored, and press Return.

Please select an ELAP to work on [A]: {AaBb}

The maintenance menu is displayed as shown in step 5.

22. Choose the Start ELAP Software menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

Enter Choice: 6

23. Select the mate ELAP; enter the number of the Select Mate ELAP menu item after the Enter Choice prompt, and press Return.

Enter Choice: 1

24. Choose the Start ELAP Software menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

Enter Choice: 6

25. Choose the Toggle LSMS Connection menu item. Enter the number of the Toggle LSMS Connection menu item after the Enter Choice prompt, and press Return.

Enter Choice: 14

26. When the software on both ELAPs has been successfully started, exit the maintenance menu. Enter “e” after the Enter Choice prompt, and press Return.

Enter Choice: e

Copying One RTDB from Another RTDB

The active ELAP reconnects with the LSMS, which results in an automatic resynchronization. When the automatic resynchronization completes, the LSMS EMS status returns to green.

You have completed this procedure; next do one of the following:

- If desired, use the steps in “Verifying RTDB Status” on page 8-4 for determining the database status if you want to further verify the result of the reload.
- If you have performed this procedure by itself or after you have copied from an RTDB on a remote mated network element (as described in “Procedure to Copy RTDB from Remote Mated NE” on page 8-21), the restoration is complete and normal updates are resumed.
- If you have performed this procedure after an LSMS-initiated procedure (as described in “User-Initiated Resynchronization Procedure” on page 5-12 or “Electronic Bulk Load Procedure” on page 7-9), you will have distributed the data to the DSMs prior to this procedure and, after this procedure, you must disable the bulk load or resynchronization (as described in “Disabling Bulk Load” on page 9-6).

Copying an RTDB from Mate ELAP, Eagle Release 28.x and later with ELAP 2.0/3.0

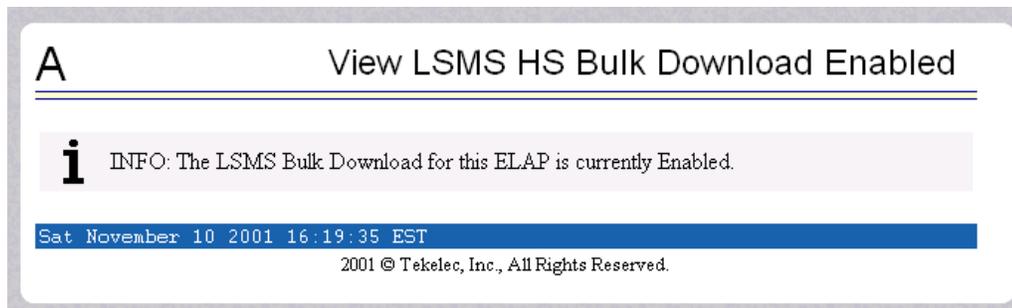
Use the following procedure to reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the mate ELAP for a network element that has Eagle STP Release 28.x and later with ELAP 2.0/3.0 installed. For more information about when to perform this procedure, see “Copying RTDB from Mated ELAP” on page 8-2.

Procedure - Copy the RTDB from Mate ELAP (Eagle Release 28.x and later with ELAP 2.0/3.0)

1. Open a browser window and connect your web browser to the ELAP graphical user interface (for more information about connecting to the ELAP GUI, refer to the *Eagle ELAP Administration Manual*). Log in with the user name and password for a user who is authorized to access the menu items shown in this procedure.
 2. Verify the status of both RTDBs at this network element, using the procedure described in “Verifying RTDB Status” on page 8-4. Determine which RTDB is backlevel or corrupted.
-

3. Select **Maintenance>LSMS HS Bulk Download>View Enabled**; a window similar to the example shown in Figure 8-3 on page 8-16 displays.

Figure 8-3. View Enabled Window

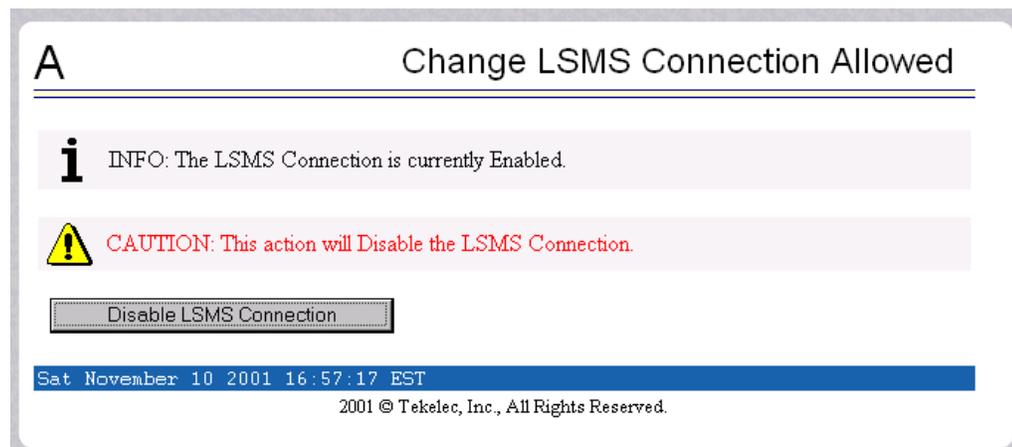


Ensure that the information field shows that the LSMS Bulk Download for this ELAP is currently disabled.

NOTE: Disabled is the normal setting. If the information field shows that the LSMS Bulk Download for this ELAP is currently enabled, another synchronization operation has not yet been concluded.

4. Select **Maintenance>LSMS Connection>Change Allowed**; a window similar to the example shown in Figure 8-4 displays.

Figure 8-4. Disable LSMS Connection Window

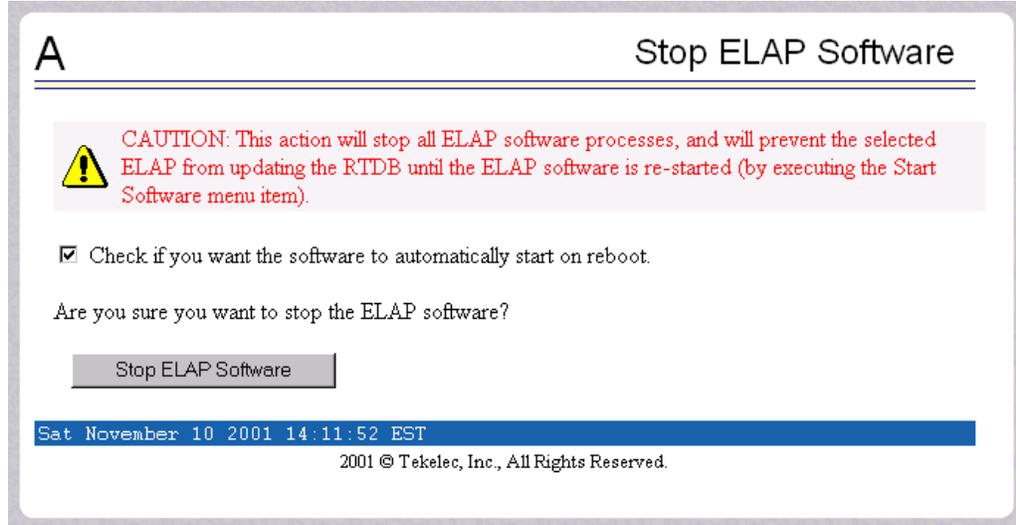


Click the Disable LSMS Connection button.

Copying One RTDB from Another RTDB

5. Select **Process Control>Stop Software**; a window similar to the example shown in Figure 8-5 on page 8-17 displays.

Figure 8-5. Stopping Software on the ELAP GUI

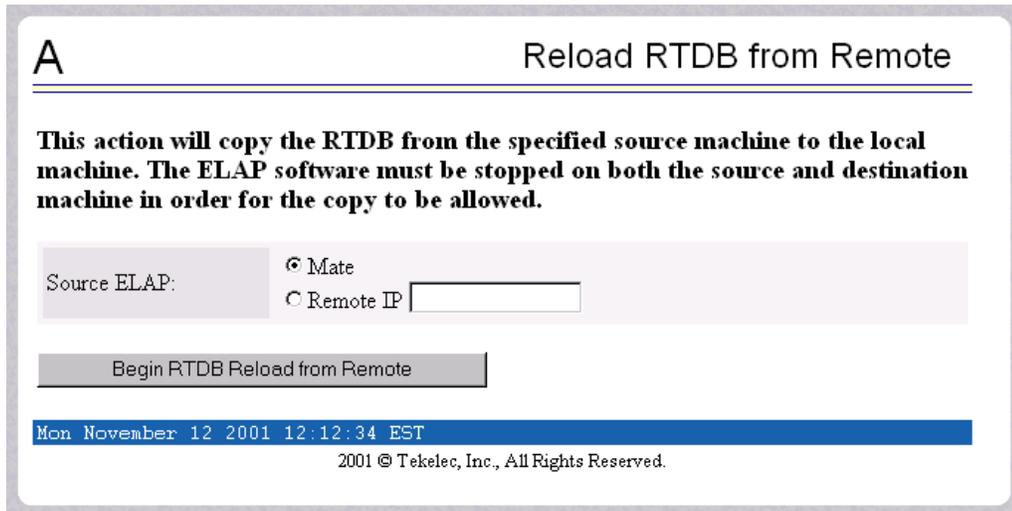


Ensure that the checkbox labeled “Check if you want the software to automatically start on reboot” is filled in (if it is not filled in, click the checkbox to fill it in) and click the Stop ELAP Software button to confirm that you wish to stop the software.

-
6. Select **Select Mate**, and repeat steps 3, 4, and 5 for the other ELAP.
-

7. Ensure that the ELAP whose database needs restoration is displayed in the window. (If not, select **Select Mate**.) Select **RTDB>Maintenance>Reload from Remote**; a window similar to the example shown in Figure 8-6 displays.

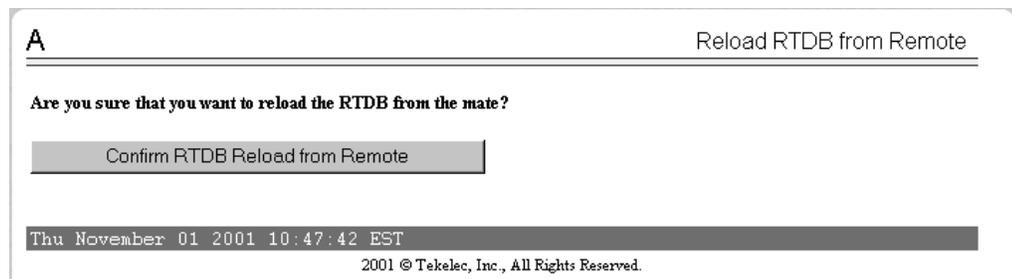
Figure 8-6. Reload from Remote ELAP



Ensure that the radio button labeled “Mate” is filled in (if not, click the button to make it filled in), and click the Begin RTDB Reload from Remote button.

8. The window shown in Figure 8-7 displays.

Figure 8-7. Confirming a Reload



Click the Confirm RTDB Reload from Remote button to confirm the reload.

The ELAP software copies the current RTDB to the one that requires restoration. This process requires about 9 minutes.

When the reload begins, the workspace indicates that the reload is in progress, and the banner also displays the status. Messages might appear at the Eagle terminal indicating that the ELAP software is unavailable for both ELAPs.

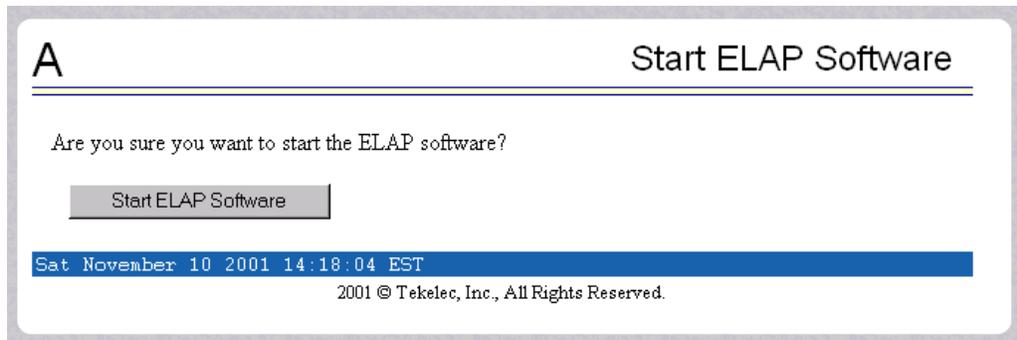
When the reload is complete, the workspace displays as shown in Figure 8-8.

Figure 8-8. Reload from Mate Successful



9. Select **Process Control>Start Software**; a window similar to the example shown in Figure 8-9 displays.

Figure 8-9. Starting Software on the ELAP GUI



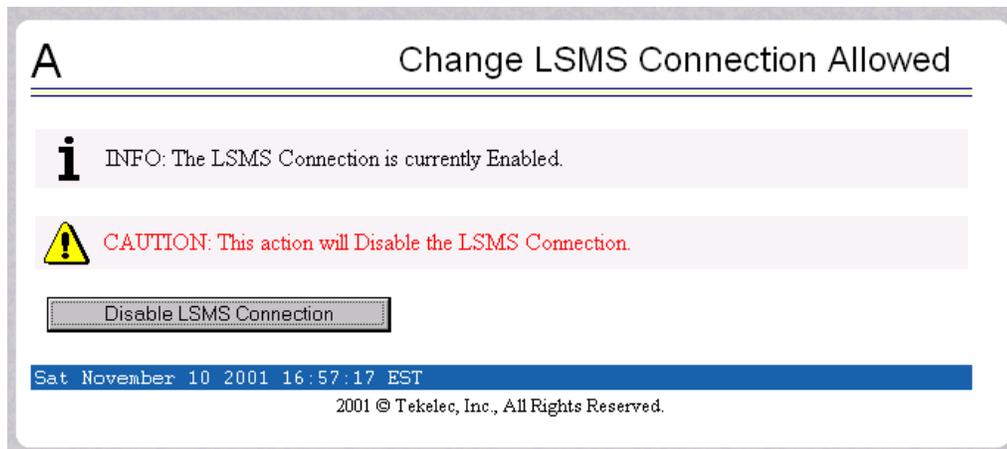
10. Press the Start ELAP Software button to confirm that you wish to start the software. When the software has started, the workspace displays the information shown in Figure 8-10.

Figure 8-10. Software Started on the ELAP GUI



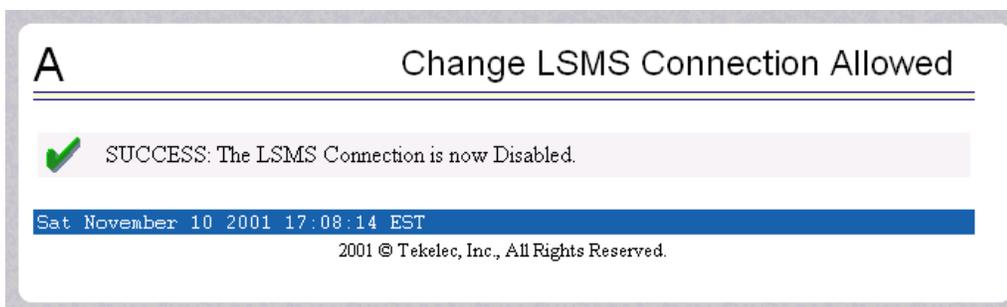
11. Select **Maintenance>LSMS Connection>Change Allowed**; a window similar to the example shown in Figure 8-11 on page 8-20 displays.

Figure 8-11. Enable LSMS Connection Window



12. Click the Enable LSMS Connection button. When the connection has been enabled, the workspace displays the information shown in Figure 8-12.

Figure 8-12. LSMS Connection Enabled on the ELAP GUI



13. Select **Select Mate**, and repeat steps 9 through 11 for the other ELAP.
14. When the software on both ELAPs has been successfully started, the active ELAP reconnects with the LSMS, which results in an automatic resynchronization. When the automatic resynchronization completes, the EMS status icon for this network element on the LSMS returns to green.

Copying One RTDB from Another RTDB

You have completed this procedure. Next, if you want to further verify the result of the reload, use the steps in “Verifying RTDB Status” on page 8-4 for determining the database status, and then do one of the following:

- If you have performed this procedure by itself or after you have copied from an RTDB on a remote mated network element (as described in “Procedure to Copy RTDB from Remote Mated NE” on page 8-21), the restoration is complete and normal updates are resumed.
- If you have performed this procedure after an LSMS-initiated procedure (as described in “User-Initiated Resynchronization Procedure” on page 5-12 or “Electronic Bulk Load Procedure” on page 7-9), you will have distributed the data to the DSMs prior to this procedure and, after this procedure, you must disable the bulk load or resynchronization (as described in “Disabling Bulk Load” on page 9-6).

Procedure to Copy RTDB from Remote Mated NE

To reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the mated network element, use either of the following procedures, depending on which release of Eagle STP is installed:

- “Procedure - Copy the RTDB from the Remote Mated NE’s Standby ELAP for Eagle Release 28.x with ELAP 1.0” on page 8-22
- “Procedure - Copy the RTDB from the Remote Mated NE’s Standby ELAP for Eagle Release 28.x and later with ELAP 2.0/3.0” on page 8-30

These procedures differ only in the appearance of the ELAP user interface. In these procedures, the network element requiring restoration of both RTDBs is called the local NE. The mated network element is called the remote mated NE. Each procedure performs the following basic functions:

1. At the LSMS, ensure that the EMS status indicator for the remote mated NE indicates that at least one RTDB is synchronized with the LSMS
2. Log into the standby ELAP on the remote mated NE
3. Disable the connection to the LSMS so that normal updates are not received
4. Stop the ELAP software
5. Log into either ELAP on the local NE
6. Repeat functions 3 and 4 on the local NE’s ELAP
7. Switch to the mate ELAP on the local NE
8. Repeat functions 3 and 4 on the local NE’s mate ELAP

9. Reload the RTDB from the remote mated NE
10. Log into the standby ELAP on the remote mated NE
11. Start the software on the remote mated NE's standby ELAP
12. Enable the connection to the LSMS for the remote mated NE's standby ELAP
13. Log into the local ELAP whose RTDB has not yet been restored (the other RTDB was restored in function 9)
14. Reload the RTDB from the mate ELAP
15. Start the local ELAP's software
16. Enable the local ELAP's connection to the LSMS
17. Switch to the mate ELAP on the local NE
18. Repeat functions 15 and 16 on the mate ELAP
19. Distribute the RTDB contents to the DSMs

**Copying RTDB from Remote Mated NE,
Eagle Release 28.x with ELAP 1.0**

Use the following procedure to reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the remote mated network element when both network elements have Eagle Release 28.x with ELAP 1.0 installed. For more information about when to perform this procedure, see "Copying RTDB from ELAP on Remote Mated NE" on page 8-3.



CAUTION: Performing this procedure results in temporary loss of provisioning. Do not perform this procedure unless both RTDBs on the local NE require restoration.

**Procedure - Copy the RTDB from the Remote Mated NE's Standby ELAP for
Eagle Release 28.x with ELAP 1.0**

1. Ensure that the EMS status indicator for the remote mated network element on the LSMS graphical user interface displays green or yellow, which indicates that at least one RTDB is synchronized or in the process of automatically resynchronizing with the LSMS.
-

Copying One RTDB from Another RTDB

2. If you are not already connected, use a program such as telnet to connect to the remote mated network element (NE). You will need to know the IP address of the remote mated NE's MPS on the customer (provisioning) network.

-
3. Log into the either ELAP user interface on the remote mated NE; enter the "elapmaint" user name and password. The password is not displayed as you enter it.

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

-
4. Enter the ELAP to work on (A or B).

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu is displayed. The banner above the menu indicates the Active/Standby status of the ELAP that you selected.

If the status shows that you have selected the active ELAP, choose the `Select Mate ELAP` menu item to change the selected ELAP to the standby ELAP.

The banner should not include the statement, "LSMS HS Bulk Download/HS Resync is enabled. Provisioning is not allowed." and the status should be standby.

Copying One RTDB from Another RTDB

```
ELAP {ELAP GPL number} user interface (MPS platform version {platform
version})
```

```
User "elapmaint" logged in to MPS A (ACTIVE).
```

```
ELAP B (STANDBY) is currently selected.
```

```
LSMS Bulk Download is disabled. Provisioning is allowed.
```

```
/---- ELAP Maintenance Menu -----\
/-----\
| 1 | Select Mate ELAP
|-----|
| 2 | Force ELAP to Become Standby
|-----|
| 3 | Remove Standby Restriction
|-----|
| 4 | Turn RTDB Audit On (currently ON)
|-----|
| 5 | Turn RTDB Audit Off (currently ON)
|-----|
| 6 | Start ELAP Software
|-----|
| 7 | Stop ELAP Software
|-----|
| 8 | Display Release Levels
|-----|
| 9 | Transaction Log
|-----|
|10 | Decode Eagle Output of MPS Alarms
|-----|
|11 | Toggle LSMS HS Audit
|-----|
|12 | Display LSMS HS Audit
|-----|
|13 | Toggle LSMS HS Bulk Download/LSMS HS Resync
|-----|
|14 | Toggle LSMS Connection (currently ENABLED)
|-----|
| e | Exit
\-----/
```

```
Enter Choice:
```

-
5. If the `Toggle LSMS Connection` menu item shows that the status is currently **DISABLED**, skip to step 6. If the `Toggle LSMS Connection` menu item shows that the status is currently **ENABLED**, enter the number of the `Toggle LSMS Connection` menu item after the `Enter Choice` prompt, and press `Return`.

```
Enter Choice: 14
```

-
6. Choose the `Stop ELAP Software` menu item. Enter the number of the menu item after the `Enter Choice Prompt`, and press `Return`.

```
Enter Choice: 7
```

Copying One RTDB from Another RTDB

7. The following warning appears; enter `y` after prompt, and press Return.

```
WARNING!! This action will stop all ELAP software processes, and will prevent
the selected ELAP from updating the RTDB until the ELAP software is re-started
(by executing the "Start ELAP Software" menu item.
```

```
Are you sure you want to stop the ELAP software? [N]: Y
```

8. An additional question appears; press Return to accept the default answer of Yes.

```
Do you want ELAP processes to automatically start after reboot? [Y]:
```

```
Press return to continue...
```

9. If you are not already connected, use a program such as telnet to connect to the local MPS with the RTDB that needs to be reloaded. You will need to know the IP address of the MPS on the customer (provisioning) network.
-

10. Log into the local ELAP user interface; enter the "elapmaint" user name and password. The password is not displayed as you enter it.

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

11. Enter either ELAP to work on (A or B). The RTDB on the other ELAP will be restored in step 31.

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu appears (see step 3).

12. Ensure that the banner does not include the statement, "LSMS HS Bulk Download/HS Resync is enabled. Provisioning is not allowed."

If this statement is included, choose the `Toggle LSMS HS Bulk Download/LSMS HS Resync` menu item. Enter the number of the `Toggle LSMS HS Bulk Download/LSMS HS Resync` menu item after the `Enter Choice` prompt, and press Return.

```
Enter Choice: 13
```

13. If the `Toggle LSMS Connection` menu item shows that the status is currently **DISABLED**, skip to step 14. If the `Toggle LSMS Connection` menu item shows that the status is currently **ENABLED**, enter the number of the `Toggle LSMS Connection` menu item after the `Enter Choice` prompt, and press Return.

```
Enter Choice: 14
```

14. Choose the `Stop ELAP Software` menu item. Enter the number of the menu item after the `Enter Choice Prompt`, and press `Return`.

```
Enter Choice: 7
```

15. The following warning appears; enter `y` after prompt, and press `Return`.

```
WARNING!! This action will stop all ELAP software processes, and will prevent
the selected ELAP from updating the RTDB until the ELAP software is re-started
(by executing the "Start ELAP Software" menu item.
```

```
Are you sure you want to stop the ELAP software? [N]: Y
```

16. An additional question appears; press `Return` to accept the default answer of `Yes`.

```
Do you want ELAP processes to automatically start after reboot? [Y]:
```

```
Press return to continue...
```

17. Select the `mate ELAP`; enter the number of the `Select Mate ELAP` menu item after the `Enter Choice` prompt, and press `Return`.

```
Enter Choice: 1
```

18. Repeat step 12 through step 16 on this ELAP.
-

19. Exit the maintenance menu. Enter `e` after the `Enter Choice` prompt, and press `Return`.

```
Enter Choice: e
```

20. Log back into the local ELAP user interface; enter the `“elapdatabase”` user name and password. The password is not displayed as you enter it.

```
login: elapdatabase
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

21. Enter the ELAP to work on (A or B); select the same ELAP as selected in step 11.

```
Please select an ELAP to work on [A]: {AaBb}
```

The database menu is displayed.

(If you need to change the selected ELAP to the other ELAP, you can choose the `Select Mate ELAP` menu item.)

Copying One RTDB from Another RTDB

```
ELAP {ELAP GPL number} user interface (MPS platform version {platform version})
User "elapdatabase" logged in to MPS A (ACTIVE).
ELAP B (STANDBY) is currently selected.
```

```
/--- ELAP Database Menu -----\  
/-----\  
| 1 | Select Mate ELAP |  
|---|-----|  
| 2 | View RTDB Status |  
|---|-----|  
| 3 | Reload RTDB from remote ELAP |  
|---|-----|  
| 4 | View Database Maintenance Log |  
|---|-----|  
| 5 | Retrieve RTDB Records |  
|---|-----|  
| e | Exit |  
\-----\  
\-----\  
/
```

Enter Choice:

-
- 22.** Choose the Reload RTDB from remote ELAP menu item to copy the remote RTDB to the RTDB of the selected local ELAP. Enter the number of the menu item after the Enter Choice prompt and press Return.

Enter Choice: 3

-
- 23.** Enter the customer (provisioning) network IP address of the standby ELAP on the remote mated network element.



CAUTION: DO NOT press Return to accept the default of “mate” in response to the prompt.

Enter the IP address of the remote MPS server with RTDB to copy: [mate]

-
- 24.** Enter Y in response to the next prompt to start the reload.

Are you sure you want to reload the RTDB from remote MPS server? [N]: Y

The ELAP software prepares to copy the current RTDB to the one requiring restoration by first disconnecting the standby RTDB from the LSMS so that updates are not attempted.

The ELAP software copies the remote mated NE's standby RTDB to the selected local ELAP's RTDB.

The time required to complete this process depends on the bandwidth of the customer network.

The following output is an example of what can appear while the reload is in progress.

Copying One RTDB from Another RTDB

```
Reloading /usr/rt/RTDB_DBMM.TBL
Reloading /usr/rt/RTDB_DBSTAT.TBL
Reloading /usr/rt/RTDB_LNP4DIG1.TBL
Reloading /usr/rt/RTDB_LNP4DIG2.TBL
Reloading /usr/rt/RTDB_LNP4DIG3.TBL
Reloading /usr/rt/RTDB_LNP4DIG4.TBL
Reloading /usr/rt/RTDB_LNP4DIG5.TBL
Reloading /usr/rt/RTDB_LNP4DIG6.TBL
Reloading /usr/rt/RTDB_LNP4DIG7.TBL
Reloading /usr/rt/RTDB_LNP4DIG8.TBL
Reloading /usr/rt/RTDB_LNP_DBMM.TBL
Reloading /usr/rt/RTDB_LNP_LRN.TBL
Reloading /usr/rt/RTDB_LNP_MR.TBL
Reloading /usr/rt/RTDB_LNP_NPANXX.TBL
Reloading /usr/rt/RTDB_LNP_SP_ID.TBL
Reloading /usr/rt/RTDB_RBLOG.TBL
```

Messages appear at each Eagle terminal indicating that the ELAP software is stopped for the selected ELAPs.

When the reload is complete, the following output appears.

```
RTDB successfully reloaded from remote ELAP (192.168.2.200)
Press Return to continue...
```

25. Exit the database menu; enter “e” after the Enter Choice prompt and press Return.

```
Enter Choice: e
```

26. Perform this step through step 24 to start the software on the remote mated NE’s standby ELAP. Log into the ELAP user interface; enter the “elapmaint” user name and password. The password is not displayed as you enter it.

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

27. Enter the ELAP (A or B) of the standby ELAP, and press Return.

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu is displayed as shown in step 4 on page 8-23.

28. Choose the Start ELAP Software menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

```
Enter Choice: 6
```

Copying One RTDB from Another RTDB

29. Choose the `Toggle LSMS Connection` menu item. Enter the number of the `Toggle LSMS Connection` menu item after the `Enter Choice` prompt, and press `Return`.

`Enter Choice: 14`

30. Perform the procedure described in “Distributing an RTDB LNP Database to DSMs” on page 9-3.
-

31. Perform the “Procedure to Copy an RTDB from the Mate ELAP” on page 8-9, logging into the interface for the ELAP that has not yet been restored (you can start at step 14). Follow the instructions through the end of the procedure to copy an RTDB from its mate ELAP RTDB, restart software and enable connections to the LSMS.
-

This restoration method is complete and normal updates are resumed.

Use the steps in “Verifying RTDB Status” on page 8-4 if you want to verify database levels after the reloading is complete.

**Copying RTDB from Remote Mated NE,
Eagle Release 28.x and later with ELAP 2.0/3.0**

Use the following procedure to reload a backlevel or corrupted RTDB by copying a currently synchronized RTDB on the mated network element when both network elements have Eagle Release 28.x and later with ELAP 2.0/3.0 installed. For more information about when to perform this procedure, see “Copying RTDB from ELAP on Remote Mated NE” on page 8-3.

In this procedure, the network element requiring restoration of one or both RTDBs is called the local NE, and the ELAP controlling the RTDB requiring restoration is called the local ELAP. The mated network element is called the remote mated NE.



CAUTION: Performing this procedure results in temporary loss of provisioning. Do not perform this procedure unless both RTDBs on the local NE require restoration.

**Procedure - Copy the RTDB from the Remote Mated NE's Standby ELAP for
Eagle Release 28.x and later with ELAP 2.0/3.0**

1. Ensure that the EMS status indicator for the remote mated network element on the LSMS graphical user interface displays green or yellow, which indicates that at least one RTDB is synchronized or in the process of automatically resynchronizing with the LSMS.

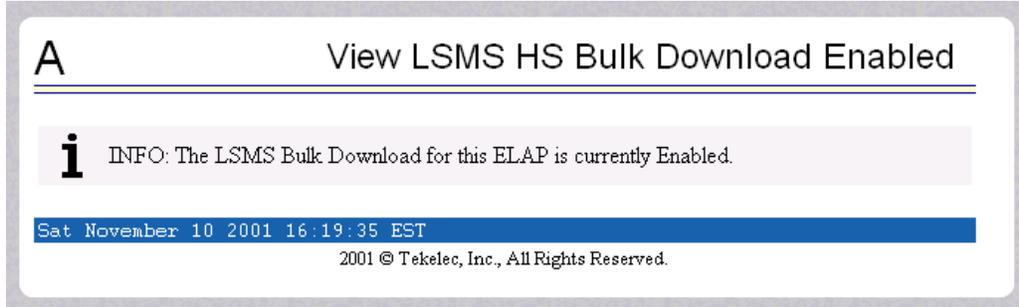
2. Open a browser window and connect to the remote mated network element (NE) using the IP address of the standby ELAP on the remote mated NE's MPS on the customer (provisioning) network. Log in with the user name and password for a user who is authorized to access the menu items shown in this procedure (for more information about connecting to the ELAP GUI and user authorization, refer to the *Eagle ELAP Administration Manual*).

3. The banner above the menu indicates the whether each ELAP on the remote mated NE has Active or Standby status. Ensure that the ELAP you logged into has Standby status. (If you have logged into the active ELAP, select **Select Mate**.)

Copying One RTDB from Another RTDB

4. Select **Maintenance>LSMS HS Bulk Download>View Enabled**; a window similar to the example shown in Figure 8-13 displays.

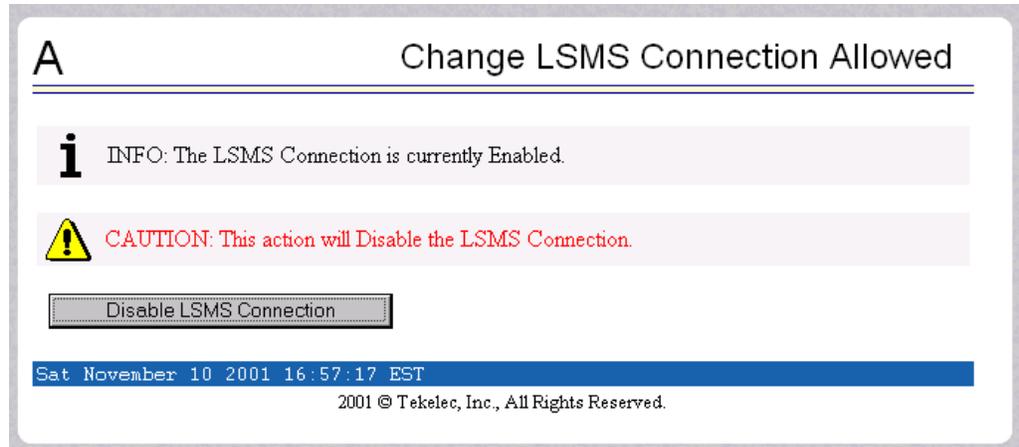
Figure 8-13. View Enabled Window



Ensure that the information field shows that the LSMS Bulk Download for this ELAP is currently disabled. (If it is currently enabled, select **Maintenance>LSMS HS Bulk Download>Change Enabled**.)

5. Select **Maintenance>LSMS Connection>Change Allowed**; a window similar to the example shown in Figure 8-14 displays.

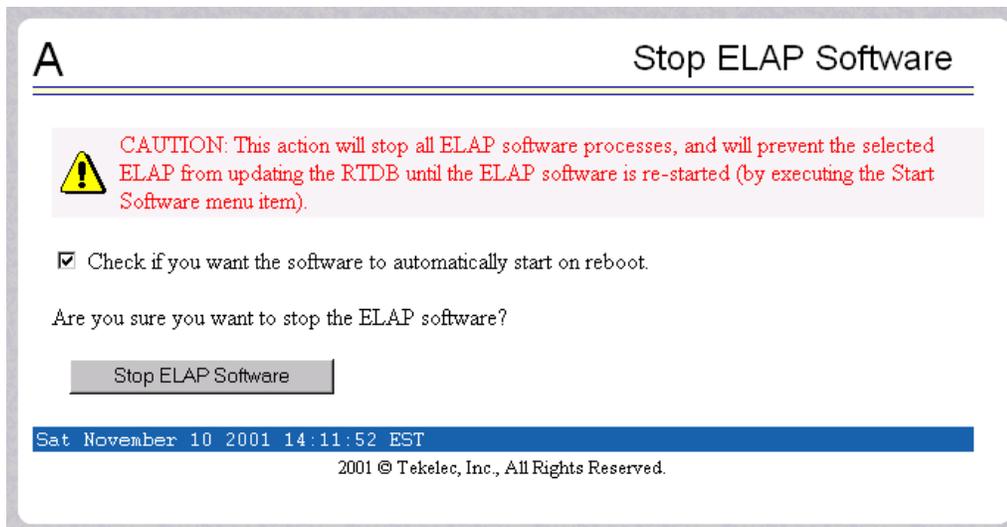
Figure 8-14. Disable LSMS Connection Window



Click the Disable LSMS Connection button.

6. Select **Process Control>Stop Software**; a window similar to the example shown in Figure 8-15 displays.

Figure 8-15. Stopping Software on the ELAP GUI



Ensure that the checkbox labeled “Check if you want the software to automatically start on reboot” is filled in (if it is not filled in, click it to fill it in) and click the Stop ELAP Software button to confirm that you wish to stop the software.

-
7. If you are not already connected to the local NE, open another browser window and connect to the local NE using the IP address of either ELAP on the local NE’s MPS on the customer (provisioning) network. (The RTDB on the other ELAP will be restored in step 31. Log in with the user name and password for a user who is authorized to access the menu items shown in this procedure.
-
8. Repeat step 4, 5, and 6 for this ELAP.
-
9. Select **Select Mate**, and repeat steps 4, 5, and 6 for the other ELAP.
-

Copying One RTDB from Another RTDB

10. Select **RTDB>Maintenance>Reload from Remote**; a window similar to the example shown in Figure 8-16 displays.

Figure 8-16. Reload from Remote Mated NE's ELAP

A Reload RTDB from Remote

This action will copy the RTDB from the specified source machine to the local machine. The ELAP software must be stopped on both the source and destination machine in order for the copy to be allowed.

Source ELAP: Mate Remote IP 192.168.61.121

Begin RTDB Reload from Remote

Thu November 01 2001 10:48:56 EST
2001 © Tekelec, Inc., All Rights Reserved.

11. Ensure that the radio button labeled Remote IP is filled in (if it is not filled in, click the radio button to fill it in) and enter the customer (provisioning) network IP address of the standby ELAP on the remote mated network element, as shown in Figure 8-16. Then, click the **Begin RTDB Reload from Remote** button. A window similar to the example shown in Figure 8-17 displays.

Figure 8-17. Confirm Reload from Remote Mated NE's ELAP

A Reload RTDB from Remote

i INFO: The ELAP software on the remote **must not be running** while the RTDB is being copied.

Are you sure that you want to reload the RTDB from 192.168.61.121?

Confirm RTDB Reload from Remote

Thu November 01 2001 11:30:25 EST
2001 © Tekelec, Inc., All Rights Reserved.

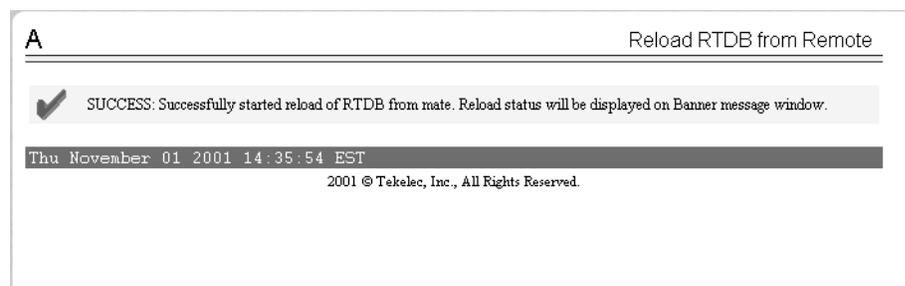
12. Verify that the correct IP address is displayed and click the Confirm RTDB Reload from Remote button to confirm that you wish to start the reload.

The ELAP software copies the remote mated NE's standby RTDB to the selected local ELAP's RTDB.

When the reload begins, the workspace indicates that the reload is in progress, and the banner also displays the status. The time required to complete this process depends on the bandwidth of the customer network.

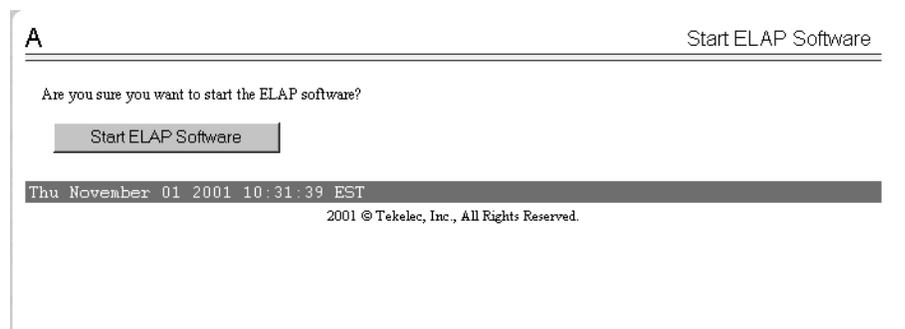
When the reload is complete, the workspace displays as shown in Figure 8-18.

Figure 8-18. Reload from Remote Mated NE Successful



13. When the reload is complete, on the ELAP that the RTDB was copied *from* (on the remote mated NE), select **Process Control>Start Software**; a window similar to the example shown in Figure 8-19 displays.

Figure 8-19. Starting Software on the ELAP GUI



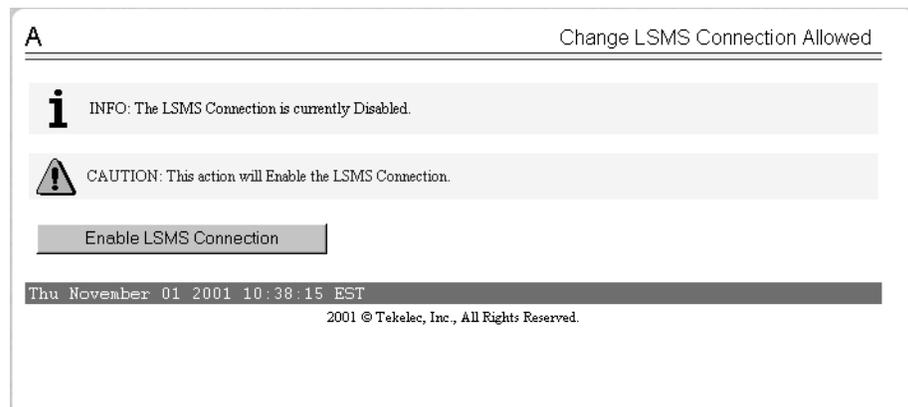
14. Press the Start ELAP Software button to confirm that you wish to start the software. When the software has started, the workspace displays the information shown in Figure 8-20.

Figure 8-20. Software Started on the ELAP GUI



15. Select **Maintenance>LSMS Connection>Change Allowed**; a window similar to the example shown in Figure 8-21 displays.

Figure 8-21. Enable LSMS Connection Window



16. Click the Enable LSMS Connection button. When the connection has been enabled, the workspace displays the information shown in Figure 8-22.

Figure 8-22. LSMS Connection Enabled on the ELAP GUI



17. Perform the procedure described in “Distributing RTDB, Returning to Normal Service” on page 9-3.

-
18. On the local ELAP, perform “Procedure - Copy the RTDB from Mate ELAP (Eagle Release 28.x and later with ELAP 2.0/3.0)” on page 8-15 (you can start with step 7 on page 8-18); ensure that the GUI displays the ELAP whose RTDB has not yet been restored. Follow the instructions through the end of the procedure to copy the RTDB from its mate ELAP RTDB (which was restored in step 10 on page 8-33 through step 13 on page 8-34 of this procedure), restart the software, and enable the connections to the LSMS.
-

This restoration method is complete and normal updates are resumed.

Use the steps in “Verifying RTDB Status” on page 8-4 if you want to verify database levels after the reloading is complete.

9

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

Introduction.....	9-2
Automatic Data Distribution	9-2
NE Database Synchronization After Copying RTDB from Mate ELAP	9-2
Other NE Database Synchronization.....	9-3
Distributing RTDB, Returning to Normal Service	9-3
Distributing an RTDB LNP Database to DSMs.....	9-3
Disabling Bulk Load for Eagle Release 28.x with ELAP 1.0.....	9-7
Disabling Bulk Load for Eagle Release 28.x and later with ELAP 2.0/3.0.....	9-9
Distributing LNP Database After BLM-Based Operation	9-12

Introduction

The network element has multiple copies of the LNP database. Synchronization operations are performed on one database. After an RTDB copy or a synchronization operation initiated from the LSMS GUI, the NE's remaining LNP databases must be synchronized with the NE's newly synchronized database as described in one of the following sections:

- “Automatic Data Distribution” on page 9-2
- “NE Database Synchronization After Copying RTDB from Mate ELAP” on page 9-2
- “Other NE Database Synchronization” on page 9-3

In addition, the following chapters describe how data is distributed after a manual bulk load:

- Chapter 10, “Manual LSMS-to-NE Bulk Loading”
- Chapter 12, “Manual NE-to-NE Bulk Loading”

Automatic Data Distribution

After the following LNP database synchronization operations, data is distributed automatically from the network element's newly synchronized LNP database to all other LNP databases at the network element:

- Automatic resynchronization (see “Automatic Resynchronization Process” on page 5-4)
- BLM-based reconcile over the normal update connection (see “Audit with Reconcile Over Normal Update Connection” on page 6-10)
- ELAP-based reconcile (see “Audit with Reconcile Over Normal Update Connection” on page 6-10)

NE Database Synchronization After Copying RTDB from Mate ELAP

If NE database synchronization is accomplished only by copying an RTDB from its mate ELAP's RTDB (but not when copying from the mate RTDB is performed after copying an RTDB from the remote mated network element or after a user-initiated resynchronization or bulk load from the LSMS), it is not necessary to distribute the data to the DSMs because they are already synchronized with the RTDB that was used to restore from. Therefore, after the copy, the DSMs are now synchronized with both RTDBs.

Other NE Database Synchronization

However, after other LNP database synchronization operations, the network element's main LNP database must be distributed by operator intervention to other LNP databases within the network element (both the mate RTDB and the DSMs). How that distribution occurs depends on which features are supported by the network element:

- If the network element has an ELAP (the 48 or 96 Million Numbers feature is installed), see “Distributing RTDB, Returning to Normal Service” on page 9-3.
- If the network element has a DCM and BLM (the Enhanced Bulk Download and Audit feature is installed), see “Distributing LNP Database After BLM-Based Operation” on page 9-12.

Distributing RTDB, Returning to Normal Service

This section describes how to distribute the LNP database to the other network element databases and return the network element to normal service after one RTDB has been updated by one of the following actions:

- Copied from an RTDB on the mated network element (see Chapter 8, “Copying One RTDB from Another RTDB”); the data must be distributed to the DSMs; then, the ELAPs are ready for normal service
- Updated by one of the following ELAP-based operations sent from the LSMS:
 - Resynchronized by user-initiated resynchronization (see Chapter 5, “Managing Resynchronization from the LSMS”)
 - Bulk loaded from the LSMS (see Chapter 7, “Managing Electronic Bulk Load from the LSMS”)

After one of these LSMS-initiated procedures, the newly synchronized RTDB must be copied to the mate RTDB and the data must be distributed to the DSMs. In addition, the NE operator must disable the ability to receive another user-initiated resynchronization or bulk load to prevent an inadvertent user-initiated resynchronization or bulk load, both of which require disconnection with the LSMS and, therefore, temporary loss of provisioning. (The steps for enabling this ability are described in “Managing User-Initiated Resynchronization from the LSMS” on page 5-12 or “Managing Electronic Bulk Load from the LSMS” on page 7-9; the steps for disabling the ability again are described in first few steps in the procedures described in “Disabling Bulk Load” on page 9-6.)

Distributing an RTDB LNP Database to DSMs

Perform the following procedure to distribute the data from the ELAP's LNP database to the DSMs.

Procedure - Distributing an RTDB LNP Database to DSMs

1. Distribute the imported LNP database onto each DSM, which will also silence the LNP database alarms. Use one of the following methods:

- Method A loads the imported LNP database onto one DSM at a time by reloading each DSM.

This method allows the global title translation and LNP functions to continue running while the new LNP database is being loaded. When the DSM is reinitializing, its database goes temporarily out of service for the period of time that it takes to reload the database on the DSM. The time required to reload the database depends upon the size of the database and can take as long as 15 minutes for an LNP database containing 2,000,000 LNP subscriptions.

- Method B loads the imported LNP database onto all DSMs in the system by reinitializing all the DSMs at once.



CAUTION: This method not only loads the imported LNP database onto the DSMs at the same time, but takes all the DSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations. Method A is the preferred method.

Method A: Perform steps **a** and **b** in this method for each DSM, one DSM at a time.

- a. Take the DSM out of service with the `rmv-card` command specifying the card location of the DSM. If there is only one DSM in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, Enter this command:

```
rmv-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been inhibited.
```

- b. Return the DSM to service with the `rst-card` command with the card location of the DSM and the option `DATA=PERSIST` to allow a warm restart if possible. This command validates that the LNP database on the specified DSM is correct. If the LNP database is correct, no further loading is required. If the LNP database is not correct, it is automatically reloaded from the RTDB; loading may require up to an hour.

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

For this example, enter this command:

```
rst-card:loc=1101:DATA=PERSIST
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been allowed.
```

- c. When the DSM is returned to service, the major alarm is silenced and UAM 0431, LNP database has been corrected, is generated. For this example, this message is generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

- d. Repeat steps a and b for the other DSMs in the system.

If any of the DSMs continue to boot, contact Tekelec Technical Services (see page 1-14).

Method B: Enter the `init-card:appl=vsccp` command.



CAUTION: This command initializes all the DSMs at once and not only loads the imported LNP database onto the DSMs at the same time, but takes all the DSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations.

NOTE: A more graceful way of initializing the DSMs is to reroute all global title translation traffic, including LNP traffic, to the mate network element using the `inh-map-ss` command. The `inh-map-ss` command takes the mated application subsystem out of service. When the mated application subsystem is out of service, all global title translation traffic, including LNP traffic, is rerouted to the mate network element.

The mated application subsystem must be inhibited with the `inh-map-ss` command before the DSMs are reinitialized with the `init-card:appl=vsccp` command. After the `init-card:appl=vsccp` command has finished executing and all the DSMs have reinitialized, return the mated application subsystem to service with the `alw-map-ss` command.

When the imported database has been loaded onto each DSM, UAM 0431 is displayed for each DSM showing that the UAM 0429 has been cleared and the database on the DSM matches the database on the MASPs. This is an example of UAM 0431.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

If any of the DSMs continue to boot, contact Tekelec Technical Services (see page 1-14).

2. Verify that the DSMs are in-service by entering the `rept-stat-sccp` command. The state of the DSMs, shown in the `PST` field of the `rept-stat-sccp` command output, should be `IS-NR` (in-service normal). This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:10:50 GMT Rel 28.0.0
SCCP SUBSYSTEM REPORT IS-NR Active -----
SCCP Cards Configured= 4 Cards IS-NR= 4 Capacity Threshold = 100%
CARD VERSION PST SST AST MSU USAGE CPU USAGE
-----
1101 002-202-000 IS-NR Active ----- 47% 32%
1206 002-202-000 IS-NR Active ----- 34% 22%
1213 002-202-000 IS-NR Active ----- 25% 18%
1214 002-202-000 IS-NR Active ----- 68% 44%
-----
SCCP Service Average MSU Capacity = 44% Average CPU Capacity = 29%
Command Completed.
```

If the state of any DSMs is not IS-NR, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

You have now completed distributing the data to the DSMs; next, do one of the following:

- If this procedure is being performed after an RTDB copy from the mated NE, your ELAP is ready for normal service.
- If this procedure is being performed after a bulk load or user-initiated resynchronization from the LSMS GUI, do the following to return the ELAPs to normal service:
 1. Copy the RTDB that was restored (by the user-initiated resynchronization or bulk load from the LSMS) to the RTDB on the mate ELAP, as described in “Procedure to Copy an RTDB from the Mate ELAP” on page 8-9.
 2. Perform one of the procedures described in “Disabling Bulk Load” on page 9-6.

Disabling Bulk Load

If you have distributed a restored RTDB’s LNP data to the DSMs (as described in “Distributing an RTDB LNP Database to DSMs” on page 9-3) after an LSMS-initiated procedure, perform one of the following procedures, depending on which release of Eagle STP is installed:

- “Procedure - Disabling Bulk Load and Copying RTDB for Eagle Release 28.x with ELAP 1.0” on page 9-7
- “Procedure - Disabling Bulk Load for Eagle Release 28.x and later with ELAP 2.0/3.0” on page 9-9

Disabling Bulk Load for Eagle Release 28.x with ELAP 1.0

To return the ELAP to normal service after performing a user-initiated resynchronization or bulk load, followed by the procedure described in “Procedure - Distributing an RTDB LNP Database to DSMs” on page 9-4 and the procedure described in “Copying RTDB from Mated ELAP” on page 8-2, perform the following procedure on a network element that has Eagle STP Release 28.x with ELAP 1.0 installed.

Procedure - Disabling Bulk Load and Copying RTDB for Eagle Release 28.x with ELAP 1.0

1. Log into the ELAP user interface; enter the “elapmaint” user name and password. The password is not displayed as you enter it.

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

2. Enter either ELAP to work on (A or B), and press Return.

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu is displayed. The banner above the menu indicates the Active/Standby status of the ELAP that you selected. If the status of the ELAP you have logged into is not active, choose the `Select Mate ELAP` menu item. The status should be active.

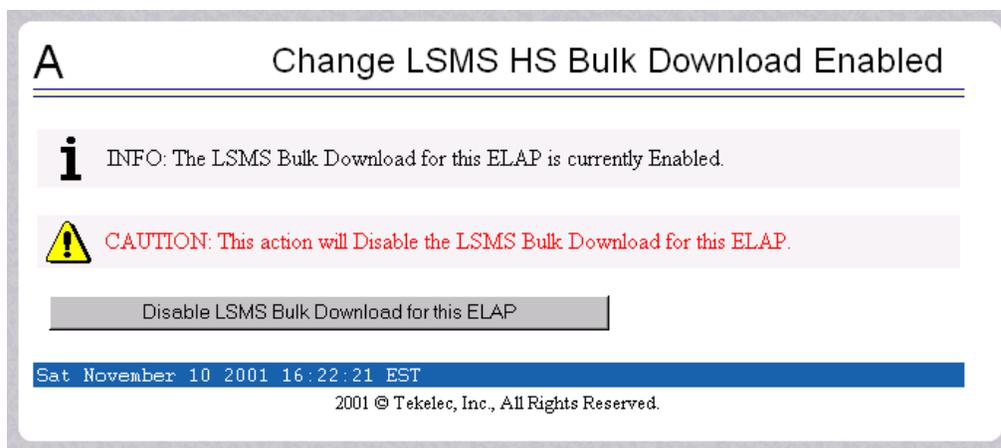
Disabling Bulk Load for Eagle Release 28.x and later with ELAP 2.0/3.0

To return the ELAP to normal service after performing a user-initiated resynchronization or bulk load, followed by the procedure described in “Procedure - Distributing an RTDB LNP Database to DSMS” on page 9-4 and the procedure described in “Copying RTDB from Mated ELAP” on page 8-2, perform the following procedure on a network element that has Eagle STP Release 28.x and later with ELAP 2.0/3.0 installed.

Procedure - Disabling Bulk Load for Eagle Release 28.x and later with ELAP 2.0/3.0

1. If you do not already have a browser window connected to the ELAP, open a browser window and connect your web browser to the ELAP graphical user interface (for more information about connecting to the ELAP GUI, refer to the *Eagle ELAP Administration Manual*). Log in with the user name and password of a user who is authorized to access the menu items shown in this procedure.
2. Select **Maintenance>LSMS HS Bulk Download>Change Enabled**; a window similar to the example shown in Figure 9-1 on page 9-9 displays.

Figure 9-1. Change Enabled Window



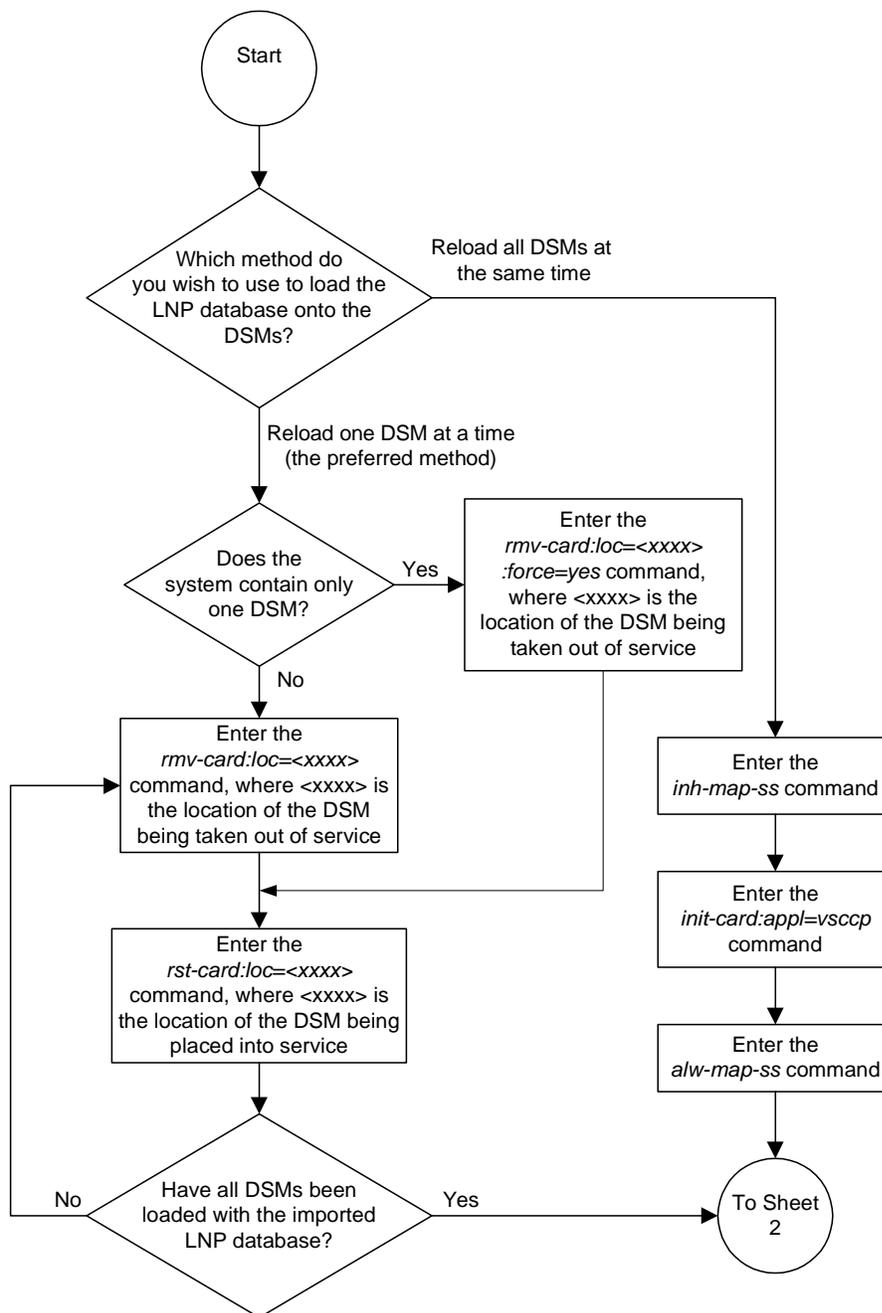
The information field should show that the LSMS Bulk Download for this ELAP is currently enabled.

3. Click the **Disable LSMS HS Bulk Download for this ELAP**.

You have now completed this procedure and the user-initiated resynchronization or bulk load.

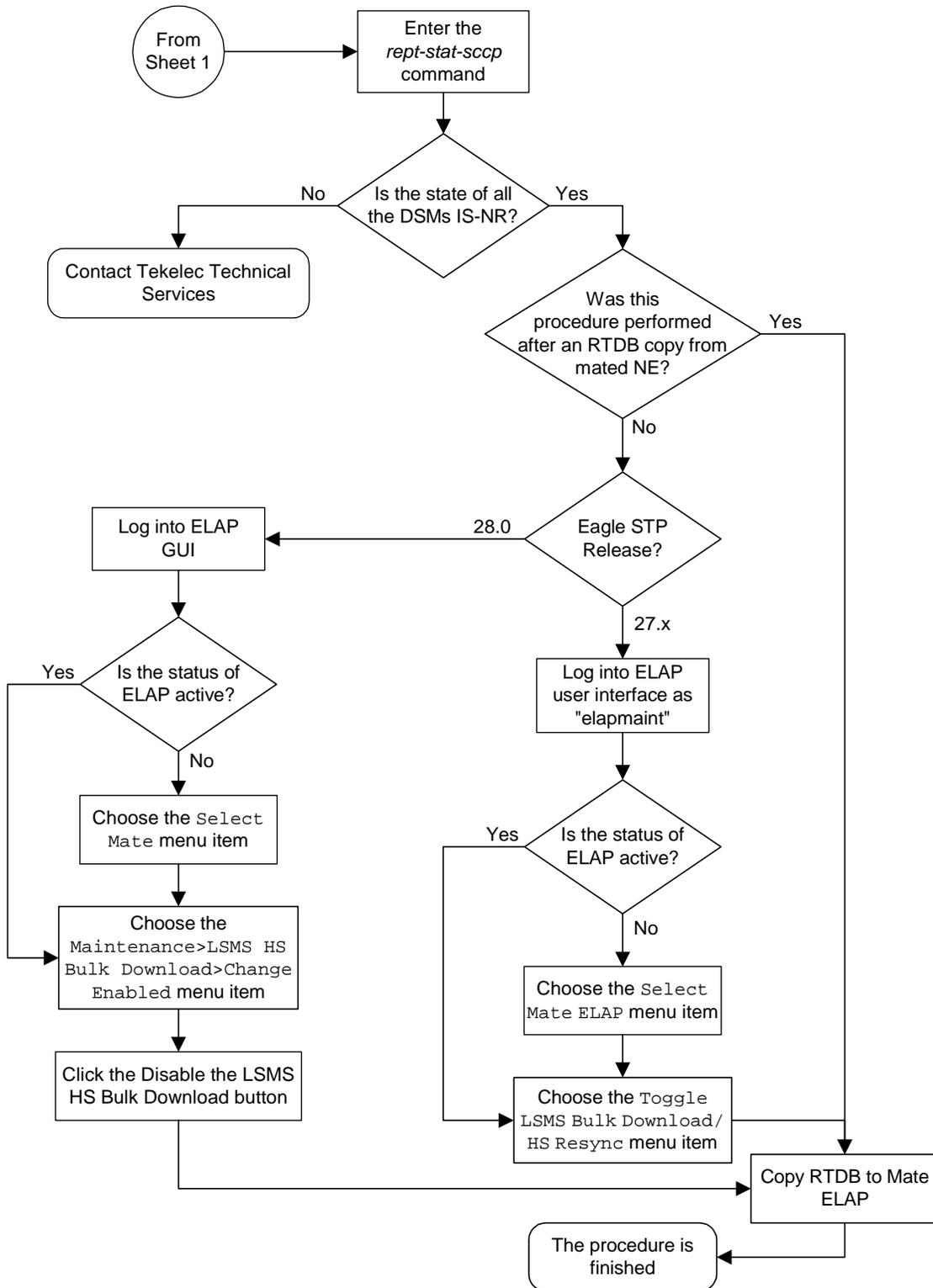
Flowchart 9-1. Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy (Sheet 1 of 2)

NOTE: Do not perform this procedure unless you have completed the procedures in Chapter 4 “Preparing the NE for Non-Manual Synchronization,” and one of the following: Chapter 5 “Managing Resynchronization from the LSMS,” Chapter 7 “Managing Electronic Bulk Load from the LSMS,” or Chapter 8, “Copying One RTDB from Another RTDB.”



Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

Flowchart 9-1. Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy (Sheet 2 of 2)



Distributing LNP Database After BLM-Based Operation

After a BLM-based operation, the Local Number Portability (LNP) database has been bulk loaded, reconciled, or resynchronized on the network element's Bulk Load Module (BLM) card. The distribution process of the LNP database consists of copying the LNP database from the BLM to the fixed disks and from the fixed disks to all Translation Service Modules (TSMs).

This section describes how to prepare the OAP terminals, copy the LNP database from the BLM to the fixed disks, restore any translation type values, and distribute the LNP database to all TSMs.

The LNP database must be distributed after any of the following LNP database synchronization operations:

- Bulk loaded from the LSMS (see Chapter 7, "Managing Electronic Bulk Load from the LSMS")
- Reconciled using the BLM connection after an audit (see Chapter 6, "Auditing and Reconciling Network Elements from the LSMS")
- Resynchronized by user-initiated resynchronization (see Chapter 5, "Managing Resynchronization from the LSMS")

To perform the procedure in this section, the terminal and user ID command input class assignments and unsolicited output message group assignments must be set as outlined in section "Terminal and User ID Requirements" on page 4-8.

Canceling a BLM-Based Operation



CAUTION: If for any reason you do not wish to use the BLM LNP database that has been changed by the LSMS, or the LNP database synchronization operation has failed or been discarded or canceled by the LSMS operator, enter the `chg-db:action=canceled1` command instead of performing this procedure. The `chg-db:action=canceled1` command reboots the BLM in order to reload the current LNP database from the fixed disks and discards the LNP database that was downloaded from the LSMS. If you wish to discard the downloaded LNP database, the `chg-db:action=canceled1` command must be executed before the `chg-db:action=finished1` command is executed.

Procedure to Distribute the LNP Database After a BLM-Based Operation

The following is a summary of actions performed during the execution of this procedure:

- The OAP terminals are taken out of service (`type=none`) to prevent any LNP database updates while the downloaded LNP database is distributed throughout the network element. After the LNP database has been distributed, the terminal types are returned to service (`type=oap`).
- The LNP audit function is turned off if it is on. When the LNP database has been distributed, the LNP audit function is turned back on.
- The measurement collection function is turned off if it is on. When the LNP database has been distributed, the measurement collection function is turned back on.
- The downloaded LNP database is copied from the BLM to the fixed disks using the `chg-db:action=finished1` command.
- These translation type values shown in the `rtrv-lnp-serv` command output are compared to the values recorded when the network element was prepared for a BLM-based operation (see Chapter 4, “Preparing the NE for Non-Manual Synchronization”):
 - Translation type names, as shown by values in the TTN field
 - Alias translation types, as shown in the ALIAS field
 - User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field
 - Wireless number portability translation types, as shown by the entry `WNP` in the SERV field
 - PCS 1900 number portability translation types, as shown by the entry `PCS` in the SERV field

These translation type values are not supported by the LSMS. When the LNP database is imported into the network element, these values will not appear in the `rtrv-lnp-serv` command output. If any of these values were being used on the network element before the LNP database synchronization procedure was performed, these values are restored in this procedure.

- The imported LNP database is distributed to all TSMs in the network element.

Use the following procedure to distribute the LNP database after a BLM-based operation. In this procedure, the LNP database is copied from the BLM to the fixed disks and then to the TSMs.

Procedure

1. Display the terminal configuration in the database with the `rtrv-trm` command. The OAP terminals are shown in the output with the entry `OAP` in the `TYPE` field. Record the values of the OAP terminal ports. This is an example of the possible output. In this example, the OAP terminals are terminals 6 and 9, shown in bold.

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1 SW    30     5      99:59:59
2    KSR        9600-7-E-1 HW    30     5      INDEF
3    PRINTER    4800-7-E-1 HW    30     0      00:00:00
4    VT320      2400-7-E-1 BOTH  30     5      00:30:00
5    VT320      9600-7-O-1 NONE  30     5      00:00:30
6    OAP        19200-7-E-1 SW    0      5      INDEF
7    PRINTER    9600-7-N-2 HW    30     5      00:30:00
8    KSR        19200-7-E-2 BOTH  30     5      00:30:00
9    OAP        19200-7-E-1 SW    0      5      INDEF
10   VT320      9600-7-E-1 HW    30     5      00:30:00
11   VT320      4800-7-E-1 HW    30     5      00:30:00
12   PRINTER    9600-7-E-1 HW    30     4      00:30:00
13   VT320      9600-7-O-1 NONE  30     5      00:30:00
14   VT320      9600-7-E-2 SW    30     8      00:30:00
15   VT320      9600-7-N-2 HW    30     5      00:30:00
16   VT320      9600-7-E-2 BOTH  30     3      00:30:00
```

```
TRM  TRAF  LINK  SA  SYS  PU  DB
1    NO   YES   NO  YES  NO  YES
2    NO   NO    NO  NO   NO  NO
3    YES  YES   YES  NO   YES YES
4    YES  NO    NO  NO   NO  NO
5    NO   YES   NO  NO   NO  NO
6    YES  YES   YES  YES  YES YES
7    YES  YES   YES  YES  YES YES
8    NO   NO    NO  NO   YES NO
9    YES  YES   YES  YES  YES YES
10   NO   NO    NO  NO   NO  NO
11   YES  YES   YES  YES  YES YES
12   YES  YES   YES  YES  YES YES
13   NO   YES   NO  NO   NO  NO
14   NO   NO    YES  NO   NO  NO
15   YES  YES   YES  NO   YES YES
16   NO   NO    NO  NO   YES NO
```

2. Display the status of the terminals with the `rept-stat-trm` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
TRM  PST          SST          AST
1    IS-NR         Active       -----
2    IS-NR         Active       -----
3    IS-NR         Active       -----
4    IS-NR         Active       -----
5    IS-NR         Active       -----
6    IS-NR        Active      -----
7    IS-NR         Active       -----
8    IS-NR         Active       -----
9    IS-NR        Active      -----
10   IS-NR         Active       -----
11   IS-NR         Active       -----
12   IS-NR         Active       -----
13   IS-NR         Active       -----
14   IS-NR         Active       -----
15   IS-NR         Active       -----
16   IS-NR         Active       -----
Command Completed.
```

3. Take the OAP terminals out of service using the `rmv-trm` command with the values of the OAP terminals recorded in step 1. The `force=yes` parameter must be used when taking the last OAP terminal out of service. For this example, enter these commands:

```
rmv-trm:trm=6
rmv-trm:trm=9:force=yes
```



CAUTION: These commands will take the connection between the network element and the LSMS and the SEAS interface out of service and will remain out of service until the OAP terminals are returned to service in step 25.

If the status of the OAP terminals shown in the PST field in step 2 is OOS-MT-DSBLD (out of service maintenance disabled), the terminal is already out of service and the `rmv-trm` command does not need to be executed for that terminal.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Inhibit message sent to terminal

rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Command Completed.
```

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

4. Change the terminal type of the OAP terminals to **NONE** with the **chg-trm** command, the **type=none** parameter, and with the values of the OAP terminals recorded in step 1. For this example, enter these commands.

```
chg-trm:trm=6:type=none
```

```
chg-trm:trm=9:type=none
```

The system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
CHG-TRM: MASP B - COMPLTD
```

5. Verify that the OAP terminals have been changed to the terminal type **NONE** with the **rtrv-trm** command. This is an example of the possible output. In this example, the OAP terminals are terminals 6 and 9, shown in bold.

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1 SW    30      5      99:59:59
2    KSR        9600-7-E-1 HW    30      5      INDEF
3    PRINTER   4800-7-E-1 HW    30      0      00:00:00
4    VT320      2400-7-E-1 BOTH  30      5      00:30:00
5    VT320      9600-7-O-1 NONE  30      5      00:00:30
6    NONE      19200-7-E-1 SW    0       5      INDEF
7    PRINTER   9600-7-N-2 HW    30      5      00:30:00
8    KSR        19200-7-E-2 BOTH  30      5      00:30:00
9    NONE      19200-7-E-1 SW    0       5      INDEF
10   VT320      9600-7-E-1 HW    30      5      00:30:00
11   VT320      4800-7-E-1 HW    30      5      00:30:00
12   PRINTER   9600-7-E-1 HW    30      4      00:30:00
13   VT320      9600-7-O-1 NONE  30      5      00:30:00
14   VT320      9600-7-E-2 SW    30      8      00:30:00
15   VT320      9600-7-N-2 HW    30      5      00:30:00
16   VT320      9600-7-E-2 BOTH  30      3      00:30:00
```

```
TRM  TRAF LINK SA  SYS PU  DB
1    NO  YES  NO  YES NO  YES
2    NO  NO   NO  NO  NO  NO
3    YES YES  YES NO  YES YES
4    YES NO   NO  NO  NO  NO
5    NO  YES  NO  NO  NO  NO
6    YES YES  YES YES YES YES
7    YES YES  YES YES YES YES
8    NO  NO   NO  NO  YES NO
9    YES YES  YES YES YES YES
10   NO  NO   NO  NO  NO  NO
11   YES YES  YES YES YES YES
12   YES YES  YES YES YES YES
13   NO  YES  NO  NO  NO  NO
14   NO  NO   YES NO  NO  NO
15   YES YES  YES NO  YES YES
16   NO  NO   NO  NO  YES NO
```

If the **rtrv-trm** command output shows that the OAP terminals have not been changed to terminal type **NONE**, repeat steps 4 and 5. If the OAP terminal type has not been changed after repeating steps 4 and 5, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

6. Display the LNP options in the database with the `rtrv-lnpopts` command. The LNP audit function must be turned off, shown by the entry `AUD = off` in the output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMACTYPE      = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = on
SP            = a123
FRCSMPLEX    = no
ADMHIPRI     = no
GTWYSTP      = no
CCP          = no
SERVPORT     = no
WQREDRCT     = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on in `rtrv-feat` command output), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

In this example, the LNP audit function is on. Go to step 7. If the LNP audit function is off, go to step 10.

-
7. Turn the LNP audit function off using the `chg-lnpopts` command and specifying the `aud=off` parameter. Enter this command:

```
chg-lnpopts:aud=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0
CHG-LNPOPTS: MASP B - COMPLTD
```

8. Verify that the LNP audit function is off with the `rtrv-lnpopts` command. The entry `AUD = off` should be shown in the `rtrv-lnpopts` output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMACTYPE      = 003
AMAFEATID     = 010
CIC           = 1369
AUD         = off
SP            = a123
FRCSMPLEX    = no
ADMHIPRI     = no
GTWYSTP      = no
CCP          = no
SERVPORT     = no
WQREDRCT     = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on in `rtrv-feat` command output), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still on, repeat steps 7 and 8. If the LNP audit function is still on after repeating these steps, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

NOTE: If the network element has Eagle 28.x with ELAP 1.0 installed, skip this step and go to step 10.

9. Verify whether or nor the Measurements Platform option is enabled (`Platform Enabled = on`) using the `rtrv-measopts` command.

```
rlghncxa03w 01-09-17 16:02:05 GMT Rel 28.0.0
EAGLE MEASUREMENT OPTIONS LIST
```

```
Platform Enabled =on
-----
SYSTOTSTP      =on   MTCHNP      =off
```

NOTE: The `rtrv-measopts` command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the `rtrv-measopts` command, see the `rtrv-measopts` command description in the *Commands Manual*.

NOTE: If step 9 shows that the Measurements Platform is enabled, skip steps 10, 11, and 12, and go to step 13.

10. Display the status of the measurement collection function using the `rtrv-meas-sched` command.

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT      = on
GTWYLSREPT    = both
```

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

```
-----  
SYSTOT-STP      = on  
SYSTOT-TT       = off  
SYSTOT-STPLAN   = off  
COMP-LNKSET     = on  
COMP-LINK       = on  
GTWY-STP        = on  
GTWY-LNKSET     = on  
MTCD-STP        = on  
MTCD-LINK       = on  
MTCD-STPLAN     = on  
MTCD-LNKSET     = on
```

NOTE: If Measurement collection is off, skip this step and step 12, and go to step 13.

11. Turn off the measurement collection function with the `chg-meas` command and the `collect=off` parameter. Enter this command:

```
chg-meas:collect=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0  
CHG-MEAS: MASP B - COMPLTD
```

12. Verify that the measurement collection function is off by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0  
COLLECT      = off  
GTWYLSREPT    = both  
-----  
SYSTOT-STP    = on  
SYSTOT-TT     = off  
SYSTOT-STPLAN = off  
COMP-LNKSET   = on  
COMP-LINK     = on  
GTWY-STP      = on  
GTWY-LNKSET   = on  
MTCD-STP      = on  
MTCD-LINK     = on  
MTCD-STPLAN   = on  
MTCD-LNKSET   = on
```

If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat steps 11 and 12. If the function is still off after repeating these steps, contact Tekelec Technical Services. See “Technical Services and Support” on page 1-14.

- Copy the LNP database from the BLM to the fixed disks on the MASPs by entering the `chg-db:action=finished1` command.

During command execution, these messages appear:

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
FINISHEDL : MASP B - Upload (LNP) starts on active MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
FINISHEDL : MASP B - Upload (LNP) on active MASP complete.
FINISHEDL : MASP B - Upload (LNP) starts on standby MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
FINISHEDL : MASP B - Upload (LNP) on standby MASP complete.
FINISHEDL : MASP B - MASP(s) will reboot to reload data.
```

When the `chg-db:action=finished1` command has completed, both MASPs are reinitialized.

The performance time required for copying the LNP database from the BLM to the fixed disks on the MASPs varies depending on the number of records provisioned in the database and the quality of the transmission and connections. Table 9-1 lists the performance range for copying the LNP database from the BLM to the fixed disks.

Table 9-1. Performance Range for Copying the LNP Database from the BLM to the Fixed Disks

Activity	Typical Performance per Million Records	Maximum Time* per Million Records
Copying the LNP database from the BLM to the OAM fixed disks (active and standby) on the MASPs.	10 minutes	15-20 minutes
*If an activity exceeds the maximum time, contact Tekelec Technical Services. See "Technical Services and Support" on page 1-14.		

When both MASPs have been reinitialized, the databases on the MASPs and the TSMs are different and UAM 0429, LNP database is inconsistent, is generated for each TSM. For this example, these messages are generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1101 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1206 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1213 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1214 SCCP LNP database is inconsistent
```

NOTE: If the LNP audit function was not turned off in step 7, skip steps 14 and 15, and go to step 16.

14. Turn the LNP audit function on with the `chg-lnpopts` command, specifying the `aud=on` parameter. Enter this command:

```
chg-lnpopts:aud=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0  
CHG-LNPOPTS: MASP B - COMPLTD
```

15. Verify that the LNP audit function is on with the `rtrv-lnpopts` command. The entry `AUD = on` should be shown in the `rtrv-lnpopts` output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0  
AMASLPID      = 123456789  
INCSLP        = yes  
AMATYPE       = 003  
AMAFEATID     = 010  
CIC           = 1369  
AUD          = on  
SP            = a123  
FRCSMPLEX     = no  
ADMHIPRI      = no  
GTWYSTP       = no  
CCP           = no  
SERVPORT      = no  
WQREDRCT      = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on in `rtrv-feat` command output), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still off, repeat steps 14 and 15. If the LNP audit function is still off after repeating these steps, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

16. Verify that the LNP translation type values in the imported LNP database match the values recorded in step 3 on page 7-14 in Chapter 7 “Managing Electronic Bulk Load from the LSMS,” with the `rtrv-lnp-serv` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT  TTN      DV  ALIAS
AIN    15  AIN      TCAP ---
LIDB   20  LIDB     SCCP ---
CLASS  25  CLASS    SCCP ---
CNAM   30  CNAM     SCCP ---
ISVM   50  ISVM     SCCP ---
IN      6   IN       TCAP ---
```

```
LNP-SERV TABLE IS (6 of 256) 2% FULL
```

If the output of the `rtrv-lnp-serv` command in step 3 on page 7-14 of Chapter 7 “Managing Electronic Bulk Load from the LSMS,” contained any of the following data, that data is no longer in the LNP services table because the LSMS does not support the following functions:

- Translation type names, as shown by values in the `TTN` field. Because translation type names are not supported by the LSMS, when the LNP database is imported into the network element, the translation type names shown in the `rtrv-lnp-serv` command output are the LNP service names.
- Alias translation types, as shown in the `ALIAS` field
- User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the `SERV` field
- Wireless number portability translation types, as shown by the entry `WNP` in the `SERV` field
- PCS 1900 number portability translation types, as shown by the entry `PCS` in the `SERV` field

If you wish to continue to use the user-defined services, alias translation types, or wireless number portability translation types recorded from step 3 on page 7-14 of Chapter 7 “Managing Electronic Bulk Load from the LSMS,” go to step 17.

If you wish to use the translation type names recorded from step 3 on page 7-14 of Chapter 7 “Managing Electronic Bulk Load from the LSMS,” go to step 18. Otherwise, go to step 20.

17. Re-enter the user-defined LNP services or alias translation types with the `ent-lnp-serv` command specifying the values recorded from the `rtrv-lnp-serv` output in step 3 on page 7-14 in Chapter 7, “Managing Electronic Bulk Load from the LSMS.”

For this example, enter these commands:

```
ent-lnp-serv:serv=udf1:tt=201:dv=sccp
```

```
ent-lnp-serv:serv=ain:alias=235
```

```
ent-lnp-serv:serv=ain:alias=236
```

```
ent-lnp-serv:serv=wnp:tt=22:dv=tcap
```

```
ent-lnp-serv:serv=pcs:tt=11:dv=tcap
```

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the `serv` parameter of the `ent-lnp-serv` command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

CAUTION: LNP service TTs have changed, OAP configuration is required

If the OAP configuration must be updated, go to the “Configuring the OAP from the System Terminal” in the *Database Administration Manual - LNP* to update the OAP configuration.

After successful completion of this command, the system returns the following output:

```
r1ghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0  
ENT-LNP-SERV: MASP B - COMPLTD
```

18. Change the LNP services by adding the translation type names to the LNP services in the database with the `chg-lnp-serv` command specifying the values recorded from the `rtrv-lnp-serv` output in step 3 on page 7-14 in Chapter 7, “Managing Electronic Bulk Load from the LSMS.” For this example, enter these commands:

```
chg-lnp-serv: serv=ain:nttn=aingte
```

```
chg-lnp-serv: serv=class:nttn=classgte
```

```
chg-lnp-serv: serv=in:nttn=ingte
```

```
chg-lnp-serv: serv=wnp:nttn=wnpgte
```

```
chg-lnp-serv: serv=pcs:nttn=pcs11
```

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the `serv` parameter of the `chg-lnp-serv` command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

CAUTION: LNP service TTs have changed, OAP configuration is required

If the OAP configuration must be updated, go to the “Configuring the OAP from the System Terminal” in the *Database Administration Manual - LNP* to update the OAP configuration.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0  
CHG-LNP-SERV: MASP B - COMPLTD
```

19. Verify that the user-defined LNP services, translation type names, or alias translation types have been added to the database with the `rtrv-lnp-serv` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT  TTN      DV  ALIAS
AIN           15  AINGTE  TCAP  235
                236
IN           6  INGTE   TCAP  ---
LIDB        20  LIDB    SCCP  ---
WNP         22  WNPGE   TCAP  ---
PCS         11  PCS11   TCAP  ---
CLASS       25  CLASSGE SCCP  ---
CNAM        30  CNAM    SCCP  ---
ISVM        50  ISVM    SCCP  ---
UDF1       201  UDF1    SCCP  ---
```

LNP-SERV TABLE IS (9 of 256) 4% FULL

If the `rtrv-lnp-serv` command output shows that the user-defined LNP services, translation type names, alias translation types, the wireless number portability translation type, or the PCS 1900 number portability translation type have not been added to the database, repeat steps 17, 18, and 19. If the user-defined LNP services, translation type names, alias translation types, the wireless number portability translation type, or the PCS 1900 number portability translation type still have not been added to the database after repeating steps 17, 18, and 19, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

20. Distribute the imported LNP database onto each TSM, which will also silence the LNP database alarms. Use one of the following methods:

- Method A loads the imported LNP database onto one TSM at a time by reloading each TSM.
- Method B loads the imported LNP database onto one TSM at a time by reloading each TSM using only one command.

Methods A and B allow the global title translation and LNP functions to continue running while the new LNP database is being loaded. When the TSM is reinitializing, its database goes temporarily out of service for the period of time that it takes to reload the database on the TSM. The time required to reload the database depends upon the size of the database and can take as long as 15 minutes for an LNP database containing 2,000,000 LNP subscriptions.

- Method C loads the imported LNP database onto all TSMs in the system by reinitializing all the TSMs at once.



CAUTION: This method not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations. Method A is the preferred method when the level of the downloaded LNP database is higher than the level of the current LNP database. Method B should be used when the level of the downloaded database is lower than the level of the current LNP database.

Method A: Perform steps a and b in this method for each TSM, one TSM at a time.

- a. Take the TSM out of service with the `rmv-card` command specifying the card location of the TSM. If there is only one TSM in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, Enter this command:

```
rmv-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been inhibited.
```

- b. Return the TSM to service with the `rst-card` command with the card location of the TSM. This command loads the LNP database on the specified TSM. For this example, enter this command:

```
rst-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been allowed.
```

- c. When the TSM is returned to service, the major alarm is silenced and UAM 0431, LNP database has been corrected, is generated. For this example, this message is generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

- d. Repeat steps a and b for the other TSMs in the system.

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13 “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

Method B: Enter the `init-card:appl=sccp:serial=yes` command. This command reloads all the TSMs in the system, one TSM at a time. The system responds with these messages for each TSM in the system.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
* 1127.0013 * CARD 1101 SCCP      Card is isolated from the system
      ASSY SN: 97361659

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1128.0329   SCCP SYSTEM      SCCP capacity normal, card(s) abnormal

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1129.0014   CARD 1101 SCCP      Card is present
      ASSY SN: 97361659

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1234.1238   SYSTEM          INFO Full LNP database reload initiated:
      CARD=1101      GPL=SCCP      CAUSE=USER REQUEST
Report Date: 01-09-07 Time: 11:11:28

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
5402.1241   SYSTEM          INFO REPT EVT: LNP Incremental Loading.
      database levels loaded :      0 of 1145
Report Date: 01-09-07 Time: 11:11:28

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
5402.1241   SYSTEM          INFO REPT EVT: LNP Incremental Loading.
      database levels loaded :    1145 of 1145
Report Date: 01-09-07 Time: 11:11:28

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1234.1239   SYSTEM          INFO DB updates inhibited: loading stability
Report Date: 01-09-07 Time: 11:11:28

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1234.1240   SYSTEM          INFO DB updates allowed: loading stability
Report Date: 01-09-07 Time: 11:11:28

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1130.0096   CARD 1101 SCCP      Card has been reloaded

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
1131.0328   SCCP SYSTEM      SCCP is available
```

When each TSM is returned to service, the major alarm (0429) for that TSM is silenced and UAM 0431, LNP database has been corrected, is generated for that TSM. For this example, this message is generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
0012.0431   CARD 1101 SCCP      LNP database has been corrected
```

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13 “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

Method C: Enter the `init-card:appl=sccp` command.



CAUTION: This command initializes all the TSMs at once and not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations.

NOTE: A more graceful way of initializing the TSMs is to reroute all global title translation traffic, including LNP traffic, to the mate network element using the `inh-map-ss` command. The `inh-map-ss` command takes the mated application subsystem out of service. When the mated application subsystem is out of service, all global title translation traffic, including LNP traffic, is rerouted to the mate network element.

The mated application subsystem must be inhibited with the `inh-map-ss` command before the TSMs are reinitialized with the `init-card:appl=sccp` command. After the `init-card:appl=sccp` command has finished executing and all the TSMs have reinitialized, return the mated application subsystem to service with the `alw-map-ss` command.

When the imported database has been loaded onto each TSM, UAM 0431 is displayed for each TSM showing that the UAM 0429 has been cleared and the database on the TSM matches the database on the MASPs. This is an example of UAM 0431.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
0012.0431   CARD 1101 SCCP           LNP database has been corrected
```

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13 “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

21. Verify that the TSMs are in-service by entering the **rept-stat-sccp** command. The state of the TSMs, shown in the **PST** field of the **rept-stat-sccp** command output, should be **IS-NR** (in-service normal). This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:10:50 GMT Rel 28.0.0
SCCP SUBSYSTEM REPORT IS-NR Active -----
SCCP Cards Configured= 4 Cards IS-NR= 4 Capacity Threshold = 100%
CARD VERSION PST SST AST MSU USAGE CPU USAGE
-----
1101 002-202-000 IS-NR Active ----- 47% 32%
1206 002-202-000 IS-NR Active ----- 34% 22%
1213 002-202-000 IS-NR Active ----- 25% 18%
1214 002-202-000 IS-NR Active ----- 68% 44%
-----
SCCP Service Average MSU Capacity = 44% Average CPU Capacity = 29%
Command Completed.
```

If the state of any TSMs is not IS-NR, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

22. If the measurement collection function was turned off in step 11, turn the function back on with the **chg-meas** command and the **collect=on** parameter. If the measurement collection function was not turned off in step 11, do not perform this step and step 23, and continue with step 24.

To turn on the measurement collection function, enter this command:

chg-meas:collect=on

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

23. Verify that the measurement collection function is turned on with the **rtrv-meas-sched** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT      = on
-----
SYSTOT-STP   = on
SYSTOT-TT    = off
SYSTOT-STPLAN = off
COMP-LNKSET  = on
COMP-LINK    = on
GTWY-STP     = on
GTWY-LNKSET  = on
MTCD-STP     = on
MTCD-LINK    = on
MTCD-STPLAN  = on
MTCD-LNKSET  = on
```

If the **rtrv-meas-sched** command output shows that the measurement collection function is still off, repeat steps 22 and 23. If the function is still off after repeating these steps, contact Tekelec Technical Services. See “Technical Services and Support” on page 1-14.

24. Change the terminal type of the terminals that were changed to **NONE** in step 4 to the terminal type **OAP** with the **chg-trm** command and the **type=oap** parameter. The terminal type is shown in the **TYPE** field in the **rtrv-trm** command output in step 1. For this example, enter these commands:

```
chg-trm:trm=6:type=oap
```

```
chg-trm:trm=9:type=oap
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
CHG-TRM: MASP B - COMPLTD
```

25. Put the OAP terminals back into service with the **rst-trm** command. For this example, enter these commands.

```
rst-trm:trm=6
```

```
rst-trm:trm=9
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Allow message sent to terminal

rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Command Completed.
```

26. Verify that the OAP terminals are in service with the `rept-stat-trm` command. In service terminals are shown in the `rept-stat-trm` command output with the entry `IS-NR` in the PST field. This is an example of the possible output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
TRM  PST          SST          AST
1    IS-NR        Active      -----
2    IS-NR        Active      -----
3    IS-NR        Active      -----
4    IS-NR        Active      -----
5    IS-NR        Active      -----
6    IS-NR        Active      -----
7    IS-NR        Active      -----
8    IS-NR        Active      -----
9    IS-NR        Active      -----
10   IS-NR        Active      -----
11   IS-NR        Active      -----
12   IS-NR        Active      -----
13   IS-NR        Active      -----
14   IS-NR        Active      -----
15   IS-NR        Active      -----
16   IS-NR        Active      -----
Command Completed.
```

If the `rept-stat-trm` command output shows that the OAP terminals are not in service, repeat steps 25 and 26. If the OAP terminals are not in service after repeating steps 25 and 26, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

-
27. Back up the new changes using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

28. Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **n** is shown in the C field of the `rept-stat-db` output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:07:36 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
-----
FD BKUP  Y      74 01-09-07 16:07:36 GMT  Y      74 01-09-07 16:07:36 GMT
FD CRNT  Y      106
MDAL 1117
-----
RD BKUP  -      -      -      -

CARD/APPL  LOC  C  T  LEVEL    TIME LAST UPDATE  EXCEPTION
-----
SCCP      1101 Y N 106    01-09-07 16:07:36  -
GLS       1102 Y N 106    01-09-07 16:07:36  -
TDM-CRNT  1114 Y N 106    01-09-07 16:07:36  -
TDM-BKUP  1114 Y - 74     01-09-07 16:07:36  -
TDM-CRNT  1116 Y N 106    01-09-07 16:07:36  -
TDM-BKUP  1116 Y - 74     01-09-07 16:07:36  -
MDAL      1117 -  -  -      -      -      -
SS7ANSI   1201 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1202 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1203 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1204 Y N 106    01-09-07 15:37:36  -
CCS7ITU   1205 Y N 106    01-09-07 15:37:36  -
SCCP      1206 Y N 106    01-09-07 16:07:36  -
SS7GX25   1207 Y N 106    01-09-07 15:37:36  -
SS7GX25   1208 Y N 106    01-09-07 15:37:36  -
SCCP      1213 Y N 106    01-09-07 16:07:36  -
SCCP      1214 Y N 106    01-09-07 16:07:36  -
EBDABLM   1215 Y N 106    01-09-07 16:07:36  -
STPLAN    1216 Y N 106    01-09-07 16:07:36  -
EBDADCM   1217 Y N 106    01-09-07 16:07:36  -
ATMANSI   1301 Y N 106    01-09-07 16:07:36  -
STPLAN    1304 Y N 106    01-09-07 16:07:36  -
SS7ANSI   1305 Y N 106    01-09-07 16:07:36  -
SS7GX25   1308 Y N 106    01-09-07 16:07:36  -
SS7GX25   1314 Y N 106    01-09-07 16:07:36  -
STPLAN    1317 Y N 106    01-09-07 16:07:36  -
ATMANSI   1318 Y N 106    01-09-07 16:07:36  -
EMDC      2107 Y N 106    01-09-07 16:07:36  -
EMDC      2111 Y N 106    01-09-07 16:07:36  -
```

Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

If the 48 Million Number feature is on, information about the ELAP RTDBs are also displayed in the `rept-stat-db` output, as shown in the following example.

```

                                ELAP A ( ACTV )
                                C  BIRTHDATE          LEVEL          EXCEPTION
                                -  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
RTDB                            Y  02-01-29 08:20:04      12345            -
RTDB-EAGLE                       02-01-29 08:20:04      12345            -

                                ELAP B ( STDBY )
                                C  BIRTHDATE          LEVEL          EXCEPTION
                                -  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
RTDB                            Y  02-01-29 08:20:04      12345            -
RTDB-EAGLE                       02-01-29 08:20:04      12345            -

                                EAGLE RTDB REPORT
                                CARD/APPL  LOC  C  BIRTHDATE          LEVEL          EXCEPTION
                                - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
VSCCP                          1201  Y  02-01-29 08:20:04      12345            -
VSCCP                          1203  Y  02-01-29 08:20:04      12345            -
VSCCP                          1105  Y  02-01-29 08:20:04      12345            -

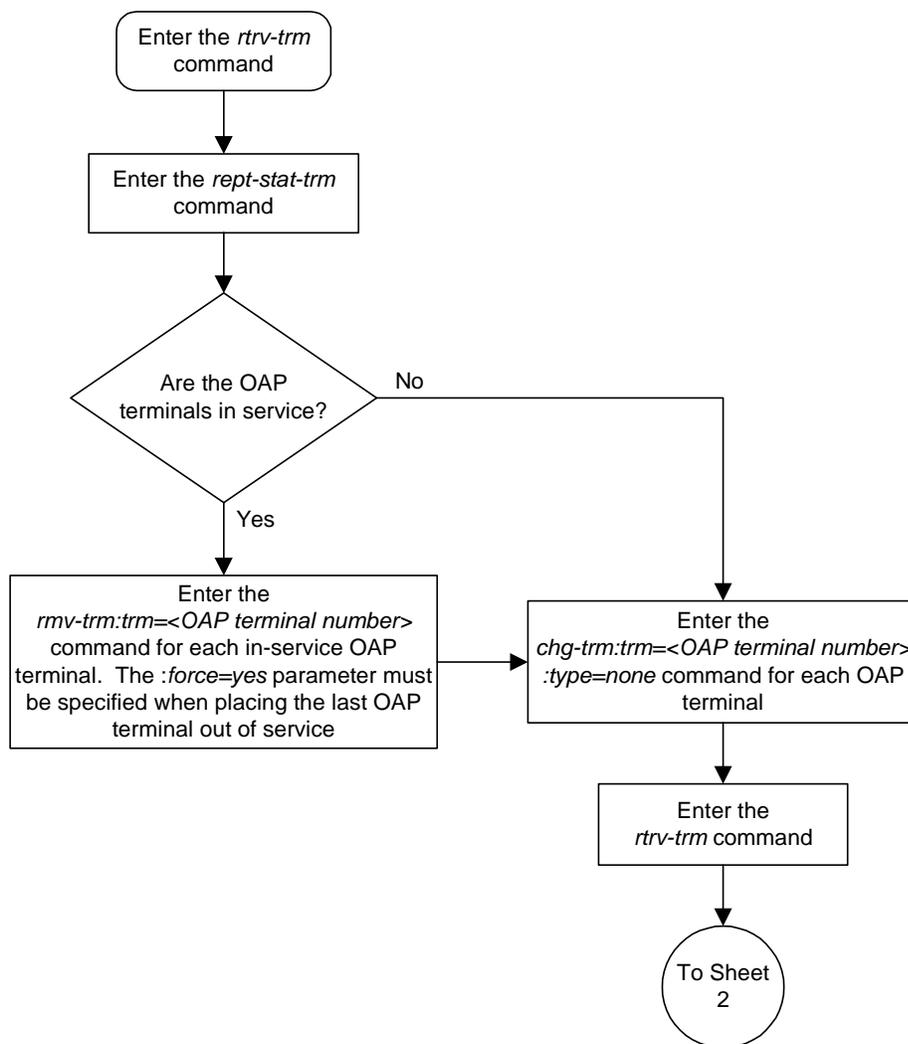
```

If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 27 and 28. If the databases are still not coherent after repeating steps 27 and 28, contact the Tekelec Technical Services department. See “Technical Services and Support” on page 1-14.

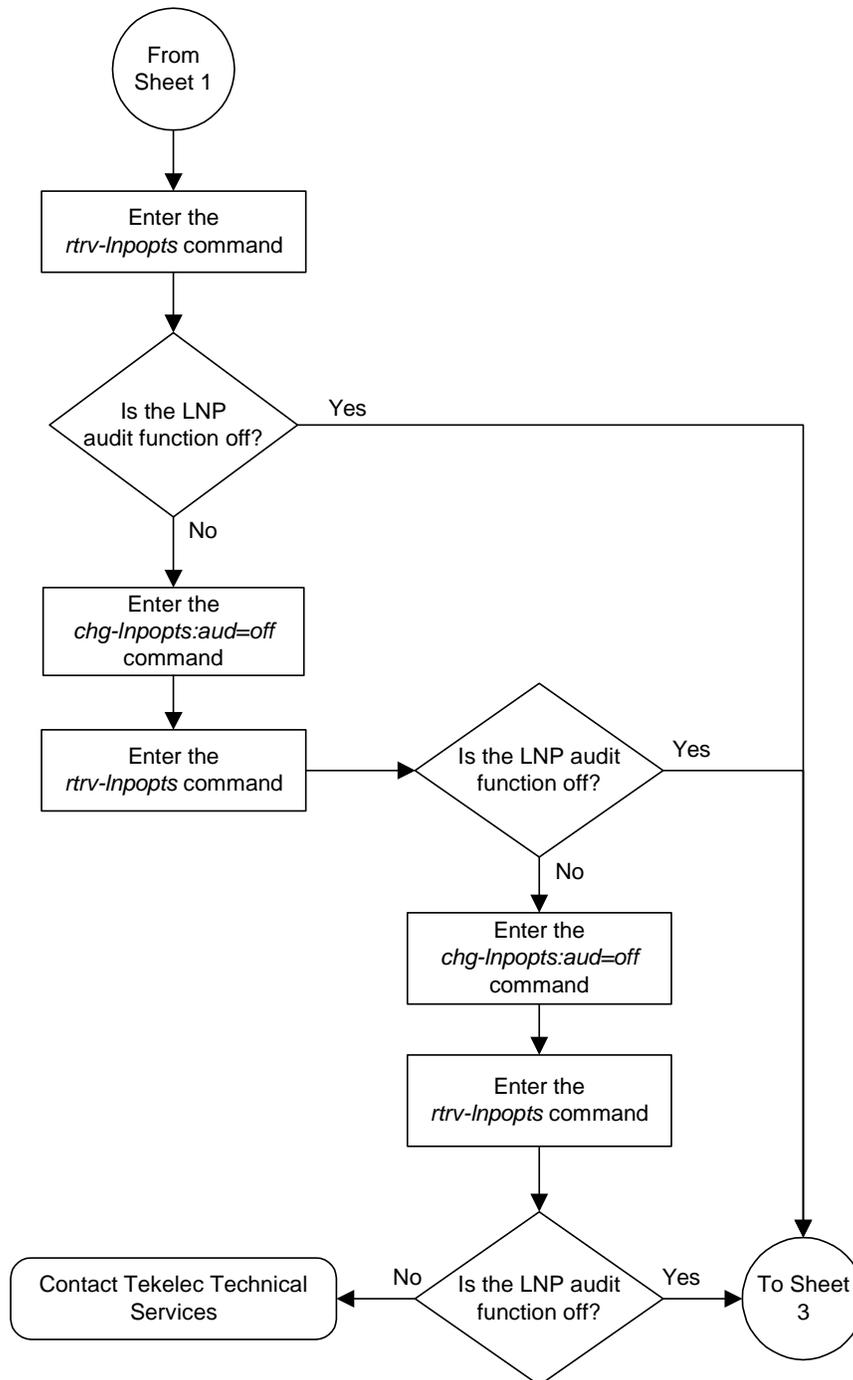
You have now completed this procedure.

Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 1 of 10)

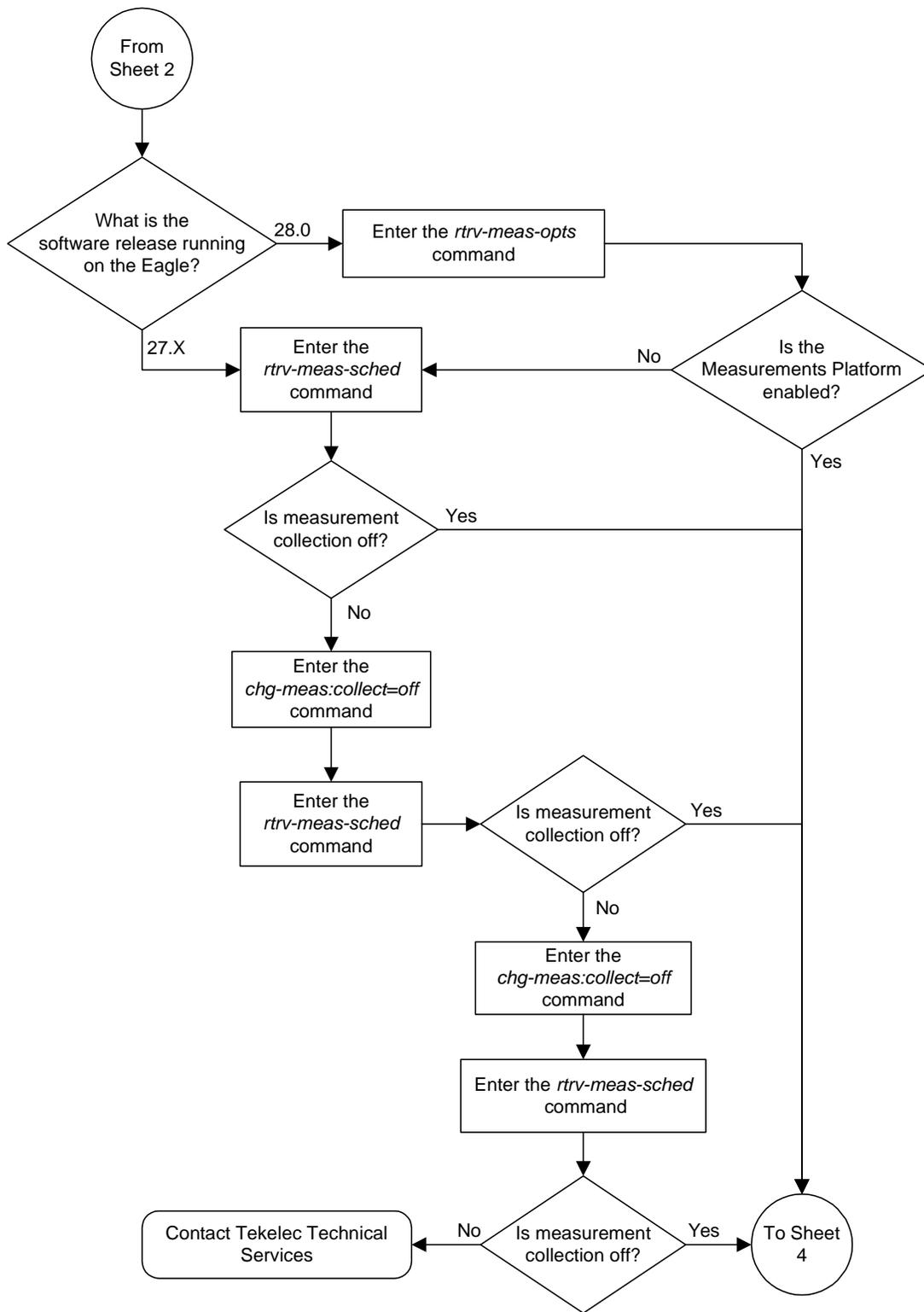
NOTE: Do not perform this procedure unless you have completed the procedures in Chapter 4 “Preparing the NE for Non-Manual Synchronization,” and either Chapter 5 “Managing Resynchronization from the LSMS,” Chapter 6 “Auditing and Reconciling Network Elements from the LSMS,” or Chapter 7, “Managing Electronic Bulk Load from the LSMS.”



Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 2 of 10)

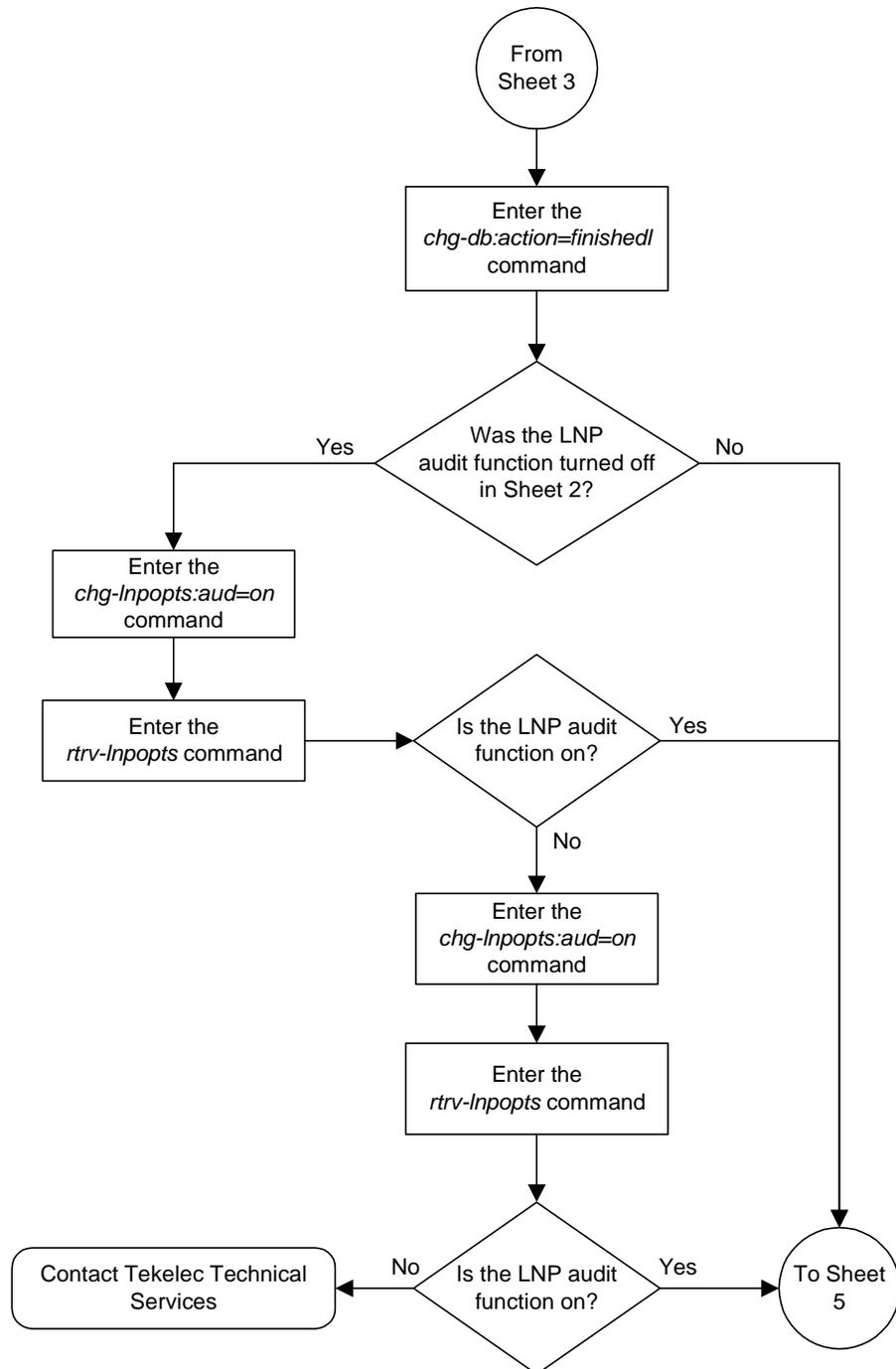


Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 3 of 10)

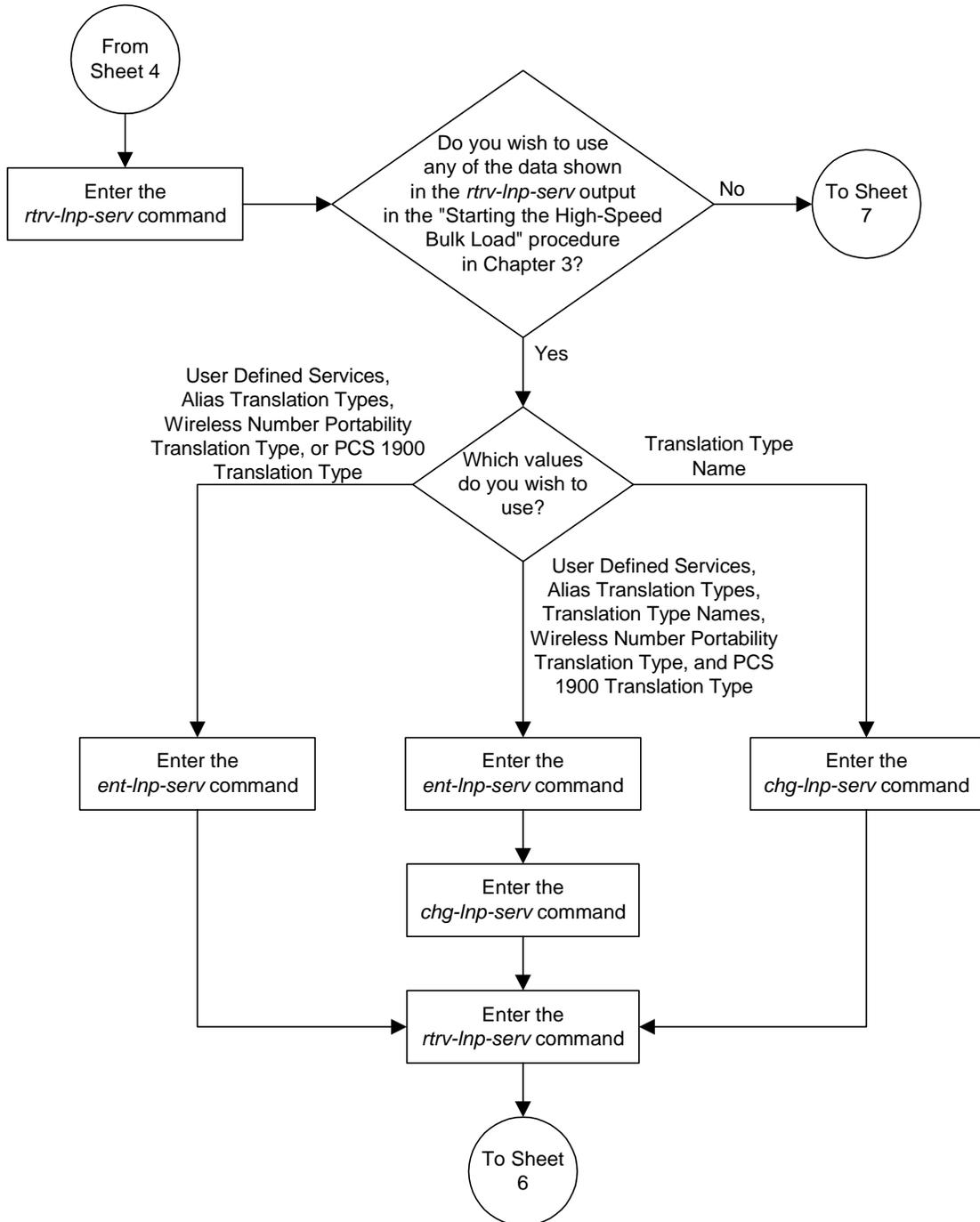


Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

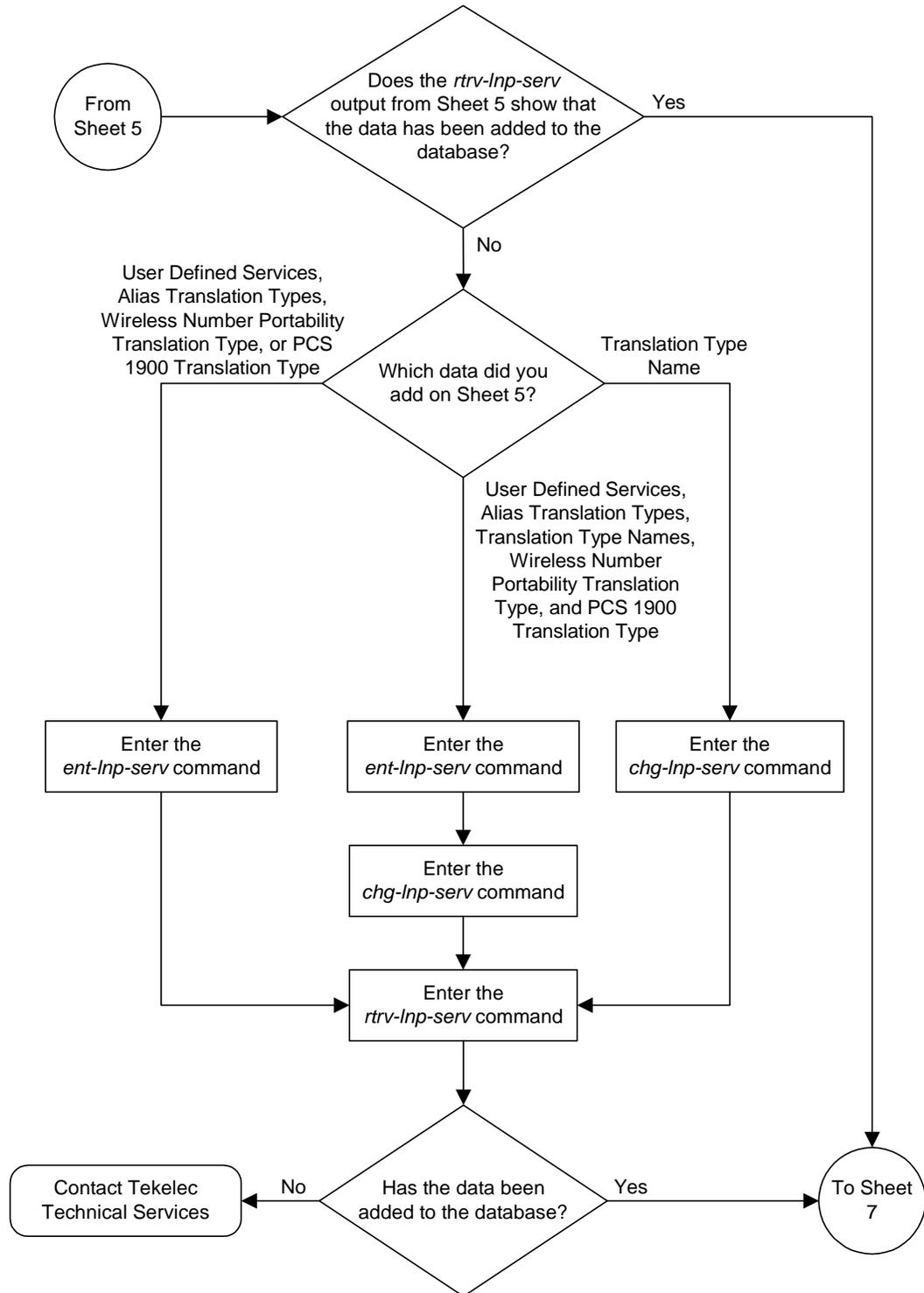
Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 4 of 10)



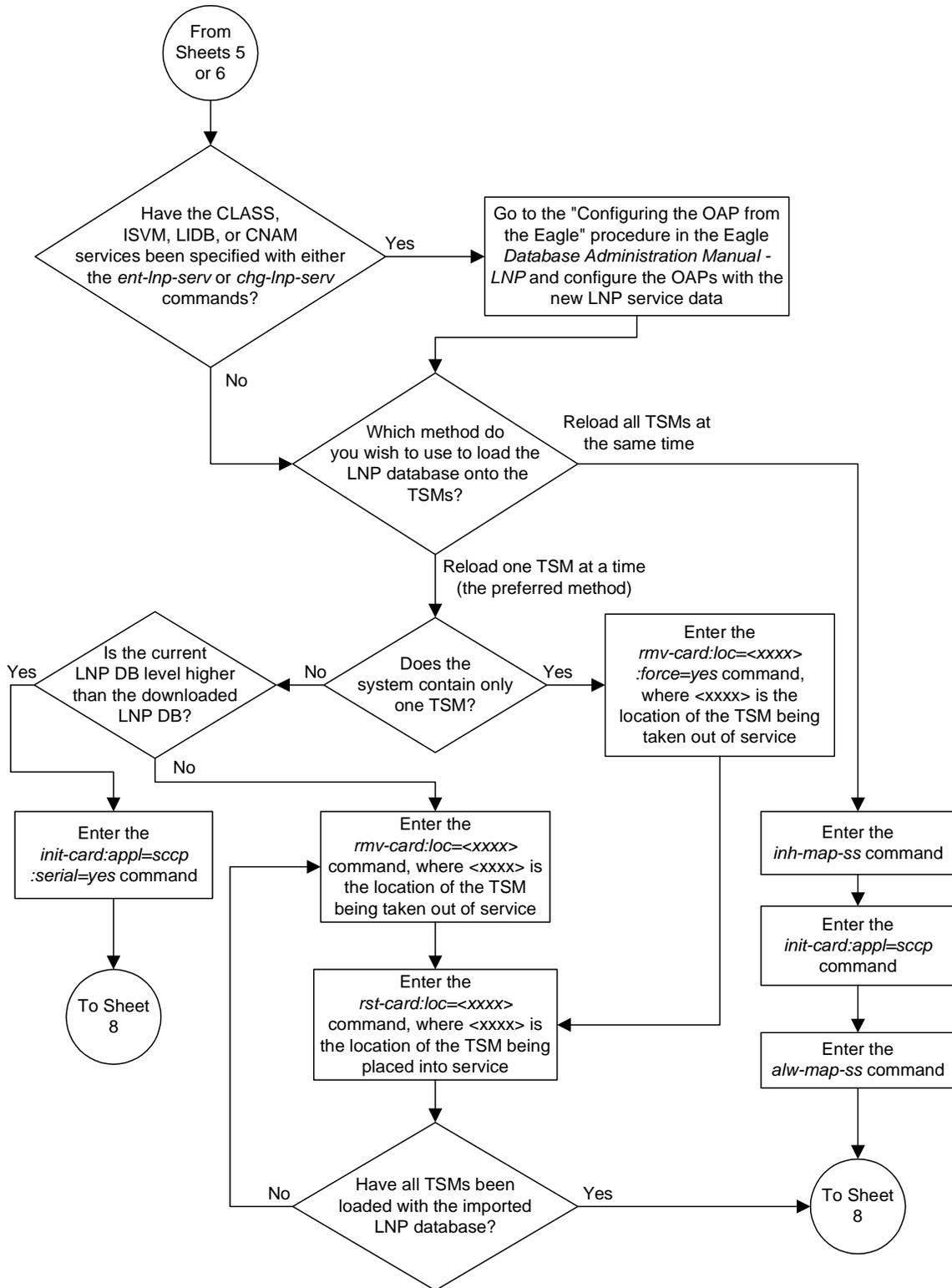
Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 5 of 10)



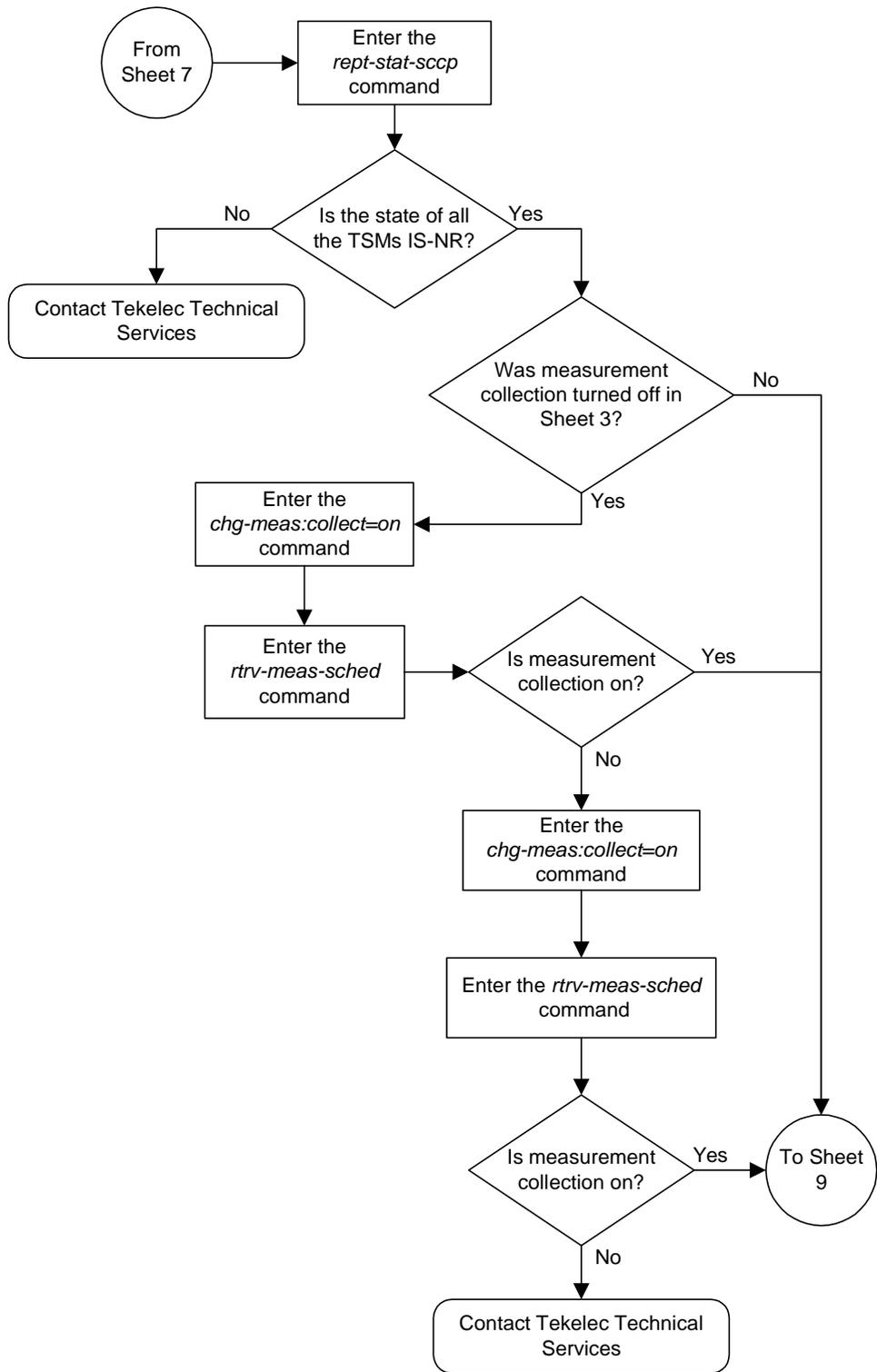
Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 6 of 10)



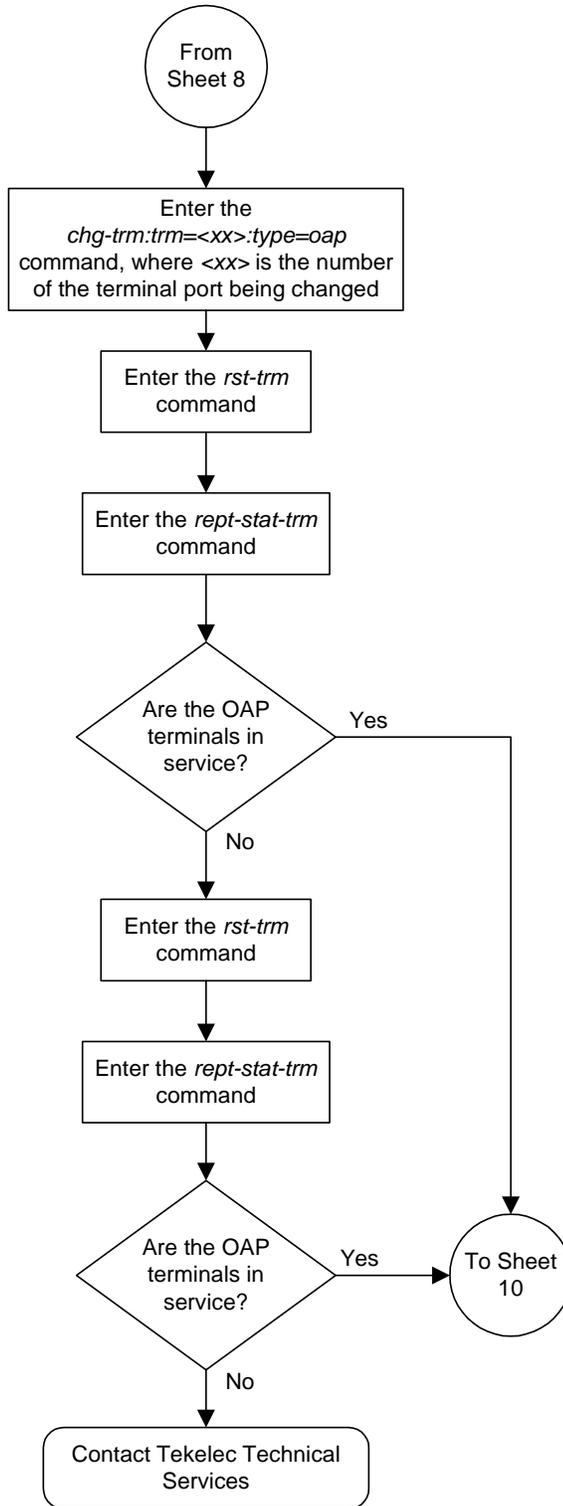
Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 7 of 10)



Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 8 of 10)

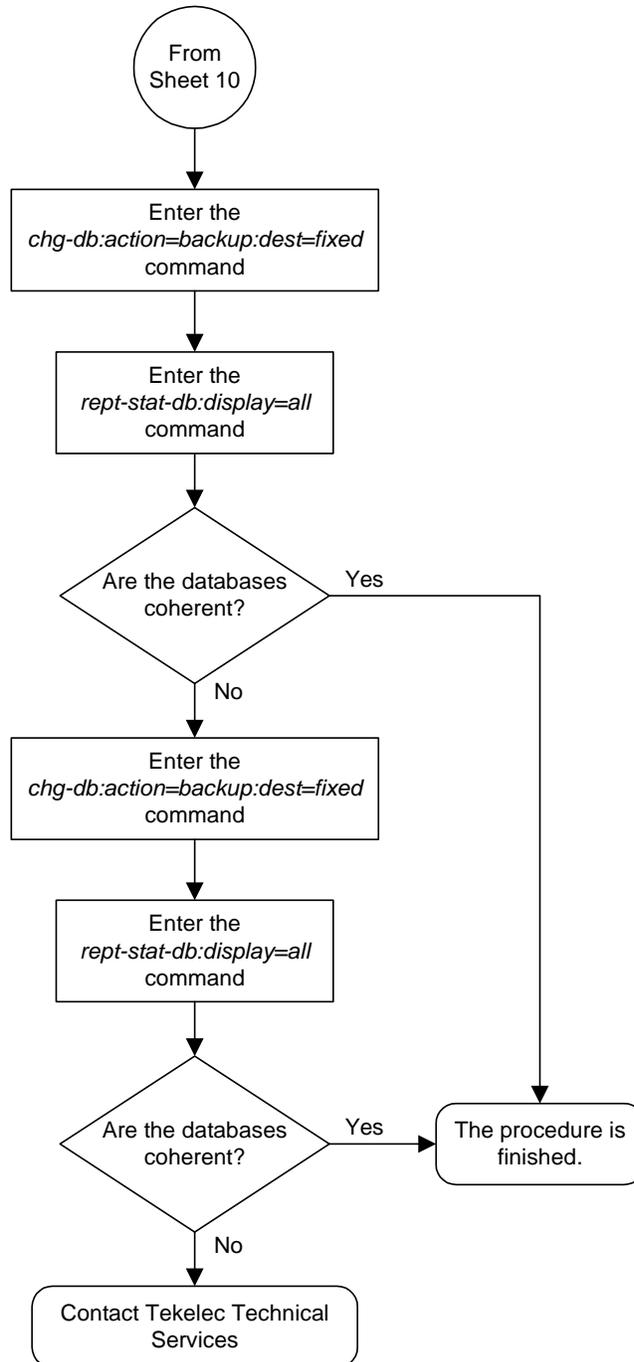


Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 9 of 10)



Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

Flowchart 9-2. Distributing the BLM LNP Database After BLM-Based Operation (Sheet 10 of 10)



Distributing the LNP Database after LSMS-Based Operation or RTDB Copy

10

Manual LSMS-to-NE Bulk Loading

Introduction.....	10-2
Extracting the LNP Database from the LSMS	10-4
Loading and Distributing the LNP Database at the Eagle STP	10-13

Introduction

NOTE: This chapter applies only for network element LNP databases that contain 6 million or fewer ported numbers.

Manual LSMS-to-STP bulk loading is the process of extracting the LNP database (regional and locally provisioned data) from the LSMS to a removable cartridge, loading the LNP database onto the Eagle STP, and distributing the LNP database to all Translation Service Modules (TSMs) in the system. Bulk loading fully replaces the network element LNP database.

This chapter describes the manual LSMS-to-STP bulk loading process using the following procedures:

- “Extracting the LNP Database from the LSMS”
- “Loading and Distributing the LNP Database at the Eagle STP”

The manual LSMS-to-STP bulk loading process requires two removable cartridges: a Bulk Load removable cartridge and a Database Backup removable cartridge. Both cartridges must have been prepared as described in Chapter 11, “Preparing the Network Element for Manual Bulk Loading” using these procedures:

- “Preparing the Bulk Load Removable Cartridge” on page 11-6
- “Preparing the Database Backup Removable Cartridge” on page 11-19

Use the Bulk Load removable cartridge for the procedures in this chapter to store the LNP database from the LSMS and to load the LNP database onto the Eagle STP.

Use the Database Backup removable cartridge if you need to back out of the procedures in this chapter. In this case, use the cartridge to restore the Eagle STP configuration using this procedure:

- “Backing Out Using the Database Backup Removable Cartridge” in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures.”

Manual LSMS-to-NE Bulk Loading

When the Bulk Load removable cartridge was prepared for bulk loading (see procedure “Preparing Removable Cartridges for LSMS-to-NE Bulk Loading” in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”), the following Eagle STP settings were recorded so that they could be restored after the LNP database was imported into the Eagle STP:

- Translation type values shown in the `rtrv-lnp-serv` command output:
 - Translation type names, as shown by values in the TTN field
 - Alias translation types, as shown in the ALIAS field
 - User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field
 - Wireless number portability translation types, as shown by the entry `WNP` in the SERV field
 - PCS 1900 number portability translation types, as shown by the entry `PCS` in the SERV field

These translation type values are not supported by the LSMS. When the LNP database is imported into the Eagle STP, these values will not appear in the `rtrv-lnp-serv` command output.

- The OAP terminal types are changed to `NONE` to prevent any LNP database updates from the LSMS while the LNP database is being imported into the Eagle STP.
- The LNP audit function and the measurement collection function are turned off.

To perform the procedures in this chapter, the terminal and user ID command input class assignments and unsolicited output message group assignments must be set as outlined in the “Terminal and User ID Requirements” section in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”

If more information is needed on any of the Eagle STP commands used in this procedure, refer to the *Eagle STP Commands Manual*. If more information is needed on any of the LSMS commands used in this procedure, refer to the *LSMS System Administration Manual*.

Extracting the LNP Database from the LSMS

Use this procedure to extract the LNP database from the LSMS. The LNP database is converted into Eagle STP format and loaded onto the Bulk Load removable cartridge.

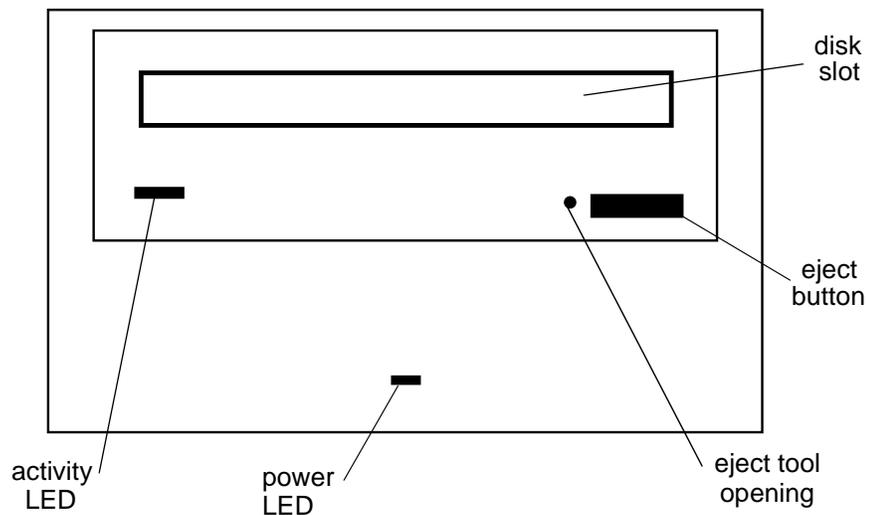
The removable cartridge must have been prepared earlier at the Eagle STP that requires the bulk load of the LNP database (see section “Preparing Removable Cartridges for LSMS-to-NE Bulk Loading” in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”)

The translation type values stored at the LSMS are recorded and compared to the values shown in the `rtrv-lnp-serv` command output of the Eagle STP that were recorded in procedure “Preparing Removable Cartridges for LSMS-to-NE Bulk Loading” in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.” These translation type values should be the same.

Procedure

1. At the LSMS, insert the Bulk Load removable cartridge into the active server’s magneto-optical drive (see Figure 10-1) so that side A of the cartridge is facing up.

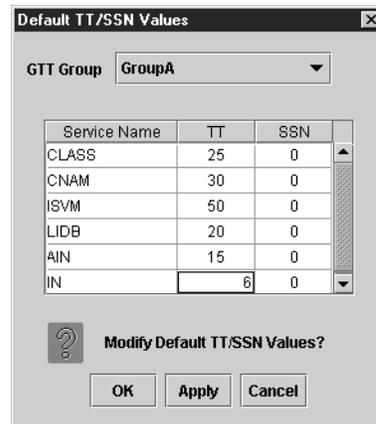
Figure 10-1. LSMS Magneto-Optical Drive Front View



2. Log into the LSMS GUI as a user in the `lsmsadm` or `lsmsall` groups, or as a user in the `lsmsuext` group (a user in the `lsmsuext` group must have authority to access the SPID assigned to the GTT group; for more information about SPID security, refer to the LSMS Database Administration Manual.)
-

3. Select **Configure>TT/SSN Values**; a window similar to the example shown in Figure 10-2 displays.

Figure 10-2. LSMS Default TT/SSN Values



NOTE: Before performing this step, Tekelec recommends that you contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

4. Verify that the LSMS Default TT/SSN window shows the six LNP services, CLASS, CNAM, ISVM, LIDB, AIN, and IN. Compare the translation type values for the LNP services in the LSMS Default TT/SSN window with the values recorded from the `rtrv-lnp-serv` command output in step 11 on page 11-14 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.” The translation type values in the LSMS Default TT/SSN window and the `rtrv-lnp-serv` command output should be the same.

NOTE: If the translation type values in the Eagle STP and the LSMS do not match, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14) to resolve the differences in the translation type values between the Eagle STP and the LSMS.

-
5. At the LSMS console, log in as a user in the `lsmsadm` user group and go to the directory containing the version of the LSMS software that the LSMS is running.

```
% cd $LSMS_DIR
```

6. Extract the LNP database by entering the following command:

```
% export_lsms_db <clli> <supDB> [<rdb1> ... <rdb7>]
```

<clli> = the CLLI of the network element that the database is extracted for

<supDB> = supported agent database name

[<rdb1> ... <rdb7>] = the regional database names, 1 through 7

For this example, enter this command.

```
% export_lsms_db RLGHCXA03W supDB NortheastDB
```

This is an example of the possible output. Answer the prompts, which are shown in bold, appropriately.

```
Tekelec LSMS Database Export program, Version 1.3.0
Copyright 1997 Tekelec, Inc. All rights reserved.
```

```
TIME STAMP GENERATED : DATABASE PRINT : 19981013140436
                        FILE      PRINT : 13-10-1998140436
```

```
CHECKING THAT THE CLLI IS SERVICED BY THIS SUPPORTED AGENT DATABASE
OK : ONE EMS SYSTEM IS SERVICING THIS CLLI
```

```
THE DISTINGUISHED NAME (COMPONENT ID) (300) OF THE EMS IS IN THE DEFAULT LIST
THUS, ALL THE SUBSCRIPTION VERSION OBJECTS WILL BE DOWNLOADED
```

```
CHECKING THAT EVERY DATABASE IS OK
NO NEED TO CONNECT TO SUPPORTED AGENT DATABASE : supDB
THIS IS THE SESSION DATABASE
TRYING TO CONNECT TO REGIONAL DATABASE # 1 : NortheastDB
CONNECTION SUCCEEDED
```

```
CHECKING THE EXISTANCE AND ACCESS TO THE DIRECTORIES
CHECKING LSMS_DIR DIRECTORY : */usr/local/LSMS/13X03* OK
CHECKING LSMS BULK LOAD DIRECTORY : */usr/local/LSMS/13X03/bulk_load* OK
CHECKING LSMS CLLI DIRECTORY : */usr/local/LSMS/13X03/bulk_load/RLGHCXA03W* OK
```

```
CHECKING THE EXISTANCE AND ACCESS TO THE DATABASES DIRECTORIES
SUPPORTED AGENT DATABASE :
CHECKING SUPPORTED AGENT DIRECTORY : */usr/local/LSMS/13X03/bulk_load/RLGHCXA03W/supDB*
THE DIRECTORY */usr/local/LSMS/13X03/bulk_load/RLGHCXA03W/supDB* DOES NOT EXIST
CREATING IT : OK
```

OK

```
REGIONAL DATABASE # 1 :
CHECKING REGIONAL DIRECTORY : */usr/local/LSMS/13X03/bulk_load/RLGHCXA03W/NortheastDB* OK
THE DIRECTORY */usr/local/LSMS/13X03/bulk_load/RLGHCXA03W/NortheastDB* IS NOT EMPTY
DO YOU WANT TO DELETE ALL THE FILES (Y) OR EXIT THE PROGRAM (N)
ANSWER (Y/N) : Y
DELETING FILE NAME *000000-999999.02-10-1998140730* : OK
DELETING FILE NAME *SPID.02-10-1998140730* : OK
DELETING FILE NAME *NPANXX.02-10-1998140730* : OK
DELETING FILE NAME *LRN.02-10-1998140730* : OK
```

```
DOWNLOADING THE FILES FOR THE DATABASES
SUPPORTED AGENT DATABASE : supDB
SUBSCRIPTION VERSION FILE
NO ELEMENT IS RELATED TO THIS FILE : *000000-999999*
THUS THE FILE IS NOT CREATED
SERVICE PROVIDER FILE
NO ELEMENT IS RELATED TO THIS FILE : *SPID*
THUS THE FILE IS NOT CREATED
SKIPPING NPA NXX AND LRN FILES BECAUSE NO SPS FOUND
DEFAULT GTT FILE
NO ELEMENT IS RELATED TO THIS FILE : *DFLT-GTT*
THUS THE FILE IS NOT CREATED
OVERRIDE GTT FILE
NO ELEMENT IS RELATED TO THIS FILE : *OVER-GTT*
THUS THE FILE IS NOT CREATED
REGIONAL DATABASE # 1 : NortheastDB
SUBSCRIPTION VERSION FILE
```

Manual LSMS-to-NE Bulk Loading

```
CREATING DOWNLOAD FILE :
*/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/000000-999999.13-10-1998140436* OK
NUMBER OF OBJECTS DOWNLOADED : 4
SERVICE PROVIDER FILE
CREATING DOWNLOAD FILE :
*/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/SPID.13-10-1998140436* OK
NUMBER OF OBJECTS DOWNLOADED : 31
NPA NXX FILE
CREATING DOWNLOAD FILE :
*/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/NPANXX.13-10-1998140436* OK
NUMBER OF OBJECTS DOWNLOADED : 344
LRN FILE
CREATING DOWNLOAD FILE :
*/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/LRN.13-10-1998140436* OK
NUMBER OF OBJECTS DOWNLOADED : 189
DEFAULT GTT FILE
NO ELEMENT IS RELATED TO THIS FILE : *DFLT-GTT*
THUS THE FILE IS NOT CREATED
OVERRIDE GTT FILE
NO ELEMENT IS RELATED TO THIS FILE : *OVER-GTT*
THUS THE FILE IS NOT CREATED
SUPPORTED AGENT DIRECTORY : */usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/supDB* EMPTY, DELETED
```

-
7. List the database directories in the bulk load directory for the relevant CLLI with the following commands, where `<c11i>` has the same value as used in step 6:

```
% cd $LSMS_DIR/bulk_load/<c11i>
% ls
```

Continuing with the example shown step 6, enter these commands:

```
% cd $LSMS_DIR/bulk_load/RLGHNCXA03W
% ls
```

This is an example of the output, which shows one regional database (NortheastDB) in addition to the supplemental database:

```
NortheastDB      supDB
```

-
8. For each regional database shown in the output of step 7, remove all files except the files that relate to subscription versions with the following commands, where `<c11i>` and `<rdb1>` have the same values used in step 6:

```
% cd $LSMS_DIR/bulk_load/<c11i>/<rdb1>
% rm SPID* NPANXX* LRN*
```

Continuing with the example shown in step 6, enter these commands:

```
% cd $LSMS_DIR/bulk_load/RLGHNCXA03W/NortheastDB
% rm SPID* NPANXX* LRN*
```

Repeat this step for each regional database shown in the output of step 7 (but *not* for the supplemental database, supDB).

-
9. Change back to the directory containing the version of the LSMS software that the LSMS is running.

```
% cd $LSMS_DIR
```

10. Convert the LNP database into Eagle STP format and load it onto the Bulk Load removable cartridge by entering the `cnvt_lsms_db <clli>` command.

`<clli>` = the CLI of the network element that the database is extracted for

For this example, enter this command.

```
cnvt_lsms_db -f RLGHNCA03W
```

The `-f` option of the `cnvt_lsms_db` command converts the LNP database whether or not the data in the database contains any errors. If any errors are displayed during the processing of the `cnvt_lsms_db` command, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

The following output appears for each CLI listed in the command (in the command example, only one CLI is listed). Answer yes to the prompt if the directory and time stamp are correct.

```
Bulk Load sub-directory /usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W
/NortheastDB
contains the time stamp 19981013140436.
Press 'Y' if data in this directory is valid, 'N' to cancel program: Y
```

If the following message is displayed after you answer yes to the prompt, verify that the Bulk Load Removable Cartridge is inserted into the removable cartridge drive on the LSMS so that side A of the cartridge is being used. Re-enter the `cnvt_lsms_db` command.

```
Removable cartridge invalid LNP database version, 165.165.165
Please insert removable containing a version 0.0.0 LNP database
```

If this message is displayed again, either contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14) or perform the “Preparing Removable Cartridges for LSMS-to-NE Bulk Loading” in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.” When the removable cartridges have been prepared, perform this procedure again.

If the error message does not appear when you answer yes to the prompt, the following is an example of the possible output.

```
Verifying Removable...LNP database version 0.0.0.
Initializing Tables on removable...complete.
Building local LNP Services table...complete.
Parsing data file "/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/SPID.
13-10-1998140436"...complete.
Parsing data file "/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/LRN.1
3-10-1998140436"...complete.
Parsing data file "/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/NPANX
X.13-10-1998140436"...complete.
Parsing data file "/usr/local/LSMS/13X03/bulk_load/RLGHNCXA03W/NortheastDB/00000
0-999999.13-10-1998140436"...complete.
Writing time stamp "19981012152638" to removable...complete.
LSMS Database conversion completed successfully.
Writing data to Removable. Please Wait...Completed.
```

WRITE DOWN THE TIMESTAMP WRITTEN TO THE REMOVABLE CARTRIDGE "e.g. 19981012152638".

Manual LSMS-to-NE Bulk Loading

(This will be used at a later time to import the LSMS database into the Eagle.)

Record the timestamp being written to the Bulk Load Removable Cartridge. The timestamp is found in this line of the `cnvt_lsms_db` command output.

```
Writing time stamp "19981012152638" to removable...complete.
```

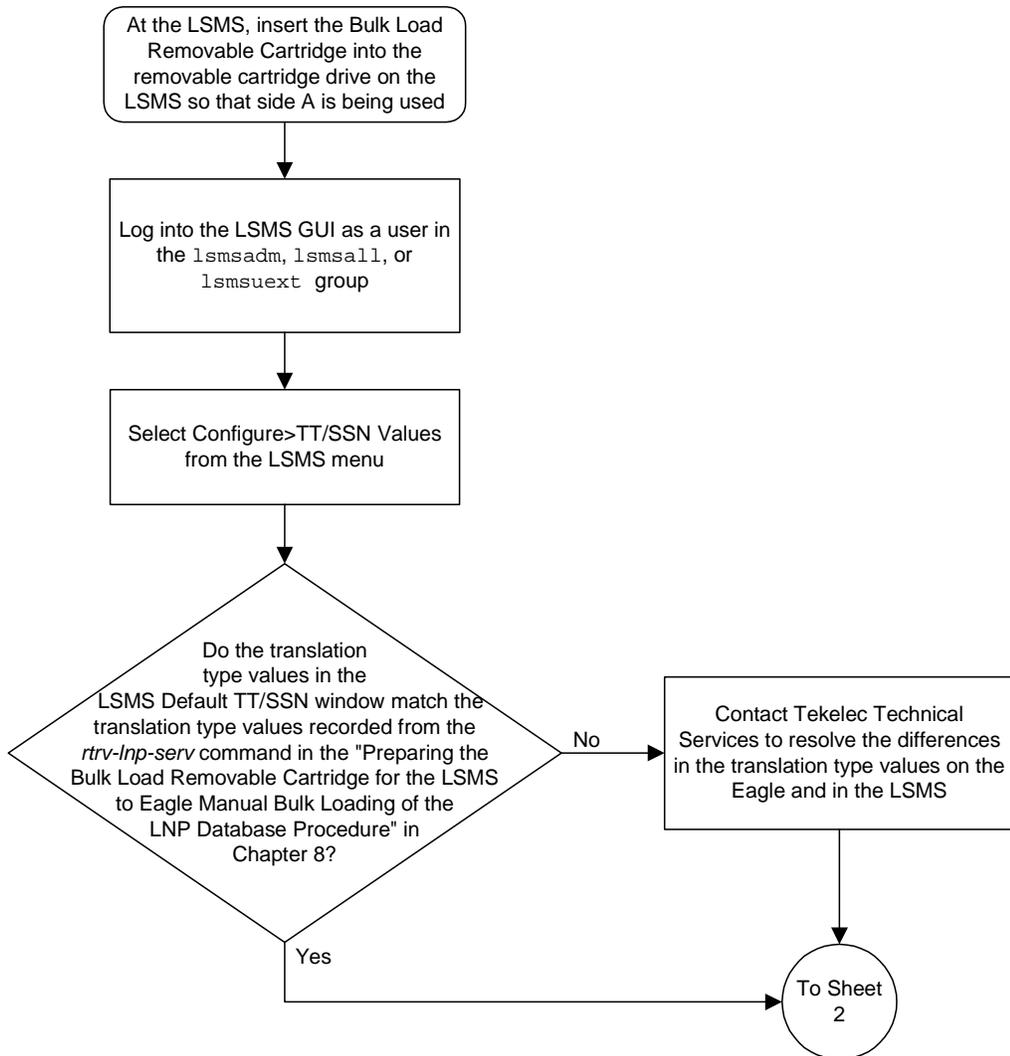
The timestamp value is used in step 4 on page 10-15 when the LNP database is imported into the Eagle STP.

11. Remove the Bulk Load removable cartridge from the removable cartridge drive on the LSMS. See “Removing the Removable Cartridge” on page 11-6.

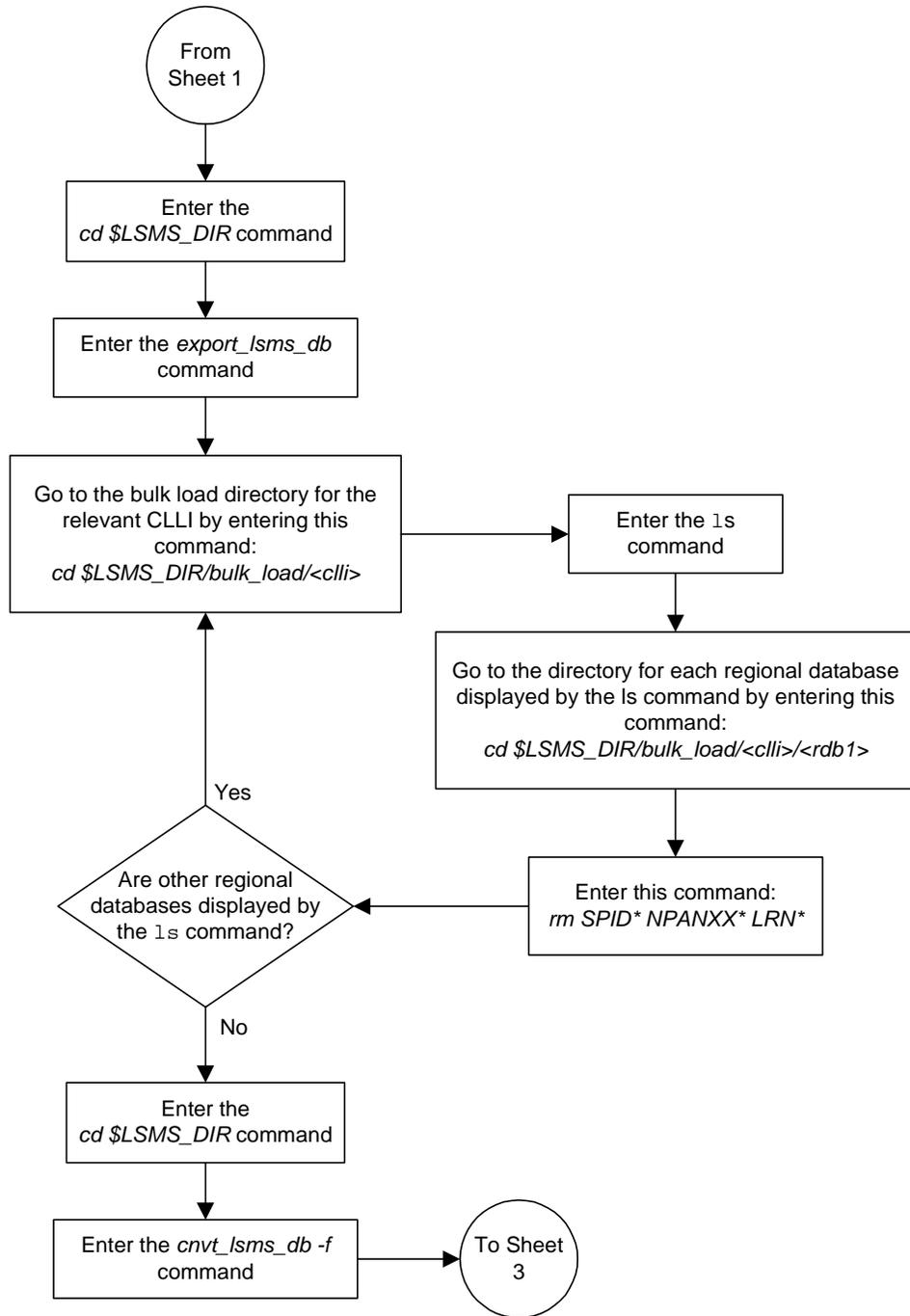
12. Repeat steps 1 through 11 if the “Bulk Loading of the LNP Database” procedure is to be performed on other Eagle STPs.

You have now completed this procedure.

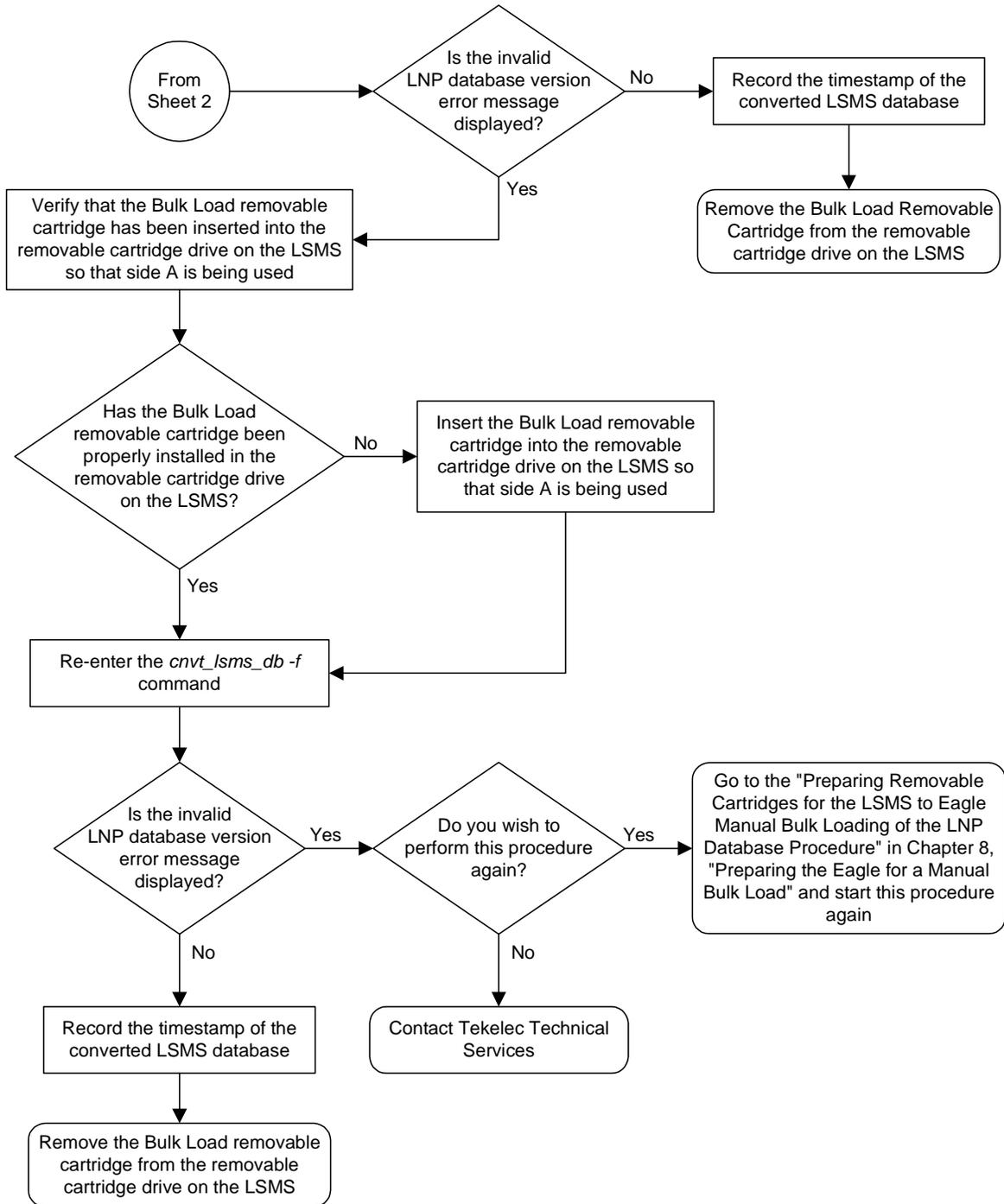
Flowchart 10-1. Extracting the LNP Database from the LSMS (Sheet 1 of 3)



Flowchart 10-1. Extracting the LNP Database from the LSMS (Sheet 2 of 3)



Flowchart 10-1. Extracting the LNP Database from the LSMS (Sheet 3 of 3)



Loading and Distributing the LNP Database at the Eagle STP

Use this procedure to load the LNP database onto the Eagle STP.

The timestamp of the converted LNP database is checked to see if it matches the recorded timestamp value of the LNP database on the LSMS.

The LNP database is loaded onto the Eagle STP from the Bulk Load removable cartridge using the `chg-db:action=import` command.

The following Eagle STP settings are compared with the settings recorded in step 2 on page 11-19, step 7 on page 11-22, and step 11 on page 11-24 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading."

- These translation type values, shown in the `rtrv-lnp-serv` command output:
 - Translation type names, as shown by values in the TTN field
 - Alias translation types, as shown in the ALIAS field
 - User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field
 - Wireless number portability translation types, as shown by the entry `WNP` in the SERV field
 - PCS 1900 number portability translation types, as shown by the entry `PCS` in the SERV field

These translation type values are not supported by the LSMS. When the LNP database is imported into the Eagle STP, these values will not appear in the `rtrv-lnp-serv` command output.

- Whether the LNP audit function is on or off
- Whether the measurement collection function is on or off

The settings are restored to the values recorded before the Bulk Load Backout removable cartridge was prepared.

The imported LNP database is distributed to all the TSMs in the Eagle STP.

The OAP terminal types that were changed to `NONE` in step 6 on page 11-22 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading," are changed back to the `OAP` terminal type.

Procedures

1. At the Eagle STP, insert the Bulk Load removable cartridge containing the LNP database downloaded from the LSMS into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. See "Inserting the Removable Cartridge" on page 11-5 and Figure 11-2.

2. Copy the approved GPLs and the system release table from the active fixed disk to the Bulk Load removable cartridge with the `copy-gpl` command.

During command execution, these messages appear:

```
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

3. Display the files on the Bulk Load removable cartridge using the `disp-disk-dir:loc=1117` command.

In your output, look for the LBA value of the LNP_STAT.BKP table (file) shown in the LBA field. The area is indicated in bold in the following output example. Record the LBA value of the LNP_STAT.BKP table. You will use the LBA value in step 4.

```
rlghncxa03w 01-09-07 15:52:04 GMT Rel 28.0.0
DISP-DISK-DIR, Loc=1117, Device = REMOVE, Dir = :\
Filename Ext      Length  Last Modified      Cluster      LBA
DMS        CFG        16384  02-07-98 17:29              2             180
TOAM       ELF       3145728  02-07-98 17:29              4             212
TSS7       ELF       1048576  02-07-98 17:29             388           6356
TGX25      ELF       1048576  02-07-98 17:29             516           8404
TCCS7ITU   ELF       1048576  02-07-98 17:29             644          10452
TSCCP      ELF       1048576  02-07-98 17:29             772          12500
TCDU       ELF       1048576  02-07-98 17:29             900          14548
TGLS       ELF       1048576  02-07-98 17:29            1028          16596
TSLAN      ELF       1048576  02-07-98 17:29            1156          18644
TIMT       ELF       152576   02-07-98 17:29            1284          20692
DBSTAT     BKP         46      02-07-98 17:29            1303          20996
MCFG       BKP        156      02-07-98 17:29            1304          21012
IMTA       BKP       10912    02-07-98 17:29            1305          21028
SHELF      BKP         54      02-07-98 17:29            1307          21060
LINK       BKP        8192     02-07-98 17:29            1308          21076
LSET       BKP       26080    02-07-98 17:29            1309          21092
ROUTE     BKP      113776   02-07-98 17:29            1313          21156
L2T        BKP        640      02-07-98 17:29            1327          21380
L3T        BKP       3392     02-07-98 17:29            1328          21396
LTH        BKP        728      02-07-98 17:29            1329          21412
SLTM       BKP        640      02-07-98 17:29            1330          21428
UID        BKP      12800    02-07-98 17:29            1331          21444
MEASCTRL   BKP        276      02-07-98 17:29            1333          21476
TERMINAL   BKP       2048     02-07-98 17:29            1334          21492
TTMAP      BKP      43398    02-07-98 17:29            1335          21508
XLINK      BKP      32768    02-07-98 17:29            1341          21604
STPOPTS    BKP        300      02-07-98 17:29            1345          21668
SID        BKP        455      02-07-98 17:29            1346          21684
X25DSTN    BKP      24960    02-07-98 17:29            1347          21700
X25RTE     BKP      43680    02-07-98 17:29            1351          21764
```

Manual LSMS-to-NE Bulk Loading

REDIRECT	BKP	450	02-07-98 17:29	1357	21860
SECUDFLT	BKP	128	02-07-98 17:29	1358	21876
WARNMSG	BKP	3330	02-07-98 17:29	1359	21892
PID2	BKP	25600	02-07-98 17:29	1360	21908
LOGTRACK	BKP	12928	02-07-98 17:29	1364	21972
LBP	BKP	524288	02-07-98 17:29	1366	22004
SMEASCTL	BKP	226	02-07-98 17:29	1430	23028
ATTRSLOG	BKP	128	02-07-98 17:29	1431	23044
TTSERV	BKP	8192	02-07-98 17:29	1432	23060
SSAPPL	BKP	2048	02-07-98 17:29	1433	23076
SERVPROV	BKP	3200	02-07-98 17:29	1434	23092
ACG_NOC	BKP	160	02-07-98 17:29	1435	23108
LNP_OPTS	BKP	302	02-07-98 17:29	1436	23124
LNP_STAT	BKP	128	02-07-98 17:29	1437	23140
XLINKSET	BKP	47662	02-07-98 17:29	1438	23156
XSTPOPTS	BKP	200	02-07-98 17:29	1444	23252
DEVFILT	BKP	75294	02-07-98 17:29	1445	23268
GWSRULE2	BKP	12380158	02-07-98 17:29	1455	23428
GWSMSTI2	BKP	331008	02-07-98 17:29	2967	47620
GTT_TT	BKP	11519992	02-07-98 17:29	3008	48276
GTT_CPC	BKP	435150	02-07-98 17:29	4415	70788
GTT_TBT	BKP	15720	02-07-98 17:29	4469	71652
GTT_RPC	BKP	65484	02-07-98 17:29	4471	71684
DBMM2	BKP	320000	02-07-98 17:29	4479	71812
GTT_RPC2	BKP	262374	02-07-98 17:29	4519	72452
LNP_LRN	BKP	3072096	02-07-98 17:29	4552	72980
LNP_MR	BKP	1679392	02-07-98 17:29	4928	78996
LNP_NPA	BKP	5120096	02-07-98 17:29	5134	82292
LNP_4DIG	BKP	128000064	02-07-98 17:29	5760	92308
ACG_MIC	BKP	187712	02-07-98 17:29	21386	342324
LNP_CHK	BKP	197378	02-07-98 17:29	21409	342692
LNP_DBMM	BKP	801600	02-07-98 17:29	21434	343092
MRN	SYS	426652	02-07-98 17:29	21532	344660
SMEAS_ST	SYS	12228	02-07-98 17:29	21585	345508
SECULOG	SYS	2560256	02-07-98 17:29	21587	345540
EVENTLOG	SYS	11263947	02-07-98 17:29	21900	350548
TTRBLTX	BKP	63980	02-07-98 17:29	23275	372548
MTT	BKP	384000	02-07-98 17:29	23283	372676
SYSREL	SYS	352	02-07-98 17:29	23330	373428
SYSRD	SYS	1048576	02-07-98 17:29	23331	373444
MEASRD	SYS	1048576	02-07-98 17:29	23459	375492
2210	REL	2048	02-07-98 17:29	23587	377540

File(s) : 72 Bytes : 192883124
Volume : SYSTEM DISK
Bytes free : 75544140
Disk Size (MB) : 1096

-
4. Display the contents of the LNP_STAT.BKP table using the `disp-lba` command. Specify the LBA number of the LNP-STAT.BKP table as determined in step 3. For this example, enter this command:

```
disp-lba:lba=23140:loc=1117
```

Verify that the third through sixth octets on the line beginning with 0010 do NOT contain a sequence of "a5" characters.

If the output of the `disp-lba` command contains a sequence of a5 characters, stop performing this procedure and contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

Verify that the timestamp (end of line 0010 and line 0020) of the converted LSMS database matches the timestamp value recorded in step 10 on page 10-8.

The third to sixth octets shown in the `disp-lba` command output corresponds to a version of the LNP database. Check this octet to verify the formatting of the removable cartridge. A sequence of a5 characters shows that the removable cartridge is not formatted correctly. If any other values are shown for this octet, the cartridge is formatted correctly. This octet does not constrict the importing of a large number of telephone number subscriptions based on the fact that an Eagle STP containing less than 2 million telephone number subscriptions can import an LNP database with 4 million telephone numbers as long as the TSMs have the correct amount of memory. The import process will allocate the memory when the `chg-db:action=import` command is executed. Hence the value of the octet is not important as long as it is not a string of a5 characters.

```

rlghncxa03w 01-09-07 03:59:26 GMT Rel 28.0.0
0504 DISP-LBA DEVICE ID=H'0021, LBA=H'00005a64
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0010 00 00 00 00 06 00 00 00 00 00 00 00 00 00 00 32 .....2
0020 30 30 30 30 32 30 37 30 33 35 39 32 36 00 00 00 0000207035926...
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0140 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0170 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0180 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0190 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

```

5. Verify the integrity of the removable cartridge using the `tst-disk` command and specifying the location of the MDAL card. Enter this command.

```
tst-disk:loc=1117
```

If the removable cartridge passes the tests performed by the `tst-disk` command, the output should show the number of retries as zero (0) and the number of errors as zero (0), as shown in the following output example.

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
TST-DISK results for TDM 1117
Total LBAs = 524286   LBA size = 512
Retries    = 0      Errors  = 0
```

If the number of errors or number of retries is a number other than zero (0), stop performing this procedure and contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

6. Copy the LNP database from the Bulk Load removable cartridge to the fixed disk of the Eagle STP by entering the `chg-db:action=import` command. This command can take up to 30 minutes to execute, depending on other system activity that is in progress when this command is entered.

NOTE: If this command takes more than 60 minutes to execute, contact Tekelec Technical Services for assistance (see “Technical Services and Support” on page 1-14).

During command execution, these messages appear. When the `chg-db:action=import` command has completed, both MASPs are reinitialized.

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) starts on active MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) on active MASP complete.
IMPORT : MASP B - Import (LNP) starts on standby MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) on standby MASP complete.
IMPORT : MASP B - MASP(s) will reboot to reload data.
```

When both MASPs have been reinitialized, the databases on the MASPs and the TSMs are different and UAM 0429, LNP database is inconsistent, is generated for each TSM. For this example, these messages are generated.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1101 SCCP      LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1206 SCCP      LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1213 SCCP      LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1214 SCCP      LNP database is inconsistent
```

If the database being imported contains more than 8 million telephone numbers and the LNP 12 Million Telephone Number Support feature is not on (**LNP12MIL=off** in the **rtrv-feat** command output, see step 7), the **chg-db:action=import** command will be rejected with this message:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
E3660 Cmd Rej: LNP support 12 million feature must be ON
```

If error message E3660 is displayed, go to step 7.

If the **chg-db:action=import** command has completed successfully, go to step 9.

-
7. Verify that the LNP 12 Million Telephone Number Support feature is turned on (**lnp12mil=on**) by entering the **rtrv-feat** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
EAGLE FEATURE LIST

GTT          = on      GWS          = off      NRT          = off
X25G         = off     LAN          = off     CRMD         = off
SEAS         = off     LFS         = off     MTPRS       = off
LNP        = on      FAN         = off     DSTN4000    = off
WNP          = off     CNCF        = off     LNP12MIL    = off
TLNP         = off     SCCPCNV     = off     TCAPCNV     = off
X252000      = off     PLNP        = off     NCR          = off
ITUMTPRS     = off     SLSOCB     = off     EGT         = off
IPISUP       = off     DYNRTK     = off     PVGTT       = off
PRFXDLGT     = off     MPC         = off     INP         = off
ITUDUPPC     = off
```

To turn on the LNP 12 Million Telephone Number Support features, go to step 8.

NOTE: The LNP 12 Million Telephone Number Support (TLNP) feature is optional and must be purchased before turning it on. If you are not sure whether you have purchased this feature, contact your Tekelec Sales or Account Representative.

Once a feature has been turned on with the **chg-feat command, the feature cannot be turned off.**

If the LNP 12 Million Telephone Number Support feature is already on, contact Tekelec Technical Services for assistance (see “Technical Services and Support” on page 1-14).

8. Turn on the LNP 12 Million Telephone Number Support feature by entering this command:

```
chg-feat:lnp12mil=on
```

NOTE: Once the LNP 12 Million Telephone Number Support feature is turned on with the `chg-feat` command, it cannot be turned off.

The LNP 12 Million Telephone Number Support feature is optional and must be purchased before you turn on the feature. If you are not sure whether you have purchased the LNP 12 Million Telephone Number Support feature, contact your Tekelec Sales or Account Representative.

The system returns this message:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
CHG-FEAT: MASP A - COMPLTD
```

Go back to step 6 and import the database again. Then continue with step 9.

9. Verify that the databases (FD CRNT and FD BKUP) on the active and standby MASPs and on the Bulk Load Removable Cartridge (RD BKUP) are coherent using the `rept-stat-db` command.

If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If the databases are coherent, go to step 10. If any of the databases are not coherent, shown by the letter **N** in the C field of the `rept-stat-db` output, go to section “Verifying the Database” in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP  C  LEVEL      TIME LAST BACKUP
      -  - - - - - - - - - - - - - - -  -  - - - - - - - - - - - - - - -
FD BKUP Y       35 01-09-06 10:19:18 GMT Y       35 01-09-06 10:19:18 GMT
FD CRNT Y       106
      MDAL 1117
      -  - - - - - - - - - - - - - - -
RD BKUP Y       247 01-09-02 14:29:03 GMT
```

10. Remove the Bulk Load removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.
-

11. If the LNP audit function was turned off in step 8 on page 11-22 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” turn it back on with the `chg-lnpopts` command and the `aud=on` parameter. If the LNP audit function was not turned off, go to step 13 without performing this step.

To turn on the LNP audit function, enter this command:

```
chg-lnpopts:aud=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0
CHG-LNPOPTS: MASP B - COMPLTD
```

12. Verify that the LNP audit function is on (`AUD=on`) with the `rtrv-lnpopts` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMACTYPE      = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = on
SP            = a123
FRCSMPLEX    = no
ADMHIPRI     = no
GTWYSTP      = no
CCP           = no
SERVPORT     = no
WQREDRCT     = off
```

NOTE: If the Triggerless LNP feature is on (`TLNP=on` in `rtrv-feat` command), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still off, repeat steps 11 and 12. If the LNP audit function is still off after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

13. Verify with the `rtrv-1np-serv` command that the LNP translation type values in the imported LNP database match the values recorded before the LNP database was extracted from the LSMS (see step 4 on page 10-5 and step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”)

This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT   TTN      DV   ALIAS
AIN    15  AIN      TCAP ---
LIDB  20  LIDB     SCCP ---
CLASS 25  CLASS    SCCP ---
CNAM   30  CNAM     SCCP ---
ISVM   50  ISVM     SCCP ---
IN      6   IN       TCAP ---
```

LNP-SERV TABLE IS (6 of 256) 2% FULL

If the output of the `rtrv-1np-serv` command in step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” contained any of the following data, that data is no longer in the LNP services table because the LSMS does not support the following functions:

- Translation type names, as shown by values in the TTN field. Because translation type names are not supported by the LSMS, when the LNP database is imported into the Eagle STP, the translation type names shown in the `rtrv-1np-serv` command output are the LNP service names.
- Alias translation types, as shown in the ALIAS field
- User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field
- Wireless number portability translation types, as shown by the entry `WNP` in the SERV field
- PCS 1900 number portability translation types, as shown by the entry `PCS` in the SERV field

If you wish to continue to use the user-defined services, translation type names, alias translation types, or wireless number portability translation types recorded from step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” go to step 14.

If you wish to continue to use the user-defined services, alias translation types, or wireless number portability translation types but not the translation type names recorded from step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” go to step 14, then continue with step 16.

If you wish to use only the translation type names recorded from step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading,” go to step 15 on page 10-22. Otherwise, go to step 19 on page 10-26.

14. Re-enter the user-defined LNP services or alias translation types with the `ent-lnp-serv` command specifying the values recorded from the `rtrv-lnp-serv` output in step 2 on page 11-19 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading." For this example, enter these commands:

```
ent-lnp-serv:serv=udf1:tt=201:dv=sccp
```

```
ent-lnp-serv:serv=ain:alias=235
```

```
ent-lnp-serv:serv=ain:alias=236
```

```
ent-lnp-serv:serv=wnp:tt=22:dv=tcap
```

```
ent-lnp-serv:serv=pcs:tt=11:dv=tcap
```

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the `serv` parameter of the `ent-lnp-serv` command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

CAUTION: LNP service TTs have changed, OAP configuration is required

If the OAP configuration must be updated, go to procedure "Configuring the OAP from the System Terminal" in the *Eagle STP Database Administration Manual - System Management* to update the OAP configuration.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
ENT-LNP-SERV: MASP B - COMPLTD
```

15. Change the LNP services by adding the translation type names to the LNP services in the database with the `chg-lnp-serv` command and specifying the values recorded from the `rtrv-lnp-serv` output in step 2 on page 11-19 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading." For this example, enter these commands:

```
chg-lnp-serv:serv=ain:nttn=aingte
```

```
chg-lnp-serv:serv=class:nttn=classgte
```

```
chg-lnp-serv:serv=in:nttn=ingte
```

```
chg-lnp-serv:serv=wnp:nttn=wnpgte
```

```
chg-lnp-serv:serv=pcs:nttn=pcs11
```

Manual LSMS-to-NE Bulk Loading

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the **serv** parameter of the **chg-lnp-serv** command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

CAUTION: LNP service TTs have changed, OAP configuration is required

If the OAP configuration must be updated, go to procedure “Configuring the OAP from the System Terminal” in the *Eagle STP Database Administration Manual - LNP* to update the OAP configuration.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
CHG-LNP-SERV: MASP B - COMPLTD
```

16. Verify that the user-defined LNP services, translation type names, or alias translation types have been added to the database with the **rtrv-lnp-serv** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT  TTN      DV  ALIAS
AIN           15  AINGTE  TCAP  235
                236
IN           6  INGTE   TCAP  ---
LIDB         20  LIDB    SCCP  ---
WNP          22  WNPGE   TCAP  ---
PCS          11  PCS11   TCAP  ---
CLASS        25  CLASSGE SCCP  ---
CNAM         30  CNAM    SCCP  ---
ISVM         50  ISVM    SCCP  ---
UDF1         201  UDF1    SCCP  ---
```

LNP-SERV TABLE IS (9 of 256) 4% FULL

If the **rtrv-lnp-serv** command output shows that the user-defined LNP services, translation type names, alias translation types, the wireless number portability translation type, or the PCS 1900 number portability translation type have not been added to the database, repeat steps 14, 15, and 16. If these services, translation type names, or translation types still have not been added to the database after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

17. If the database has been imported from a removable cartridge created by the LSMS and if any split NPANXX data is displayed, proceed to step 19.

If no split NPANXX data is displayed, the import has recorded the new NPANXX, but has deleted the old NPANXX. Perform the following substeps to recreate the split NPANXX data at the Eagle STP. Perform these substeps. Capture or save all output produced by these substeps.

- a. Display the existing NPANXX data using the `rtrv-lnp-npanxx` command. For example,

```
rtrv-lnp-npanxx:npanxx=319456
```

```
rlghncxa03w 01-09-07 14:44:38 GMT Rel 28.0.0
NPANXX MR LRN TT XLAT RI PCA SSN NGT
319456 yes yes 16 DPC GT 001-001-001 0 ---
          18 DPCNGT GT 002-002-002 0 10
          19 DPCSSN SSN 002-002-004 20 ---
```

```
NPANXX TABLE IS 1% FULL
```

If the NPANXX is in the database, go to substep b. If the NPANXX is not in the database, go to substep c.

- b. Go to the “Removing an LNP NPANXX” procedure in the *Eagle STP Database Administration Manual - LNP* and remove the entire old NPANXX portable record using the NPANXX specified in substep a.
- c. Use a “reverse” `ent-split-npa` command so that the telephone numbers currently associated with the new NPANXX also become associated with the old NPANXX. For example,

```
ent-split-npa:npanxx=333456:nnpanxx=319456
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:44:38 GMT Rel 28.0.0
ENT-SPLIT-NPA: MASP B - COMPLTD
```

- d. Remove the NPANXX record that was split in substep c (to allow a proper NPANXX split to be performed in substep e) using the `dlt-split-npanxx` command. For example,

```
dlt-split-npa:npanxx=333456
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:43:38 GMT Rel 28.0.0  
DLT-SPLIT-NPA: MASP B - COMPLTD
```

- e. Use the `ent-split-npa` command to create the appropriate NPANXX split with the proper old and new NPANXXs. For example,

```
ent-split-npa:npanxx=319456:nnpanxx=333456
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:44:38 GMT Rel 28.0.0  
ENT-SPLIT-NPA: MASP B - COMPLTD
```

- f. Repeat substeps a through e for each NPANXX that was shown in the first column of the output.
-

18. Display the LNP 4Digit table memory configuration in the database with the `rtrv-mem` command.

This is an example of the output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
LNP 4DIGIT OBJECT  %FULL
-----
LNP_4DIG.TBL      75

LNP 4DIGIT database is (1500000 of 2000000) 75% full

rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
Memory retrieval complete.
```

If the LNP 4Digit table memory allocation is the correct amount for the size of the LNP database that was imported in step 6 on page 10-17, go to step 19. If the LNP 4Digit table memory allocation is not correct, then the TSMs on the Eagle STP may not contain the same amount of memory. Go to procedure “Configuring the LNP 4Digit Tables” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP* and increase the LNP 4Digit table memory allocation, then go to step 19.

NOTE: When the LNP database is imported using the `chg-db:action=import` command, and the removable cartridge and the fixed disks have different memory allocations, the Eagle STP will determine the memory allocation from the media that has the greater memory allocation. For example, if the removable cartridge has three LNP 4Digit tables allocated and the fixed disk has one, then three LNP 4Digit tables should be allocated on the Eagle STP after the LNP database has been imported.

-
19. Distribute the imported LNP database onto each TSM, which will also silence the LNP database alarms. Use one of the following methods:
- Method A loads the imported LNP database onto one TSM at a time by reloading each TSM.

This method allows the global title translation and LNP functions to continue running while the new LNP database is being loaded. When the TSM is reinitializing, its database goes temporarily out of service for the period of time that it takes to reload the database on the TSM. The time required to reload the database depends upon the size of the database and can take as long as 15 minutes for an LNP database containing 2,000,000 LNP subscriptions.

- Method B loads the imported LNP database onto all TSMs in the system by reinitializing all the TSMs at once.



CAUTION: This method not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations. Method A is the preferred method.

Method A: Perform steps a and b in this method for each TSM, one TSM at a time:

- a. Place the TSM out of service with the `rmv-card` command specifying the card location of the TSM. If there is only one TSM in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, Enter this command:

```
rmv-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been inhibited.
```

- b. Place the TSM back into service with the `rst-card` command with the card location of the TSM. This command loads the LNP database on the specified TSM. For this example, enter this command:

```
rst-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
Card has been allowed.
```

- c. When the TSM is placed back into service, the major alarm is silenced and UAM 0431, LNP database has been corrected, is generated. For this example, this message is generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

- d. Repeat steps a and b for the other TSMs in the system.

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

Method B: Enter the `init-card:appl=sccp` command.



CAUTION: This command initializes all the TSMs at once and not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations.

NOTE: A more graceful way of initializing the TSMs is to reroute all global title translation traffic, including LNP traffic, to the mate Eagle STP using the `inh-map-ss` command. The `inh-map-ss` command places the mated application subsystem out of service. When the mated application subsystem is out of service, all global title translation traffic, including LNP traffic, is rerouted to the mate Eagle STP.

The mated application subsystem must be inhibited with the `inh-map-ss` command before the TSMs are reinitialized with the `init-card:appl=sccp` command. After the `init-card:appl=sccp` command has finished executing and all the TSMs have reinitialized, place the mated application subsystem back into service with the `alw-map-ss` command.

When the imported database has been loaded onto each TSM, UAM 0431 is displayed for each TSM showing that the UAM 0429 has been cleared and the database on the TSM matches the database on the MASP. This is an example of UAM 0431.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

-
- 20.** Back up the new changes using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

22. If the measurement collection function was turned off when preparing the Database Backup removable cartridge (see step 12 on page 11-24 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading"), turn the measurement collection function back on either by enter this command:

```
chg-meas:collect=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

If the measurement collection function was not turned off, skip this step and step 23 and continue with step 24.

23. Verify with the `rtrv-meas-sched` command that the measurement collection function is turned on. This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = on
GTWYLSREPT      = both
-----
SYSTOT-STP      = on
SYSTOT-TT       = off
SYSTOT-STPLAN   = off
COMP-LNKSET     = on
COMP-LINK       = on
GTWY-STP        = on
GTWY-LNKSET     = on
MTCD-STP        = on
MTCD-LINK       = on
MTCD-STPLAN     = on
MTCD-LNKSET     = on
```

If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat steps 22 and 23. If the function is still off after repeating these steps, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

24. Change the terminal type of the terminals that were changed to `NONE` in step 6 on page 11-22 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading," to the terminal type `OAP` with the `chg-trm` command and the `type=oap` parameter. The terminal type is shown in the TYPE field in the `rtrv-trm` command output in step 3 on page 11-20 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading." Enter these commands.

```
chg-trm:trm=6:type=oap
```

```
chg-trm:trm=9:type=oap
```

The system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
CHG-TRM: MASP B - COMPLTD
```

25. Put the OAP terminals back into service with the `rst-trm` command. For this example, enter these commands:

```
rst-trm:trm=6
```

```
rst-trm:trm=9
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0  
Allow message sent to terminal
```

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0  
Command Completed.
```

26. Verify that the OAP terminals are in service with the `rept-stat-trm` command. In-service terminals are shown in the `rept-stat-trm` command output with the entry `IS-NR` in the `PST` field. This is an example of the possible output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0  
TRM   PST           SST           AST  
1     IS-NR           Active       -----  
2     IS-NR           Active       -----  
3     IS-NR           Active       -----  
4     IS-NR           Active       -----  
5     IS-NR           Active       -----  
6     IS-NR           Active       -----  
7     IS-NR           Active       -----  
8     IS-NR           Active       -----  
9     IS-NR           Active       -----  
10    IS-NR           Active       -----  
11    IS-NR           Active       -----  
12    IS-NR           Active       -----  
13    IS-NR           Active       -----  
14    IS-NR           Active       -----  
15    IS-NR           Active       -----  
16    IS-NR           Active       -----  
Command Completed.
```

If the `rept-stat-trm` command output shows that the OAP terminals are not in service, repeat steps 25 and 26. If the OAP terminals are still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

27. Back up the database using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.  
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.  
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.  
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

28. Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **n** is shown in the C field of the `rept-stat-db` output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:07:36 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
-----
FD BKUP Y      74 01-09-07 16:07:36 GMT Y      74 01-09-07 16:07:36 GMT
FD CRNT Y      106
MDAL 1117
-----
RD BKUP - - - - -

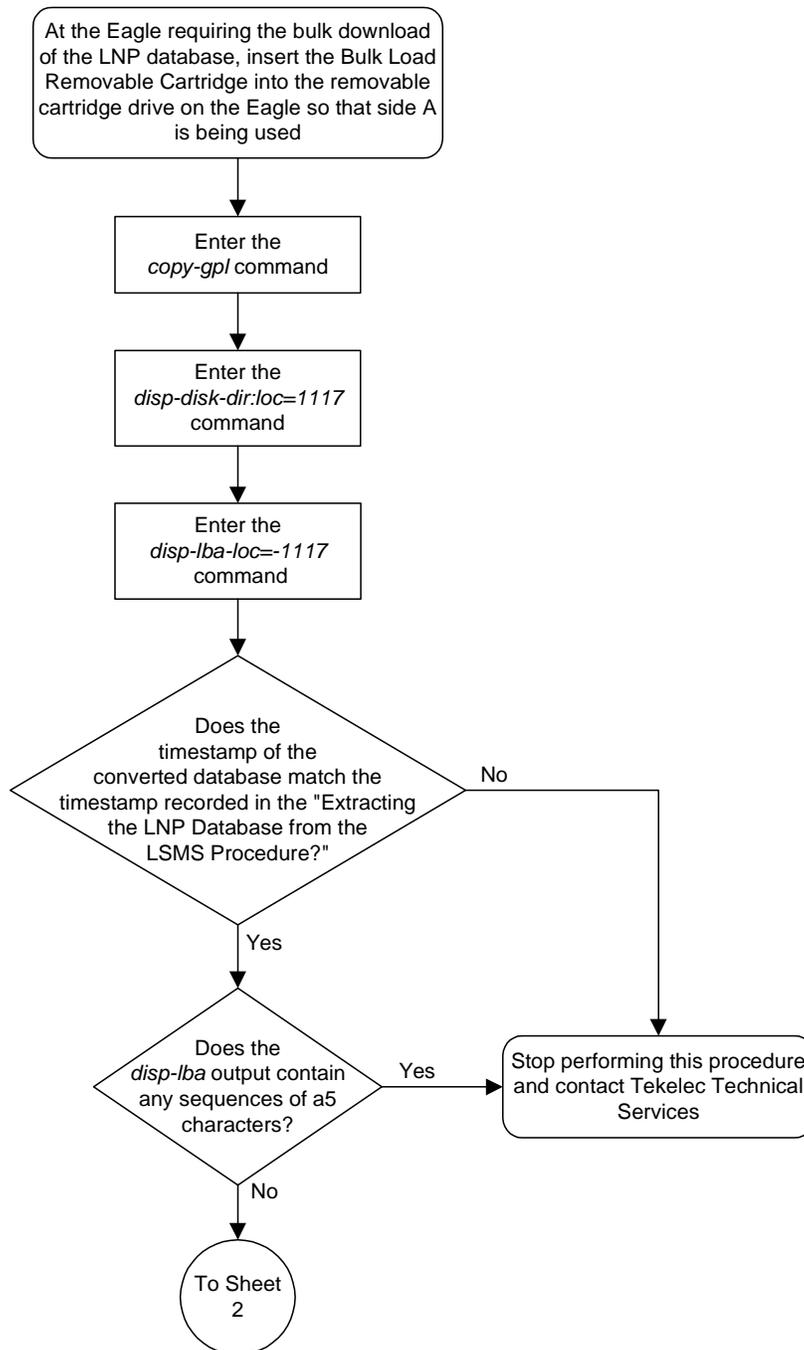
CARD/APPL  LOC  C  T  LEVEL    TIME LAST UPDATE  EXCEPTION
-----
SCCP      1101 Y N 106      01-09-07 16:07:36  -
GLS       1102 Y N 106      01-09-07 16:07:36  -
TDM-CRNT  1114 Y N 106      01-09-07 16:07:36  -
TDM-BKUP  1114 Y - 74       01-09-07 16:07:36  -
TDM-CRNT  1116 Y N 106      01-09-07 16:07:36  -
TDM-BKUP  1116 Y - 74       01-09-07 16:07:36  -
MDAL      1117 - - - - -
SS7ANSI   1201 Y N 106      01-09-07 15:37:36  -
SS7ANSI   1202 Y N 106      01-09-07 15:37:36  -
SS7ANSI   1203 Y N 106      01-09-07 15:37:36  -
SS7ANSI   1204 Y N 106      01-09-07 15:37:36  -
CCS7ITU   1205 Y N 106      01-09-07 15:37:36  -
SCCP      1206 Y N 106      01-09-07 16:07:36  -
SS7GX25   1207 Y N 106      01-09-07 15:37:36  -
SS7GX25   1208 Y N 106      01-09-07 15:37:36  -
SCCP      1213 Y N 106      01-09-07 16:07:36  -
SCCP      1214 Y N 106      01-09-07 16:07:36  -
EBDABLM   1215 Y N 106      01-09-07 16:07:36  -
STPLAN    1216 Y N 106      01-09-07 16:07:36  -
EBDADCM   1217 Y N 106      01-09-07 16:07:36  -
ATMANSI   1301 Y N 106      01-09-07 16:07:36  -
STPLAN    1304 Y N 106      01-09-07 16:07:36  -
SS7ANSI   1305 Y N 106      01-09-07 16:07:36  -
SS7GX25   1308 Y N 106      01-09-07 16:07:36  -
SS7GX25   1314 Y N 106      01-09-07 16:07:36  -
STPLAN    1317 Y N 106      01-09-07 16:07:36  -
ATMANSI   1318 Y N 106      01-09-07 16:07:36  -
EMDC      2107 Y N 106      01-09-07 16:07:36  -
EMDC      2111 Y N 106      01-09-07 16:07:36  -
```

If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 27 and 28. If the databases are still not coherent after repeating these, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

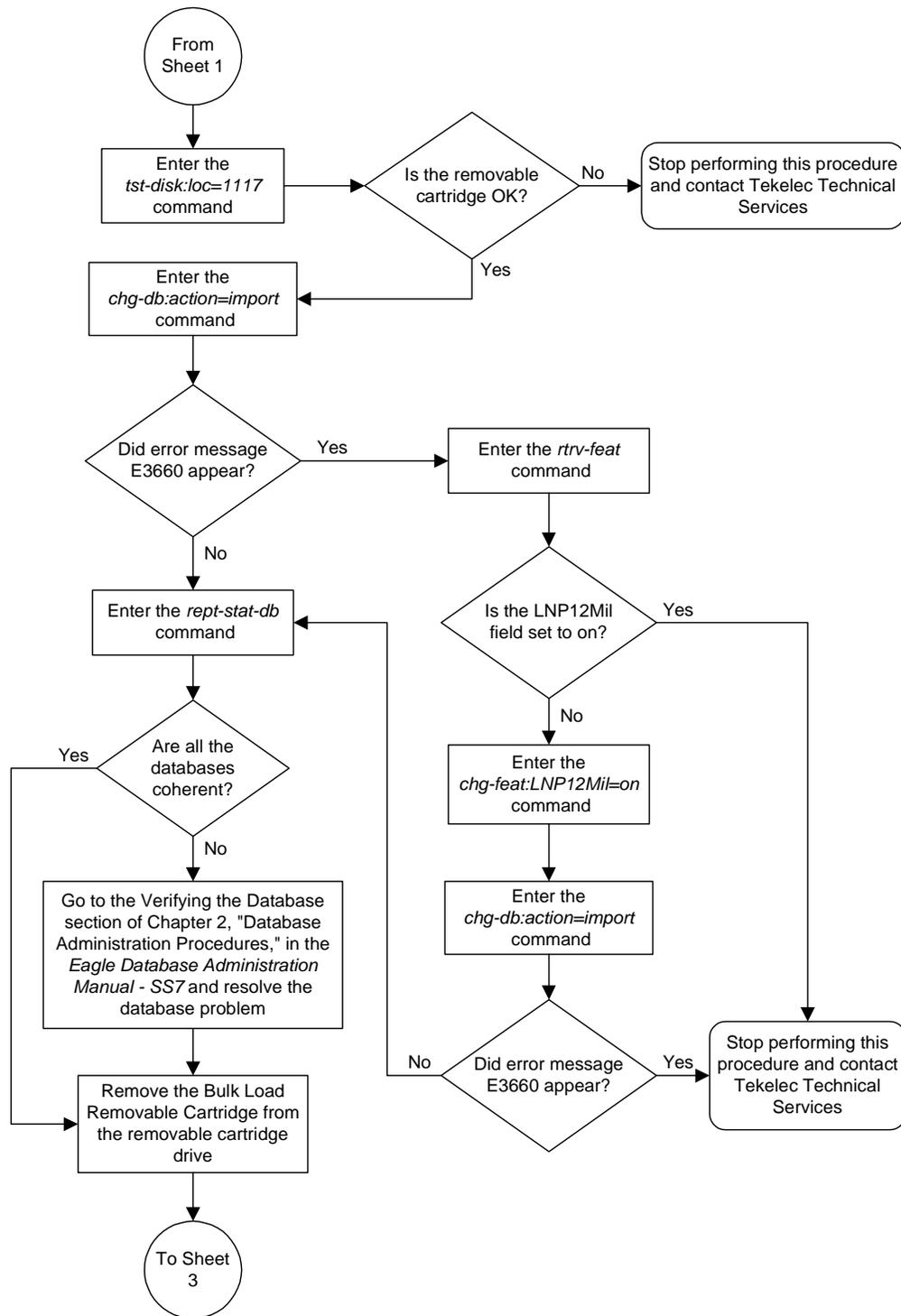
You have now completed this procedure.

Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 1 of 13)

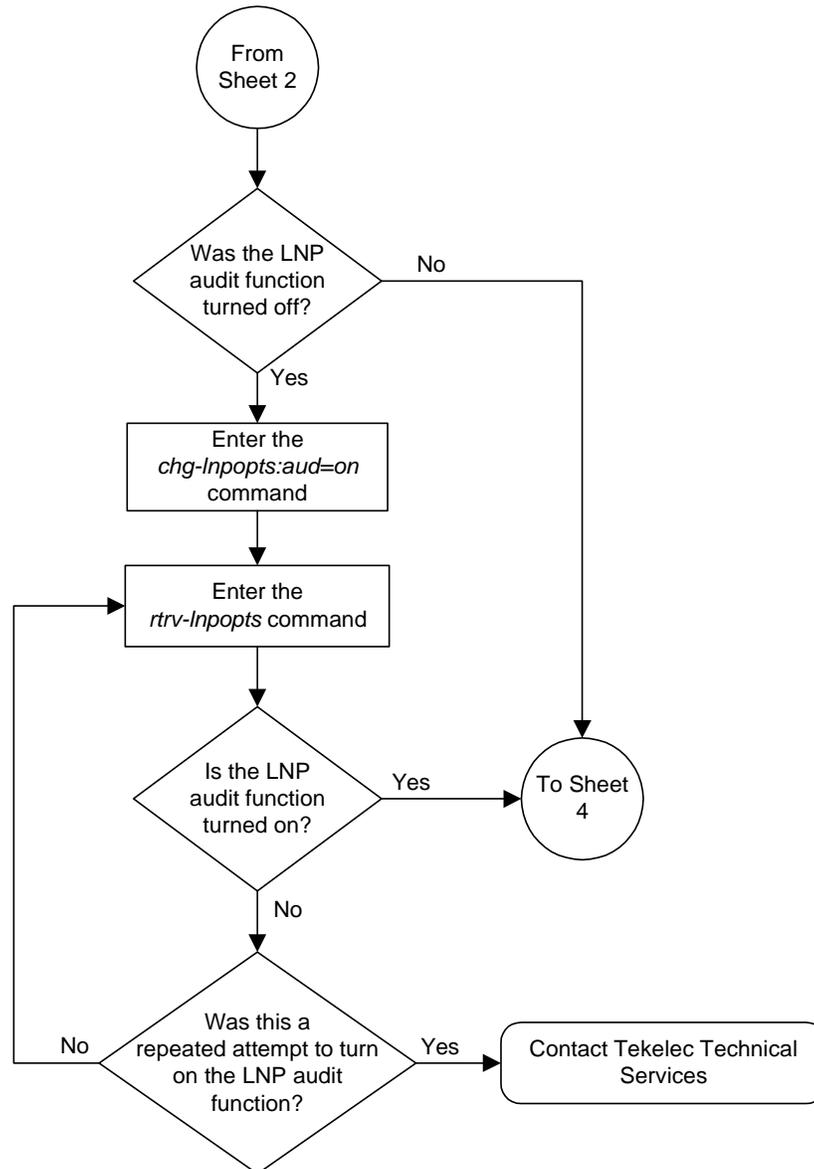
NOTE: Before executing this procedure, make sure you have purchased the LNP 12 Million Support feature. If you are not sure whether you have purchased the LNP 12 Million Support feature, contact your Tekelec Sales Representative or Account Representative.



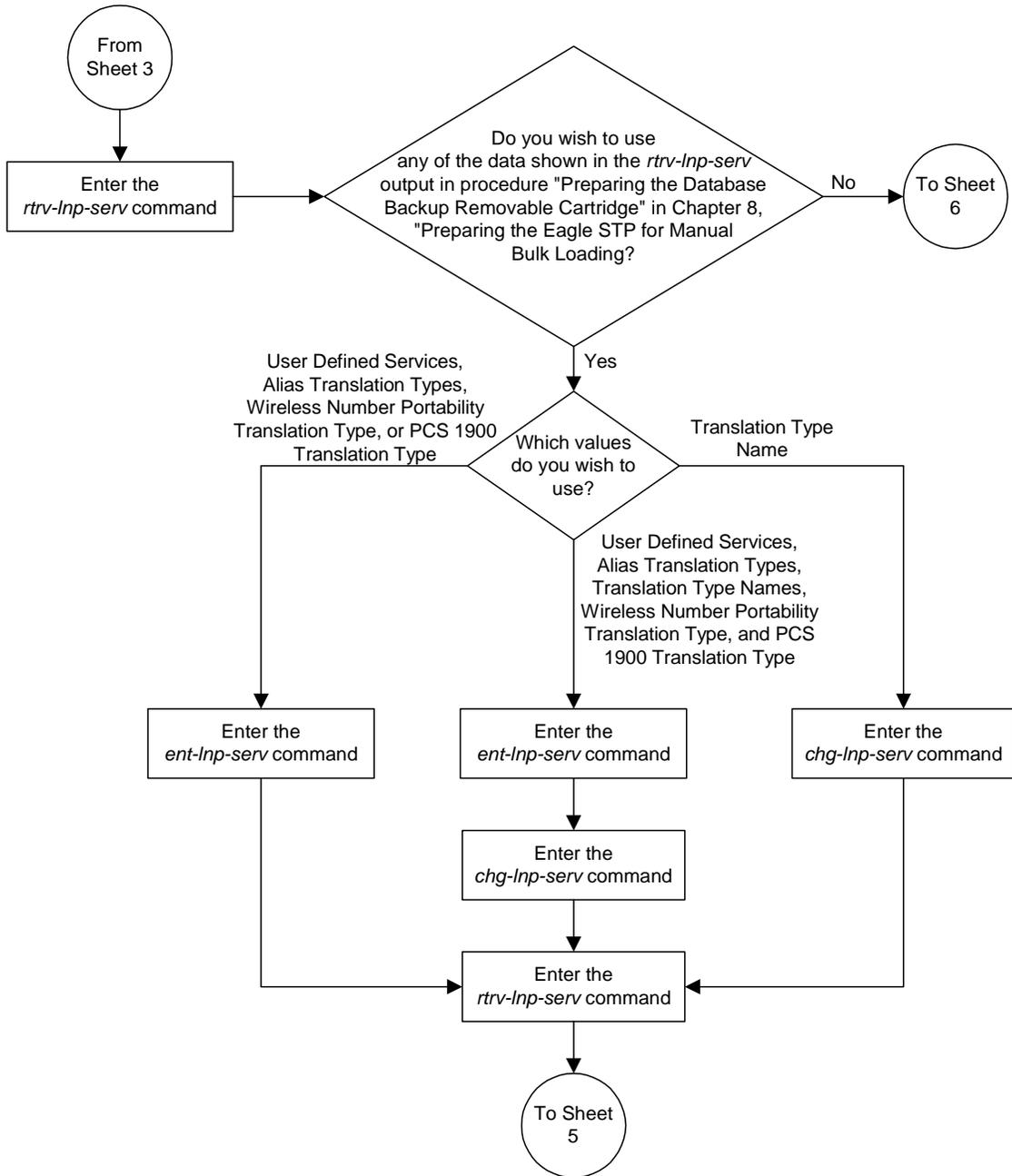
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 2 of 13)



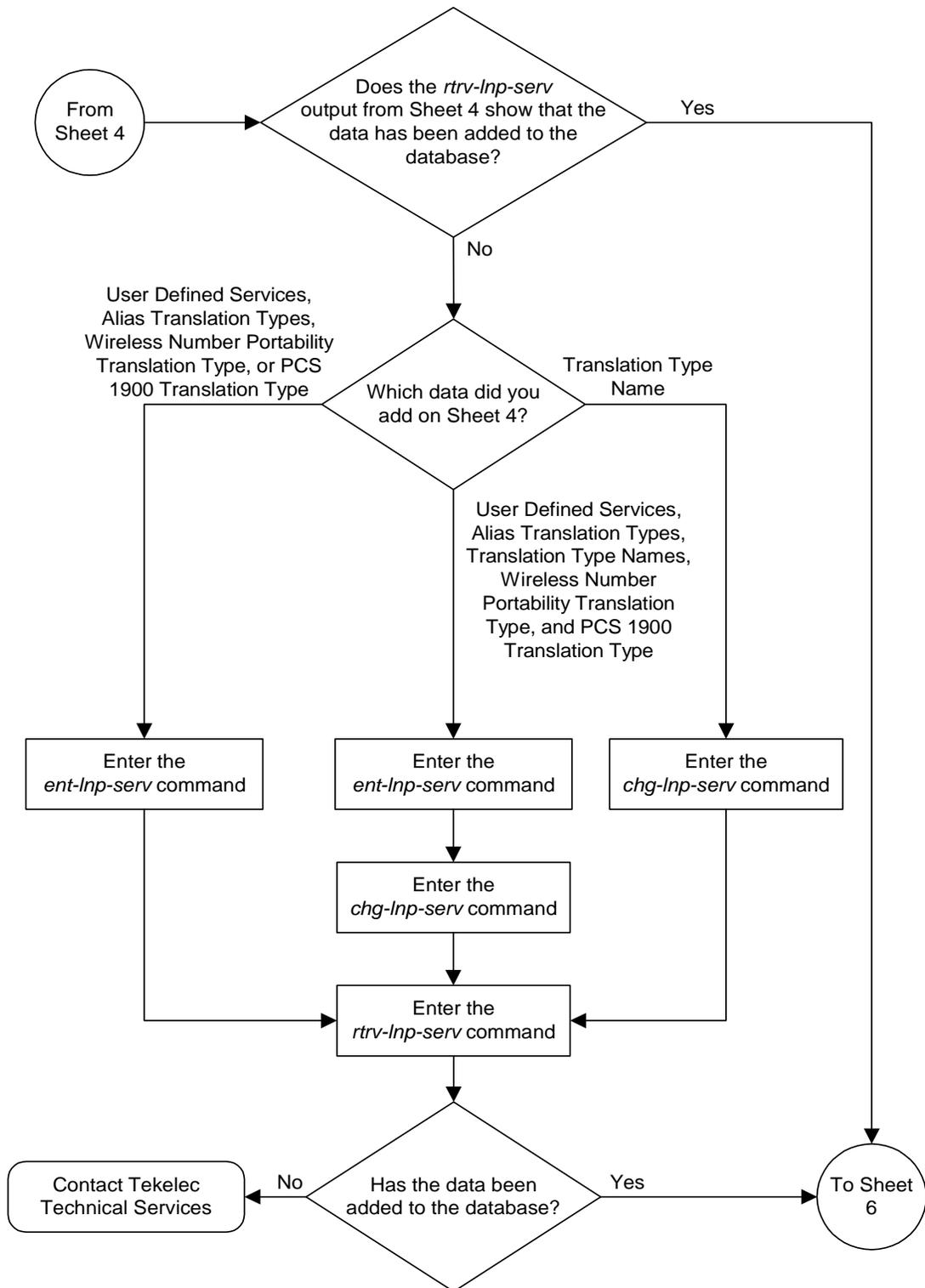
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 3 of 13)



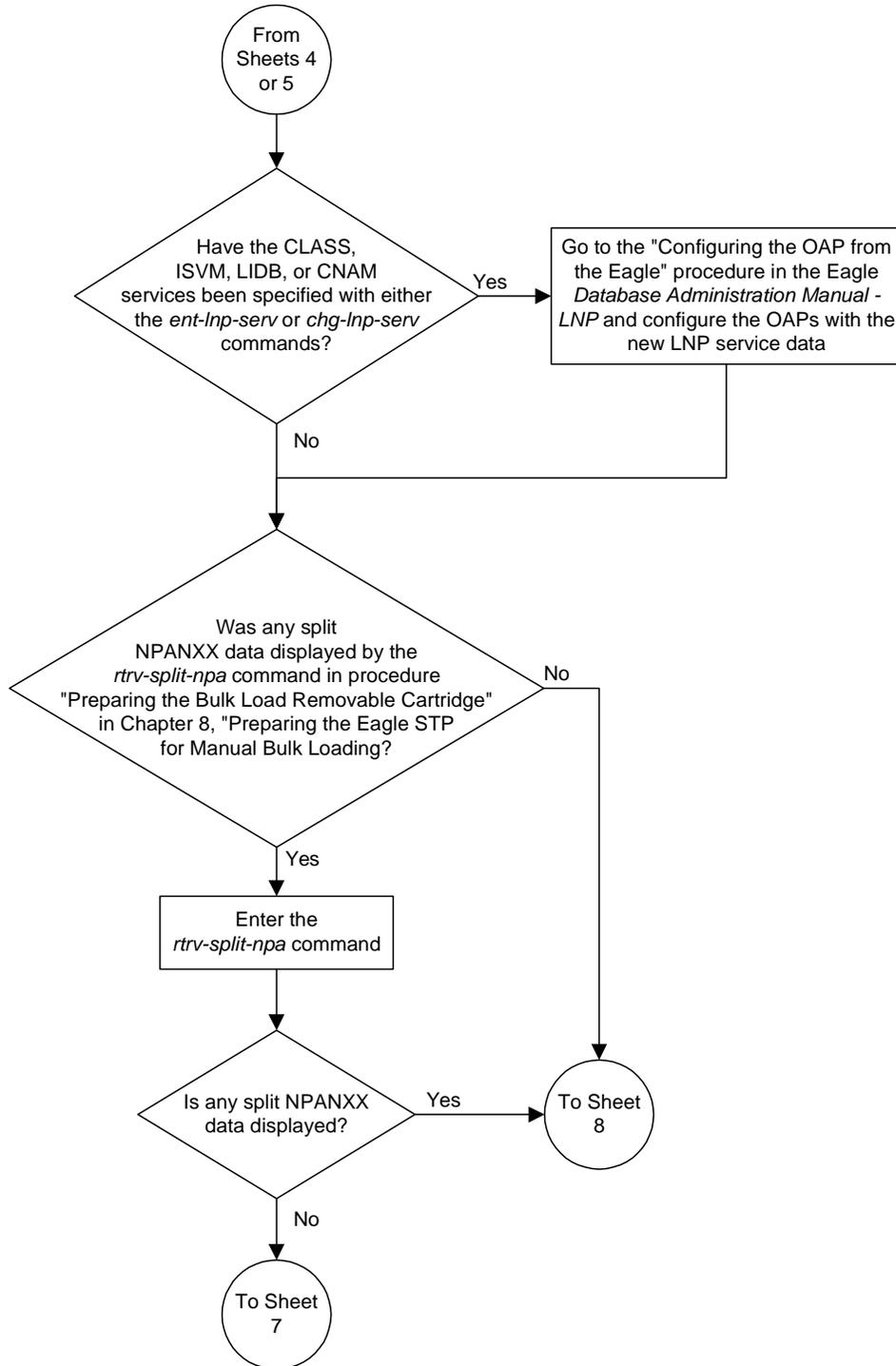
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 4 of 13)



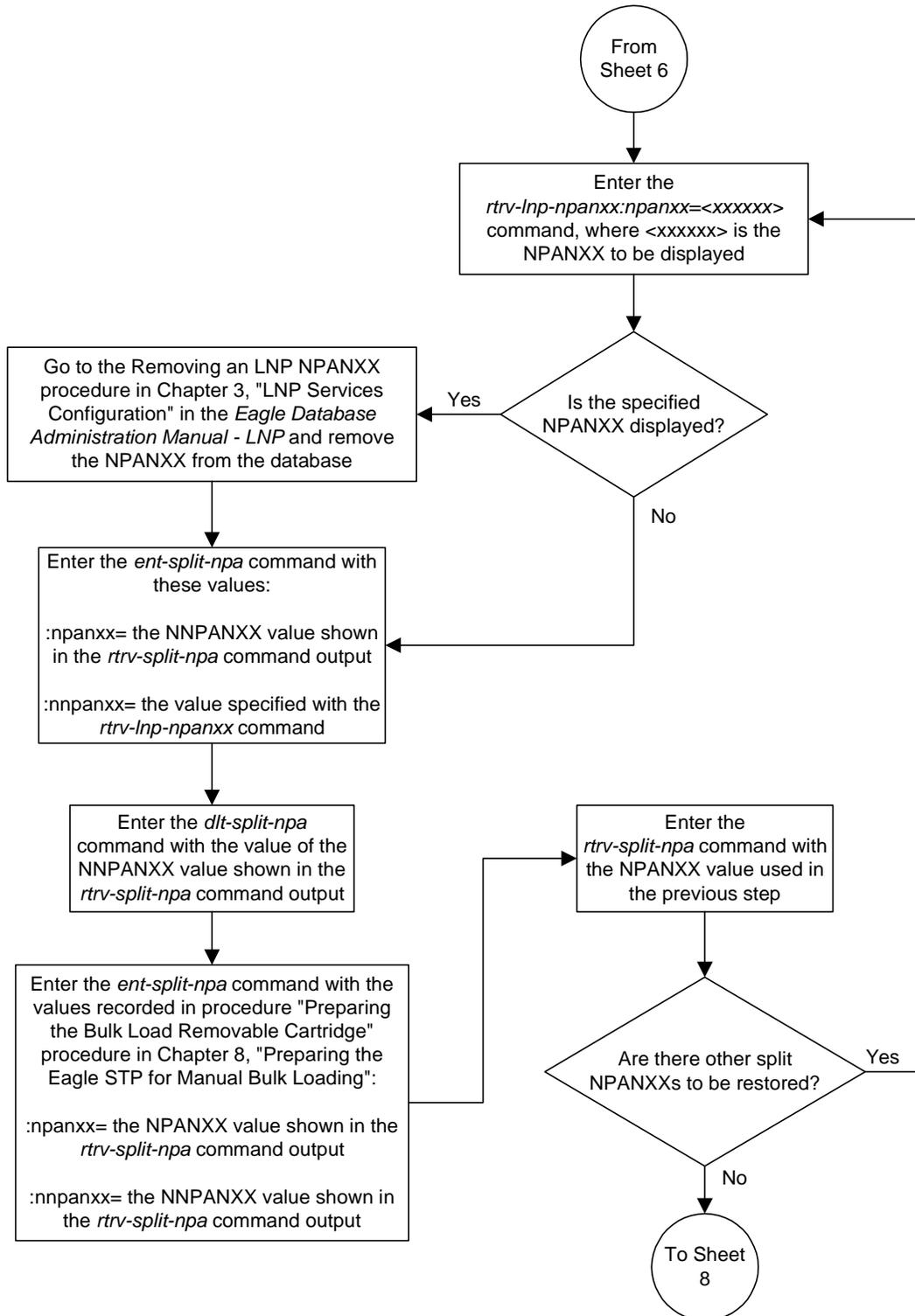
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 5 of 13)



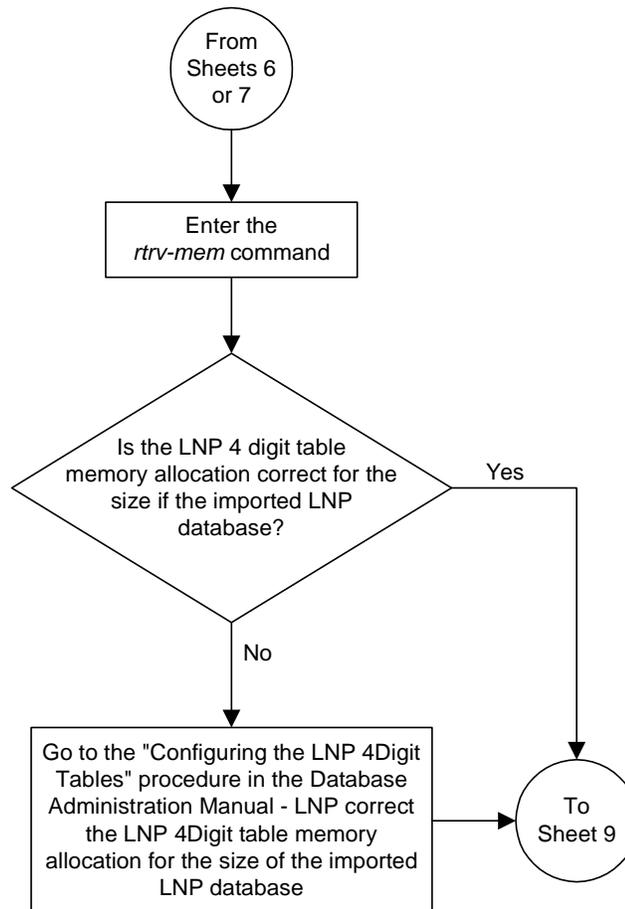
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 6 of 13)



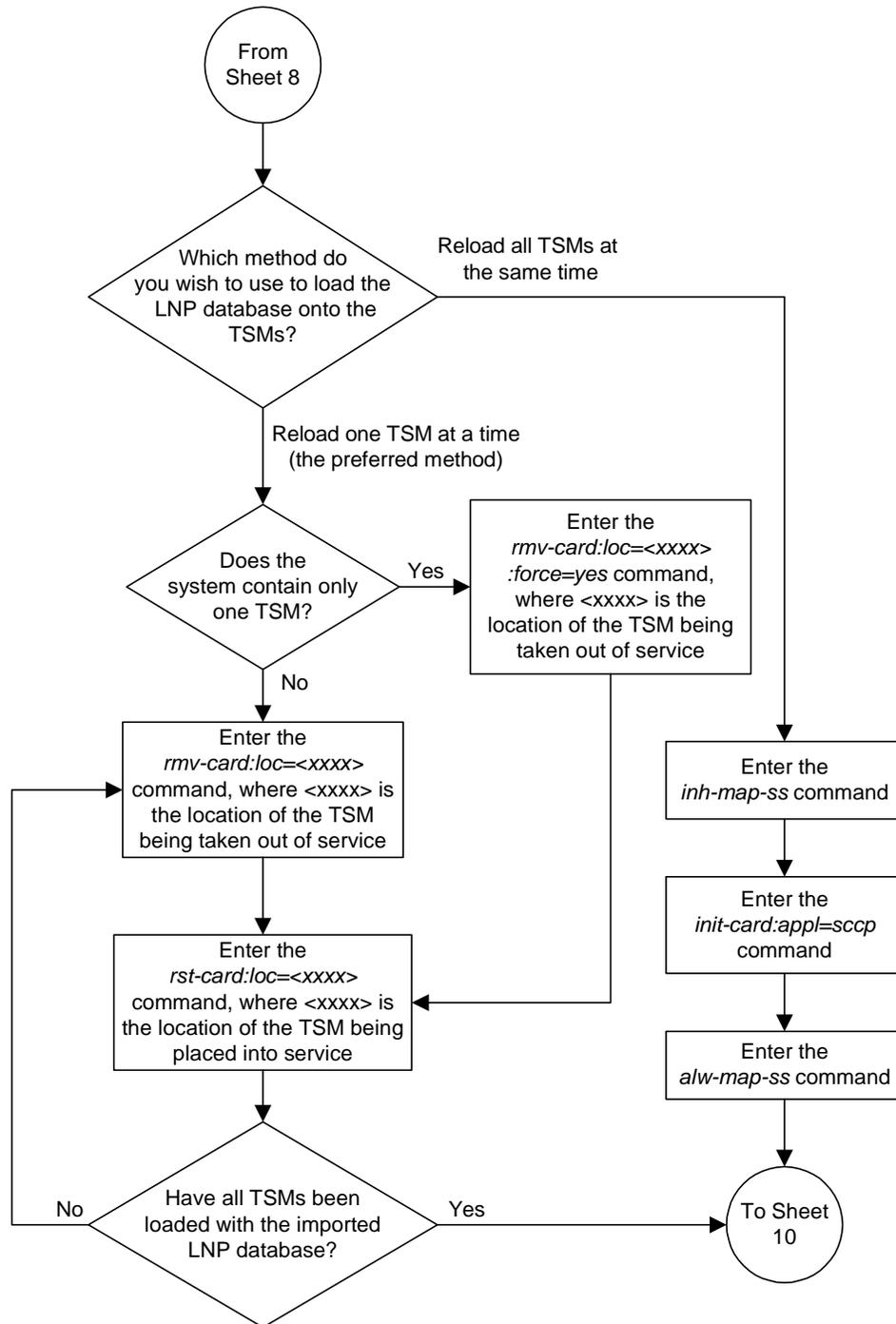
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 7 of 13)



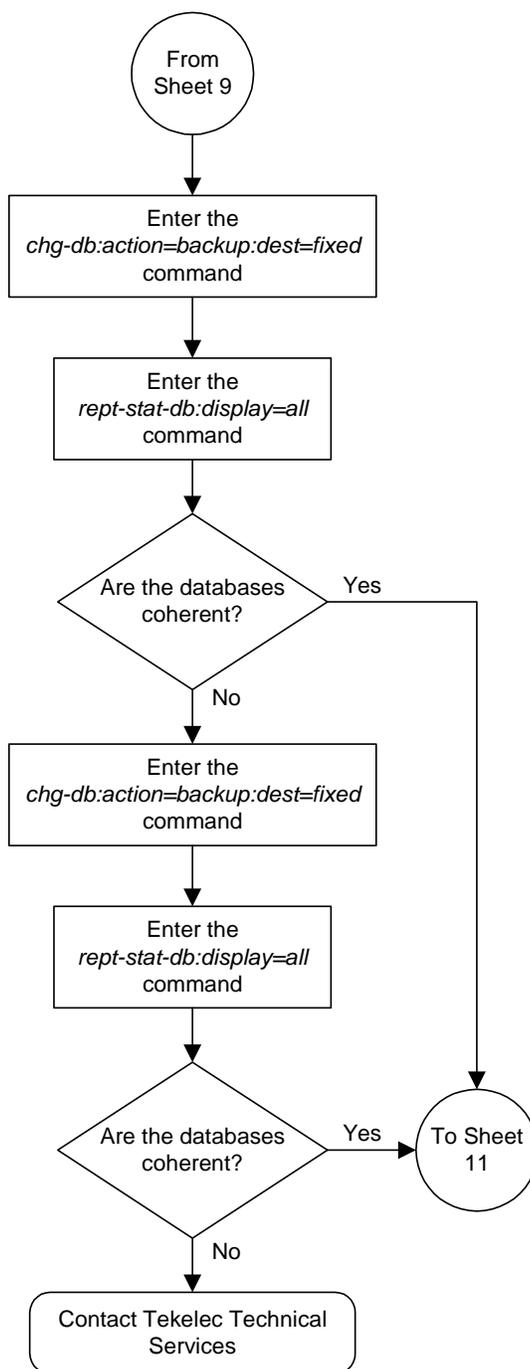
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 8 of 13)



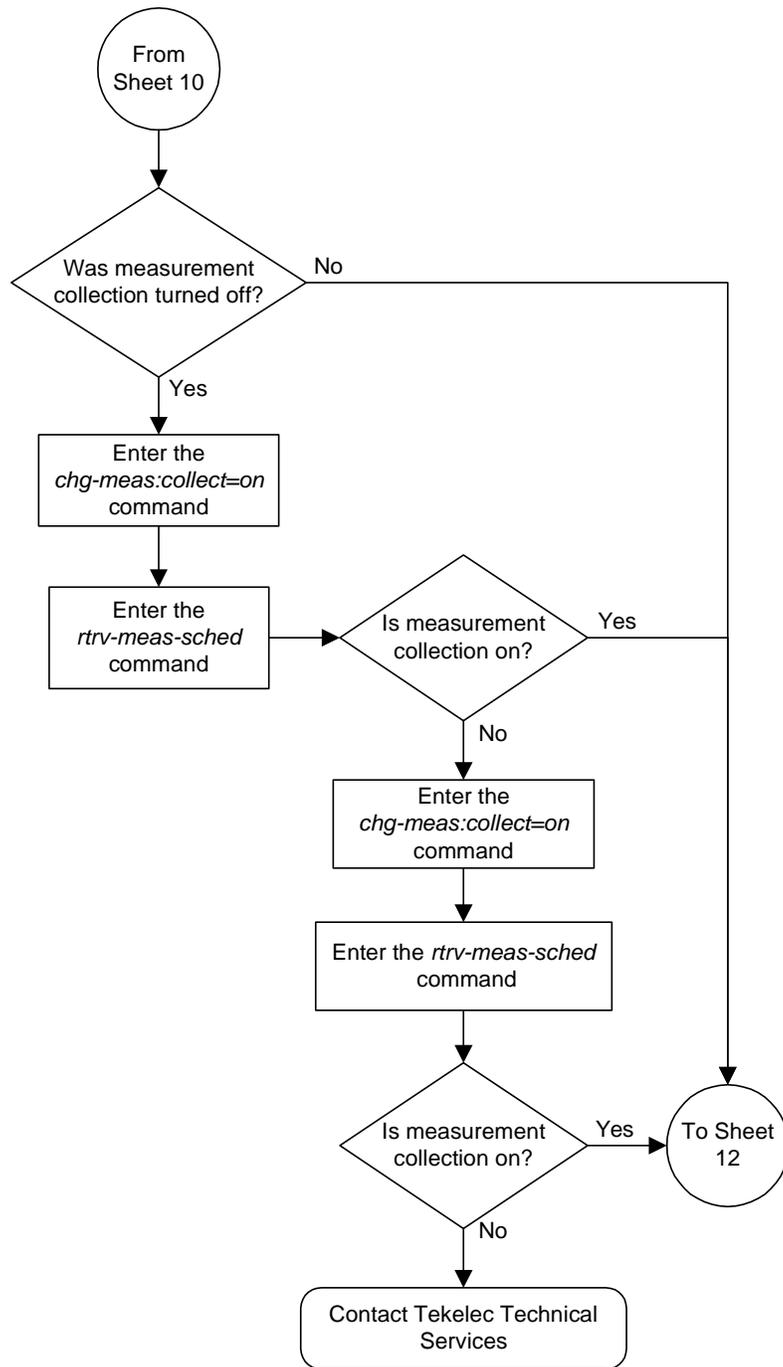
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 9 of 13)



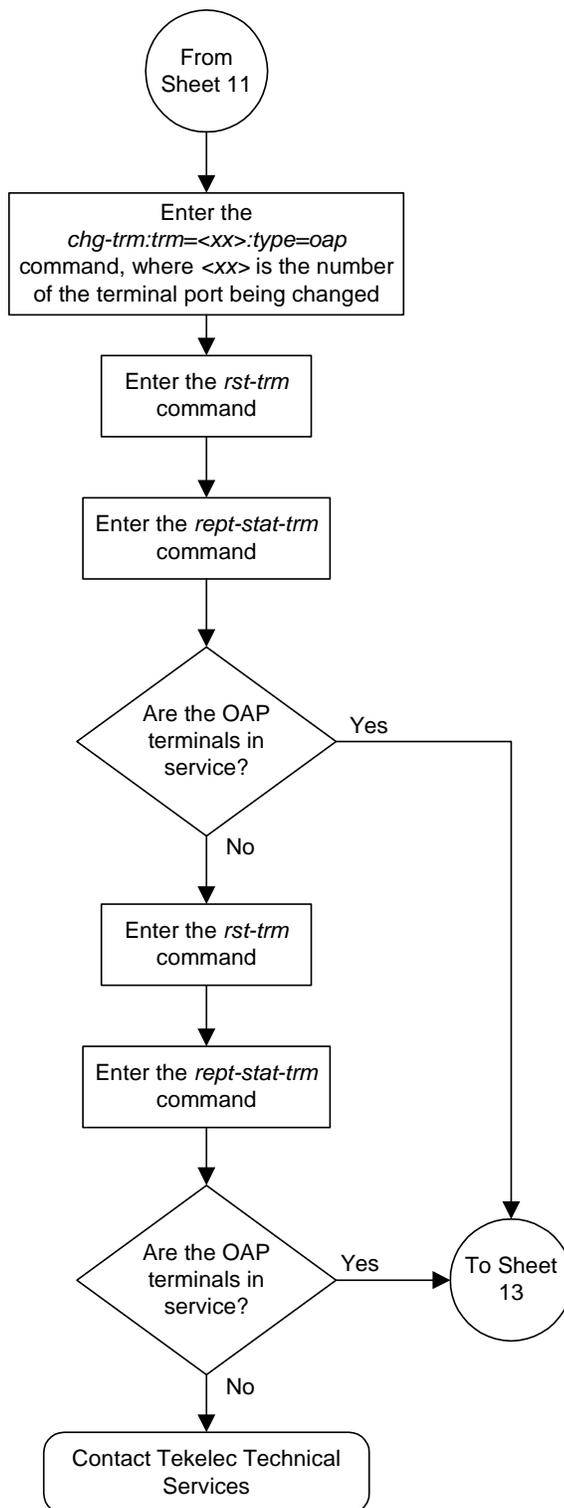
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 10 of 13)



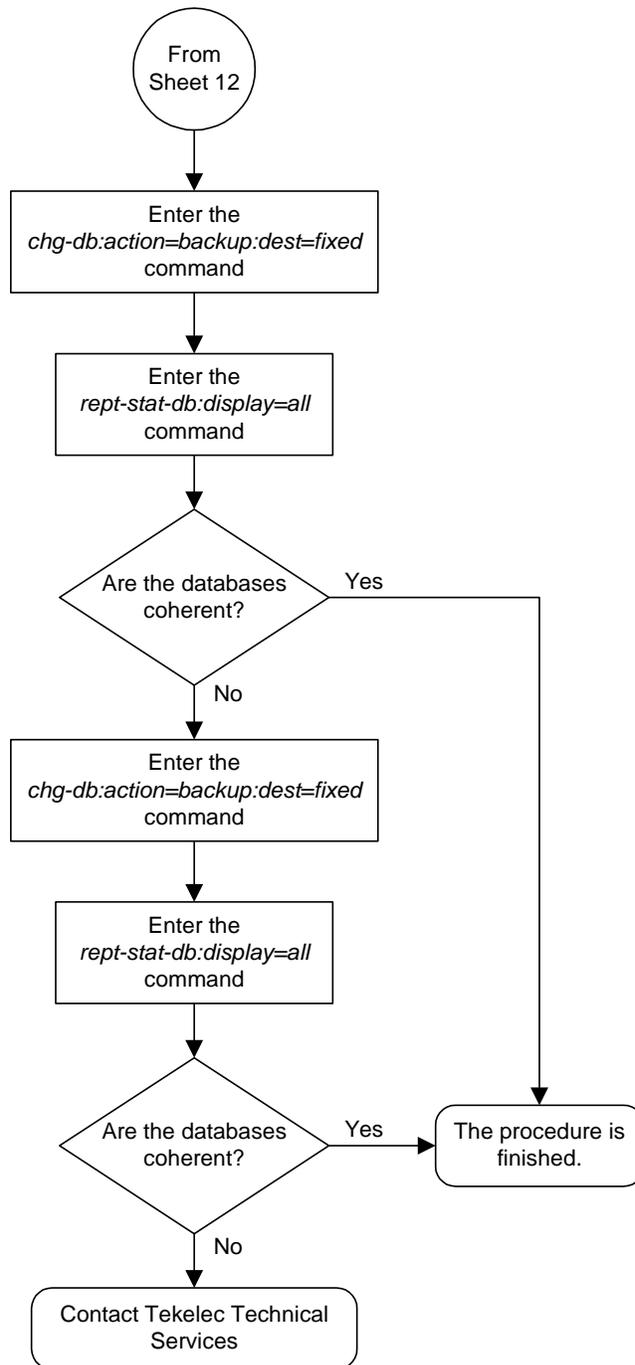
Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 11 of 13)



Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 12 of 13)



Flowchart 10-2. Loading the LNP Database onto the Eagle STP (Sheet 13 of 13)



11

Preparing the Network Element for Manual Bulk Loading

Introduction.....	11-2
Terminal and User ID Requirements	11-2
Removable Cartridges	11-4
Labeling the Removable Cartridges	11-4
Write-Enabling the Removable Cartridge.....	11-4
Inserting the Removable Cartridge.....	11-5
Removing the Removable Cartridge	11-6
Preparing Removable Cartridges for LSMS-to-NE Bulk Loading	11-6
Preparing the Bulk Load Removable Cartridge.....	11-6
Preparing the Database Backup Removable Cartridge.....	11-19
Preparing Removable Cartridges for NE-to-NE Bulk Loading	11-30
Preparing the Bulk Load Removable Cartridges.....	11-30
Preparing the Database Backup Removable Cartridge.....	11-41

Introduction

NOTE: This chapter applies only for network element LNP databases that contain 6 million or fewer ported numbers.

Manual bulk loading is the process of downloading the complete LNP database from the LSMS or mated network element to a removable cartridge, loading the database to the fixed disks of the network element requiring the bulk load, and distributing the database to all Translation Service Modules (TSMs) in the network element system. The downloaded LNP database fully replaces the LNP database at the network element.

The manual bulk loading process requires access from a terminal to the database and up to three removable cartridges. Up to two cartridges are prepared to be loaded with the new LNP database; the other cartridge is prepared to be loaded with the system database of the original network element in case a backout from the bulk loading process is required.

This chapter describes how to prepare the Eagle STP for manual bulk loading by setting the required terminal and user ID requirements as well as handling and preparing the removable cartridges to store the LNP database or the system database. The removable disks must be prepared prior to manual bulk loading.

Manual bulk loading of the LNP database is described in these chapters:

- Chapter 10, “Manual LSMS-to-NE Bulk Loading”
- Chapter 12, “Manual NE-to-NE Bulk Loading”

Backing out from a manual bulk loading procedure is described in this chapter:

- Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures”

Terminal and User ID Requirements

The following STP command classes must be assigned to the terminal and the user ID to be used for any of the manual bulk loading procedures:

- Database Administration
- Debug
- Link Maintenance
- LNP Basic
- LNP Database Administration
- LNP Subscription
- Program Update
- System Maintenance

Preparing the Network Element for Manual Bulk Loading

The command input class assignments for the terminals can be verified using the `rtrv-secu-trm` command. The command class assignments for the user ID that is currently logged onto a specific terminal can be verified using the `rtrv-user` command. The command class assignments for all user IDs, or specific user IDs, whether they are logged on or not, can be verified using the `rtrv-secu-user` command.

To change the command input class assignments for terminals, go to procedure “Changing Terminal Command Class Assignments” in Chapter 4 of the *Eagle STP Database Administration Manual - System Management*. To change the command input class assignments for user IDs, go to procedure “Changing User Information” procedure in Chapter 4 of the *Eagle STP Database Administration Manual - System Management*.

For the procedures required in this chapter to prepare the Eagle STP, the terminal being used must be assigned to these unsolicited message output groups:

- Database Administration
- Link Maintenance
- LNP Database Administration
- LNP Subscription
- Program Update
- System Maintenance

The unsolicited output message group assignments for the terminals can be verified using the `rtrv-trm` command.

To change the unsolicited output message group assignments, go to procedure “Changing Terminal Characteristics” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP*.

If more information is needed on any of the Eagle STP commands, refer to the *Eagle STP Commands Manual*.

The Global Title Translation (GTT) feature and the LNP feature must be on (`gtt=on` and `lnp=on`). Verify the feature status by entering the `rtrv-feat` command. To turn on one or both of these features, go to procedure “Activating the LNP Feature” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP*.

NOTE: Before turning on the Global Title Translation (GTT) feature and the Local Number Portability (LNP) feature, make sure you have purchased these features. If you are not sure whether you have purchased the LNP and GTT features, contact your Tekelec Sales or Account Representative.

Once a feature has been turned on with the `chg-feat` command, the feature cannot be turned off.

Removable Cartridges

The Eagle STP currently uses a 2.3 Gbyte removable cartridge for its removable cartridge drive. The drive is located on the Maintenance Disk and Alarm (MDAL) card in slot location 1117 of the control shelf. Manual bulk loading requires up to three removable cartridges, up to two Bulk Load removable cartridges and one Database Backup removable cartridge.

This section describes how to label, write-enable, insert, and remove a removable cartridge.

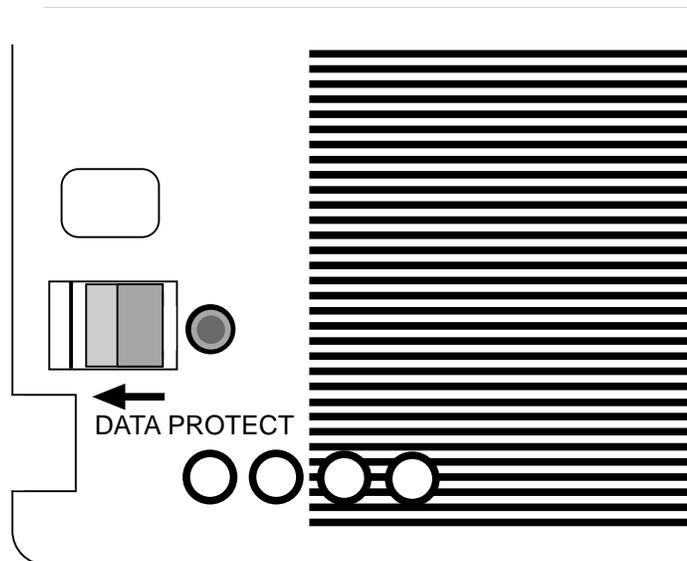
Labeling the Removable Cartridges

Avoid any confusion over the content or purpose of a removable cartridge by clearly labeling each cartridge. For example, label the cartridges to be used in manual bulk loading procedures as Bulk Load removable cartridge and Database Backup removable cartridge. Label the removable cartridges with an adhesive label affixed to the cartridge or with a marker capable of writing on the surface of the cartridge.

Write-Enabling the Removable Cartridge

The removable cartridges used with the manual bulk load procedures must be write-enabled. To write enable the removable cartridge, slide the tab in the lower left corner of the cartridge to the right, the opposite direction of the arrow, until it snaps into place. The hole to the right of the tab should be filled with a red dot. See Figure 11-1.

Figure 11-1. Write-Enabled Removable Cartridge



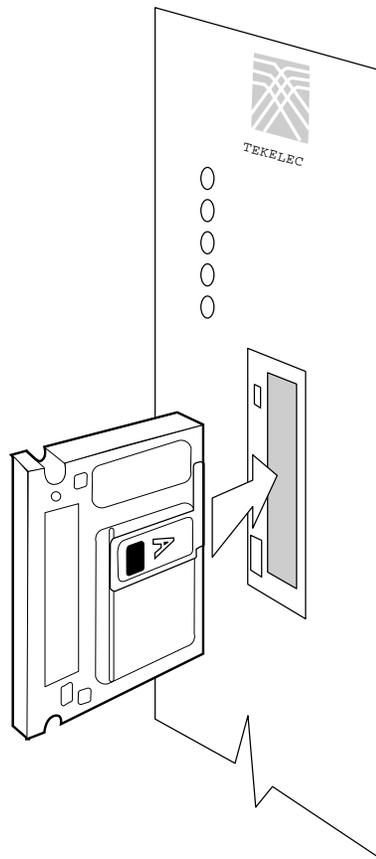
Preparing the Network Element for Manual Bulk Loading

Inserting the Removable Cartridge

The removable cartridge is two-sided with each side designated as side A or side B. The removable cartridge drive can access only one side of the cartridge at a time; which side is accessed depends on how the cartridge is inserted into the removable cartridge drive. The side indicator is located on the shutter on each side of the removable cartridge.

To insert the removable cartridge to access side A, insert the removable cartridge into the cartridge insertion slot of the drive with the indicator for side A on the shutter facing to the right side of the drive and away from the side with the LED and the eject button, as shown in Figure 11-2.

Figure 11-2. Inserting the Removable Cartridge to Use Side A



To insert the removable cartridge to access side B, insert the removable cartridge into the cartridge insertion slot of the drive with the indicator for side A on the shutter facing to the left side of the drive and toward the side with the LED and the eject button.

When the removable cartridge is inserted into the removable cartridge drive, the LED is yellow while the cartridge is spinning up. When the cartridge is finished spinning up and ready to use, the LED is green.

Removing the Removable Cartridge

Remove a removable cartridge from the removable cartridge drive while the LED is green. If the LED is yellow, the drive is being accessed by the Eagle STP and the cartridge cannot be removed from the drive. Wait until the LED turns green before attempting to remove the cartridge from the drive. When the LED is green, push the eject button on the removable cartridge drive. While the cartridge is being ejected from the drive, the LED turns yellow. The LED is off when the cartridge is fully ejected from the drive. The cartridge can then be removed from the drive.

Preparing Removable Cartridges for LSMS-to-NE Bulk Loading

Manual bulk loading of the LNP database from the LSMS to the network element requires two removable cartridges, a Bulk Load removable cartridge and a Database Backup removable cartridge.

The Bulk Load removable cartridge is used to extract the LNP database from the LSMS and load this database onto the network element with the unsynchronized LNP database.

The Database Backup removable cartridge is used in a backout procedure to restore the network element to the configuration it had before a bulk download procedure was attempted. The backout procedure requiring a removable cartridge is described in section “Backing Out Using the Database Backup Removable Cartridge” in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures.”

The following two procedures show how to prepare these removable cartridges for the manual LSMS-to-NE bulk loading of the LNP database.

Preparing the Bulk Load Removable Cartridge

Use this procedure to prepare a removable cartridge for manual bulk loading from the LSMS to the Eagle STP. This procedure is performed at the Eagle STP that requires the bulk load of the LNP database.

The procedures for extracting the LNP database from the LSMS and loading the LNP database onto the Eagle STP are described in the following sections of Chapter 10, “Manual LSMS-to-NE Bulk Loading”:

- “Extracting the LNP Database from the LSMS” procedure on page 10-4
- “Loading and Distributing the LNP Database at the Eagle STP” procedure on page 10-13

Procedure

1. At the Eagle STP, insert the Bulk Load removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4” and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.

-
2. Verify that the GTT and LNP features are turned on (`gtt=on` and `lnp=on`) by entering the `rtrv-feat` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
EAGLE FEATURE LIST
```

GTT	= on	GWS	= off	NRT	= off
X25G	= off	LAN	= off	CRMD	= off
SEAS	= off	LFS	= off	MTPRS	= off
LNP	= on	FAN	= off	DSTN4000	= off
WNP	= off	CNCF	= off	LNP12MIL	= off
TLNP	= off	SCCPCNV	= off	TCAPCNV	= off
X252000	= off	PLNP	= off	NCR	= off
ITUMTPRS	= off	SLSOCB	= off	EGTT	= off
IPISUP	= off	DYNRTK	= off	PVGTT	= off
PRFXDLGT	= off	MPC	= off	INP	= off
ITUDUPPC	= off				

If both features are turned on, go to step 3.

To turn on the LNP feature or to turn on the LNP and the GTT features, refer to procedure “Activating the LNP Feature” in the *Database Administration Manual - LNP*. Then return to step 3.

Preparing the Network Element for Manual Bulk Loading

3. Enter the `rept-stat-db:display=version` command and examine its output to verify the characteristics described in the following substeps. This is an example of the output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP  C  LEVEL      TIME LAST BACKUP
-----
FD BKUP  Y          35 01-09-06 10:19:18 GMT  Y          35 01-09-06 10:19:18 GMT
FD CRNT  Y          106                    Y          106
      MDAL 1117
      -
RD BKUP  Y          247 01-09-02 14:29:03 GMT

CARD/APPL  LOC  C  T  LEVEL      TIME LAST UPDATE  VERSION      STATUS
-----
TDM-CRNT   1114 Y  N  106      01-09-06 23:15:06  026-000-500  NORMAL
LNP
TDM-BKUP   1114 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
LNP
TDM-CRNT   1116 Y  N  106      01-09-06 23:47:05  026-000-500  NORMAL
LNP
TDM-BKUP   1116 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
LNP
MDAL      1117 Y  -  247      01-09-02 14:29:03  026-000-500  NORMAL
LNP
```

- a. Verify that the database status shows **OK**.
- b. Verify that the current databases (FD CRNT for both the ACTV TDM and the STDBY TDM) are coherent. A database is shown as coherent by the letter **Y** displayed in the C field of the upper part of the sample output. If the current databases are not coherent, shown by the letter **N** in the C field, go to procedure "Verifying the Database" in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.
- c. Verify that version numbers of the databases, as shown in the VERSION column, on the active fixed disk (TDM-CRNT at location 1116) and the Bulk Load removable cartridge (MDAL) are the same. (The location number of the active fixed disk is shown by the TDM field that has (**ACTV**) listed next to it in the upper part of the output. Next, look for the version number of the TDM-CRNT that has that location number.)

If the database version on the Bulk Load removable cartridge is the same as the database version of the active fixed disk, go to step 7.

If the database versions are not the same, the Bulk Load removable cartridge must be formatted. In this example, they are not the same. Go to step 4.

Preparing the Network Element for Manual Bulk Loading

4. Verify the integrity of the removable cartridge using the `tst-disk` command and specifying the location of the MDAL card. Enter this command:

```
tst-disk:loc=1117
```

If the removable cartridge passes the tests performed by the `tst-disk` command, the output shows the number of retries as zero (0) and the number of errors as zero (0). This is an example of the possible output:

```
rlghncxa03w 01-09-07 09:39:05 GMT Rel 28.0.0
TST-DISK results for TDM 1117
Total LBAs = 524286    LBA size = 512
Retries    = 0      Errors    = 0
```

If the number of errors or number of retries is a number other than zero (0), stop performing this procedure and contact Tekelec Technical Services. See “Technical Services and Support” on page 1-14.

5. Format the Bulk Load removable cartridge for system data by entering the `format-disk:type=system` command.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 09:39:05 GMT Rel 28.0.0
Format-disk of system removable cartridge started.
Extended processing required, please wait.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
Format-disk of system removable cartridge completed.
```

NOTE: If the removable cartridge to be formatted contains Eagle STP data, the `force=yes` parameter must be specified with the `format-disk` command. All data on the removable cartridge will be lost.

This command takes approximately 31 minutes to execute. It may take longer depending on other system activity that is in progress when this command is entered.

6. Verify the integrity of the removable cartridge that was formatted in step 5 using the `tst-disk` command and specifying the location of the MDAL card. Enter this command:

```
tst-disk:loc=1117
```

If the removable cartridge passes the tests performed by the `tst-disk` command, the output should show the number of retries as zero (0) and the number of errors as zero (0), as shown in the following output example.

```
rlghncxa03w 01-09-07 09:39:05 GMT Rel 28.0.0
TST-DISK results for TDM 1117
Total LBAs = 524286    LBA size = 512
Retries    = 0    Errors    = 0
```

If the number of errors or number of retries is a number other than zero (0), stop performing this procedure and contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

-
7. Copy the approved GPLs and the system release table from the active fixed disk to the Bulk Load removable cartridge with the `copy-gpl` command.

During command execution, these messages appear:

```
rlghncxa03w 01-09-07 14:50:46 GMT Rel 28.0.0
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

-
8. Back up the database to the Bulk Load removable cartridge using the `chg-db:action=backup:dest=remove` command. Perform this step so you can further verify the correct formatting of the cartridge as shown in step 10.

After successful completion of this command, the system returns the following output:

```
BACKUP (REMOVABLE) : MASP B - Backup starts on active MASP.
BACKUP (REMOVABLE) : MASP B - Backup to removable cartridge complete.
```

Preparing the Network Element for Manual Bulk Loading

9. Display the files on the Bulk Load removable cartridge using the `disp-disk-dir:loc=1117` command.

In your output, look for the LBA value of the LNP_STAT.BKP table (file) shown in the LBA field. The area is indicated in bold in the following output example. Record the LBA value of the LNP_STAT.BKP table. You will use the LBA value in step 10.

```
rlghncxa03w 01-09-07 15:52:04 GMT Rel 28.0.0
DISP-DISK-DIR, Loc=1117, Device = REMOVE, Dir = :\  

Filename Ext      Length  Last Modified  Cluster  LBA  

DMS        CFG      16384  02-07-98 17:29      2        180  

TOAM       ELF     3145728  02-07-98 17:29      4        212  

TSS7       ELF     1048576  02-07-98 17:29     388     6356  

TGX25      ELF     1048576  02-07-98 17:29     516     8404  

TCCS7ITU   ELF     1048576  02-07-98 17:29     644    10452  

TSCCP      ELF     1048576  02-07-98 17:29     772    12500  

TCDU       ELF     1048576  02-07-98 17:29     900    14548  

TGLS       ELF     1048576  02-07-98 17:29    1028    16596  

TSLAN      ELF     1048576  02-07-98 17:29    1156    18644  

TIMT       ELF     152576  02-07-98 17:29    1284    20692  

DBSTAT     BKP        46  02-07-98 17:29    1303    20996  

MCFG       BKP       156  02-07-98 17:29    1304    21012  

IMTA       BKP     10912  02-07-98 17:29    1305    21028  

SHELFB     BKP        54  02-07-98 17:29    1307    21060  

LINK       BKP     8192  02-07-98 17:29    1308    21076  

LSET       BKP     26080  02-07-98 17:29    1309    21092  

ROUTE     BKP    113776  02-07-98 17:29    1313    21156  

L2T        BKP       640  02-07-98 17:29    1327    21380  

L3T        BKP     3392  02-07-98 17:29    1328    21396  

LTH        BKP       728  02-07-98 17:29    1329    21412  

SLTM       BKP       640  02-07-98 17:29    1330    21428  

UID        BKP     12800  02-07-98 17:29    1331    21444  

MEASCTRL   BKP       276  02-07-98 17:29    1333    21476  

TERMINAL   BKP     2048  02-07-98 17:29    1334    21492  

TTMAP      BKP    43398  02-07-98 17:29    1335    21508  

XLINK      BKP    32768  02-07-98 17:29    1341    21604  

STPOPTS    BKP       300  02-07-98 17:29    1345    21668  

SID        BKP       455  02-07-98 17:29    1346    21684  

X25DSTN    BKP    24960  02-07-98 17:29    1347    21700  

X25RTE     BKP    43680  02-07-98 17:29    1351    21764  

REDIRECT   BKP       450  02-07-98 17:29    1357    21860  

SECUDFLT   BKP       128  02-07-98 17:29    1358    21876  

WARNMSG    BKP     3330  02-07-98 17:29    1359    21892  

PID2       BKP    25600  02-07-98 17:29    1360    21908  

LOGTRACK   BKP     12928  02-07-98 17:29    1364    21972  

LBP        BKP    524288  02-07-98 17:29    1366    22004  

SMEASCTL   BKP       226  02-07-98 17:29    1430    23028  

ATTRSLOG   BKP       128  02-07-98 17:29    1431    23044  

TTSERV     BKP     8192  02-07-98 17:29    1432    23060  

SSAPPL     BKP     2048  02-07-98 17:29    1433    23076  

SERVPROV   BKP     3200  02-07-98 17:29    1434    23092  

ACG_NOC    BKP       160  02-07-98 17:29    1435    23108  

LNP_OPTS   BKP       302  02-07-98 17:29    1436    23124  

LNP_STAT BKP     128 02-07-98 17:29 1437 23140  

XLINKSET   BKP     47662  02-07-98 17:29    1438    23156  

XSTPOPTS   BKP       200  02-07-98 17:29    1444    23252  

DEVFILT    BKP     75294  02-07-98 17:29    1445    23268  

GWSRULE2   BKP   12380158  02-07-98 17:29    1455    23428  

GWSMSTI2   BKP    331008  02-07-98 17:29    2967    47620  

GTT_TT     BKP   11519992  02-07-98 17:29    3008    48276  

GTT_CPC    BKP    435150  02-07-98 17:29    4415    70788
```

Preparing the Network Element for Manual Bulk Loading

GTT_TBT	BKP	15720	02-07-98	17:29	4469	71652
GTT_RPC	BKP	65484	02-07-98	17:29	4471	71684
DBMM2	BKP	320000	02-07-98	17:29	4479	71812
GTT_RPC2	BKP	262374	02-07-98	17:29	4519	72452
LNP_LRN	BKP	3072096	02-07-98	17:29	4552	72980
LNP_MR	BKP	1679392	02-07-98	17:29	4928	78996
LNP_NPA	BKP	5120096	02-07-98	17:29	5134	82292
LNP_4DIG	BKP	128000064	02-07-98	17:29	5760	92308
ACG_MIC	BKP	187712	02-07-98	17:29	21386	342324
LNP_CHKCK	BKP	197378	02-07-98	17:29	21409	342692
LNP_DBMM	BKP	801600	02-07-98	17:29	21434	343092
MRN	SYS	426652	02-07-98	17:29	21532	344660
SMEAS_ST	SYS	12228	02-07-98	17:29	21585	345508
SECULOG	SYS	2560256	02-07-98	17:29	21587	345540
EVENTLOG	SYS	11263947	02-07-98	17:29	21900	350548
TTRBLTX	BKP	63980	02-07-98	17:29	23275	372548
MTT	BKP	384000	02-07-98	17:29	23283	372676
SYSREL	SYS	352	02-07-98	17:29	23330	373428
SYSRD	SYS	1048576	02-07-98	17:29	23331	373444
MEASRD	SYS	1048576	02-07-98	17:29	23459	375492
2210	REL	2048	02-07-98	17:29	23587	377540

File(s) : 72 Bytes : 192883124
Volume : SYSTEM DISK
Bytes free : 75544140
Disk Size (MB) : 1096

10. Display the contents of the LNP_STAT.BKP table using the `disp-lba` command. Specify the LBA number of the LNP-STAT.BKP table as determined in step 9. For this example, enter this command:

```
disp-lba:lba=23140:loc=1117
```

Verify that the third through sixth octets on the line beginning with 0010 do NOT contain a sequence of "a5" characters.

If the output of the `disp-lba` command contains a sequence of a5 characters, stop performing this procedure and contact the Tekelec Technical Services department (see "Technical Services and Support" on Page 1-14).

Preparing the Network Element for Manual Bulk Loading

The octet shown in the `disp-lba` command output corresponds to a version of the LNP database. Check this octet to verify the formatting of the removable cartridge. A sequence of a5 characters shows that the removable cartridge is not formatted correctly. If any other values are shown for this octet, the cartridge is formatted correctly. This octet does not constrict the importing of a large number of telephone number subscriptions based on the fact that an Eagle STP containing less than 2 million telephone number subscriptions can import an LNP database with 4 million telephone numbers as long as the TSMs have the correct amount of memory. The import process will allocate the memory when the `chg-db:action=import` command is executed. Hence the value of the octet is not important as long as it is not a string of a5 characters.

```
rlghncxa03w 01-09-07 03:59:26 GMT Rel 28.0.0
0504 DISP-LBA DEVICE ID=H'0021, LBA=H'00005a64
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0010 00 00 00 00 06 00 00 00 00 00 00 00 00 00 32 .....2
0020 30 30 30 30 32 30 37 30 33 35 39 32 36 00 00 0000207035926...
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0140 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0170 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0180 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0190 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
01f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
```

11. Display the LNP translation type services in the database using the `rtrv-lnp-serv` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV      TT      TTN      DV      ALIAS
AIN       15      AINGTE   TCAP    235
          236
IN        6       INGTE    TCAP    ---
LIDB     20      LIDB     SCCP    ---
WNP      22      WNPGE    TCAP    ---
PCS      11      PCS11    TCAP    ---
CLASS    25      CLASSGTE SCCP    ---
CNAM     30      CNAM     SCCP    ---
ISVM     50      ISVM     SCCP    ---
UDF1     201     UDF1     SCCP    ---
```

```
LNP-SERV TABLE IS (9 of 256) 4% FULL
```

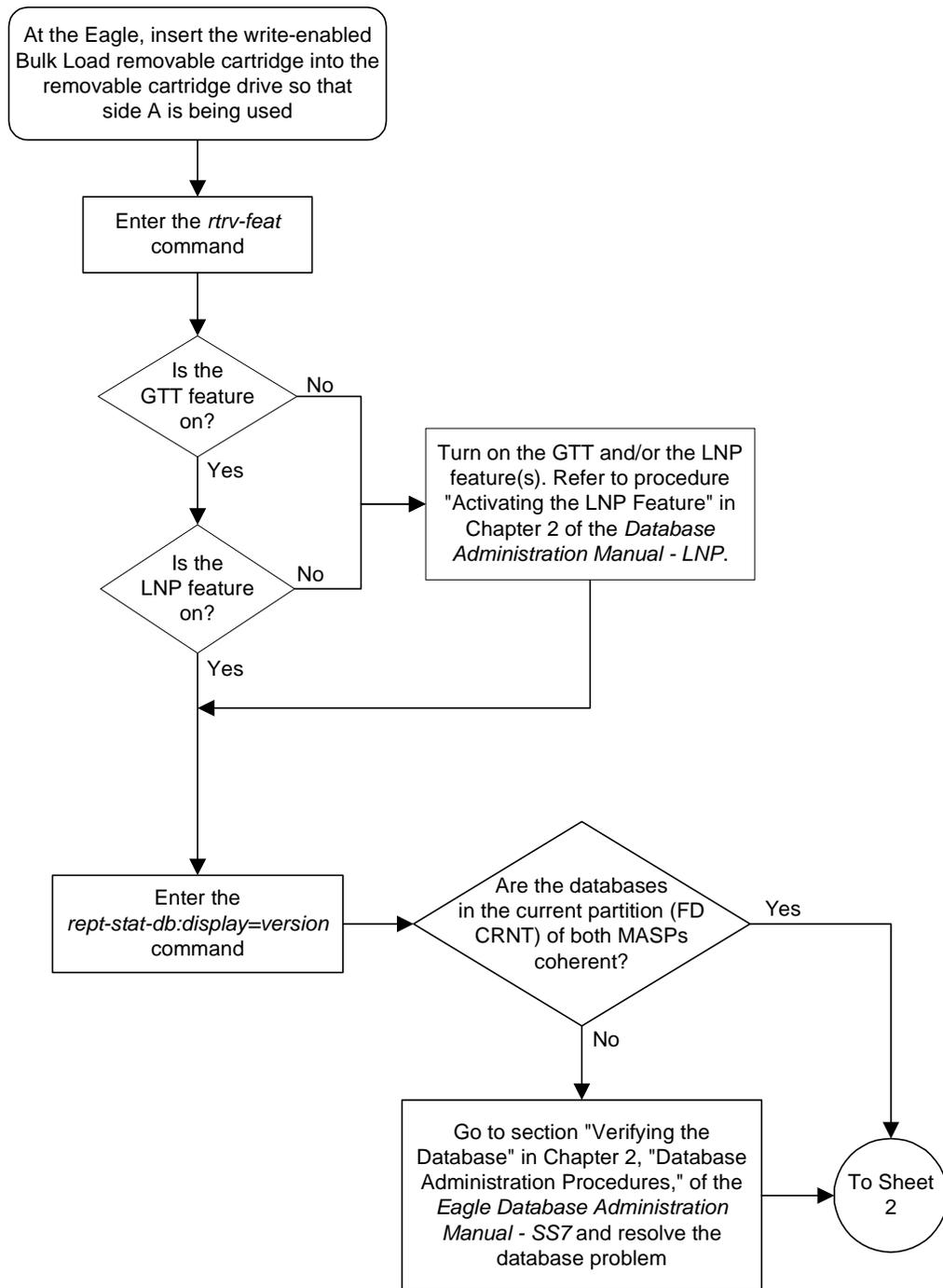
Record the translation type values in the TT field for the LNP services AIN, LIDB, CLASS, CNAM, ISVM, and IN. These values are used later to compare them with the values contained in the LSMS (see step 4 on page 10-5 in Chapter 10, “Manual LSMS-to-NE Bulk Loading”).

12. Remove the Bulk Load removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.

You have now completed this procedure.

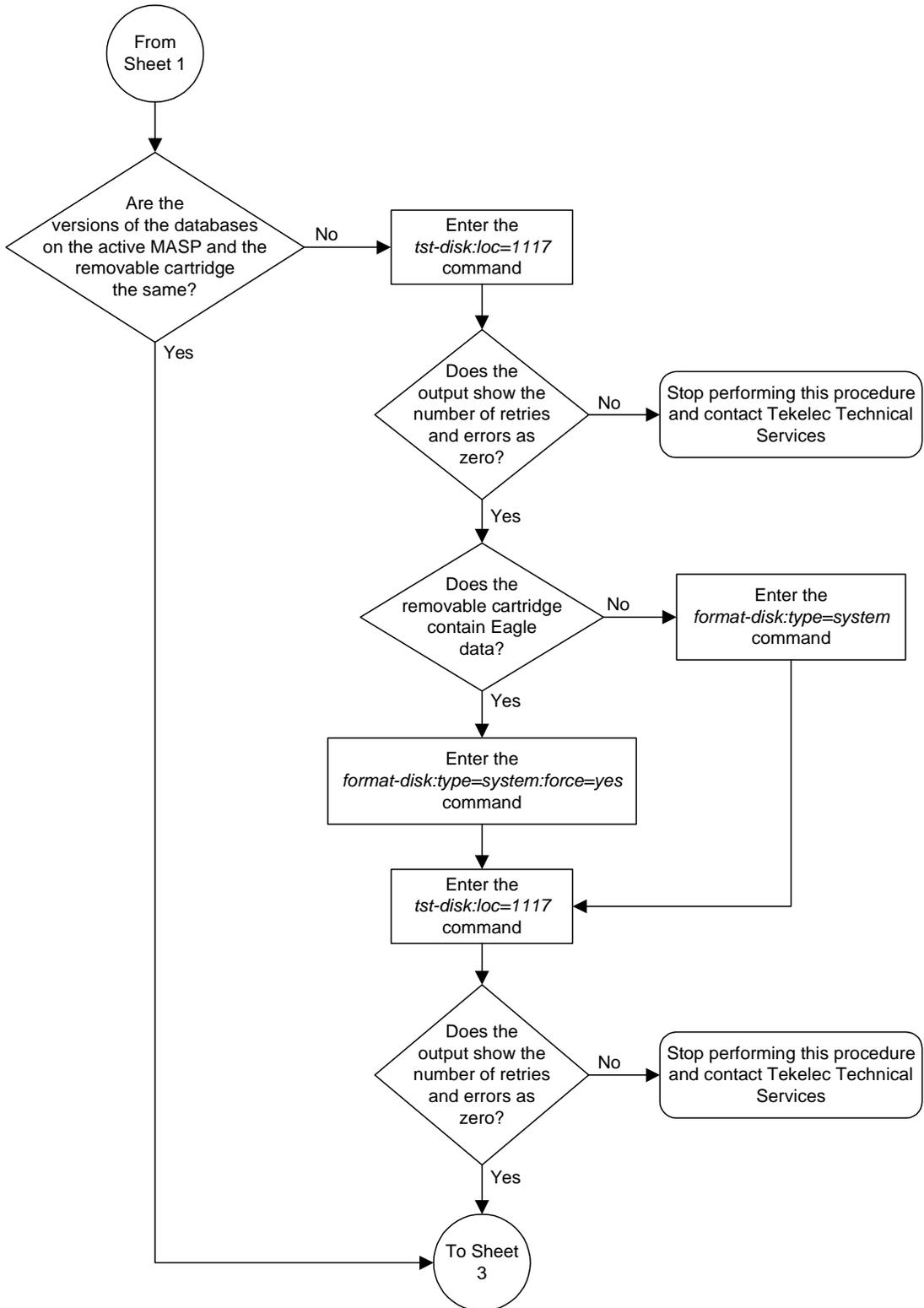
Preparing the Network Element for Manual Bulk Loading

Flowchart 11-1. Preparing the Bulk Load Removable Cartridge (Sheet 1 of 4)



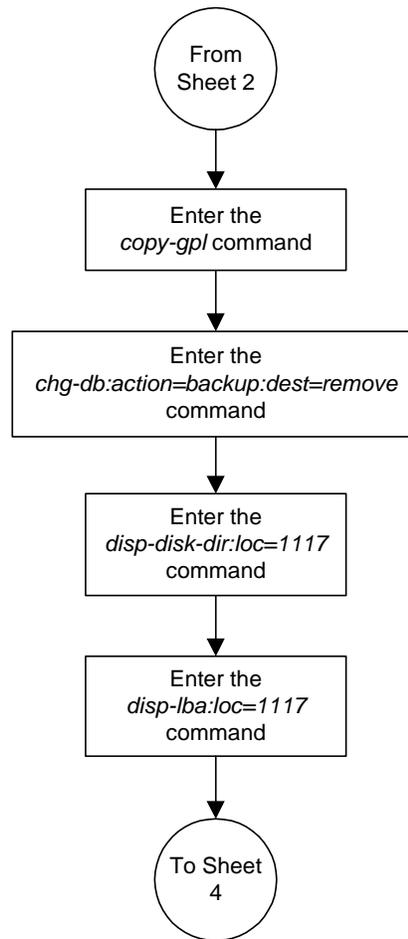
Preparing the Network Element for Manual Bulk Loading

Flowchart 11-1. Preparing the Bulk Load Removable Cartridge (Sheet 2 of 4)

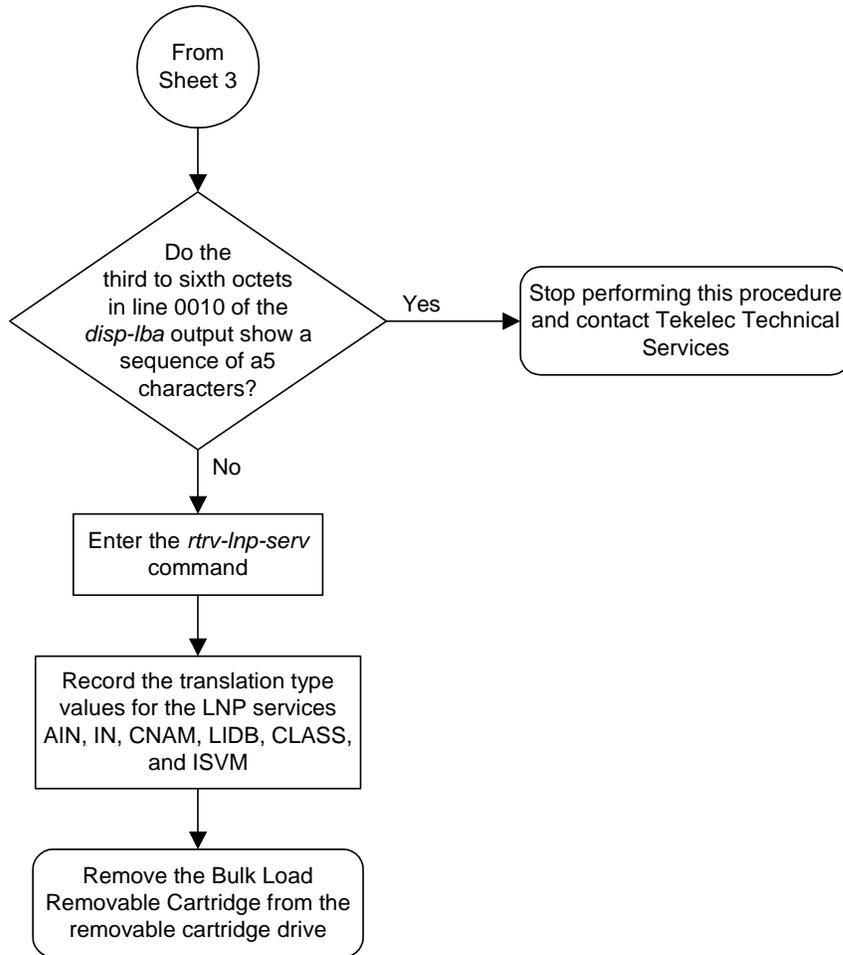


Preparing the Network Element for Manual Bulk Loading

Flowchart 11-1. Preparing the Bulk Load Removable Cartridge (Sheet 3 of 4)



Flowchart 11-1. Preparing the Bulk Load Removable Cartridge (Sheet 4 of 4)



Preparing the Database Backup Removable Cartridge

Use this procedure to prepare a Database Backup removable cartridge prior to a manual bulk load from the LSMS to the Eagle STP. This procedure is performed at the Eagle STP that requires the bulk load of the LNP database.

The Database Backup removable cartridge is used in a backout procedure to restore the Eagle STP to the configuration it had before the bulk download procedure was attempted. The backout procedure requiring a removable cartridge is described in section “Backing Out Using the Database Backup Removable Cartridge” in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures.”

Procedure

1. At the Eagle STP, insert the Database Backup removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. See “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2 on page 11-5. **Do not use the Bulk Load removable cartridge.**
2. Determine with the `rtrv-lnp-serv` command whether the Eagle STP database has any data that needs to be preserved by displaying the LNP translation type services in the database. This is an example of the possible output; data that you may want to preserve is shown in bold.

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV      TT      TTN      DV      ALIAS
AIN       15      AINGTE  TCAP    235
          236
IN        6       INGTE   TCAP    ---
LIDB     20      LIDB     SCCP    ---
WNP     22      WNPGTE TCAP    ---
PCS     11      PCS11  TCAP    ---
CLASS    25      CLASSGTE SCCP    ---
CNAM     30      CNAM     SCCP    ---
ISVM     50      ISVM     SCCP    ---
UDF1   201     UDF1   SCCP    ---
```

```
LNP-SERV TABLE IS (9 of 256) 4% FULL
```

If the output of the `rtrv-lnp-serv` command shows any of the following data, that data will be lost when the LNP database is imported from the Bulk Load removable cartridge into the Eagle STP. The LSMS does not support these functions:

- Translation type names, as shown by values in the TTN field that differ from values in the SERV field
- Alias translation types, as shown in the ALIAS field
- User-defined services, as shown by entries `UDF1`, `UDF2`, `UDF3`, `UDF4`, or `UDF5` in the SERV field

- Wireless number portability translation types, as shown by the entry **WNP** in the **SERV** field
- PCS 1900 number portability translation types, as shown by the entry **PCS** in the **SERV** field

If you wish to continue to use the user-defined services, translation type names, alias translation types, the wireless number portability translation type, or the PCS 1900 number portability translation type, shown in the **rtrv-lnp-serv** output in this step, you must re-enter them with the **ent-lnp-serv** or **chg-lnp-serv** commands when you reach step 14 on page 10-22 and step 15 on page 10-22 in Chapter 10, “Manual LSMS-to-NE Bulk Loading.”

-
3. Display the terminal configuration in the database with the **rtrv-trm** command. The OAP terminals are shown in the output with the entry **OAP** in the **TYPE** field. Record the values of the OAP terminal ports. This is an example of the possible output; the OAP terminals are terminals 6 and 9 (shown in bold):

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1  SW      30     5      99:59:59
2    KSR        9600-7-E-1  HW      30     5      INDEF
3    PRINTER   4800-7-E-1  HW      30     0      00:00:00
4    VT320      2400-7-E-1  BOTH    30     5      00:30:00
5    VT320      9600-7-O-1  NONE    30     5      00:00:30
6    OAP       19200-7-E-1 SW      0      5      INDEF
7    PRINTER   9600-7-N-2  HW      30     5      00:30:00
8    KSR        19200-7-E-2 BOTH    30     5      00:30:00
9    OAP       19200-7-E-1 SW      0      5      INDEF
10   VT320      9600-7-E-1  HW      30     5      00:30:00
11   VT320      4800-7-E-1  HW      30     5      00:30:00
12   PRINTER   9600-7-E-1  HW      30     4      00:30:00
13   VT320      9600-7-O-1  NONE    30     5      00:30:00
14   VT320      9600-7-E-2  SW      30     8      00:30:00
15   VT320      9600-7-N-2  HW      30     5      00:30:00
16   VT320      9600-7-E-2  BOTH    30     3      00:30:00
```

```
TRM  TRAF  LINK  SA   SYS  PU  DB
1    NO   YES   NO   YES  NO  YES
2    NO   NO    NO   NO   NO  NO
3    YES  YES   YES  NO   YES YES
4    YES  NO    NO   NO   NO  NO
5    NO   YES   NO   NO   NO  NO
6    YES  YES   YES  YES  YES YES
7    YES  YES   YES  YES  YES YES
8    NO   NO    NO   NO   YES NO
9    YES  YES   YES  YES  YES YES
10   NO   NO    NO   NO   NO  NO
11   YES  YES   YES  YES  YES YES
12   YES  YES   YES  YES  YES YES
13   NO   YES   NO   NO   NO  NO
14   NO   NO    YES  NO   NO  NO
15   YES  YES   YES  NO   YES YES
16   NO   NO    NO   NO   YES NO
```

Preparing the Network Element for Manual Bulk Loading

4. Display the status of the terminals with the `rept-stat-trm` command. This is an example of the possible output.

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
TRM  PST          SST          AST
1    IS-NR        Active      -----
2    IS-NR        Active      -----
3    IS-NR        Active      -----
4    IS-NR        Active      -----
5    IS-NR        Active      -----
6    IS-NR        Active      -----
7    IS-NR        Active      -----
8    IS-NR        Active      -----
9    IS-NR        Active      -----
10   IS-NR        Active      -----
11   IS-NR        Active      -----
12   IS-NR        Active      -----
13   IS-NR        Active      -----
14   IS-NR        Active      -----
15   IS-NR        Active      -----
16   IS-NR        Active      -----
Command Completed.
```

5. Take the OAP terminals out of service using the `rmv-trm` command with the values of the OAP terminals recorded in step 3. The `force=yes` parameter must be used when taking the last OAP terminal out of service. For this example, enter these commands.

```
rmv-trm:trm=6
rmv-trm:trm=9:force=yes
```



CAUTION: These commands will take the connection between the Eagle STP and the LSMS and the SEAS interface out of service and will remain out of service until the OAP terminals are returned to service in step 24 on page 10-30 in Chapter 10, “Manual LSMS-to-NE Bulk Loading.”

If the status of any OAP terminal, shown in the PST field in step 4, is OOS-MT-DSBLD (out of service maintenance disabled), the terminal is already out of service and the `rmv-trm` command does not need to be executed for that terminal.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Inhibit message sent to terminal

rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Command Completed.
```

6. Change the terminal type of the OAP terminals to **NONE** with the **chg-trm** command. Specify the **type=none** parameter and the OAP terminals recorded in step 3. For this example, enter these commands:

```
chg-trm:trm=6:type=none
```

```
chg-trm:trm=9:type=none
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0  
CHG-TRM: MASP B - COMPLTD
```

7. Display the LNP options in the database with the **rtrv-lnpopts** command. The LNP audit function must be turned off (**AUD=off**) in the output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0  
AMASLPID = 123456789  
INCSLP = yes  
AMACTYPE = 003  
AMAFEATID = 010  
CIC = 1369  
AUD = on  
SP = a123  
FRCSMPX = no  
ADMHIPRI = no  
GTWYSTP = no  
CCP = no  
SERVPORT = no  
WQREDRCT = off
```

NOTE: If the Triggerless LNP feature is on (**TLNP=on** in **rtrv-feat** command output), the **rtrv-lnpopts** command output shows the additional fields **JIPPROV** and **JIPDIGITS**.

To turn off the LNP audit function, go to step 8. If the LNP audit function is off, continue with step 11.

8. Turn the LNP audit function off with the **chg-lnpopts** command and specify the **aud=off** parameter. Enter this command:

```
chg-lnpopts:aud=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0  
CHG-LNPOPTS: MASP B - COMPLTD
```

Preparing the Network Element for Manual Bulk Loading

9. Verify that the LNP audit function is off (**AUD=off**) with the **rtrv-lnpopts** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMACTYPE      = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = off
SP            = a123
FRCSMPLEX     = no
ADMHIPRI      = no
GTWYSTP       = no
CCP           = no
SERVPORT      = no
WQREDRCT      = off
```

NOTE: If the Triggerless LNP feature is on (**TLNP=on** in **rtrv-feat** command output), the **rtrv-lnpopts** command output shows the additional fields **JIPPROV** and **JIPDIGITS**.

If the **rtrv-lnpopts** command output shows that the LNP audit function is still on, repeat steps 8 and 9. If the LNP audit function is still on after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on Page 1-14).

NOTE: If the network element has Eagle 28.x with ELAP 1.0 installed, skip step 10 and go to step 11.

10. Verify whether or nor the Measurements Platform option is enabled (**Platform Enabled = on**) using the **rtrv-measopts** command.

```
rlghncxa03w 01-09-17 16:02:05 GMT Rel 28.0.0
EAGLE MEASUREMENT OPTIONS LIST

Platform Enabled =on
-----
SYSTOTSTP      =on   MTCHNP      =off
```

NOTE: The **rtrv-measopts** command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the **rtrv-measopts** command, see the **rtrv-measopts** command description in the *Commands Manual*.

NOTE: If step 10 shows that the Measurements Platform is enabled, skip steps 11 through 13, and go to step 14.

11. Verify that the measurement collection function is off (**COLLECT=off**) by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = on
GTWYLSREPT        = both
-----
SYSTOT-STP        = on
SYSTOT-TT         = off
SYSTOT-STPLAN     = off
COMP-LNKSET       = on
COMP-LINK         = on
GTWY-STP          = on
GTWY-LNKSET       = on
MTCD-STP          = on
MTCD-LINK         = on
MTCD-STPLAN       = on
MTCD-LNKSET       = on
```

NOTE: If Measurement collection is off, skip steps 12 and 13, and go to step 14.

12. Turn the measurement collection function off with the **chg-meas** command and the **collect=off** parameter. Enter this command:

```
chg-meas:collect=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

13. Verify that the measurement collection function is off (**COLLECT=off**) by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = off
GTWYLSREPT        = both
-----
SYSTOT-STP        = on
SYSTOT-TT         = off
SYSTOT-STPLAN     = off
COMP-LNKSET       = on
COMP-LINK         = on
GTWY-STP          = on
GTWY-LNKSET       = on
MTCD-STP          = on
MTCD-LINK         = on
MTCD-STPLAN       = on
MTCD-LNKSET       = on
```

Preparing the Network Element for Manual Bulk Loading

If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat steps 12 and 13. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on Page 1-14).

- 14.** Back up the database using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.  
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.  
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.  
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

- 15.** Copy the approved GPLs and the system release table from the active fixed disk to the Database Backup removable cartridge with the `copy-gpl` command.

During command execution, these messages appear:

```
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP  
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

- 16.** Back up the database to the Database Backup removable cartridge using the `chg-db:action=backup:dest=remove` command. These messages appear:

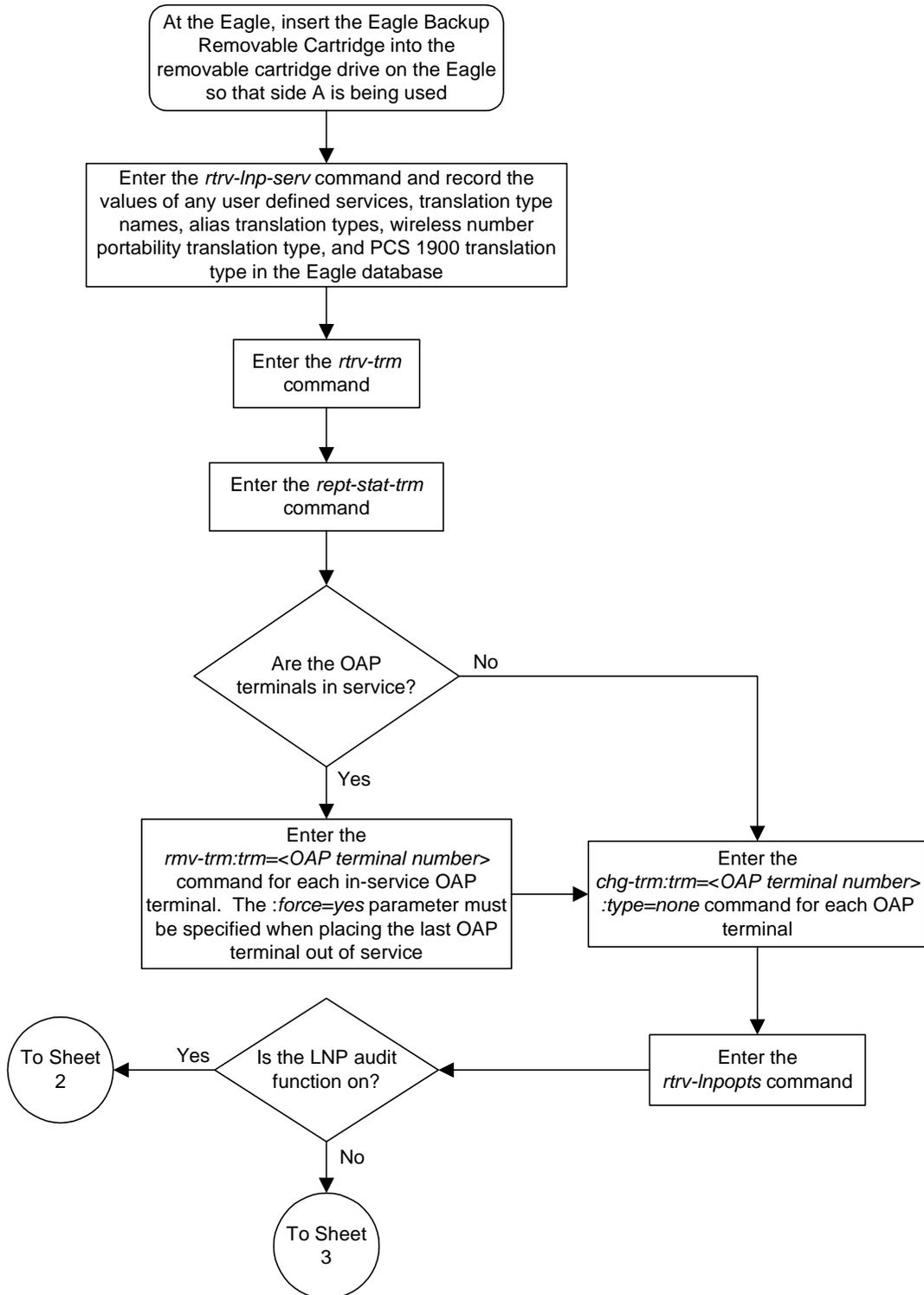
```
BACKUP (REMOVABLE) : MASP B - Backup starts on active MASP.  
BACKUP (REMOVABLE) : MASP B - Backup to removable cartridge complete.
```

- 17.** Remove the Database Backup removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.
-

You have now completed this procedure.

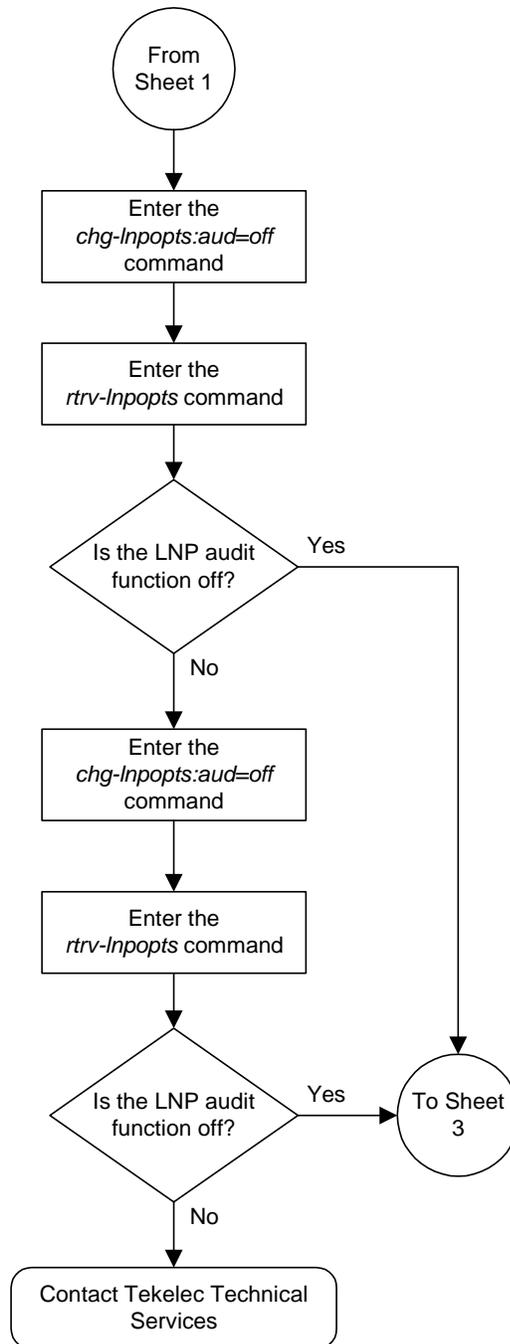
Preparing the Network Element for Manual Bulk Loading

Flowchart 11-2. Preparing the Database Backup Removable Cartridge (Sheet 1 of 4)

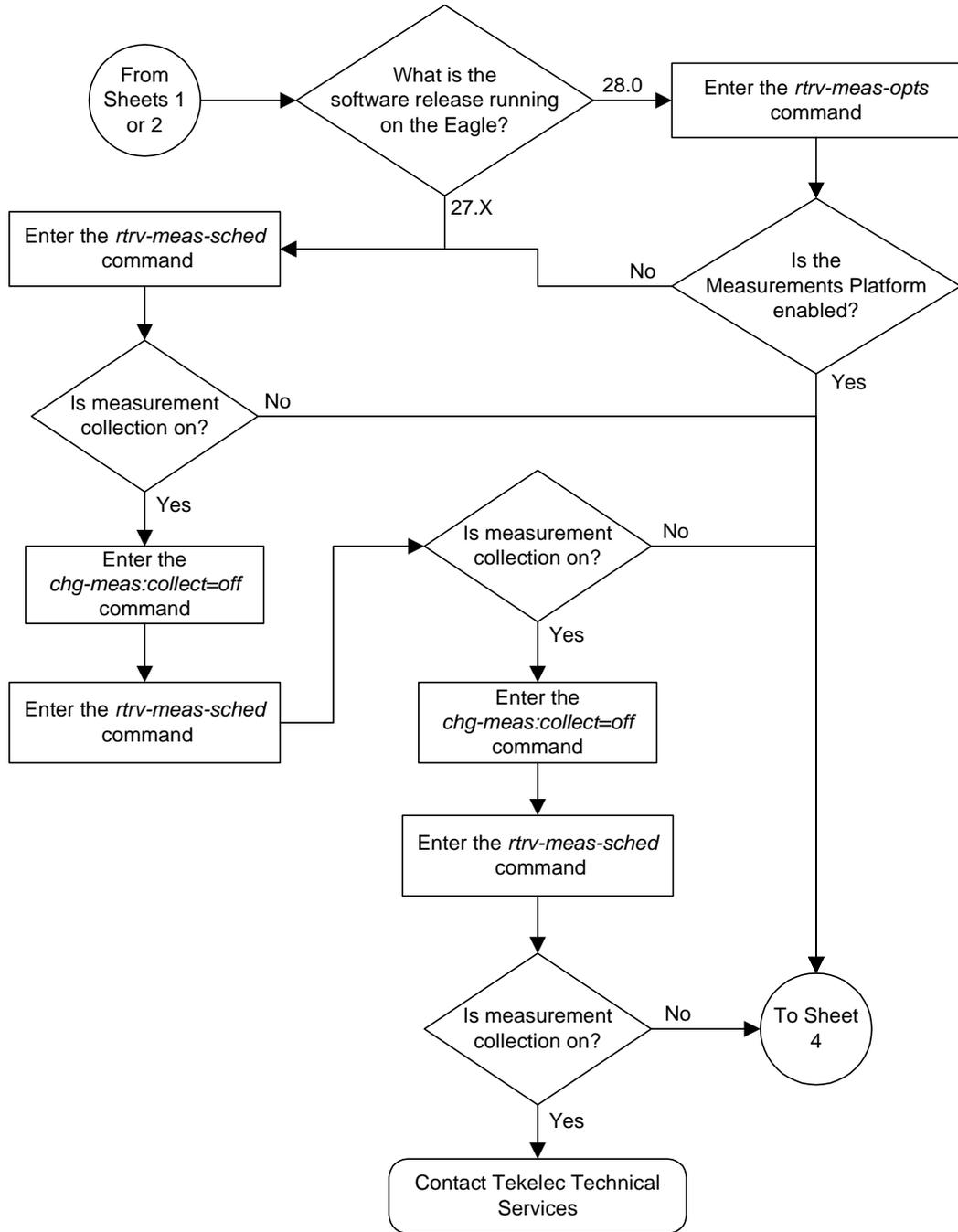


Preparing the Network Element for Manual Bulk Loading

Flowchart 11-2. Preparing the Database Backup Removable Cartridge
(Sheet 2 of 4)

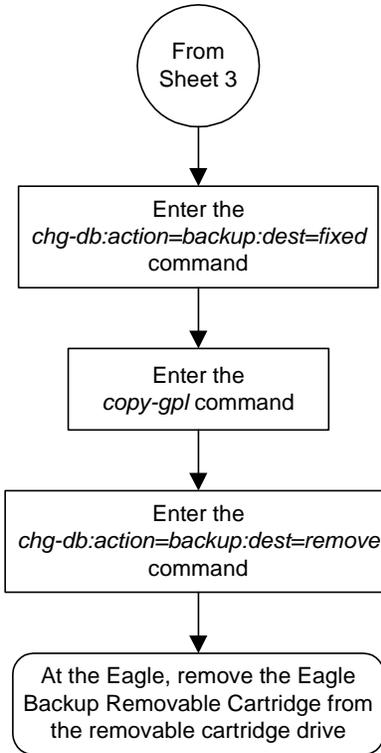


Flowchart 11-2. Preparing the Database Backup Removable Cartridge (Sheet 3 of 4)



Preparing the Network Element for Manual Bulk Loading

Flowchart 11-2. Preparing the Database Backup Removable Cartridge
(Sheet 4 of 4)



Preparing Removable Cartridges for NE-to-NE Bulk Loading

Manual bulk loading of the LNP database from one network element to its mated network element requires three removable cartridges, two Bulk Load removable cartridges and a Database Backup removable cartridge.

The Bulk Load removable cartridges are used to copy the good LNP database from a mate network element and load this database onto the network element with the unsynchronized LNP database.

The Database Backup removable cartridge is used in a backout procedure to restore the Eagle STP to the configuration it had before a bulk download procedure was attempted. The backout procedure requiring a removable cartridge is described in section “Backing Out Using the Database Backup Removable Cartridge” in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures.”

The following two procedures show how to prepare these removable cartridges for the STP bulk loading of the LNP database procedure.

Preparing the Bulk Load Removable Cartridges

Use this procedure to prepare two removable cartridges to copy the LNP database from an Eagle STP that contains an LNP database in good condition and to load the LNP database onto the Eagle STP requiring the bulk load of the LNP database. Manual STP-to-STP bulk loading is described in the following procedures in Chapter 12, “Manual NE-to-NE Bulk Loading”:

- “Copying the LNP Database from Another Eagle STP” on page 12-5
- “Loading and Distributing the LNP Database at the Eagle STP” on page 12-21

This procedure is performed at the Eagle STP requiring the bulk load of the LNP database.

Procedure

NOTE: If step 1 shows that the Measurements Platform is enabled, skip steps 2 and 3, and go to step 4.

1. Verify that the measurement collection function is off (**COLLECT=off**) by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT           = on
GTWYLSREPT        = both
-----
SYSTOT-STP       = on
SYSTOT-TT        = off
SYSTOT-STPLAN    = off
COMP-LNKSET      = on
COMP-LINK        = on
GTWY-STP         = on
GTWY-LNKSET      = on
MTCD-STP         = on
MTCD-LINK        = on
MTCD-STPLAN      = on
MTCD-LNKSET      = on
```

2. Turn the measurement collection function off with the **chg-meas** command and the **collect=off** parameter. Enter this command:

```
chg-meas:collect=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

3. Verify that the measurement collection function is off by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT           = off
GTWYLSREPT        = both
-----
SYSTOT-STP       = on
SYSTOT-TT        = off
SYSTOT-STPLAN    = off
COMP-LNKSET      = on
COMP-LINK        = on
GTWY-STP         = on
GTWY-LNKSET      = on
```

```
MTCD-STP      = on
MTCD-LINK     = on
MTCD-STPLAN   = on
MTCD-LNKSET   = on
```

If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat steps 2 and 3. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on Page 1-14).

4. Display the LNP options in the database with the `rtrv-lnpopts` command. The LNP audit function must be turned off (`AUD=off`) in the output. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID    = 123456789
INCSLP      = yes
AMACTYPE    = 003
AMAFEATID   = 010
CIC         = 1369
AUD       = on
SP          = a123
FRCSMPLEX   = no
ADMHIPRI    = no
GTWYSTP     = no
CCP         = no
SERVPORT    = no
WQREDRCT    = off
```

NOTE: If the Triggerless LNP feature is on (`TLNP=on` in `rtrv-feat` command output), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

To turn off the LNP audit function, go to step 5. If the LNP audit function is off, continue with step 7.

5. Turn the LNP audit function off with the `chg-lnpopts` command and specify the `aud=off` parameter. Enter this command:

```
chg-lnpopts:aud=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0
CHG-LNPOPTS: MASP B - COMPLTD
```

6. Verify that the LNP audit function is off (`AUD=off`) with the `rtrv-lnpopts` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID    = 123456789
INCSLP      = yes
AMACTYPE    = 003
```

Preparing the Network Element for Manual Bulk Loading

```
AMAFEATID = 010
CIC       = 1369
AUD     = off
SP        = a123
FRCSMPX  = no
ADMHIPRI = no
GTWYSTP  = no
CCP      = no
SERVPORT = no
WQREDRCT = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on), see `rtrv-feat` command output in step 2 on page 11-7, the `rtrv-lnpopts` command output shows the additional fields JIPPROV and JIPDIGITS.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still on, repeat steps 5 and 6. If the LNP audit function is still on after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on Page 1-14).

-
7. Insert the first Bulk Load Removable Cartridges into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4 and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.
-

8. Format the removable cartridge for system data by entering this command:

```
format-disk:type=system:force=yes
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 09:39:05 GMT Rel 28.0.0
Format-disk of system removable cartridge started.
Extended processing required, please wait.
```

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
Format-disk of system removable cartridge completed.
```

NOTE: Specifying the force=yes parameter with the format-disk command allows the removable cartridge to be formatted even if the removable cartridge contains Eagle STP data. All data on the removable cartridge will be lost.

This command takes approximately 31 minutes to execute. It may take longer depending on other system activity that is in progress when this command is entered.

9. Enter the `rept-stat-db:display=version` command and examine its output to verify the characteristics described in the following substeps. This is an example of the output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)          TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP      C  LEVEL      TIME LAST BACKUP
-----
FD BKUP  Y          35 01-09-06 10:19:18 GMT  Y          35 01-09-06 10:19:18 GMT
FD CRNT  Y          106
MDAL 1117
-----
RD BKUP  Y          247 01-09-02 14:29:03 GMT
```

CARD/APPL	LOC	C	T	LEVEL	TIME LAST UPDATE	VERSION	STATUS
TDM-CRNT	1114	Y	N	106	01-09-06 23:15:06	026-000-500	NORMAL
LNP						000-006-000	
TDM-BKUP	1114	Y	-	35	01-09-06 10:19:18	026-000-500	NORMAL
LNP						000-006-000	
TDM-CRNT	1116	Y	N	106	01-09-06 23:47:05	026-000-500	NORMAL
LNP						000-006-000	
TDM-BKUP	1116	Y	-	35	01-09-06 10:19:18	026-000-500	NORMAL
LNP						000-006-000	
MDAL	1117	Y	-	247	01-09-02 14:29:03	026-000-500	NORMAL
LNP						165-165-165	

Preparing the Network Element for Manual Bulk Loading

- a. Verify that the database status shows OK.
- b. Verify that the current databases (**FD CRNT** for both the **ACTV TDM** and the **STDBY TDM**) are coherent. A database is shown as coherent by the letter **Y** displayed in the C field of the upper part of the example output. If the current databases are not coherent, shown by the letter **N** in the C field, go to the “Verifying the Database” section in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.
- c. Verify that the proper versions of the LNP databases are shown in the **VERSION** column for the fixed disks (**TDM-CRNT** and **TDM-BKUP** at locations 1114 and 1116)
- d. Verify that the version of the LNP database shown in the **VERSION** column for the Bulk Load removable cartridge (MDAL) is 165-165-165. If the LNP database version number on the Bulk Load removable cartridge is 165-165-165, go to step 10. If the LNP database version is not 165-165-165, the Bulk Load removable cartridge must be formatted as described in step 8.

10. Remove the removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.

11. Insert the second Bulk Load removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4” and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.

Repeat steps 8, 9, and 10 for the second Bulk Load removable cartridge, then go to step 12.

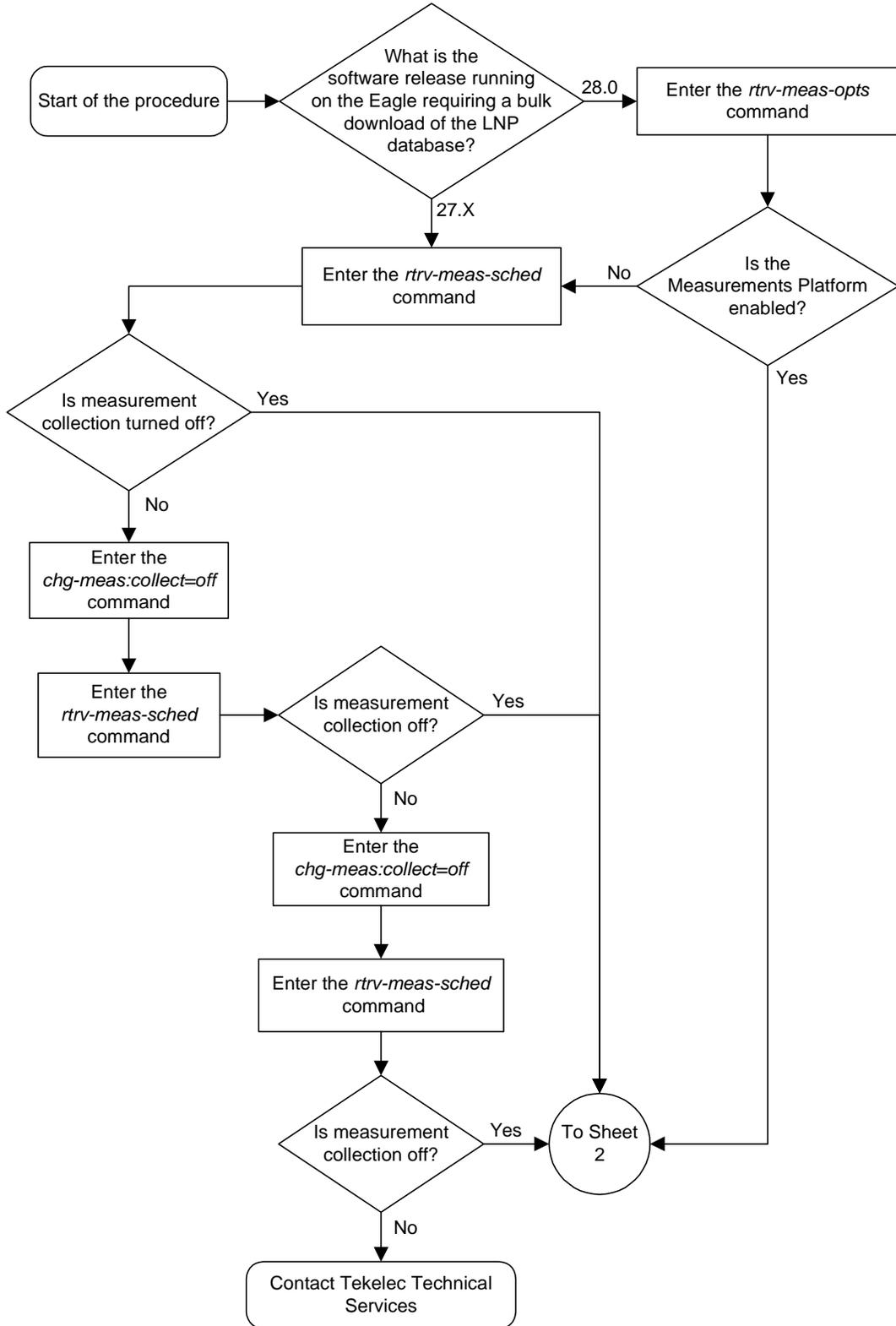
12. Insert the Database Backup removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4” and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.

Repeat steps 8, 9, and 10 for the Database Backup Removable Cartridge, then go to procedure “Preparing the Database Backup Removable Cartridge” on page 11-41.

You have now completed this procedure.

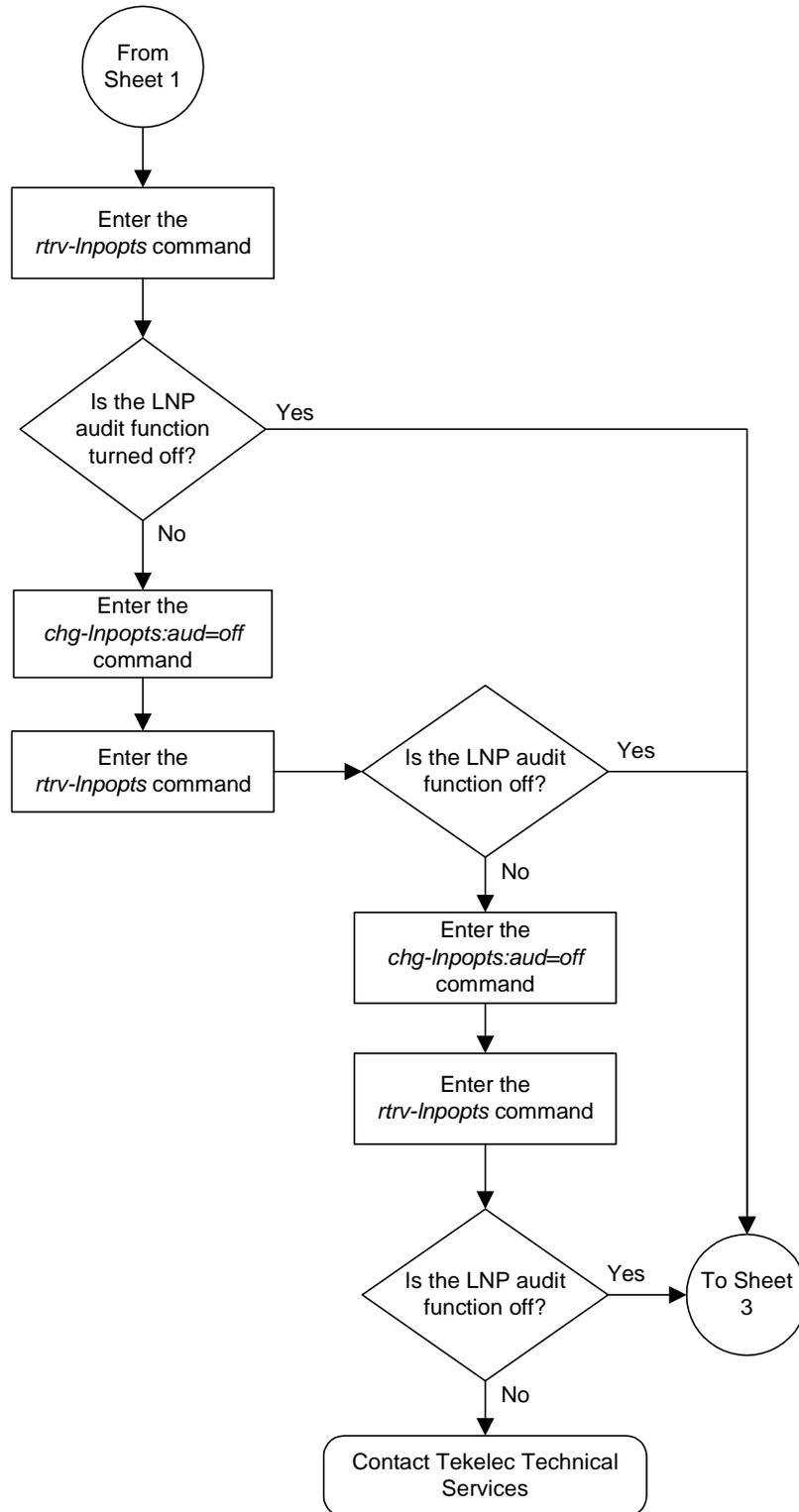
Preparing the Network Element for Manual Bulk Loading

Flowchart 11-3. Preparing the Bulk Load Removable Cartridge (Sheet 1 of 5)

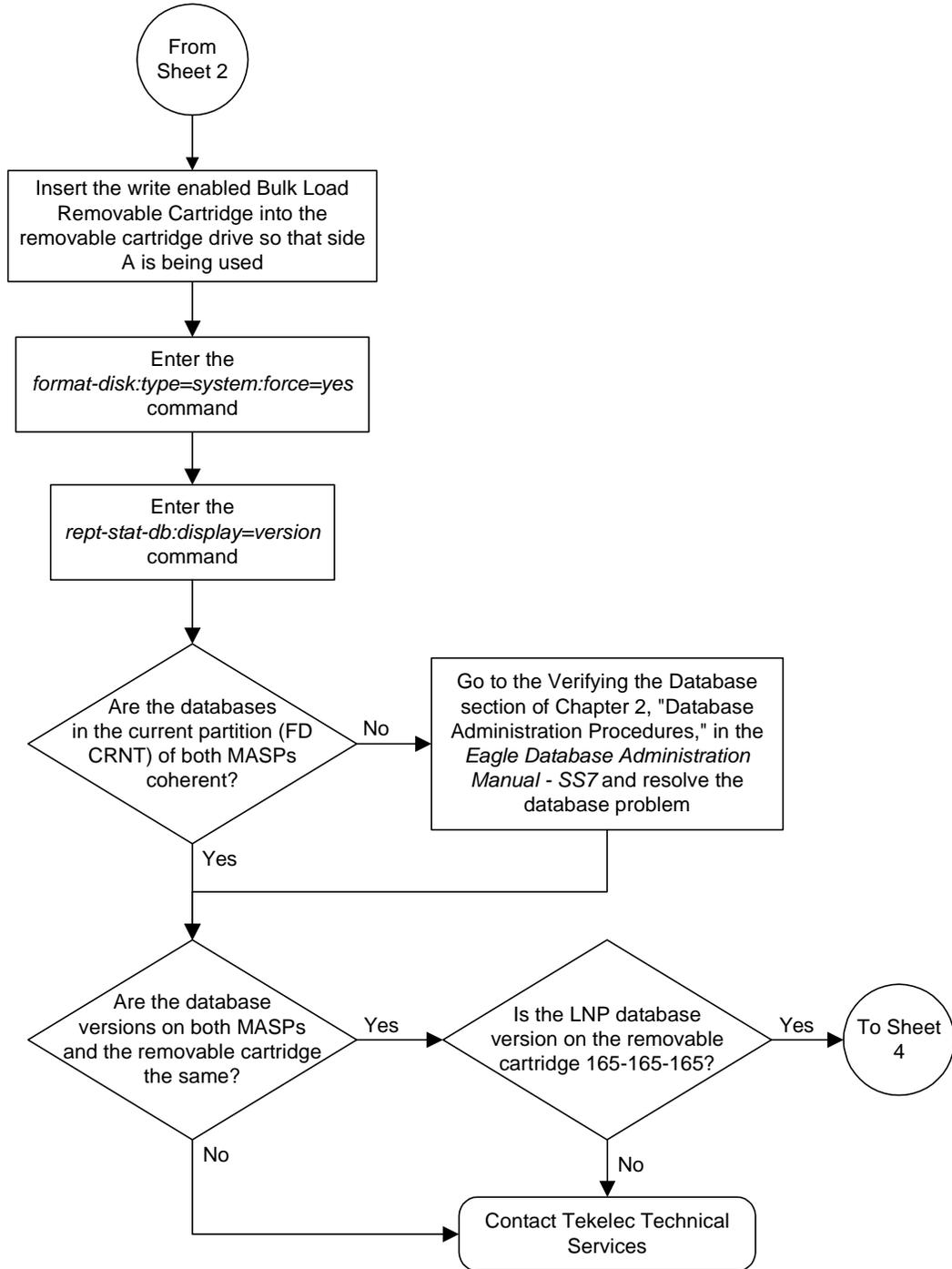


Preparing the Network Element for Manual Bulk Loading

Flowchart 11-3. Preparing the Bulk Load Removable Cartridge (Sheet 2 of 5)

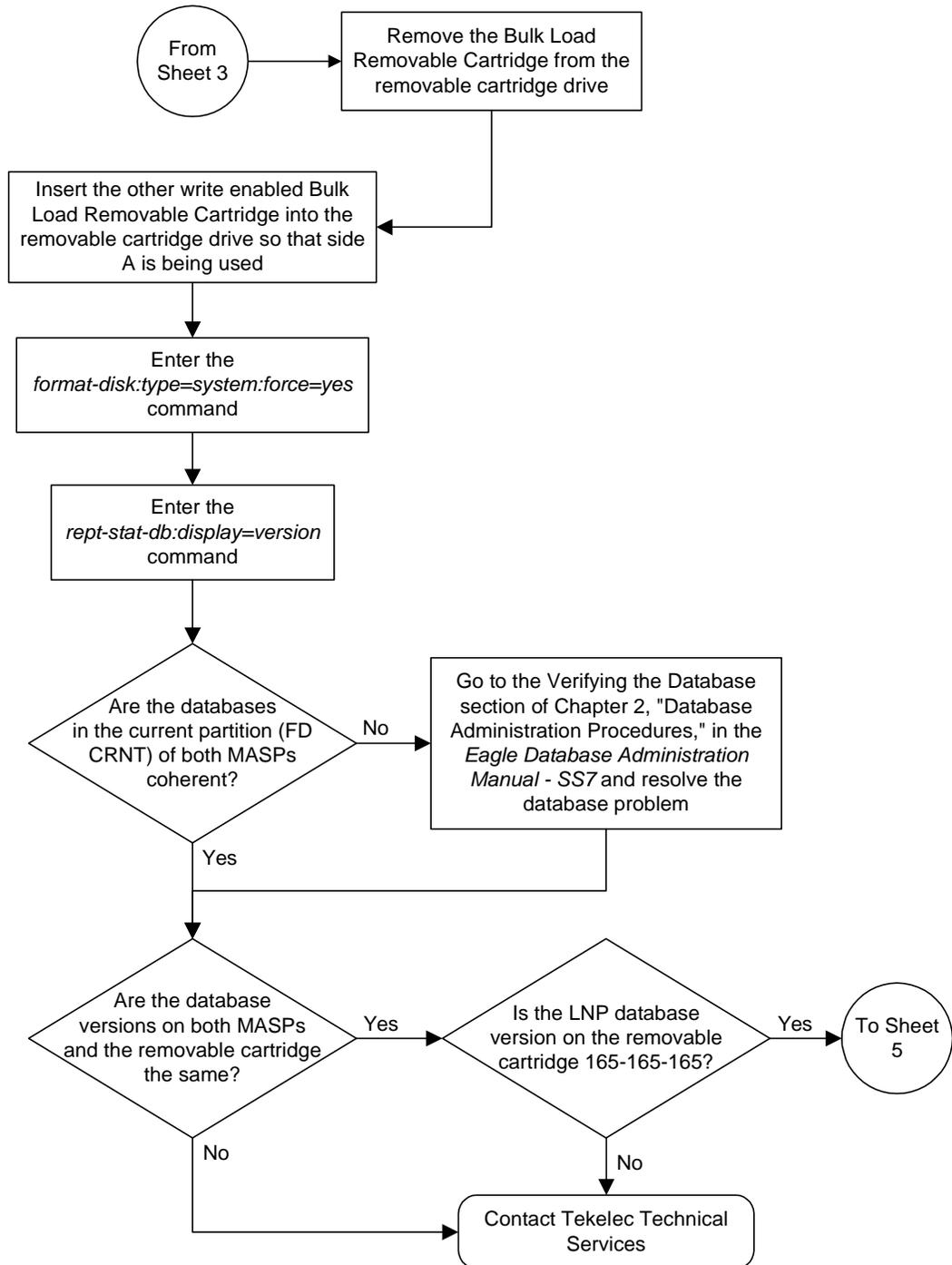


Flowchart 11-3. Preparing the Bulk Load Removable Cartridge (Sheet 3 of 5)

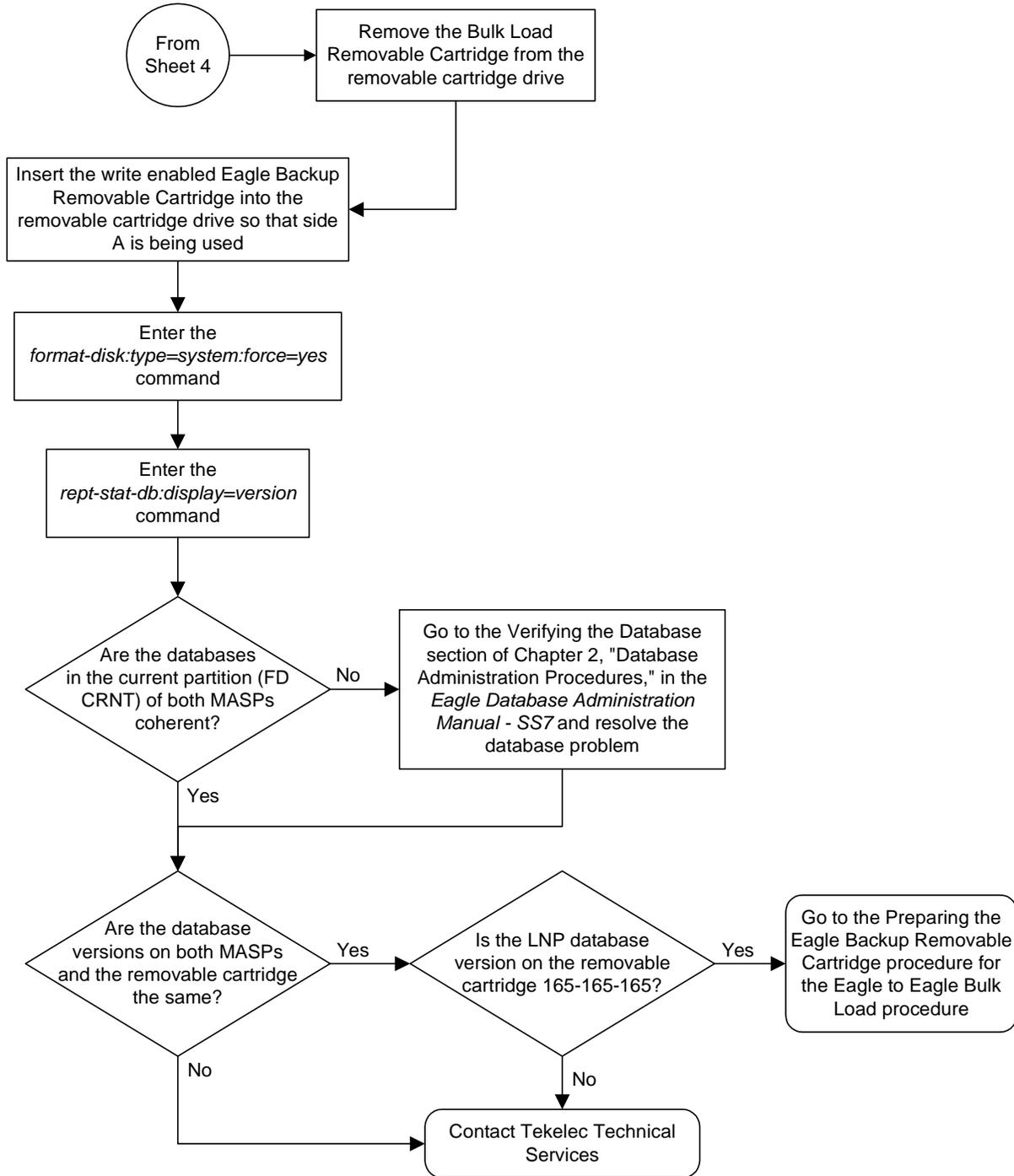


Preparing the Network Element for Manual Bulk Loading

Flowchart 11-3. Preparing the Bulk Load Removable Cartridge (Sheet 4 of 5)



Flowchart 11-3. Preparing the Bulk Load Removable Cartridge (Sheet 5 of 5)



Preparing the Database Backup Removable Cartridge

Use this procedure to prepare a Database Backup removable cartridge in case you have to back out of a manual bulk loading procedure. The Database Backup removable cartridge is used to restore the Eagle STP to the configuration it had before the LNP database bulk load procedure was performed. The backout procedure is described in Chapter 13, "Bulk Loading Troubleshooting and Backout Procedures," procedure "Backing Out Using the Database Backup Removable Cartridge".

Procedure

1. At the Eagle STP, insert the Database Backup removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See "Write-Enabling the Removable Cartridge" on page 11-4" and "Inserting the Removable Cartridge" on page 11-5 and Figure 11-2.
-

2. Copy the approved GPLs and the system release table from the active fixed disk to the Database Backup removable cartridge with the `copy-gpl` command.

During command execution, these messages appear:

```
rlghncxa03w 01-09-07 14:50:46 GMT Rel 28.0.0
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

3. Back up the database to the Database Backup removable cartridge using the `chg-db:action=backup:dest=remove` command. These messages appear:

```
BACKUP (REMOVABLE) : MASP B - Backup starts on active MASP.
BACKUP (REMOVABLE) : MASP B - Backup to removable cartridge complete.
```

4. Back up the database to the fixed disk using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

Preparing the Network Element for Manual Bulk Loading

5. Verify that the versions of the LNP database on the fixed disks and removable cartridge (MDAL) are the same using the `rept-stat-db:display=version` command. This is an example of the output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<

      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP   C  LEVEL      TIME LAST BACKUP
-----
FD BKUP  Y          35 01-09-06 10:19:18 GMT  Y          35 01-09-06 10:19:18 GMT
FD CRNT  Y         106                               Y         106
MDAL 1117
-----
RD BKUP  Y          247 01-09-02 14:29:03 GMT

CARD/APPL  LOC  C  T  LEVEL      TIME LAST UPDATE  VERSION      STATUS
-----
TDM-CRNT   1114 Y  N  106      01-09-06 23:15:06  026-000-500  NORMAL
LNP
TDM-BKUP   1114 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
LNP
TDM-CRNT   1116 Y  N  106      01-09-06 23:47:05  026-000-500  NORMAL
LNP
TDM-BKUP   1116 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
LNP
MDAL       1117 Y  -  247      01-09-02 14:29:03  026-000-500  NORMAL
LNP
```

- a. Verify that the database status shows **OK**.
- b. Verify that the current databases (FD CRNT for both the ACTV TDM and the STDBY TDM) are coherent. A database is shown as coherent by the letter **Y** displayed in the C field of the upper part of the example output. If the current databases are not coherent, shown by the letter **N** in the C field, go section “Verifying the Database” in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.
- c. Verify that the version numbers of the LNP databases, as shown in the VERSION column, on the fixed disks (TDM-CRNT and TDM-BKUP at locations 1114 and 1116) and the Database Backup removable cartridge (MDAL) are the same. If the LNP database versions are the same, go to step 6.

If the LNP database versions are not the same, contact Tekelec Technical Services (see “Technical Services and Support” on Page 1-14).

Preparing the Network Element for Manual Bulk Loading

6. Display the LNP translation type services in the database with the `rtrv-lnp-serv` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV      TT      TTN      DV      ALIAS
AIN      15     AINGTE  TCAP   235
                                         236
IN       6      INGTE   TCAP   ---
LIDB    20     LIDB    SCCP   ---
WNP       22      WNPGTE   TCAP    ---
PCS       11      PCS11    TCAP    ---
CLASS   25     CLASSGTE SCCP   ---
CNAM    30     CNAM    SCCP   ---
ISVM    50     ISVM    SCCP   ---
UDF1      201     UDF1     SCCP    ---
```

```
LNP-SERV TABLE IS (9 of 256) 4% FULL
```

Record the translation type, translation type name, and alias translation type values (shown in bold) for the LNP services AIN, LIDB, CLASS, CNAM, ISVM, and IN.

-
7. Display the LNP 4Digit Table memory allocation in the database with the `rtrv-mem` command. Each LNP 4Digit table can contain up to 2,000,000 telephone number subscriptions. The database can contain up to six LNP 4Digit tables, for a maximum of 12,000,000 telephone number subscriptions.

The quantity of numbers that has been allocated in the database, the LNP 4Digit table memory allocation, is shown in bold in the output example of the `rtrv-mem` command:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
LNP 4DIGIT OBJECT  %FULL
-----
LNP_4DIG.TBL      75

LNP 4DIGIT database is (1500000 of 2000000) 75% full

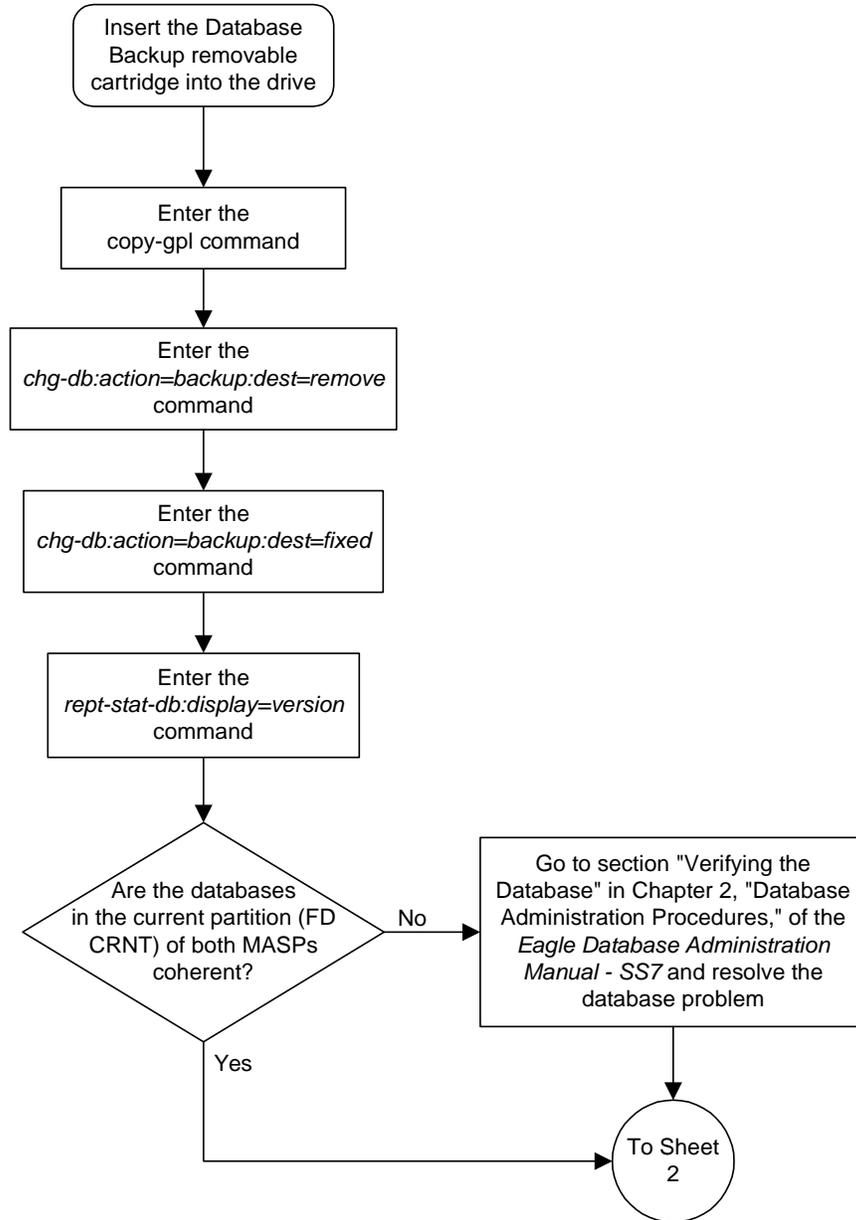
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
Memory retrieval complete.
```

Record the LNP 4Digit table memory allocation shown in the `rtrv-mem` command output. The LNP 4Digit memory allocation must be equal to or less than the LNP 4Digit table memory allocation that is shown later in the `rtrv-mem` output after the LNP database is loaded onto the Eagle STP (see step 4 on page 12-23 in Chapter 12, “Manual NE-to-NE Bulk Loading” for output and memory allocation adjustments).

-
8. Remove the Database Backup removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.
-

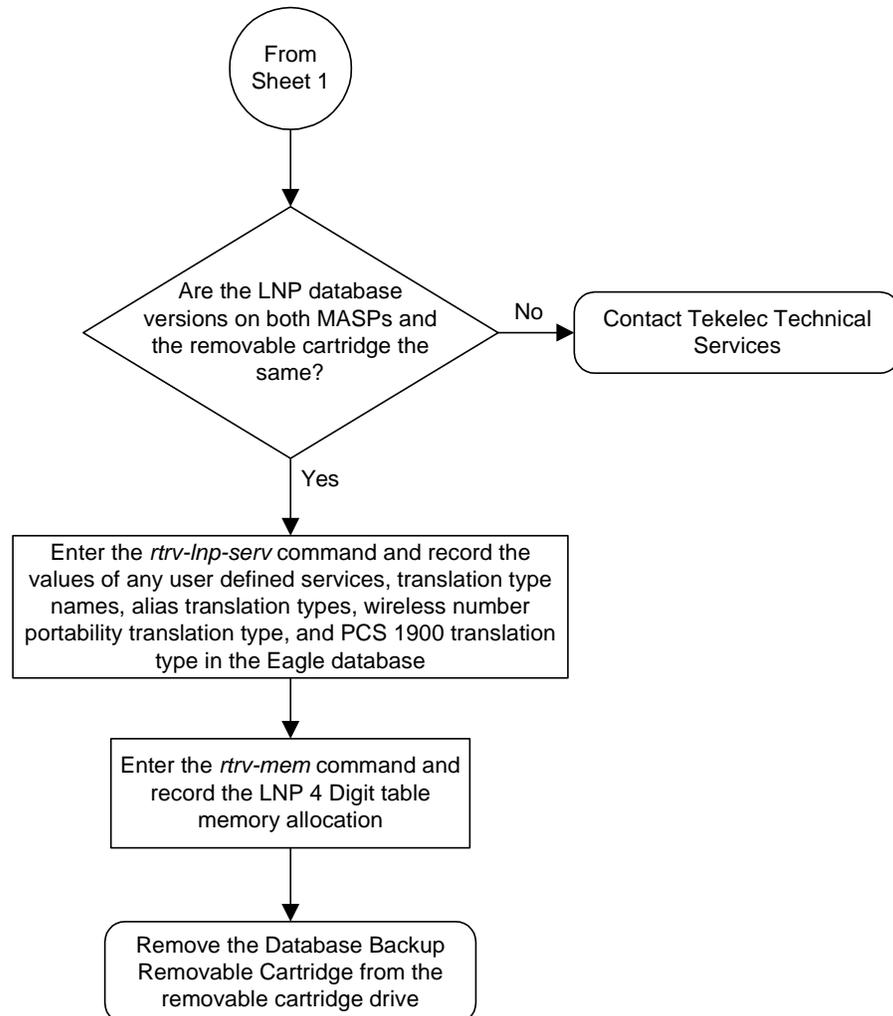
You have now completed this procedure.

Flowchart 11-4. Preparing the Database Backup Removable Cartridge (Sheet 1 of 2)



Preparing the Network Element for Manual Bulk Loading

Flowchart 11-4. Preparing the Database Backup Removable Cartridge
(Sheet 2 of 2)



Preparing the Network Element for Manual Bulk Loading

12

Manual NE-to-NE Bulk Loading

Introduction.....	12-2
Copying the LNP Database from Another Eagle STP.....	12-5
Loading and Distributing the LNP Database at the Eagle STP	12-21

Introduction

NOTE: This chapter applies only for network element LNP databases that contain 6 million or fewer ported numbers.

Manual STP-to-STP bulk loading is the process of copying the LNP database from a mated Eagle STP containing the same LNP database to a removable cartridge, loading the LNP database onto the Eagle STP's fixed disks, and distributing the LNP database from the fixed disks to all Translation Service Modules (TSMs) in the system. Bulk loading fully replaces the network element LNP database.

This chapter describes the manual STP-to-STP bulk loading process using the following procedures:

- “Copying the LNP Database from Another Eagle STP”
- “Loading and Distributing the LNP Database at the Eagle STP”

The manual STP-to-STP bulk loading process requires three removable cartridges, two Bulk Load removable cartridges and one Database Backup removable cartridge. All cartridges must have been prepared as described in Chapter 11, “Preparing the Network Element for Manual Bulk Loading” using these procedures:

- “Preparing the Bulk Load Removable Cartridge” on page 11-6
- “Preparing the Database Backup Removable Cartridge” on page 11-19

Use the Bulk Load removable cartridges for the procedures in this chapter to store the LNP database from the mate Eagle STP and to reload the LNP database onto the Eagle STP requiring the bulk load. The second Bulk Load removable cartridge is a duplicate to be available at the remote site in case the first Bulk Load removable cartridge becomes unusable.

Use the Database Backup removable cartridge if you need to backout of the procedures in this chapter. In this case, use the cartridge to restore the Eagle STP configuration using this procedure:

- “Backing Out Using the Database Backup Removable Cartridge” in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures.”

Before executing the STP-to-STP bulk loading of the LNP database, determine the following:

1. This procedure can only be used if both substeps a and b are true:
 - a. No EMS lists are defined for NPANXXs (all NPANXXs use the default EMS list). To verify that no EMS lists are defined, from the LSMS Console window, select **LSMS->EMSList->Create**. Verify that the NPANXX field is blank. If desired, click the pulldown button to the right of the NPANXX field to further verify that no NPANXXs are listed.

- b. Both Eagle STPs involved in the bulk reload have their component IDs assigned to the LSMS default EMS list. To view the default EMS list, from the LSMS Console window, select `LSMS->defaultEMSList->view`. The defaultEMSList window lists all component IDs for Eagle STPs that are assigned to the list.

To determine which CLI corresponds to a component ID, select `config->LNPSysstem->ems->view`. Type in the component ID and click the OK or Apply button. In the resulting window, view the contents of the CLI field.

2. Both Eagle STPs must be running the same software release, and the OAP configuration for the LSMS portion of the OAPs on both Eagle STPs must be the same.
3. This procedure can only be used if both Eagle STPs use the same LNP services and translation type values (CNAM, LIDB, AIN, IN, CLASS, UDF1, etc.). If an LNP service translation type value is defined in one Eagle STP but not in the other, then this procedure cannot be used. The `rtrv-lnp-serv` command can be used to display this information at the Eagle STP. The LNP service TT names and alias values do not need to match between both Eagle STPs and can be changed after the LNP database has been imported.

To perform the procedures in this chapter, the terminal and user ID command input class assignments and unsolicited output message group assignments must be set as outlined in the “Terminal and User ID Requirements” section in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”

If more information is needed on any of the Eagle STP commands used in this procedure, refer to the *Eagle STP Commands Manual*.

The LNP feature must be on. Verify this by entering the `rtrv-feat` command. If the LNP feature is not on, go to procedure “Activating the LNP Feature” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP* and turn the feature on.

NOTE: Before turning on the Global Title Translation (GTT) feature and the Local Number Portability (LNP) feature, make sure you have purchased these features. If you are not sure whether you have purchased these features, contact your Tekelec Sales or Account Representative.

Once a feature has been turned on with the `chg-feat` command, the feature cannot be turned off.

During the execution of this procedure, the following steps are carried out:

1. Three removable cartridges are prepared at the Eagle STP for use. Two cartridges are used for bulk load of the LNP database (both labeled Bulk Load removable cartridge), and one cartridge will be used as an Eagle STP database backup (labeled Database Backup removable cartridge).
 - The Bulk Load removable cartridges are used to transport the LNP database from the Eagle STP containing the good LNP database to the Eagle STP requiring the bulk load of the LNP database. One cartridge is a duplicate to be used if the other cartridge becomes unusable.
 - The Database Backup removable cartridge is used by the “Backing Out Using the Database Backup Removable Cartridge” procedure in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,” to restore the Eagle STP to the configuration it had before the LNP database bulk loading procedure was performed.
2. The Bulk Load removable cartridges are formatted at the Eagle STP requiring the bulk load of the LNP database.
3. The database on the Eagle STP requiring the bulk load of the LNP database is backed up to the fixed disks and to the Database Backup removable cartridge.
4. At the Eagle STP requiring the bulk loading of the LNP database, the LNP 4Digit table memory allocation, shown in the `rtrv-mem` command output, and the values shown in the output of the `rtrv-lnp-serv` command are recorded for comparison to the values shown on the Eagle STP containing the LNP database that is to be copied.
5. Both Bulk Load removable cartridges are taken to the Eagle STP containing the LNP database that is to be copied. The Eagle STP database (includes LNP database) is backed up onto both Bulk Load removable cartridges (duplicates).
6. Both Bulk Load removable cartridges are returned to the Eagle STP requiring the bulk loading of the LNP database.
7. One of the Bulk Load removable cartridges is inserted into the Eagle STP removable cartridge drive. The GPLs are copied to the cartridge, and the LNP database is copied (imported) from the cartridge to the Eagle STP's fixed disk databases using the `chg-db:action=import` command. (Use the second Bulk Load removable cartridge if the first one becomes unusable).
8. When the `chg-db:action=import` command has completed successfully, both the active and standby MASP's are reinitialized.
9. The newly-imported LNP database is distributed to each of the Eagle STP's TSMs.

Copying the LNP Database from Another Eagle STP

Use this procedure to copy the LNP database from another Eagle STP containing an LNP database in good condition to a removable cartridge. This procedure requires two removable cartridges that must have been prepared earlier at the Eagle STP that requires the bulk load of the LNP database (see section “Preparing Removable Cartridges for LSMS-to-NE Bulk Loading” in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”) Both cartridges will be identical. The second cartridge can be used at the remote site in case the first cartridge becomes unusable.

Procedure

1. At the Eagle STP containing the LNP database to be imported, insert the first Bulk Load removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4 and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.
-

2. Verify that the GTT and LNP features are turned on (`gtt=on` and `lnp=on`) by entering the `rtrv-feat` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
EAGLE FEATURE LIST

GTT          = on      GWS          = off      NRT          = off
X25G         = off     LAN          = off     CRMD         = off
SEAS         = off     LFS         = off     MTPRS        = off
LNP          = on      FAN         = off     DSTN4000     = off
WNP          = off     CNCF        = off     LNP12MIL    = off
TLNP         = off     SCCPCNV     = off     TCAPCNV     = off
X252000      = off     PLNP        = off     NCR          = off
ITUMTPRS     = off     SLSOCB     = off     EGTT         = off
IPISUP       = off     DYNRTK     = off     PVGTT        = off
PRFXDLGT     = off     MPC         = off     INP          = off
ITUDUPPC     = off
```

If both features are turned on, go to step 3.

To turn on the LNP feature or to turn on the LNP and the GTT features, refer to procedure “Activating the LNP Feature” in the *Database Administration Manual - LNP*. Then return to step 3.

3. Verify with the `rtrv-lnp-serv` command that the LNP service data match the values recorded during the preparation of the Database Backup removable cartridge (see step 6 on page 11-43 in Chapter , "Preparing the Network Element for Manual Bulk Loading"). This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT  TTN      DV  ALIAS
AIN   15  AIN      TCAP ---
LIDB  20  LIDB     SCCP ---
CLASS 25  CLASS    SCCP ---
CNAM  30  CNAM     SCCP ---
ISVM  50  ISVM     SCCP ---
IN    6   IN       TCAP ---
```

```
LNP-SERV TABLE IS (6 of 256) 2% FULL
```

If the values shown in the output of the `rtrv-lnp-serv` command do not match the recorded values, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

-
4. Display the LNP 4Digit table memory allocation in the database with the `rtrv-mem` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
LNP 4DIGIT OBJECT  %FULL
-----
LNP_4DIG.TBL      75

LNP 4DIGIT database is (1500000 of 2000000) 75% full

rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
Memory retrieval complete.
```

Compare the output with the values of the 4Digit table memory allocation recorded during the preparation of the Database Backup removable cartridge (see step 7 on page 11-43 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”)

If the LNP 4digit table memory allocation is less than or equal to the LNP 4Digit table memory allocation recorded, go to step 5.

If the LNP 4Digit table memory allocation is greater than the LNP 4digit table memory allocation recorded, the Translation Service Modules (TSMs) on both Eagle STPs may not contain the same amount of memory. Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

- Turn off the measurement collection function with the `chg-meas` command and the `collect=off` parameter. Enter this command:

```
chg-meas:collect=off
```

The system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

- Verify that the measurement collection function is off by entering this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = off
GTWYLSREPT        = both
-----
SYSTOT-STP        = on
SYSTOT-TT         = off
SYSTOT-STPLAN     = off
COMP-LNKSET       = on
COMP-LINK         = on
GTWY-STP          = on
GTWY-LNKSET       = on
MTCB-STP          = on
MTCB-LINK         = on
MTCB-STPLAN       = on
MTCB-LNKSET       = on
```

If the `rtrv-meas-sched` command output shows that the measurement collection function is still on, repeat steps 7 and 8. If the function is still on after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

- Display the LNP options in the database with the `rtrv-lnpopts` command to verify the LNP audit function status. The LNP audit function must be turned off (**AUD=off**). This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID          = 123456789
INCSLP            = yes
AMACTYPE          = 003
AMAFEATID         = 010
CIC               = 1369
AUD              = on
SP                = a123
FRCSMPX          = no
ADMHIPRI          = no
GTWYSTP          = no
CCP              = no
SERVPORT         = no
WQREDRCT         = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on), see rtrv-feat command output in step 2, the rtrv-lnpopts command output shows the additional fields JIPPROV and JIPDIGITS.

To turn off the LNP audit function, go to step 10. If the LNP audit function is off, continue with step 12.

-
10. Turn off the LNP audit function using the `chg-lnpopts` command and specifying the `aud=off` parameter. Enter this command:

```
chg-lnpopts:aud=off
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0
CHG-LNPOPTS: MASP B - COMPLTD
```

-
11. Verify that the LNP audit function is turned off (`AUD=off`) with the `rtrv-lnpopts` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMATYPE       = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = off
SP            = a123
FRCSMPLEX     = no
ADMHIPRI      = no
GTWYSTP       = no
CCP           = no
SERVPORT      = no
WQREDRCT      = off
```

NOTE: If the Triggerless LNP feature is on (TLNP=on), see rtrv-feat command output in step 2, the rtrv-lnpopts command output shows the additional fields JIPPROV and JIPDIGITS.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still on, repeat steps 10 and 11. If the LNP audit function is still on after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

-
12. Copy the approved GPLs and the system release table from the active fixed disk to the Bulk Load removable cartridge with the `copy-gp1` command.

During command execution, these messages appear:

```
rlghncxa03w 01-09-07 14:50:46 GMT Rel 28.0.0
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

13. Back up the database to the Bulk Load removable cartridge using the `chg-db:action=backup:dest=remove` command. These messages appear:

```
BACKUP (REMOVABLE) : MASP B - Backup starts on active MASP.
BACKUP (REMOVABLE) : MASP B - Backup to removable cartridge complete.
```

14. Verify the proper LNP database version indicator for the fixed disk databases and the database on the removable cartridge using the `rept-stat-db:display=version` command. Under the VERSION STATUS column in the resulting output, all TDM-CRNT and MDAL values must be the same. The LNP values must all be the same and not equal 165-165-165. The value 165-165-165 indicates that no valid LNP database has been backed up to the removable cartridge. This is an example of the possible output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP  C  LEVEL      TIME LAST BACKUP
      - - - - -
FD BKUP  Y      35 01-09-06 10:19:18 GMT  Y      35 01-09-06 10:19:18 GMT
FD CRNT  Y      106
      MDAL 1117
      - - - - -
RD BKUP  Y      247 01-09-02 14:29:03 GMT

CARD/APPL  LOC  C  T  LEVEL      TIME LAST UPDATE  VERSION      STATUS
-----
TDM-CRNT  1114 Y  N  106      01-09-06 23:15:06  026-000-500  NORMAL
      LNP
TDM-BKUP   1114 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
      LNP
TDM-CRNT  1116 Y  N  106      01-09-06 23:47:05  026-000-500  NORMAL
      LNP
TDM-BKUP   1116 Y  -  35      01-09-06 10:19:18  026-000-500  NORMAL
      LNP
MDAL     1117 Y  -  247      01-09-02 14:29:03  026-000-500  NORMAL
      LNP
```

15. Remove the Bulk Load removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”

16. Insert the second Bulk Load removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See the “Write-Enabling the Removable Cartridge” section on page 11-4 and the “Inserting the Removable Cartridge” section on page 11-5 and Figure 11-2 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”

17. Repeat steps 12 through 15 using the second Bulk Load removable cartridge.

18. If the LNP audit function was turned off in step 10 on page 12-9, turn on the LNP audit function with the `chg-lnpopts` command and specify the `aud=on` parameter. Enter this command:

```
chg-lnpopts:aud=on
```

The system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0  
CHG-LNPOPTS: MASP B - COMPLTD
```

If the LNP audit function was not turned off in step 10, skip this step and continue with step 20.

19. Verify that the LNP audit function is on (`AUD=on`) using the `rtrv-lnpopts` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0  
AMASLPID      = 123456789  
INCSLP        = yes  
AMACTYPE      = 003  
AMAFEATID     = 010  
CIC           = 1369  
AUD          = on  
SP            = a123  
FRCSMPLEX    = no  
ADMHIPRI     = no  
GTWYSTP      = no  
CCP          = no  
SERVPORT     = no  
WQREDRCT     = off
```

NOTE: If the Triggerless LNP feature is on (`TLNP=on`), see `rtrv-feat` command output in step 2, the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still off, repeat steps 18 and 19. If the LNP audit function is still off after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

NOTE: If the measurement collection function was not turned off in step 7 on page 12-8, skip steps 20 and 21, and continue with procedure “Loading and Distributing the LNP Database at the Eagle STP” on page 12-21.

20. To turn on the measurement collection function, enter this command:

```
chg-meas:collect=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

21. Verify that the measurement collection function is on by entering this command:

```
rtrv-meas-sched
```

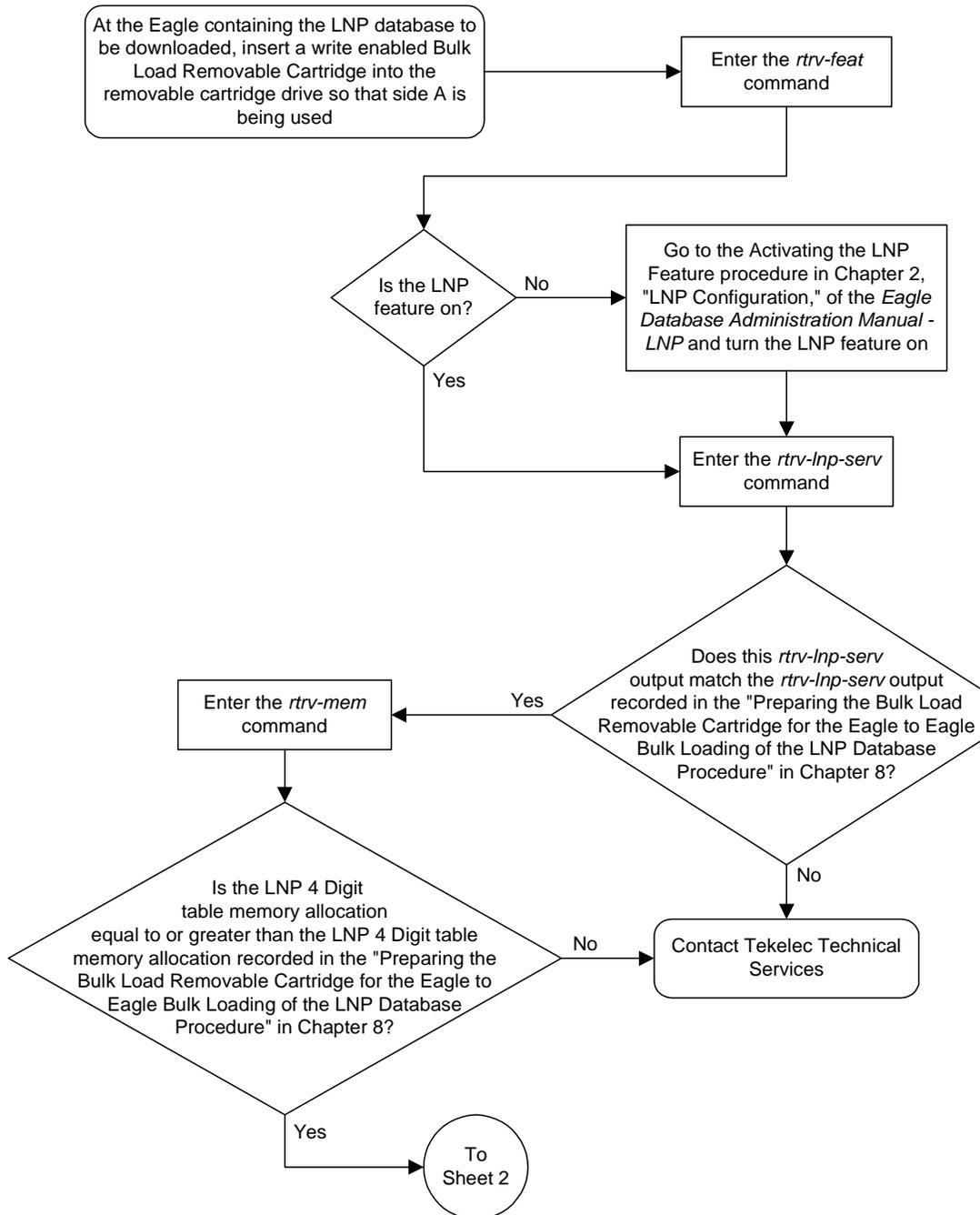
This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = on
GTWYLSREPT      = both
-----
SYSTOT-STP      = on
SYSTOT-TT       = off
SYSTOT-STPLAN   = off
COMP-LNKSET     = on
COMP-LINK       = on
GTWY-STP        = on
GTWY-LNKSET     = on
MTC D-STP       = on
MTC D-LINK      = on
MTC D-STPLAN    = on
MTC D-LNKSET    = on
```

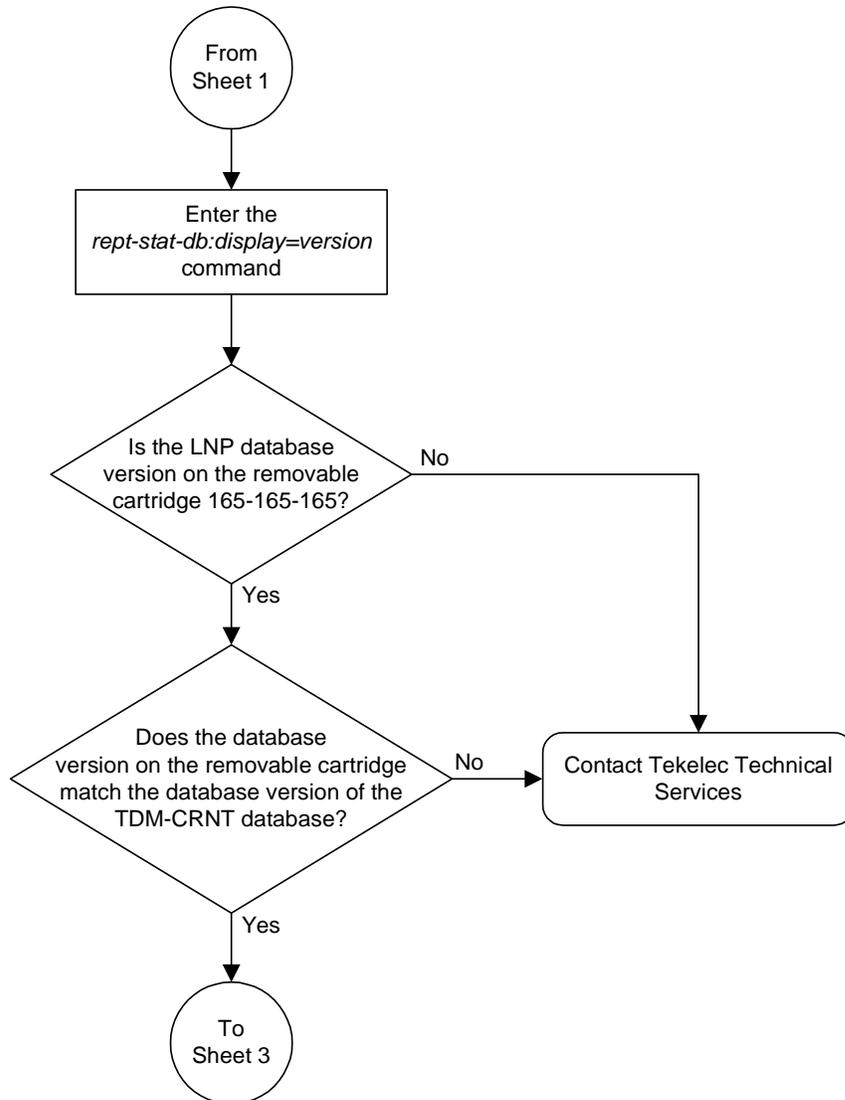
If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat step 20 and step 21. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

You have now completed this procedure.

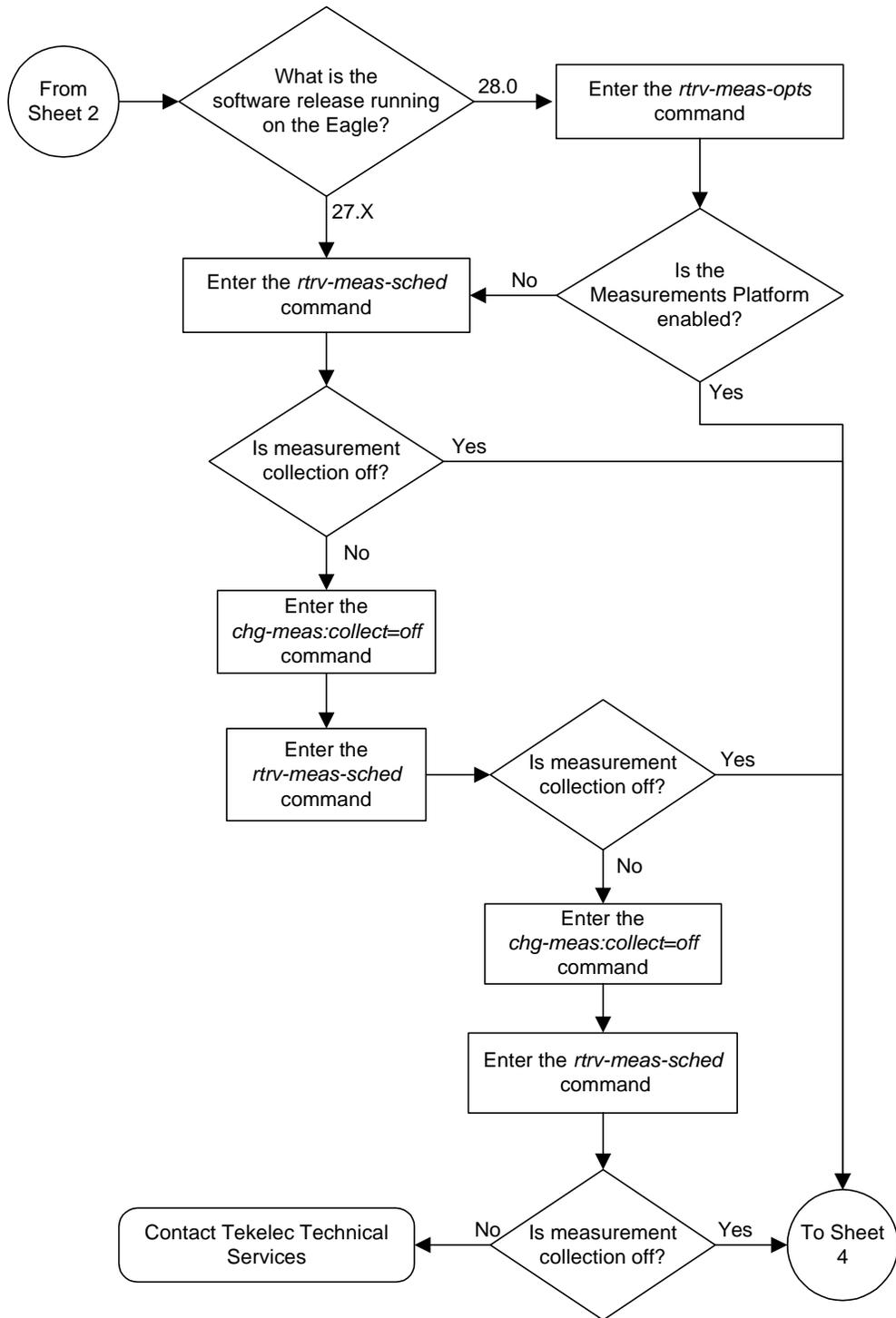
Flowchart 12-1. Copying the LNP Database from Another Eagle STP (Sheet 1 of 8)



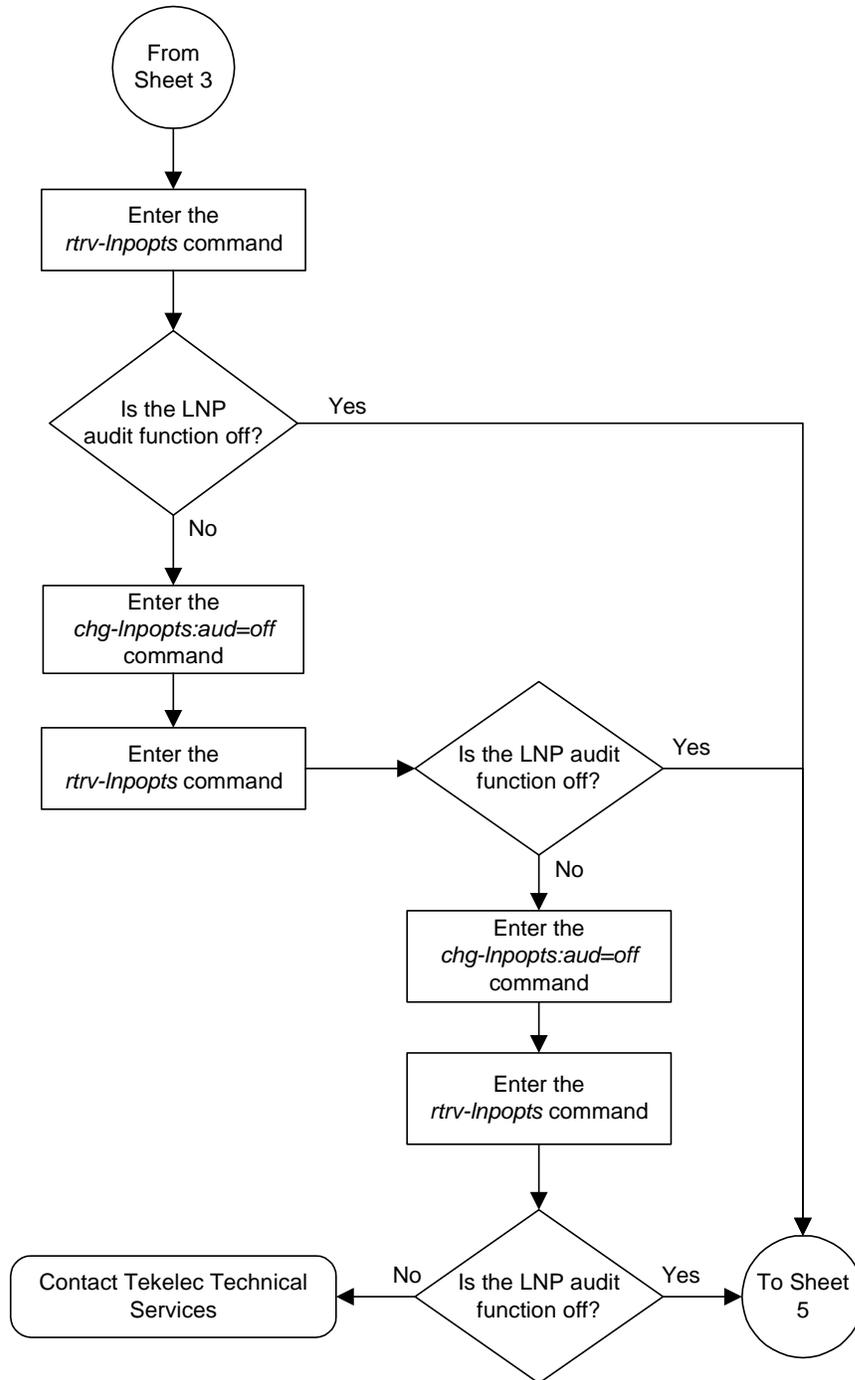
Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 2 of 8)



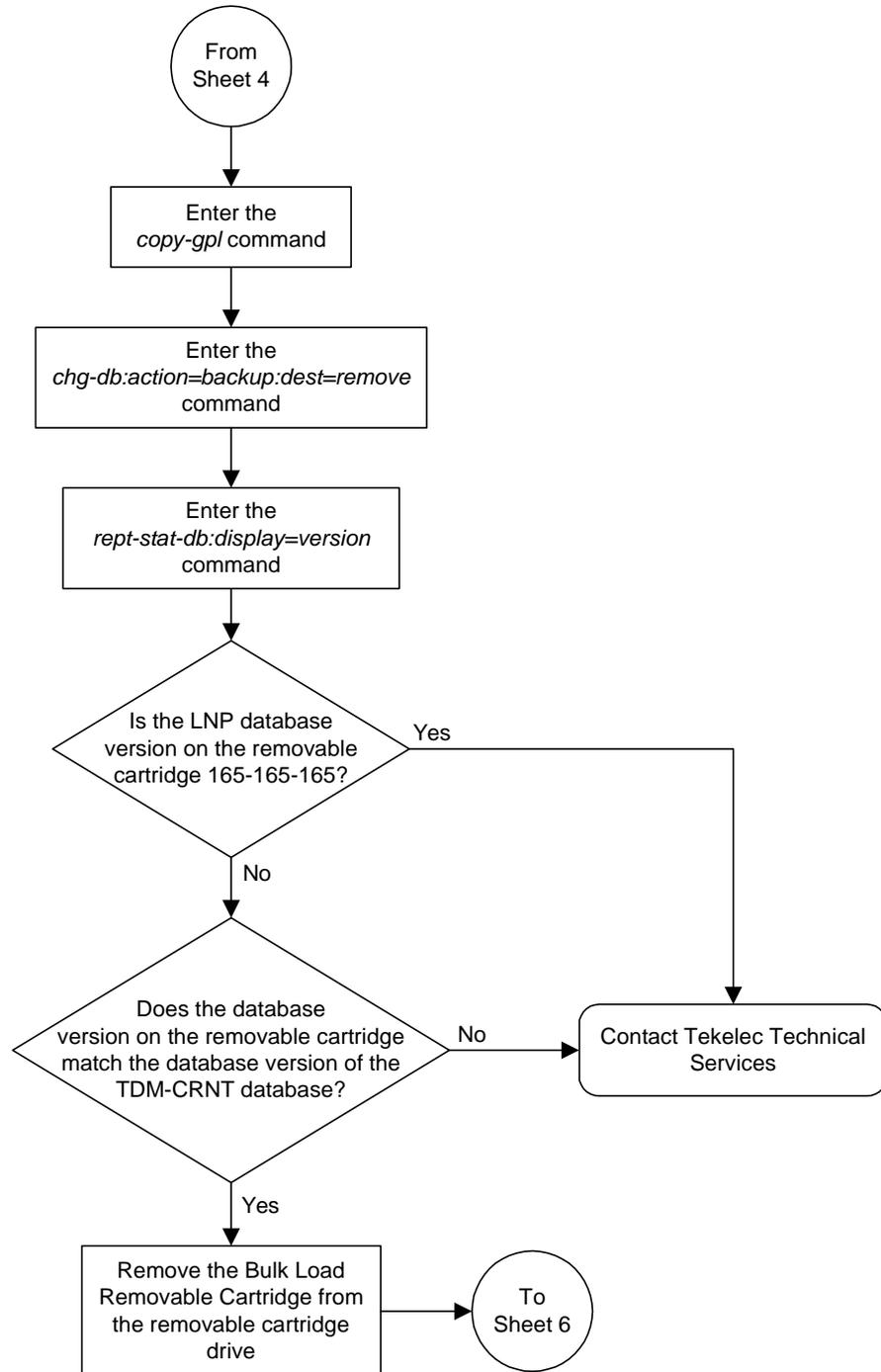
Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 3 of 8)



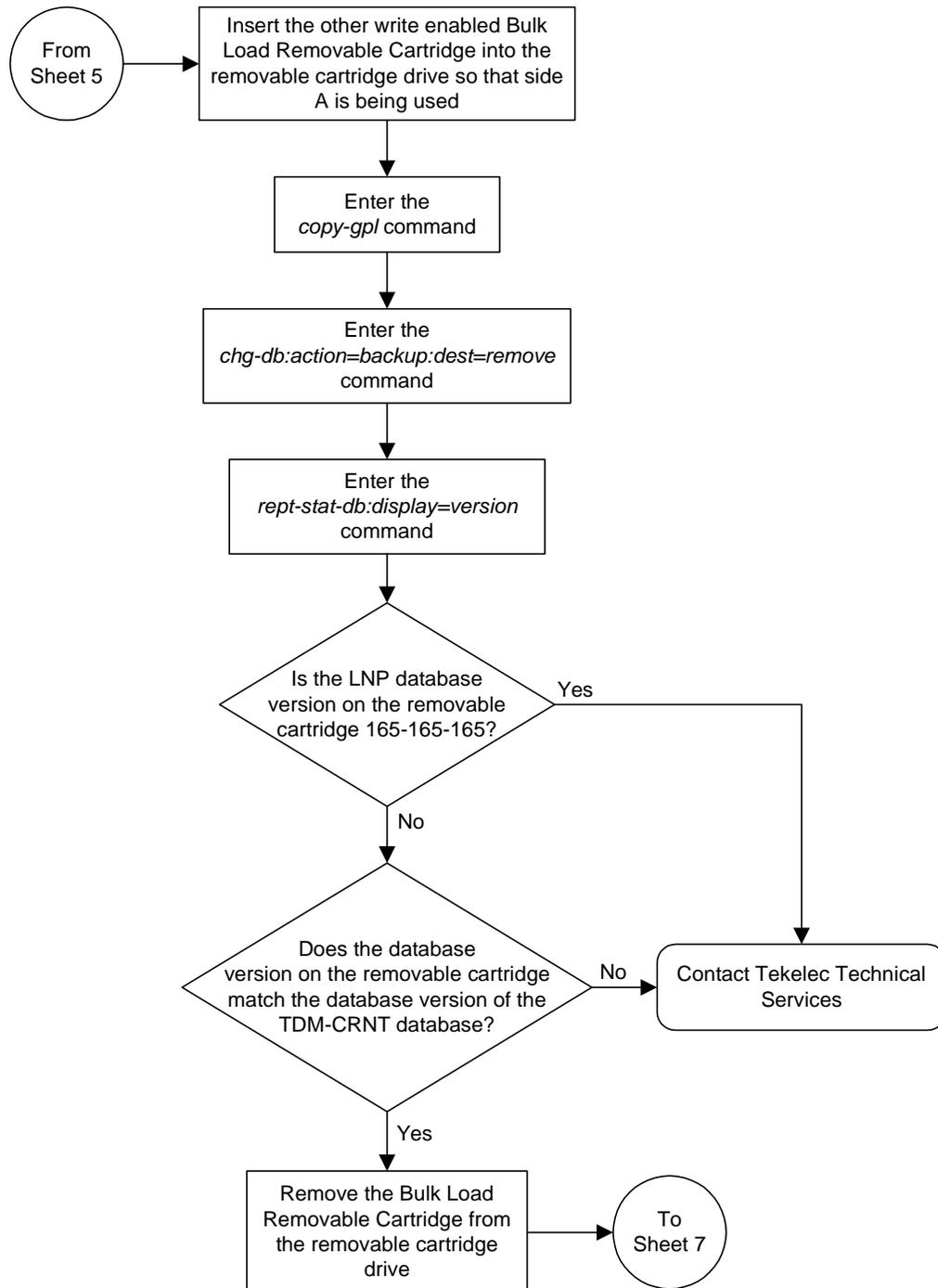
Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 4 of 8)



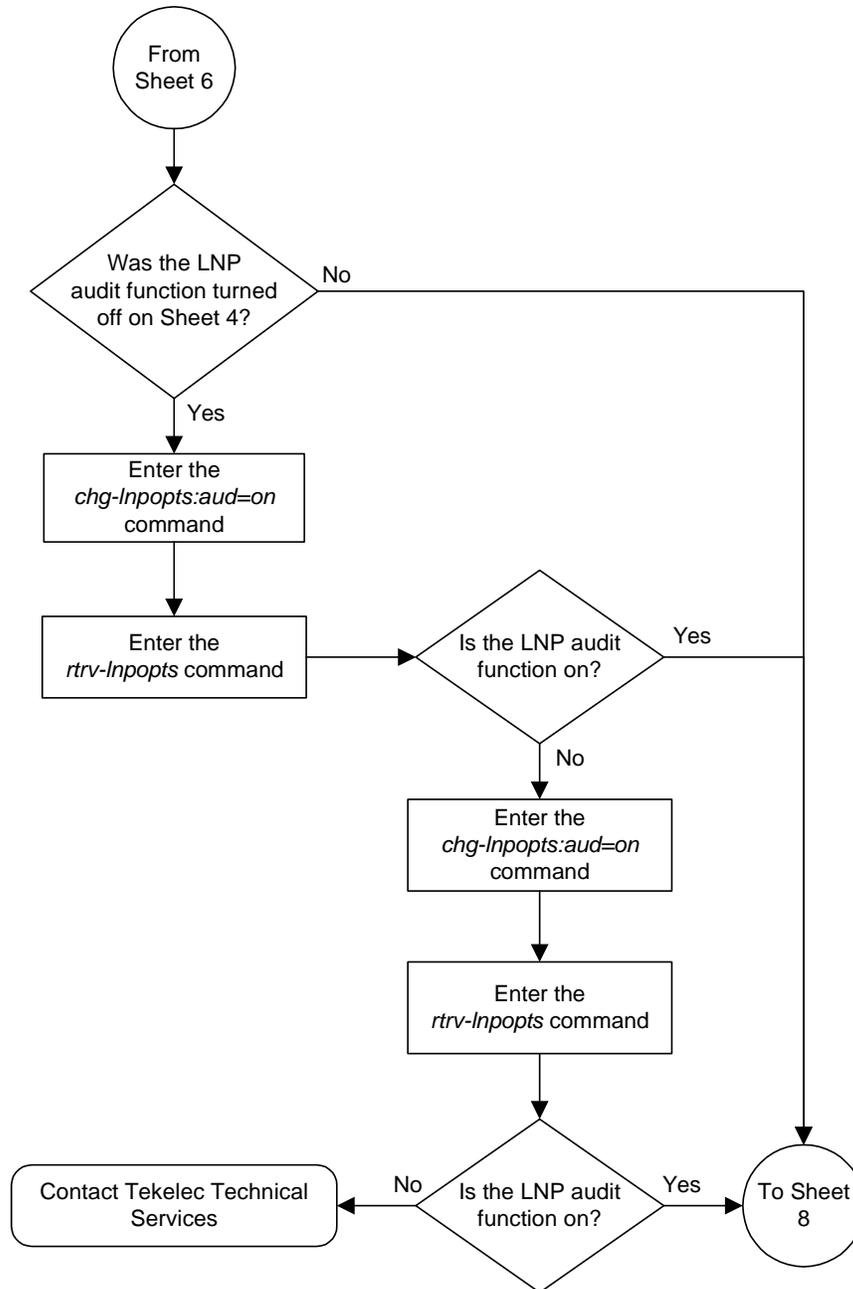
Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 5 of 8)



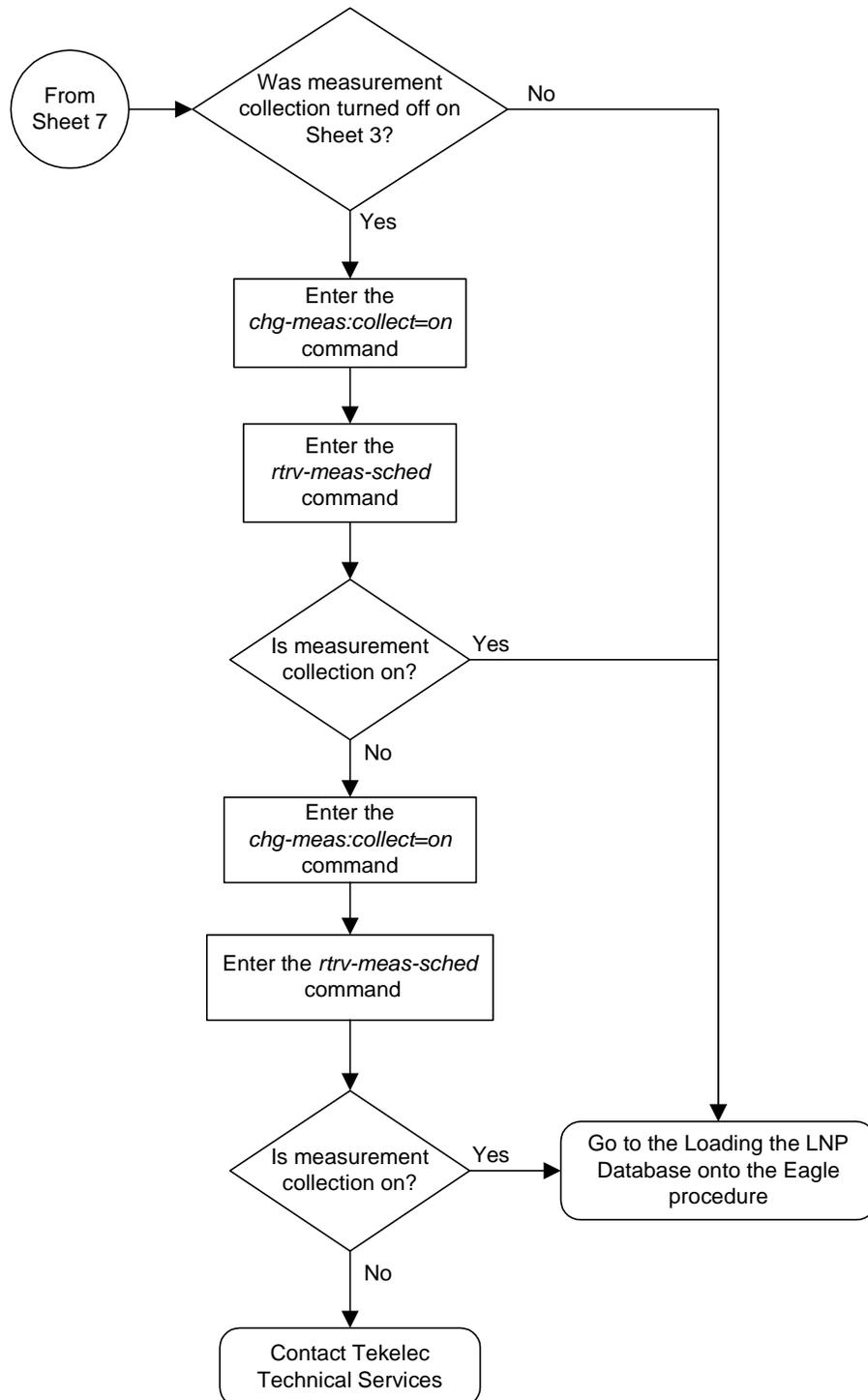
Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 6 of 8)



Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 7 of 8)



Flowchart 12-1. Copying the LNP Database from Another Eagle STP
(Sheet 8 of 8)



Loading and Distributing the LNP Database at the Eagle STP

Use this procedure to load the LNP database from the Bulk Load removable cartridge to the Eagle STP's fixed disks and to distribute the database from the fixed disks to all Translation Services Modules (TSMs).

This procedure requires two removable cartridges and must be performed at the Eagle STP requiring the bulk download of the LNP database. The cartridges must have been loaded earlier with the good LNP database from a mate STP (see "Copying the LNP Database from Another Eagle STP" on page 12-5). Both cartridges contain the same database. Use the second cartridge if the first cartridge becomes unusable.

Procedure

1. At the Eagle requiring the bulk download, insert one of the Bulk Load removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See "Write-Enabling the Removable Cartridge" on page 11-4 and "Inserting the Removable Cartridge" section on page 11-5 and Figure 11-2 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading."

2. Copy the approved GPLs and the system release table from the active fixed disk to the Bulk Load removable cartridge with the `copy-gpl` command.

During command execution, these messages appear:

```
rlghncxa03w 01-09-07 14:50:46 GMT Rel 28.0.0
COPY-GPL: MASP B - COPY STARTS ON ACTIVE MASP
COPY-GPL: MASP B - COPY TO REMOVABLE CARTRIDGE COMPLETE
```

3. Verify that the LNP database version number on the removable cartridge does not equal 165-165-165. Any other version number indicates that a valid LNP database has been downloaded to the removable cartridge (see procedure Copying the LNP Database from Another Eagle STP, step 14 on page 12-10). Enter the `rept-stat-db:display=version` command.

This is an example of the output, examine the fields shown in bold:

```
rlghncxa03w 01-09-07 16:07:48 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)          TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP    C  LEVEL      TIME LAST BACKUP
-----
FD BKUP  Y          35 01-09-06 10:19:18 GMT  Y          35 01-09-06 10:19:18 GMT
FD CRNT  Y          106
      MDAL 1117
      -
RD BKUP  Y          247 01-09-02 14:29:03 GMT
```

CARD/APPL	LOC	C	T	LEVEL	TIME LAST UPDATE	VERSION	STATUS
TDM-CRNT	1114	Y	N	106	01-09-06 23:15:06	026-000-500	NORMAL
LNP						000-006-000	
TDM-BKUP	1114	Y	-	35	01-09-06 10:19:18	026-000-500	NORMAL
LNP						000-006-000	
TDM-CRNT	1116	Y	N	106	01-09-06 23:47:05	026-000-500	NORMAL
LNP						000-006-000	
TDM-BKUP	1116	Y	-	35	01-09-06 10:19:18	026-000-500	NORMAL
LNP						000-006-000	
MDAL	1117	Y	-	247	01-09-02 14:29:03	026-000-500	NORMAL
LNP						000-006-000	

If the version number of the LNP database on the removable cartridge is 165-165-165, the incorrect removable cartridge has been inserted into the removable cartridge drive on the MDAL card. Remove the removable cartridge and verify that it is labeled as one of the Bulk Load removable cartridges. If it is not labeled as a Bulk Load removable cartridge, insert one of the removable cartridges labeled as Bulk Load removable cartridge and go back to step 2.

If the removable cartridge is labeled as a Bulk Load removable cartridge, insert the other Bulk Load removable cartridge into the removable cartridge drive and go back to step 2.

If both Bulk Load removable cartridges contain an LNP database version number of 165-165-165, go to procedure "Preparing the Bulk Load Removable Cartridges" on page 11-30 in Chapter 11, "Preparing the Network Element for Manual Bulk Loading" and restart the manual STP-to-STP Bulk Load procedure.

4. Display the LNP 4Digit table memory configuration in the database with the **rtrv-mem** command. This is an example of the output; examine the fields shown in bold:

```
rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
LNP 4DIGIT OBJECT  %FULL
-----
LNP_4DIG.TBL      75

LNP 4DIGIT database is (1500000 of 2000000) 75% full

rlghncxa03w 01-09-07 00:57:31 GMT Rel 28.0.0
Memory retrieval complete.
```

If the LNP 4Digit table memory allocation is less the LNP 4Digit table memory allocation recorded in procedure “Copying the LNP Database from Another Eagle STP,” step 4 on page 12-6, the TSMs on both Eagle STPs may not contain the same amount of memory. Go to procedure “Configuring the LNP 4Digit Tables” in Chapter 2 of the *Eagle STP Database Administration Manual - LNP* and increase the LNP 4Digit table memory allocation so that the allocation is equal to the allocation displayed in procedure “Copying the LNP Database from Another Eagle STP,” step 4 on page 12-6; then continue with step 5 in this procedure.

If the LNP 4Digit table memory allocation is greater than or equal to the amount displayed in procedure “Copying the LNP Database from Another Eagle STP”, step 4 on page 12-6, go to step 5.

5. Display the terminal configuration in the database with the `rtrv-trm` command. The OAP terminals are shown in the output with the entry `OAP` in the `TYPE` field. Record the values of the OAP terminal ports. This is an example of the possible output; in this example, the OAP terminals are terminals 6 and 9, shown in bold:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1 SW    30      5      99:59:59
2    KSR        9600-7-E-1 HW    30      5      INDEF
3    PRINTER    4800-7-E-1 HW    30      0      00:00:00
4    VT320      2400-7-E-1 BOTH  30      5      00:30:00
5    VT320      9600-7-O-1 NONE  30      5      00:00:30
6    OAP        19200-7-E-1 SW    0        5      INDEF
7    PRINTER    9600-7-N-2 HW    30      5      00:30:00
8    KSR        19200-7-E-2 BOTH  30      5      00:30:00
9    OAP        19200-7-E-1 SW    0        5      INDEF
10   VT320      9600-7-E-1 HW    30      5      00:30:00
11   VT320      4800-7-E-1 HW    30      5      00:30:00
12   PRINTER    9600-7-E-1 HW    30      4      00:30:00
13   VT320      9600-7-O-1 NONE  30      5      00:30:00
14   VT320      9600-7-E-2 SW    30      8      00:30:00
15   VT320      9600-7-N-2 HW    30      5      00:30:00
16   VT320      9600-7-E-2 BOTH  30      3      00:30:00
```

```
TRM  TRAF  LINK  SA   SYS  PU  DB
1    NO   YES   NO   YES  NO  YES
2    NO   NO    NO   NO   NO  NO
3    YES  YES   YES  NO   YES YES
4    YES  NO    NO   NO   NO  NO
5    NO   YES   NO   NO   NO  NO
6    YES  YES   YES  YES  YES YES
7    YES  YES   YES  YES  YES YES
8    NO   NO    NO   NO   YES NO
9    YES  YES   YES  YES  YES YES
10   NO   NO    NO   NO   NO  NO
11   YES  YES   YES  YES  YES YES
12   YES  YES   YES  YES  YES YES
13   NO   YES   NO   NO   NO  NO
14   NO   NO    YES  NO   NO  NO
15   YES  YES   YES  NO   YES YES
16   NO   NO    NO   NO   YES NO
```

6. Display the status of the terminals with the `rept-stat-trm` command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
TRM  PST          SST          AST
1    IS-NR        Active      -----
2    IS-NR        Active      -----
3    IS-NR        Active      -----
4    IS-NR        Active      -----
5    IS-NR        Active      -----
6    IS-NR        Active      -----
7    IS-NR        Active      -----
8    IS-NR        Active      -----
9    IS-NR        Active      -----
10   IS-NR        Active      -----
11   IS-NR        Active      -----
12   IS-NR        Active      -----
13   IS-NR        Active      -----
14   IS-NR        Active      -----
15   IS-NR        Active      -----
16   IS-NR        Active      -----
Command Completed.
```

7. Take the OAP terminals out of service using the `rmv-trm` command with the values of the OAP terminals recorded in step 5. The `force=yes` parameter must be used when placing the last OAP terminal out of service. For this example, enter these commands:

```
rmv-trm:trm=6
rmv-trm:trm=9:force=yes
```



CAUTION: These commands will take the connection between the Eagle STP and the LSMS and the SEAS interface out of service and will remain out of service until the OAP terminals are returned to service in step 22 on page 12-34.

If the status of the OAP terminals shown in the PST field in step 6 is OOS-MT-DSBLD (out of service maintenance disabled), the terminal is already out of service and the `rmv-trm` command does not need to be executed for that terminal.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Inhibit message sent to terminal

rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Command Completed.
```

8. Change the terminal type of the OAP terminals to **NONE** using the **chg-trm** command. Specify the **type=none** parameter and the values of the OAP terminals recorded in step 5. For this example, enter these commands:

```
chg-trm:trm=6:type=none
```

```
chg-trm:trm=9:type=none
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
CHG-TRM: MASP B - COMPLTD
```

9. Verify that the OAP terminals have been changed to the terminal type **NONE** with the **rtrv-trm** command. This is an example of the possible output; in this example, the OAP terminals are terminals 6 and 9 and are shown in bold.

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
TRM  TYPE  COMM      FC  TMOUT  MXINV  DURAL
1    VT320  9600-7-E-1 SW   30   5     99:59:59
2    KSR    9600-7-E-1 HW   30   5     INDEF
3    PRINTER 4800-7-E-1 HW   30   0     00:00:00
4    VT320  2400-7-E-1 BOTH 30   5     00:30:00
5    VT320  9600-7-O-1 NONE 30   5     00:00:30
6   NONE  19200-7-E-1 SW   0    5     INDEF
7    PRINTER 9600-7-N-2 HW   30   5     00:30:00
8    KSR    19200-7-E-2 BOTH 30   5     00:30:00
9   NONE  19200-7-E-1 SW   0    5     INDEF
10   VT320  9600-7-E-1 HW   30   5     00:30:00
11   VT320  4800-7-E-1 HW   30   5     00:30:00
12   PRINTER 9600-7-E-1 HW   30   4     00:30:00
13   VT320  9600-7-O-1 NONE 30   5     00:30:00
14   VT320  9600-7-E-2 SW   30   8     00:30:00
15   VT320  9600-7-N-2 HW   30   5     00:30:00
16   VT320  9600-7-E-2 BOTH 30   3     00:30:00
```

```
TRM  TRAF  LINK  SA  SYS  PU  DB
1    NO   YES  NO  YES  NO  YES
2    NO   NO   NO  NO  NO  NO
3    YES  YES  YES  NO  YES  YES
4    YES  NO   NO  NO  NO  NO
5    NO   YES  NO  NO  NO  NO
6    YES  YES  YES  YES  YES  YES
7    YES  YES  YES  YES  YES  YES
8    NO   NO   NO  NO  YES  NO
9    YES  YES  YES  YES  YES  YES
10   NO   NO   NO  NO  NO  NO
11   YES  YES  YES  YES  YES  YES
12   YES  YES  YES  YES  YES  YES
13   NO   YES  NO  NO  NO  NO
14   NO   NO   YES  NO  NO  NO
15   YES  YES  YES  NO  YES  YES
16   NO   NO   NO  NO  YES  NO
```

If the **rtrv-trm** command output shows that the OAP terminals have not been changed to terminal type **NONE**, repeat steps 8 and 9. If the OAP terminal type still has not been changed after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

10. Copy the LNP database from the Bulk Load removable cartridge to the fixed disks by entering the `chg-db:action=import` command. This command can take up to 30 minutes to execute depending on other system activity in progress when this command is entered.

NOTE: If this command takes more than 60 minutes to execute, contact Tekelec Technical Services for assistance (see “Technical Services and Support” on page 1-14).

During command execution, the following messages appear. When the `chg-db:action=import` command has completed, both MASPs are reinitialized.

```
rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) starts on active MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) on active MASP complete.
IMPORT : MASP B - Import (LNP) starts on standby MASP.

rlghncxa03w 01-09-07 09:44:08 GMT Rel 28.0.0
IMPORT : MASP B - Import (LNP) on standby MASP complete.
IMPORT : MASP B - MASP(s) will reboot to reload data.
```

When both MASPs have been reinitialized, the databases on the MASPs and the TSMs are different and UAM 0429, LNP database is inconsistent, is generated for each TSM. For this example, these messages are generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1101 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1206 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1213 SCCP LNP database is inconsistent

rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
** 0012.0429 ** CARD 1214 SCCP LNP database is inconsistent
```

-
11. Remove the Bulk Load removable cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” section on page 11-6 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”
-

12. If the LNP audit function was turned off in procedure “Copying the LNP Database from Another Eagle STP,” step 10 on page 12-9, turn on the LNP audit function. If the LNP audit function was not turned off, continue with step 14. To turn on the LNP audit function, enter this command:

```
chg-lnpopts:aud=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 08:50:12 GMT Rel 28.0.0
CHG-LNPOPTS: MASP B - COMPLTD
```

-
13. Verify that the LNP audit function is on (**aud=on**) with the **rtrv-lnpopts** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 16:02:08 GMT Rel 28.0.0
AMASLPID      = 123456789
INCSLP        = yes
AMACTYPE      = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = on
SP            = a123
FRCSMPLX     = no
ADMHIPRI     = no
GTWYSTP      = no
CCP          = no
SERVPORT     = no
WQREDRCT     = off
```

NOTE: If the Triggerless LNP feature is on (**TLNP=on** in **rtrv-feat** command output), the **rtrv-lnpopts** command output shows the additional fields **JIPPROV** and **JIPDIGITS**.

If the **rtrv-lnpopts** command output shows that the LNP audit function is still off, repeat steps 12 and 13. If the LNP audit function is still off after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

14. Verify with the `rtrv-lnp-serv` command that the LNP translation type values of the imported LNP database match the values recorded during the preparation of the Database Backup removable cartridge (see step 6 on page 11-43 in Chapter , "Preparing the Network Element for Manual Bulk Loading"). This is an example of the possible output.

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV  TT   TTN      DV   ALIAS
AIN    15  AIN      TCAP  ---
LIDB   20  LIDB     SCCP  ---
CLASS  25  CLASS    SCCP  ---
CNAM   30  CNAM     SCCP  ---
ISVM   50  ISVM     SCCP  ---
IN     6   IN       TCAP  ---
```

```
LNP-SERV TABLE IS (6 of 256) 2% FULL
```

If the recorded values from procedure “Preparing the Database Backup Removable Cartridge,” step 6 on page 11-43 do not match the values displayed in this step, correct the values displayed in this step.

If you wish to continue to use the recorded user-defined services, alias translation types, the wireless number portability translation type, or the PCS 1900 number portability translation type, go to step 15.

If you wish to use the user-defined services, alias translation types, or wireless number portability translation types but not the translation type names, go to step 15, then continue with step 17.

If you wish to use only the translation type names, go to step 16. Otherwise, go to step 18 on page 12-31.

-
15. Re-enter the user-defined LNP services or alias translation types with the `ent-lnp-serv` command specifying the values recorded in procedure “Preparing the Database Backup Removable Cartridge,” step 6 on page 11-43. For this example, enter these commands:

```
ent-lnp-serv:serv=udf1:tt=201:dv=sccp
```

```
ent-lnp-serv:serv=ain:alias=235
```

```
ent-lnp-serv:serv=ain:alias=236
```

```
ent-lnp-serv:serv=wmp:tt=22:dv=tcap
```

```
ent-lnp-serv:serv=pcs:tt=11:dv=tcap
```

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the `serv` parameter of the `ent-lnp-serv` command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

```
CAUTION: LNP service TTs have changed, OAP configuration is required
```

If the OAP configuration must be updated, go to procedure “Configuring the OAP from the System Terminal” in the *Eagle STP Database Administration Manual - System Management* to update the OAP configuration.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
ENT-LNP-SERV: MASP B - COMPLTD
```

-
- 16.** Change the LNP services by adding the translation type names to the LNP services in the database with the `chg-lnp-serv` command. Specify the values recorded in procedure “Preparing the Database Backup Removable Cartridge,” step 6 on page 11-43. For this example, enter these commands:

```
chg-lnp-serv:serv=ain:nttn=aingte
chg-lnp-serv:serv=class:nttn=classgte
chg-lnp-serv:serv=in:nttn=ingte
chg-lnp-serv:serv=wnp:nttn=wnpgte
chg-lnp-serv:serv=pcs:nttn=pcs11
```

If the LNP services CLASS, CNAM, LIDB, or ISVM are specified by the `serv` parameter of the `chg-lnp-serv` command, this caution message is displayed indicating that the OAP configuration must be updated with the new LNP service information.

```
CAUTION: LNP service TTs have changed, OAP configuration is required
```

If the OAP configuration must be updated, go to the “Configuring the OAP from the System Terminal” in the *Eagle STP Database Administration Manual - System Management* to update the OAP configuration.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
CHG-LNP-SERV: MASP B - COMPLTD
```

17. Verify with the `rtrv-lnp-serv` command that the user-defined LNP services, translation type names, alias translation types, or the wireless number portability translation type have been added to the database and match the values recorded in procedure “Preparing the Database Backup Removable Cartridge,” step 6 on page 11-43. This is an example of the possible output:

```
rlghncxa03w 01-09-07 14:42:38 GMT Rel 28.0.0
SERV      TT      TTN      DV      ALIAS
AIN       15     AINGTE   TCAP    235
          236

IN        6      INGTE    TCAP    ---
LIDB     20     LIDB     SCCP    ---
WNP      22     WNPGE    TCAP    ---
PCS      11     PCS11    TCAP    ---
CLASS    25     CLASSGE  SCCP    ---
CNAM     30     CNAM     SCCP    ---
ISVM     50     ISVM     SCCP    ---
UDF1     201    UDF1     SCCP    ---

LNP-SERV TABLE IS (9 of 256) 4% FULL
```

If the `rtrv-lnp-serv` command output shows that the user-defined LNP services, translation type names, and translation types have not been added to the database, repeat steps 15, 16, and 17. If the user-defined LNP services, translation type names, and translation types still have not been added to the database after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

18. Distribute the imported LNP database onto each TSM (assigned to the SCCP or EDBABLM application), which will also silence the LNP database alarms. Use one of the following methods:

- Method A loads the imported LNP database onto one TSM at a time by reloading each TSM.

This method allows the global title translation and LNP functions to continue running while the new LNP database is being loaded. When the TSM is reinitializing, its database goes temporarily out of service for the period of time that it takes to reload the database on the TSM. The time required to reload the database depends upon the size of the database and can take as long as 15 minutes for an LNP database containing 2,000,000 LNP subscriptions.

- Method B loads the imported LNP database onto all TSMs in the system by reinitializing all the TSMs at once.



CAUTION: This method not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. Use this method only in emergency situations. Method A is the preferred method.

Method A: Perform steps a and b in this method for each TSM, one TSM at a time:

- a. Take the TSM out of service with the `rmv-card` command specifying the card location of the TSM. If there is only one TSM in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
Card has been inhibited.
```

- b. Return the TSM to service with the `rst-card` command specifying the card location of the TSM. This command loads the LNP database on the specified TSM. For this example, enter this command:

```
rst-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
Card has been allowed.
```

- c. When the TSM is returned to service, the major alarm is silenced and UAM 0431, LNP database has been corrected, is generated. For this example, this message is generated:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

- d. Repeat steps a and b for the other TSMs in the system.

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,” and resolve the problem with the TSM.

Method B: Enter the `init-card:appl=sccp` command.



CAUTION: This command initializes all the TSMs at once and not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations.

NOTE: A more graceful way of initializing the TSMs is to reroute all global title translation traffic, including LNP traffic, to the mate Eagle STP using the `inh-map-ss` command. The `inh-map-ss` command takes the mated application subsystem out of service. When the mated application subsystem is out of service, all global title translation traffic, including LNP traffic, is rerouted to the mate Eagle STP.

The mated application subsystem must be inhibited with the `inh-map-ss` command before the TSMs are reinitialized with the `init-card:appl=sccp` command. After the `init-card:appl=sccp` command has finished executing and all the TSMs have reinitialized, return the mated application subsystem to service with the `alw-map-ss` command.

When the imported database has been loaded onto each TSM, UAM 0431 is displayed for each TSM showing that the UAM 0429 has been cleared and the database on the TSM matches the database on the MASPs. This is an example of UAM 0431.

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

If any of the TSMs continue to boot, go to procedure “Troubleshooting the Database Downloading Procedure” on page 13-4 in Chapter 13, “Bulk Loading Troubleshooting and Backout Procedures,”

-
19. If the measurement collection function was turned off when preparing the Bulk Load removable cartridge (see step 2 on page 11-31 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”), turn the measurement collection function back on by entering this command:

```
chg-meas:collect=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 17:02:57 GMT Rel 28.0.0
CHG-MEAS: MASP B - COMPLTD
```

If the measurement collection function was not turned off, skip steps 19 and 20 and go to step 21.

20. Verify that the measurement collection function is turned on using the **rtrv-meas-sched** command. This is an example of the possible output:

```
rlghncxa03w 01-09-07 07:19:51 GMT Rel 28.0.0
COLLECT          = on
GTWYLSREPT      = both
-----
SYSTOT-STP      = on
SYSTOT-TT       = off
SYSTOT-STPLAN   = off
COMP-LNKSET     = on
COMP-LINK       = on
GTWY-STP        = on
GTWY-LNKSET     = on
MTCD-STP        = on
MTCD-LINK       = on
MTCD-STPLAN     = on
MTCD-LNKSET     = on
```

If the **rtrv-meas-sched** command output shows that the measurement collection function is still off, repeat steps 19 and 20. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

-
21. Change the terminal type of the terminals that were changed to **NONE** in step 8 on page 12-26 to the terminal type **OAP** with the **chg-trm** command and the **type=oap** parameter. The terminal type is shown in the **TYPE** field in the **rtrv-trm** command output in step 5 on page 12-24. For this example, enter these commands:

```
chg-trm:trm=6:type=oap
```

```
chg-trm:trm=9:type=oap
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-09-07 11:11:28 GMT Rel 28.0.0
CHG-TRM: MASP B - COMPLTD
```

-
22. Put the OAP terminals back into service with the **rst-trm** command. For this example, enter these commands:

```
rst-trm:trm=6
```

```
rst-trm:trm=9
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Allow message sent to terminal
```

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
Command Completed.
```

23. Verify that the OAP terminals are in service with the `rept-stat-trm` command. In-service terminals are shown in the `rept-stat-trm` command output with the entry `IS-NR` in the PST field. This is an example of the possible output:

```
rlghncxa03w 01-09-07 15:08:45 GMT Rel 28.0.0
TRM   PST           SST           AST
1     IS-NR          Active       -----
2     IS-NR          Active       -----
3     IS-NR          Active       -----
4     IS-NR          Active       -----
5     IS-NR          Active       -----
6     IS-NR          Active       -----
7     IS-NR          Active       -----
8     IS-NR          Active       -----
9     IS-NR          Active       -----
10    IS-NR          Active       -----
11    IS-NR          Active       -----
12    IS-NR          Active       -----
13    IS-NR          Active       -----
14    IS-NR          Active       -----
15    IS-NR          Active       -----
16    IS-NR          Active       -----
Command Completed.
```

If the `rept-stat-trm` command output shows that the OAP terminals are not in service, repeat steps 22 and 23. If the OAP terminals are still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

-
24. Back up the database using the `chg-db:action=backup:dest=fixed` command. These messages appear; the active Maintenance and Administration Subsystem Processor (MASP) message appears first:

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

25. Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **n** is shown in the C field of the `rept-stat-db` output. This is an example of the possible output:

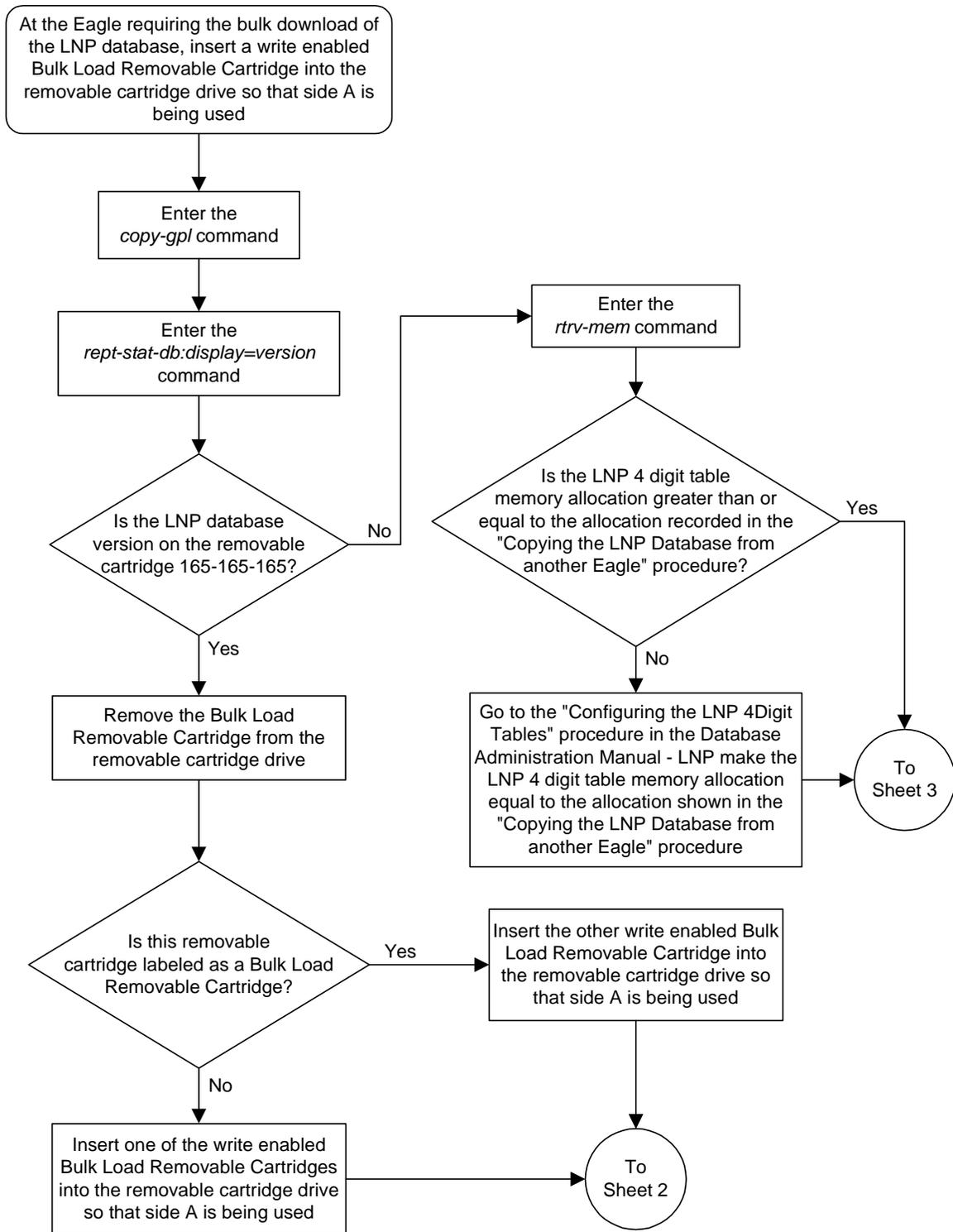
```
rlghncxa03w 01-09-07 16:07:36 GMT Rel 28.0.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
      -  - - - - - - - - - - - - - - -  -  - - - - - - - - - - - - - - -
FD BKUP Y      74 01-09-07 16:07:36 GMT Y      74 01-09-07 16:07:36 GMT
FD CRNT Y      106                                Y      106
      MDAL 1117
      -  - - - - - - - - - - - - - - -
RD BKUP - - - - - - - - - - - - - - - -

CARD/APPL  LOC  C  T  LEVEL    TIME LAST UPDATE  EXCEPTION
-----
SCCP      1101 Y N 106    01-09-07 16:07:36  -
GLS       1102 Y N 106    01-09-07 16:07:36  -
TDM-CRNT  1114 Y N 106    01-09-07 16:07:36  -
TDM-BKUP  1114 Y - 74     01-09-07 16:07:36  -
TDM-CRNT  1116 Y N 106    01-09-07 16:07:36  -
TDM-BKUP  1116 Y - 74     01-09-07 16:07:36  -
MDAL      1117 - - - - - - - - - - - - - - - -
SS7ANSI   1201 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1202 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1203 Y N 106    01-09-07 15:37:36  -
SS7ANSI   1204 Y N 106    01-09-07 15:37:36  -
CCS7ITU   1205 Y N 106    01-09-07 15:37:36  -
SCCP      1206 Y N 106    01-09-07 16:07:36  -
SS7GX25   1207 Y N 106    01-09-07 15:37:36  -
SS7GX25   1208 Y N 106    01-09-07 15:37:36  -
SCCP      1213 Y N 106    01-09-07 16:07:36  -
SCCP      1214 Y N 106    01-09-07 16:07:36  -
EBDABLM   1215 Y N 106    01-09-07 16:07:36  -
STPLAN    1216 Y N 106    01-09-07 16:07:36  -
EBDADCM   1217 Y N 106    01-09-07 16:07:36  -
ATMANSI   1301 Y N 106    01-09-07 16:07:36  -
STPLAN    1304 Y N 106    01-09-07 16:07:36  -
SS7ANSI   1305 Y N 106    01-09-07 16:07:36  -
SS7GX25   1308 Y N 106    01-09-07 16:07:36  -
SS7GX25   1314 Y N 106    01-09-07 16:07:36  -
STPLAN    1317 Y N 106    01-09-07 16:07:36  -
ATMANSI   1318 Y N 106    01-09-07 16:07:36  -
EMDC      2107 Y N 106    01-09-07 16:07:36  -
EMDC      2111 Y N 106    01-09-07 16:07:36  -
```

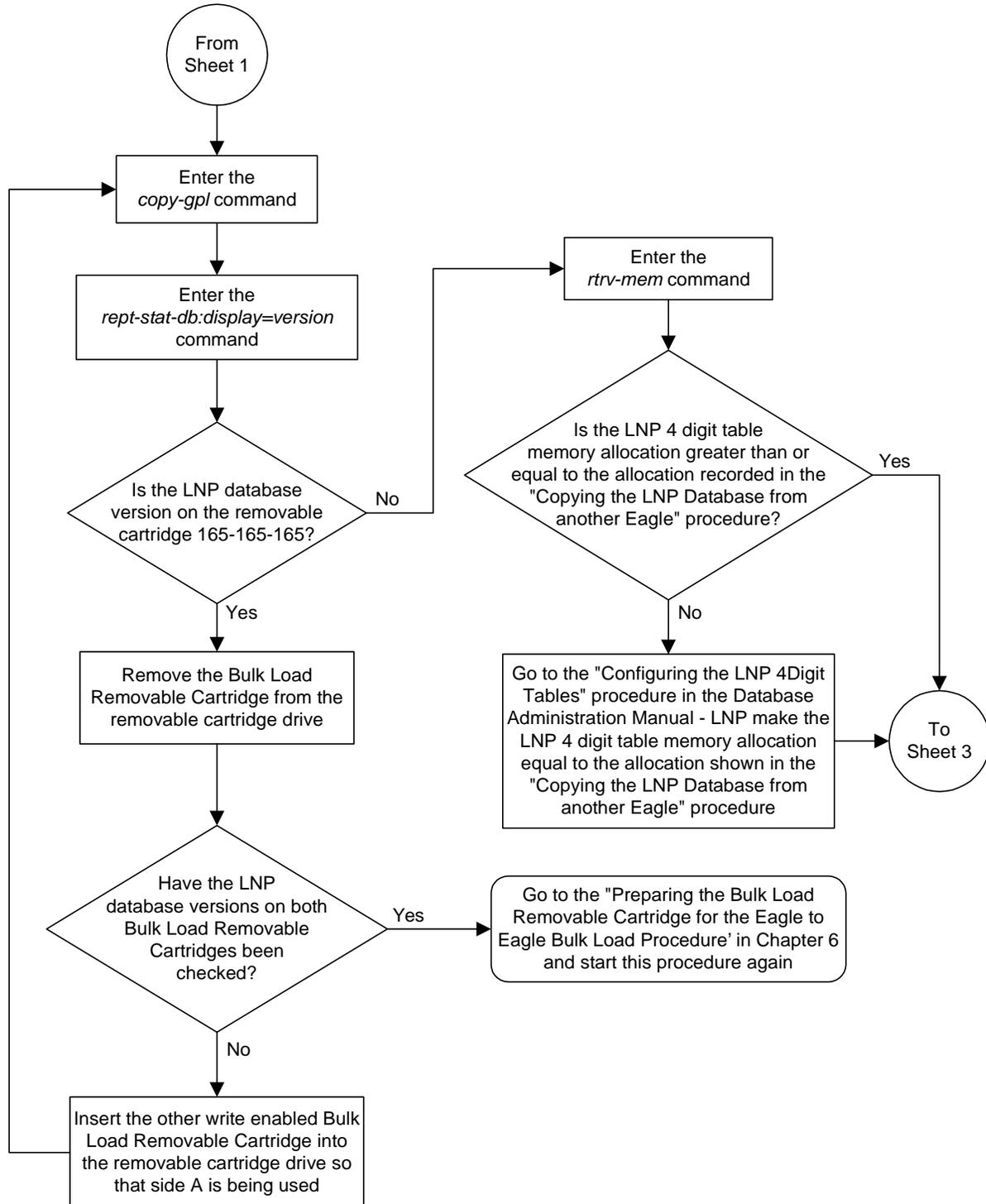
If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 24 and 25. If the databases are still not coherent after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

You have now completed this procedure.

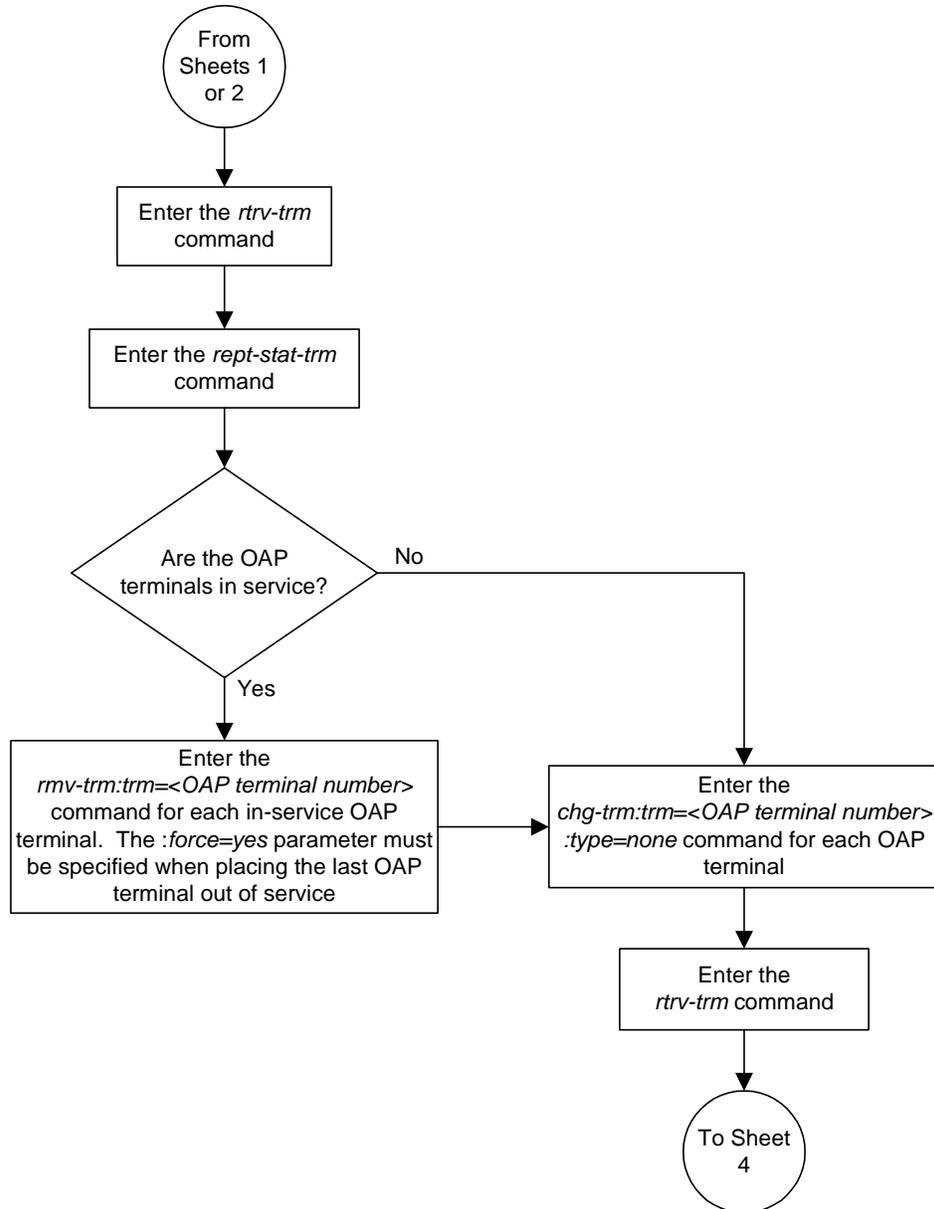
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 1 of 10)



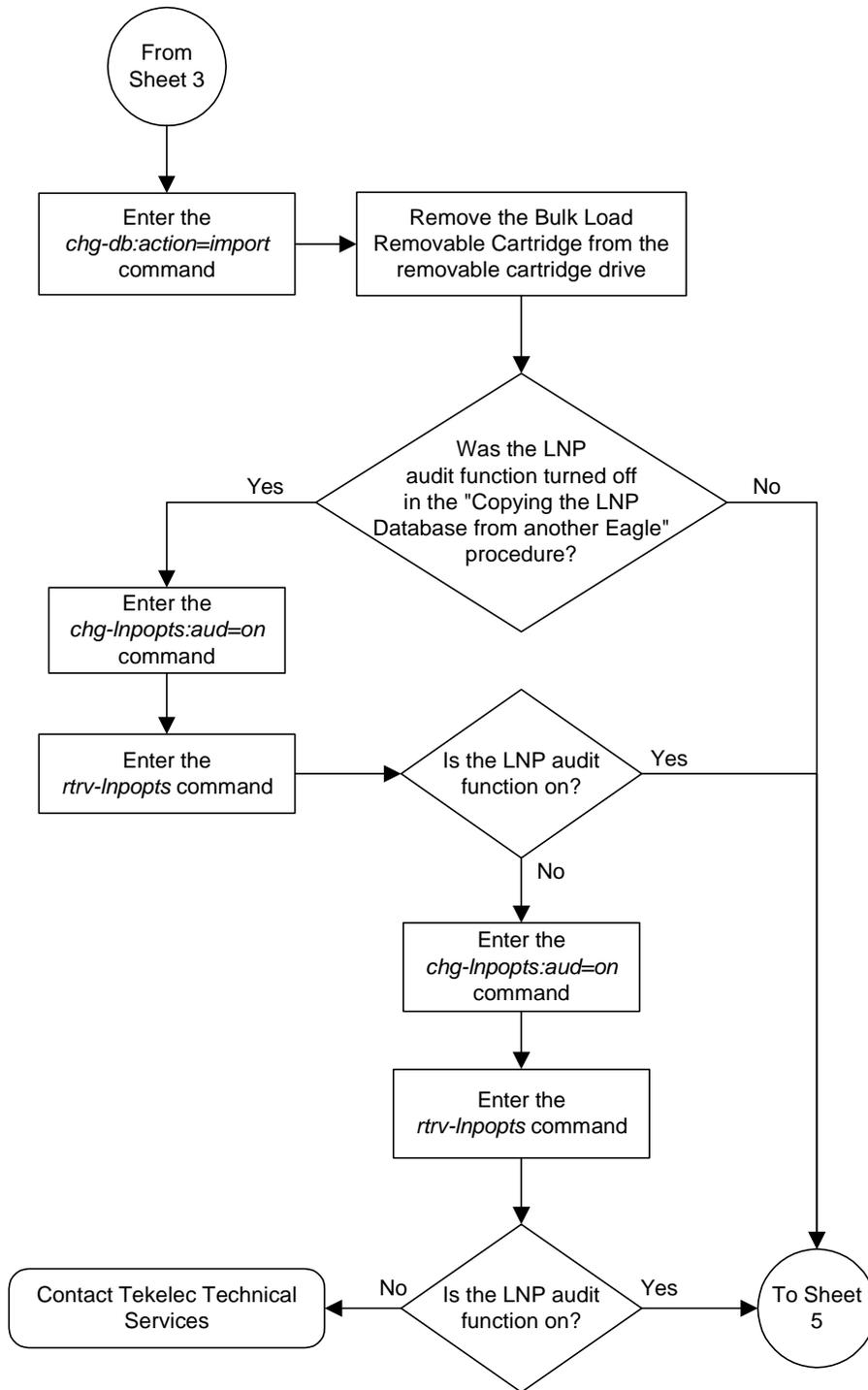
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 2 of 10)



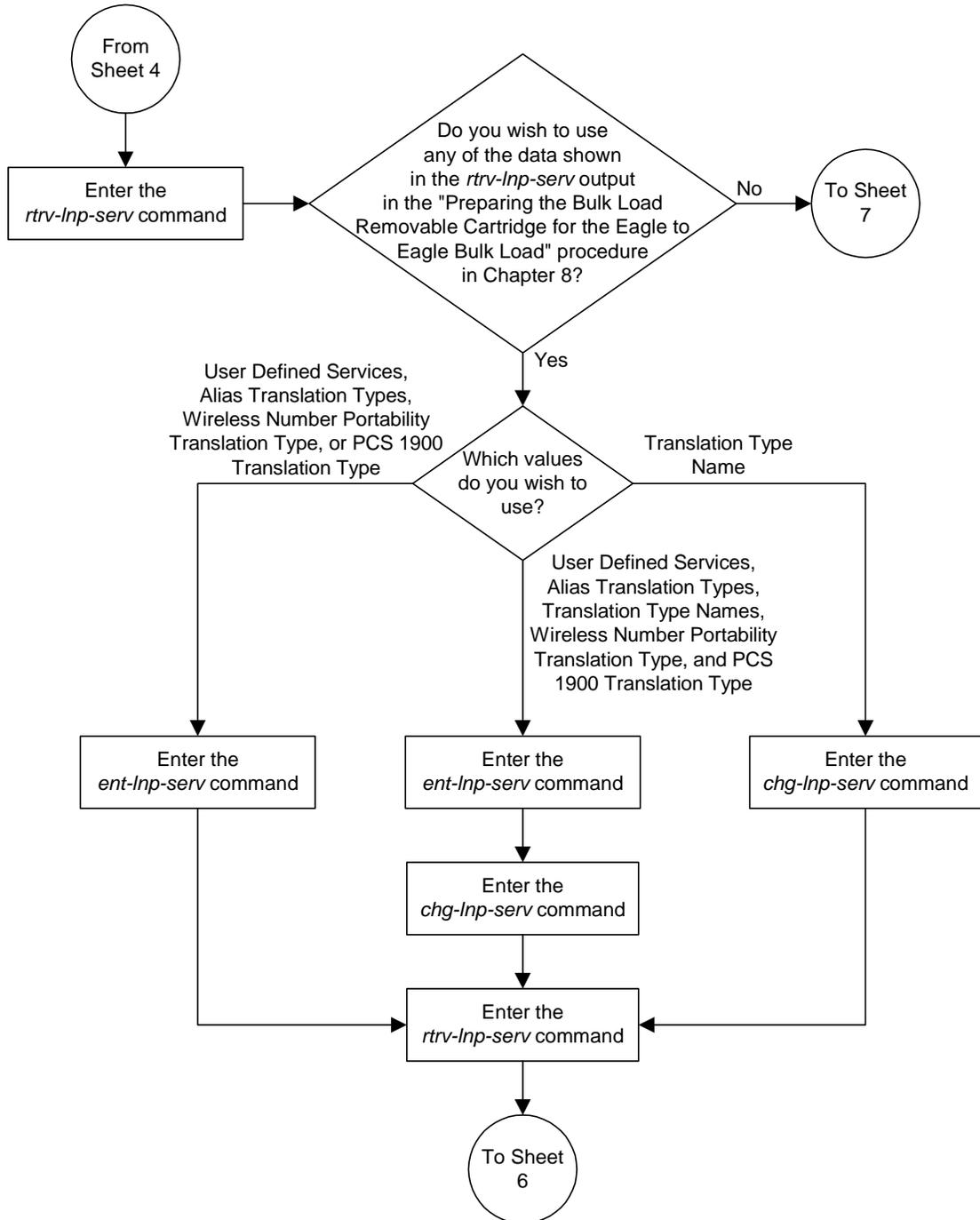
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 3 of 10)



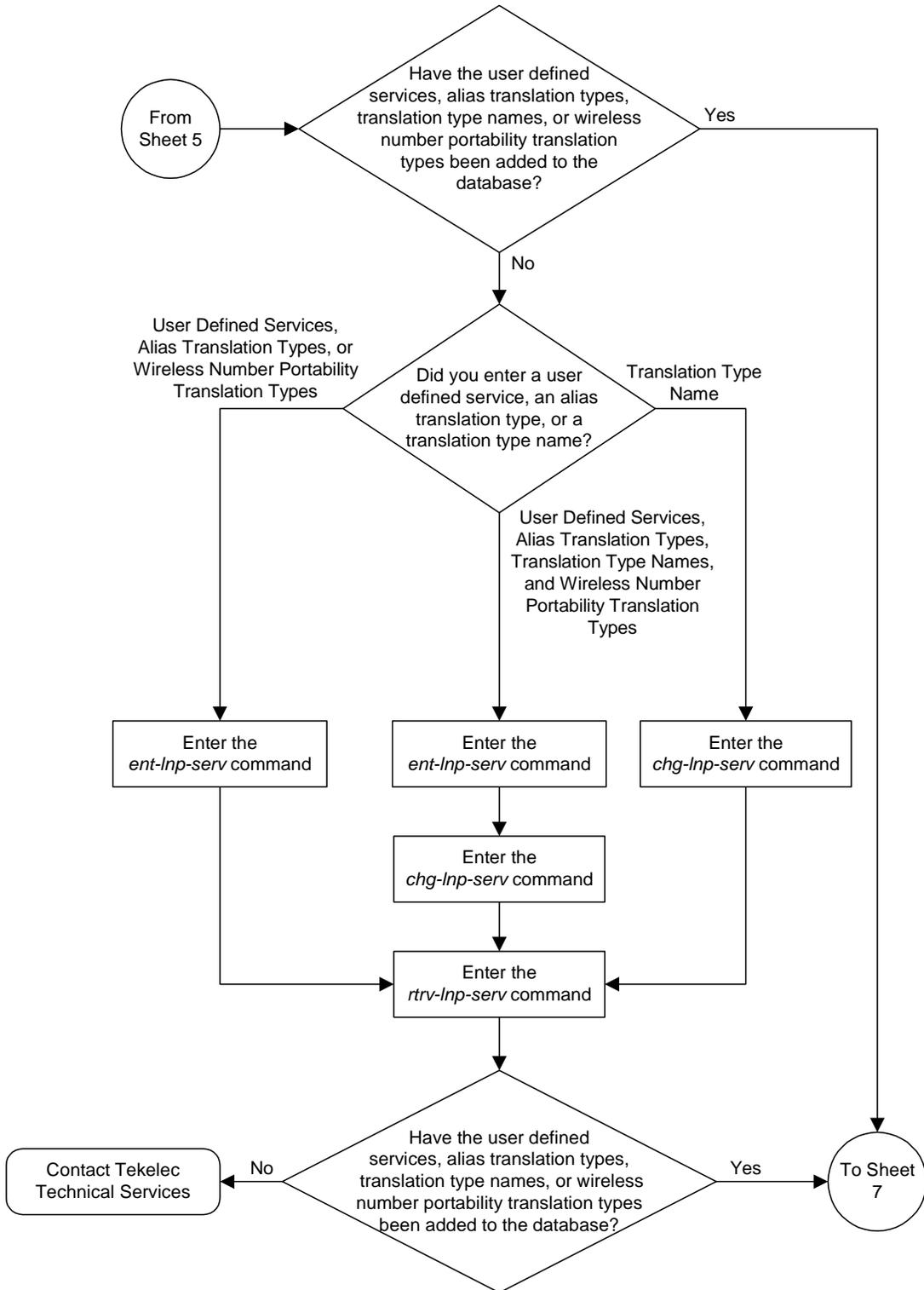
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 4 of 10)



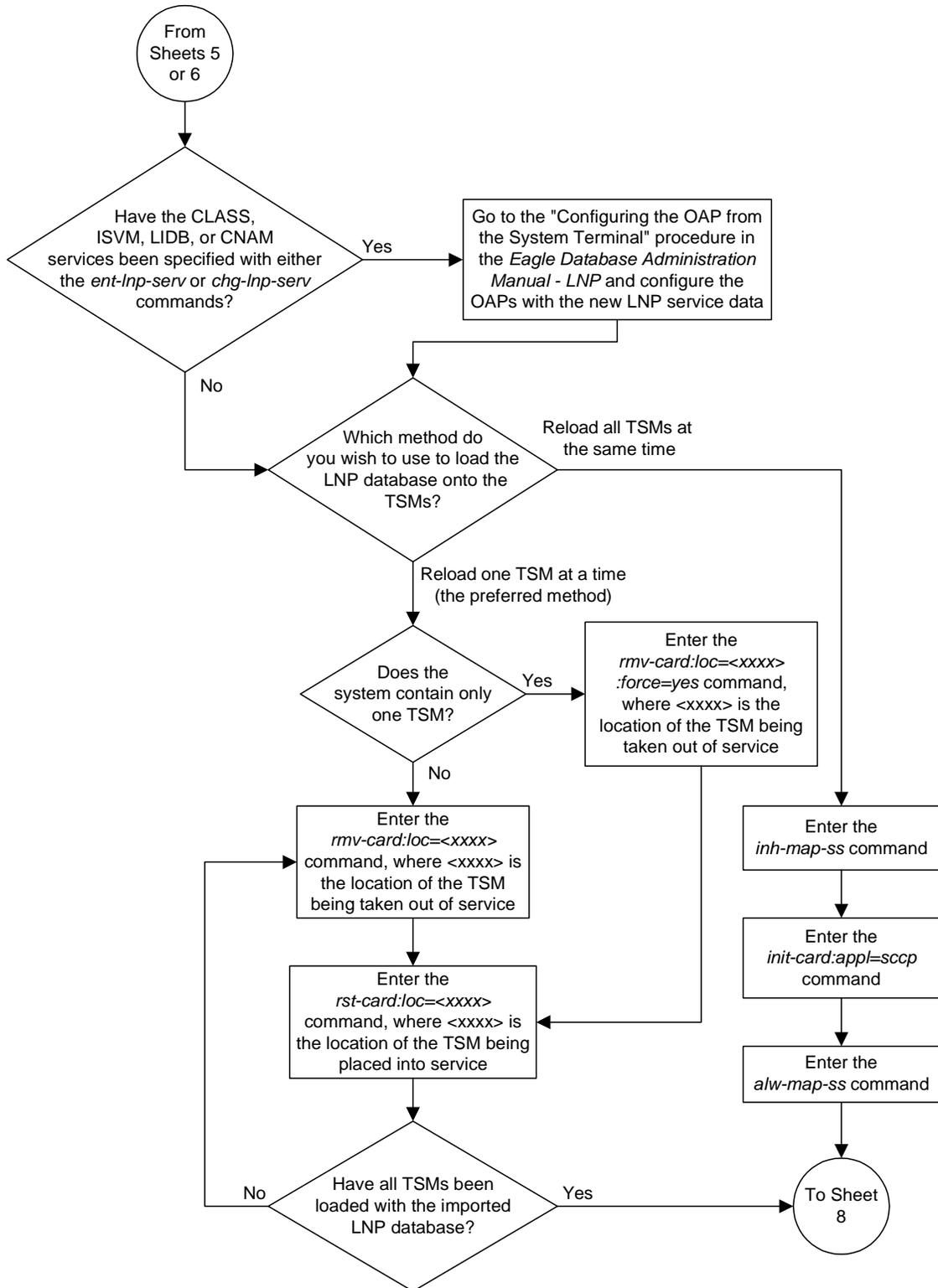
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 5 of 10)



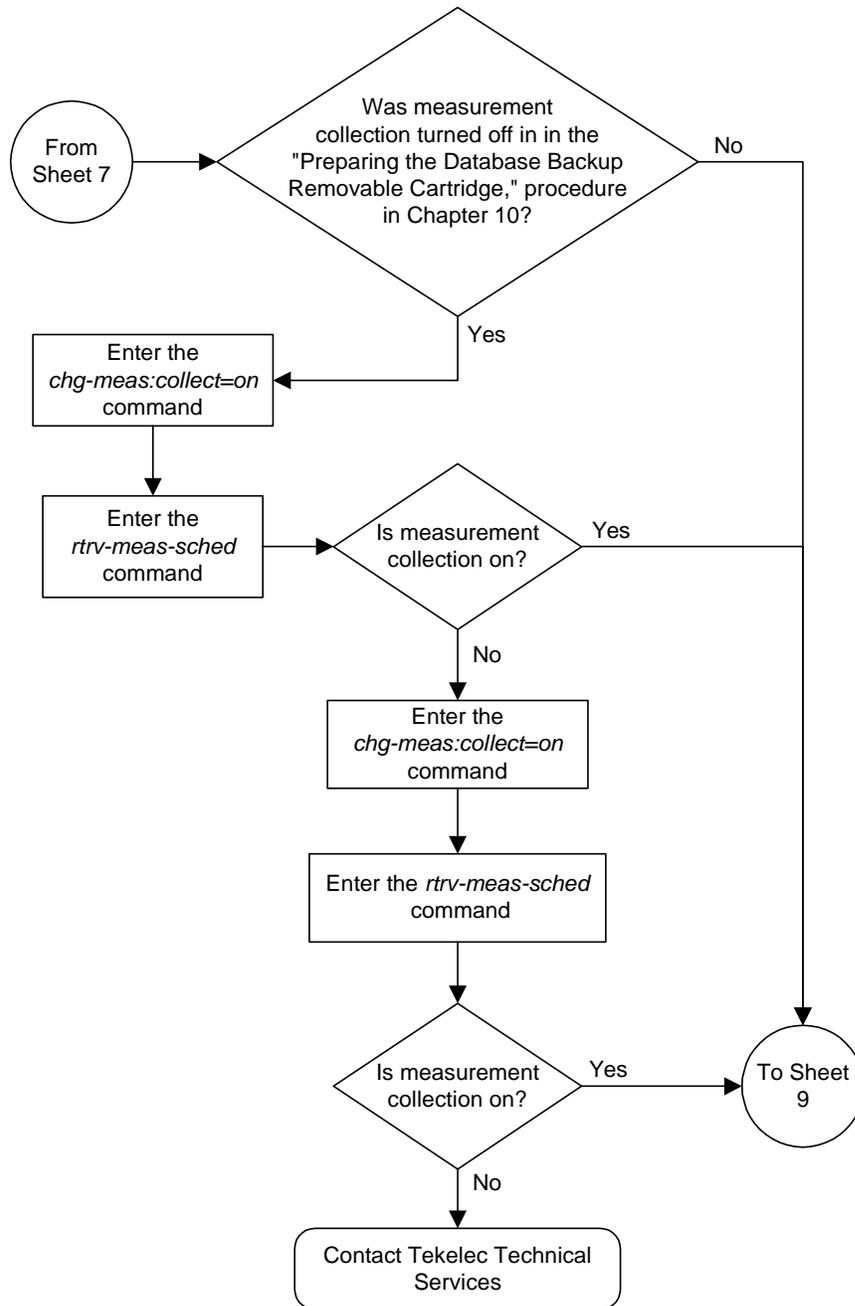
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 6 of 10)



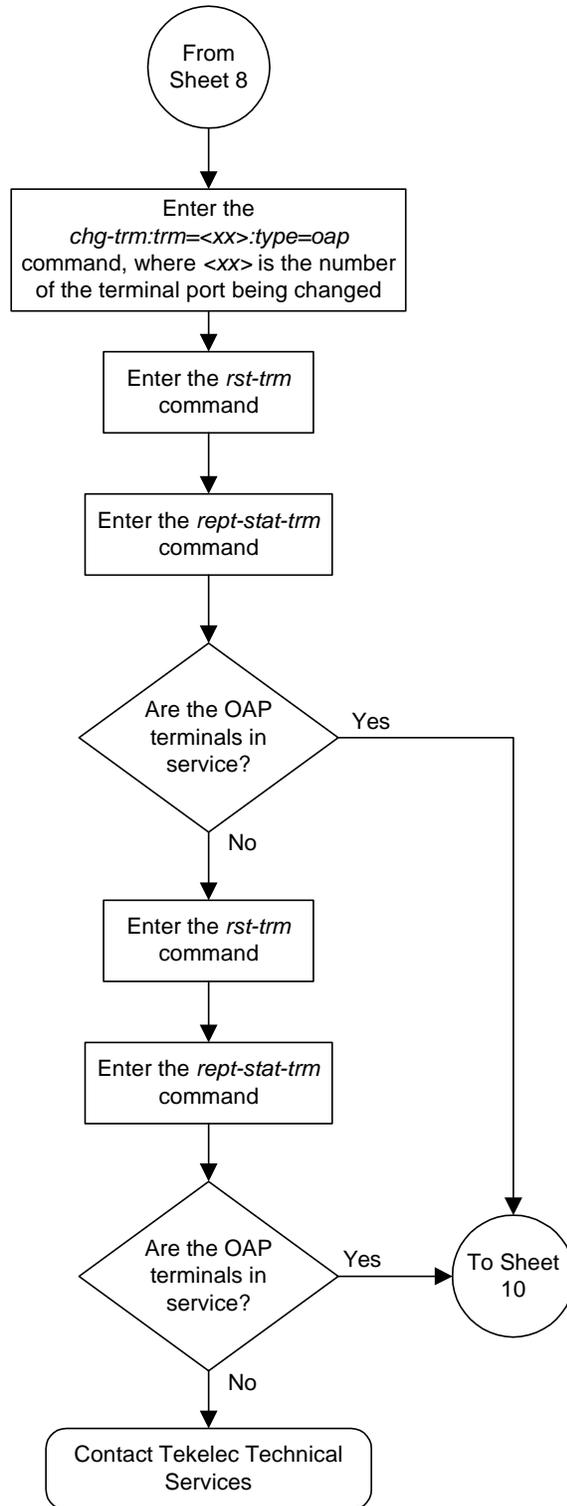
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 7 of 10)



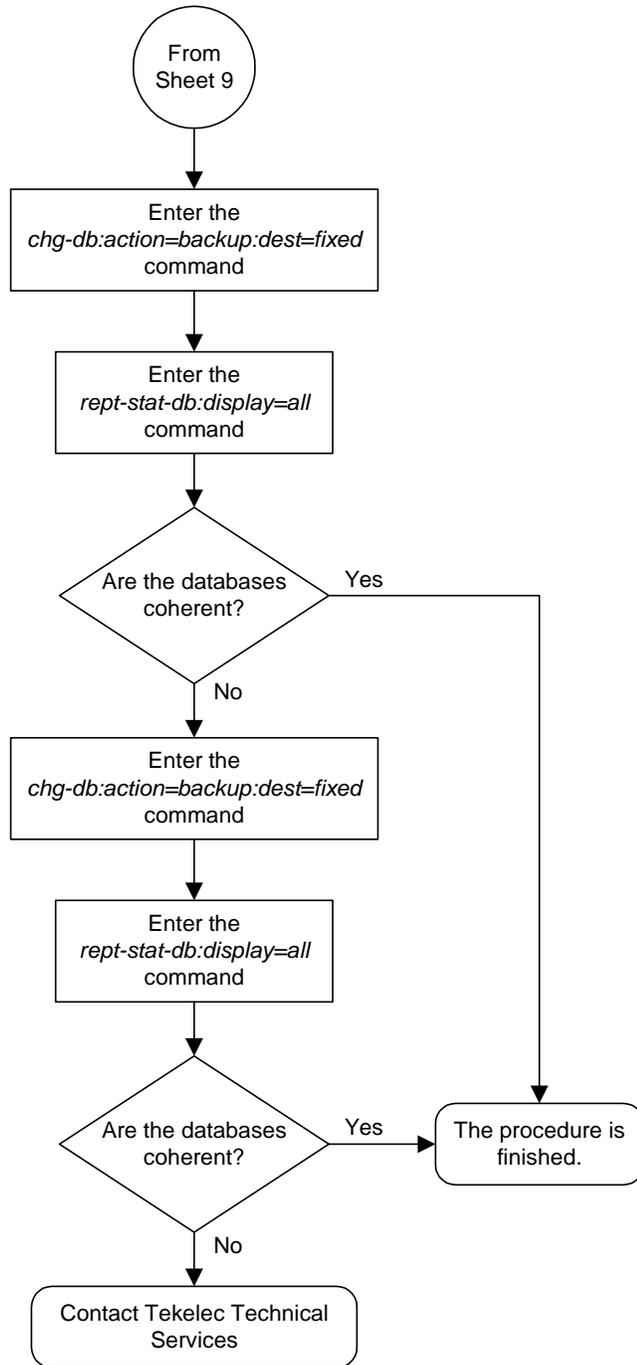
Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 8 of 10)



Flowchart 12-2. Loading and Distributing the LNP Database at the Eagle STP
(Sheet 9 of 10)



Flowchart 12-2. Loading the LNP Database onto the Eagle STP (Sheet 10 of 10)



13

Bulk Loading Troubleshooting and Backout Procedures

I

Introduction.....	13-2
Changing Translation Type Values at the Eagle STP	13-3
Troubleshooting the Database Downloading Procedure.....	13-4
Backing Out Using the Database Backup Removable Cartridge.....	13-8
Backing Out Using the Backup Database of the NE's Fixed Disk.....	13-27

Introduction

NOTE: This chapter applies only for network element LNP databases that contain 6 million or fewer ported numbers.

This chapter provides general information about changing translation type values at the Eagle STP, describes the troubleshooting of rebooting Translation Service Modules (TSMs) and the backing out of a bulk loading procedure.

LNP translation types values may have to be changed if they do not match the values contained in the imported LNP database.

Bulk loading troubleshooting examines the rebooting of TSMs after they are reinitialized (see procedures step 20 on page 9-25, "Loading and Distributing the LNP Database at the Eagle STP," step 19 on page 10-26 and step 18 on page 12-31.

A bulk loading backout procedure is used after a failed bulk loading procedure to restore the Eagle STP to the configuration before the bulk loading procedure was attempted. The backout procedure restores the configuration after a failed attempt to load the LNP database to the fixed disk and to distribute it to the TSMs from either of the following:

- a Database Backup removable cartridge
- the backup database of the Eagle STP's fixed disk

This chapter describes the restoration of the Eagle STP configuration in the following procedures:

- "Backing Out Using the Database Backup Removable Cartridge" on page 13-8

This procedure describes how to replace the fixed disk databases with the system database stored on the Database Backup removable cartridge.

- "Backing Out Using the Backup Database of the NE's Fixed Disk" on page 13-27

This procedure describes how to use the backup database of the Eagle STP's fixed disk and redistribute it to all cards in the system.

A backout procedure may be required after one of the following bulk loading procedures fails:

- "Distributing the RTDB LNP Database After ELAP-Based Operation or RTDB Copy" on page 9-10; see Chapter 9, "Distributing the LNP Database after LSMS-Based Operation or RTDB Copy"
- "Loading and Distributing the LNP Database at the Eagle STP" on page 10-13; see Chapter 10, "Manual LSMS-to-NE Bulk Loading"
- "Loading and Distributing the LNP Database at the Eagle STP" on page 12-21; see Chapter 12, "Manual NE-to-NE Bulk Loading"

If more information is needed on any of the Eagle STP commands used in these procedures, go to the *Eagle STP Commands Manual* to find the required information.

Changing Translation Type Values at the Eagle STP

If you choose to change the translation type values of the LNP services in the Eagle STP database, perform the “Changing an LNP Service” procedure in Chapter 3 of the *Eagle STP Database Administration Manual - LNP*.



CAUTION: Usually translation type values are set only one time for both the Eagle STP and the OAP and are not changed. If you decide to perform the “Changing an LNP Service” procedure, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14) to ensure that changes are made properly at the OAP.

If mismatched translation type values cannot be resolved, do not attempt to back out of the bulk loading procedure (do not use either the procedure described in “Backing Out Using the Database Backup Removable Cartridge” on page 13-8 or procedure “Backing Out Using the Backup Database of the NE’s Fixed Disk” on page 13-27).

If mismatched translation type values cannot be resolved, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Troubleshooting the Database Downloading Procedure

Use this procedure if the TSM keeps booting after it was reinitialized. Repeated booting may be caused by too many LNP database updates occurring while trying to reload the database on the TSM. Perform these steps to make sure that the OAP terminals are out of service.

Procedure

1. Display the terminal configuration in the database with the `rtrv-trm` command. The OAP terminals are shown in the output with the entry `OAP` in the TYPE field. Record the values of the OAP terminal ports. This is an example of the possible output; the OAP terminals are terminals 6 and 9 and are shown in bold:

```
rlghncxa03w 02-03-07 16:02:08 GMT Rel 28.1.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1 SW    30     5      99:59:59
2    KSR        9600-7-E-1 HW    30     5      INDEF
3    PRINTER    4800-7-E-1 HW    30     0      00:00:00
4    VT320      2400-7-E-1 BOTH  30     5      00:30:00
5    VT320      9600-7-O-1 NONE  30     5      00:00:30
6    OAP       19200-7-E-1 SW    0      5      INDEF
7    PRINTER    9600-7-N-2 HW    30     5      00:30:00
8    KSR        19200-7-E-2 BOTH  30     5      00:30:00
9    OAP       19200-7-E-1 SW    0      5      INDEF
10   VT320      9600-7-E-1 HW    30     5      00:30:00
11   VT320      4800-7-E-1 HW    30     5      00:30:00
12   PRINTER    9600-7-E-1 HW    30     4      00:30:00
13   VT320      9600-7-O-1 NONE  30     5      00:30:00
14   VT320      9600-7-E-2 SW    30     8      00:30:00
15   VT320      9600-7-N-2 HW    30     5      00:30:00
16   VT320      9600-7-E-2 BOTH  30     3      00:30:00
```

```
TRM  TRAF  LINK  SA   SYS  PU  DB
1    NO   YES   NO   YES  NO  YES
2    NO   NO    NO   NO   NO  NO
3    YES  YES   YES  NO   YES  YES
4    YES  NO    NO   NO   NO  NO
5    NO   YES   NO   NO   NO  NO
6    YES  YES   YES  YES  YES  YES
7    YES  YES   YES  YES  YES  YES
8    NO   NO    NO   NO   YES  NO
9    YES  YES   YES  YES  YES  YES
10   NO   NO    NO   NO   NO  NO
11   YES  YES   YES  YES  YES  YES
12   YES  YES   YES  YES  YES  YES
13   NO   YES   NO   NO   NO  NO
14   NO   NO    YES  NO   NO  NO
15   YES  YES   YES  NO   YES  YES
16   NO   NO    NO   NO   YES  NO
```

2. Display the status of the terminals with the `rept-stat-trm` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0
TRM  PST          SST          AST
1    IS-NR        Active      -----
2    IS-NR        Active      -----
3    IS-NR        Active      -----
4    IS-NR        Active      -----
5    IS-NR        Active      -----
6    IS-NR       Active     -----
7    IS-NR        Active      -----
8    IS-NR        Active      -----
9    IS-NR       Active     -----
10   IS-NR        Active      -----
11   IS-NR        Active      -----
12   IS-NR        Active      -----
13   IS-NR        Active      -----
14   IS-NR        Active      -----
15   IS-NR        Active      -----
16   IS-NR        Active      -----
Command Completed.
```

If the status of any one of the OAP terminals shown in the PST field is OOS-MT-DSBLD (out of service maintenance disabled), the terminal is already out of service.

If both terminals are out of service, continue with step 4. Otherwise go to step 3.

-
3. Take the OAP terminals out of service using the `rmv-trm` command with the values of the OAP terminals recorded in step 1. The `force=yes` parameter must be used when taking the last OAP terminal out of service. For this example, enter these commands:

```
rmv-trm:trm=6
rmv-trm:trm=9:force=yes
```



CAUTION: These commands will take the connection between the Eagle STP and the LSMS and the SEAS interface out of service and will remain out of service until the OAP terminals are returned to service.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0
Inhibit message sent to terminal

rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0
Command Completed.
```

- Change the terminal type of the OAP terminals to NONE with the `chg-trm` command, the `type=none` parameter, and with the values of the OAP terminals recorded in step 1. For this example, enter these commands.

```
chg-trm:trm=6:type=none
```

```
chg-trm:trm=9:type=none
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
CHG-TRM: MASP B - COMPLTD
```

- Verify that the OAP terminals have been changed to the terminal type NONE with the `rtrv-trm` command. This is an example of the possible output. In this example, the OAP terminals are terminals 6 and 9, shown in bold.

```
rlghncxa03w 02-03-07 16:02:08 GMT Rel 28.1.0
TRM  TYPE      COMM          FC      TMOUT  MXINV  DURAL
1    VT320      9600-7-E-1 SW    30      5      99:59:59
2    KSR        9600-7-E-1 HW    30      5      INDEF
3    PRINTER    4800-7-E-1 HW    30      0      00:00:00
4    VT320      2400-7-E-1 BOTH  30      5      00:30:00
5    VT320      9600-7-O-1 NONE  30      5      00:00:30
6   NONE      19200-7-E-1 SW    0       5      INDEF
7    PRINTER    9600-7-N-2 HW    30      5      00:30:00
8    KSR        19200-7-E-2 BOTH  30      5      00:30:00
9   NONE      19200-7-E-1 SW    0       5      INDEF
10   VT320      9600-7-E-1 HW    30      5      00:30:00
11   VT320      4800-7-E-1 HW    30      5      00:30:00
12   PRINTER    9600-7-E-1 HW    30      4      00:30:00
13   VT320      9600-7-O-1 NONE  30      5      00:30:00
14   VT320      9600-7-E-2 SW    30      8      00:30:00
15   VT320      9600-7-N-2 HW    30      5      00:30:00
16   VT320      9600-7-E-2 BOTH  30      3      00:30:00
```

```
TRM  TRAF LINK SA  SYS PU  DB
1    NO  YES  NO  YES NO  YES
2    NO  NO   NO  NO  NO  NO
3    YES YES  YES NO  YES YES
4    YES NO  NO  NO  NO  NO
5    NO  YES  NO  NO  NO  NO
6    YES YES  YES YES YES YES
7    YES YES  YES YES YES YES
8    NO  NO  NO  NO  YES NO
9    YES YES  YES YES YES YES
10   NO  NO  NO  NO  NO  NO
11   YES YES  YES YES YES YES
12   YES YES  YES YES YES YES
13   NO  YES  NO  NO  NO  NO
14   NO  NO  YES NO  NO  NO
15   YES YES  YES NO  YES YES
16   NO  NO  NO  NO  YES NO
```

Bulk Loading Troubleshooting and Backout Procedures

If the `rtrv-trm` command output shows that the OAP terminals have not been changed to terminal type `NONE`, repeat steps 4 and 5. If the OAP terminal type still has not been changed after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

6. If the TSM still does not reload its database, determine the cause or back out of the bulk loading procedure as described in one of the following procedures:
 - “Backing Out Using the Database Backup Removable Cartridge” on page 13-8 **or**
 - “Backing Out Using the Backup Database of the NE’s Fixed Disk” on page 13-27.
-

7. Enter the `rept-stat-sccp` command to verify that the state of each TSM is in-service normal (IS-NR) before proceeding with the next TSM. When all the TSMs have been reloaded, resume the procedure you were performing when this problem occurred:
-

8. If you are losing traffic because of the imported LNP database, use one of the following backout procedures:
 - “Backing Out Using the Database Backup Removable Cartridge” on page 13-8 **or**
 - “Backing Out Using the Backup Database of the NE’s Fixed Disk” on page 13-27.
-

You have now completed this procedure.

Backing Out Using the Database Backup Removable Cartridge

Perform this procedure at the Eagle STP if directed to do so in any of the procedures contained in Chapter 4, 9, 10, or 12, or by Tekelec Technical Services. This procedure uses the Database Backup removable cartridge created in either of the following procedures and does not contain the LNP database extracted from the LSMS or copied from another Eagle STP:

- “Preparing a Database Backup Removable Cartridge” in Chapter 4, “Preparing the NE for Non-Manual Synchronization.”
- “Preparing the Database Backup Removable Cartridge” on page 11-19 and page 11-41 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading.”

NOTE: Before you start this procedure and any time you encounter any problems while performing this procedure, contact Tekelec Technical Services for assistance (see “Technical Services and Support” on page 1-14).

Procedure

NOTE: If you are backing out of the high-speed bulk download of the LNP database from the LSMS, skip this step and go to step 2.

1. Check the removable cartridge drive on the MDAL card and remove the Bulk Load removable cartridge if applicable. See “Removing the Removable Cartridge” on page 11-6.
-
2. Insert the Database Backup removable cartridge into the removable cartridge drive on the MDAL card so that side A of the cartridge is being used. Make sure that the removable cartridge is write-enabled. See “Write-Enabling the Removable Cartridge” on page 11-4 and “Inserting the Removable Cartridge” on page 11-5 and Figure 11-2.
-
3. Verify that the databases (FD CRNT and FD BKUP) on the active and standby MASP are coherent and on the removable cartridge (RD BKUP) are coherent using the `rept-stat-db` command.

If the databases are coherent, the letter **x** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the sample output of the `rept-stat-db` command. If the databases are coherent, go to step 4. If any of the databases are not coherent, shown by the letter **n** in the C field of the `rept-stat-db` output, go to the “Verifying the Database” section in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.

- Verify that the databases (FD CRNT and FD BKUP) on the active and standby MASPs and on the removable cartridge (RD BKUP) are coherent using the `rept-stat-db` command.

If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If the databases are coherent, go to step 6. If any of the databases are not coherent, shown by the letter **N** in the C field of the `rept-stat-db` output, go to the “Verifying the Database” section in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.

```
rlghncxa03w 02-03-07 16:07:48 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C LEVEL      TIME LAST BACKUP    C LEVEL      TIME LAST BACKUP
      - - - - -
FD BKUP Y       35 02-03-06 10:19:18 GMT Y       35 02-03-06 10:19:18 GMT
FD CRNT Y       106
      MDAL 1117
      - - - - -
RD BKUP Y       247 02-03-02 14:29:03 GMT
```

- Remove the Database Backup Removable Cartridge from the removable cartridge drive on the MDAL card. See “Removing the Removable Cartridge” on page 11-6.

- If the LNP audit function was turned off in either of the steps listed in the following procedures, turn it back on with the `chg-lnpopts` command and the `aud=on` parameter.
 - Step 7 on page 9-17 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
 - Step 8 on page 11-22 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
 - Step 5 on page 11-32 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”

If the LNP audit function was not turned off, continue with step 9.

To turn on the LNP audit function, enter this command:

```
chg-lnpopts:aud=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 08:50:12 GMT Rel 28.1.0
CHG-LNPOPTS: MASP B - COMPLTD
```

- Verify that the LNP audit function is on with the `rtrv-lnpopts` command. The entry `AUD = on` should be shown in the `rtrv-lnpopts` output. This is an example of the possible output:

```
rlghncxa03w 02-03-07 16:02:08 GMT Rel 28.1.0
AMASLPID      = 123456789
INCSLP        = yes
AMATYPE       = 003
AMAFEATID     = 010
CIC           = 1369
AUD          = on
SP            = a123
FRCSMPLX     = no
ADMHIPRI      = no
GTWYSTP       = no
CCP           = no
SERVPORT      = no
WQREDRCT      = off
```

NOTE: If the Triggerless LNP feature is on (`TLNP=on` in `rtrv-feat` command output), the `rtrv-lnpopts` command output shows the additional fields `JIPPROV` and `JIPDIGITS`.

If the `rtrv-lnpopts` command output shows that the LNP audit function is still off, repeat steps 7 and 8. If the LNP audit function is still off after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

-
- Verify that the LNP translation type values in the imported LNP database match the values recorded in either of these steps in these procedures with the `rtrv-lnp-serv` command.
 - Step 16 on page 9-22 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
 - Step 2 on page 11-19 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
 - Step 6 on page 11-43 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”

This is an example of the possible output:

```
rlghncxa03w 02-03-07 14:42:38 GMT Rel 28.1.0
SERV      TT      TTN      DV      ALIAS
AIN       15      AINGTE   TCAP    235
          236
IN        6       INGTE    TCAP    ---
LIDB     20      LIDB     SCCP    ---
WNP      22      WNPGE    TCAP    ---
PCS      11      PCS11    TCAP    ---
CLASS    25      CLASSGTE SCCP    ---
CNAM     30      CNAM     SCCP    ---
ISVM     50      ISVM     SCCP    ---
UDF1     201     UDF1     SCCP    ---
```

```
LNP-SERV TABLE IS (9 of 256) 4% FULL
```

The output of the `rtrv-lnp-serv` command in this step should match the output of the `rtrv-lnp-serv` command displayed in the procedures referenced in this step. If these outputs do not match, then the wrong removable cartridge was used in this procedure; contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

10. Distribute the imported LNP database onto each TSM (assigned to the SCCP or EDBABLM application), which will also silence the LNP database alarms.

- Method A loads the imported LNP database onto one TSM at a time by reloading each TSM.

This method allows the global title translation and LNP functions to continue running while the new LNP database is being loaded. When the TSM is reinitializing, its database goes temporarily out of service for the period of time that it takes to reload the database on the TSM. The time required to reload the database depends upon the size of the database and can take as long as 15 minutes for an LNP database containing 2,000,000 LNP subscriptions.

- Method B loads the imported LNP database onto all TSMs in the system at the same time by reinitializing all the TSMs at once.



CAUTION: This method not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. Use this method only in emergency situations. Method A is the preferred method.

Method A: Perform steps a and b in this method for each TSM, one TSM at a time.

- a. Take the TSM out of service with the `rmv-card` command specifying the card location of the TSM. If there is only one TSM in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0  
Card has been inhibited.
```

- b. Return the TSM to service with the `rst-card` command specifying the card location of the TSM. This command loads the LNP database on the specified TSM. For this example, enter this command:

```
rst-card:loc=1101
```

Bulk Loading Troubleshooting and Backout Procedures

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been allowed.
```

- c. When the TSM is returned to service, the major alarm is silenced and UAM 0431, LNP database has been corrected, is generated. For this example, this message is generated:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

- d. Repeat steps a and b for the other TSMs in the system.

If any of the TSMs continue to boot, go to the “Troubleshooting the Database Downloading Procedure” section on page 13-4 and resolve the problem with the TSM. If the TSM still continues to boot, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Method B: Enter the `init-card:appl=sccp` command. This command initializes all the TSMs at once and not only loads the imported LNP database onto the TSMs at the same time, but takes all the TSMs out of service and the LNP subsystem will be offline. This method should only be used in emergency situations.

NOTE: A more graceful way of initializing the TSMs is to reroute all global title translation traffic, including LNP traffic, to the mate Eagle STP using the `inh-map-ss` command. The `inh-map-ss` command takes the mated application subsystem out of service. When the mated application subsystem is out of service, all global title translation traffic, including LNP traffic, is rerouted to the mate Eagle STP. The mated application subsystem must be inhibited with the `inh-map-ss` command before the TSMs are reinitialized with the `init-card:appl=sccp` command. After the `init-card:appl=sccp` command has finished executing and all the TSMs have reinitialized, return the mated application subsystem to service with the `alw-map-ss` command.

When the imported database has been loaded onto each TSM, UAM 0431 is displayed for each TSM showing that the UAM 0429 has been cleared and the database on the TSM matches the database on the MASPs. This is an example of UAM 0431.

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
0012.0431 CARD 1101 SCCP LNP database has been corrected
```

If any of the TSMs continues to boot, go to the “Troubleshooting the Database Downloading Procedure” section on page 13-4 and resolve the problem with the TSM. If the TSM still continues to boot, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

11. Back up the new changes using the `chg-db:action=backup:dest=fixed` command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) messages appear first.

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

12. Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **N** is shown in the C field of the `rept-stat-db` output. This is an example of the possible output:

```
rlghncxa03w 02-03-07 16:07:36 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
-----
FD BKUP Y      74 02-03-07 16:07:36 GMT Y      74 02-03-07 16:07:36 GMT
FD CRNT Y     106
MDAL 1117
-----
RD BKUP - - - -
```

CARD/APPL	LOC	C	T	LEVEL	TIME LAST UPDATE	EXCEPTION
SCCP	1101	Y	N	106	02-03-07 16:07:36	-
GLS	1102	Y	N	106	02-03-07 16:07:36	-
TDM-CRNT	1114	Y	N	106	02-03-07 16:07:36	-
TDM-BKUP	1114	Y	-	74	02-03-07 16:07:36	-
TDM-CRNT	1116	Y	N	106	02-03-07 16:07:36	-
TDM-BKUP	1116	Y	-	74	02-03-07 16:07:36	-
MDAL	1117	-	-	-	-	-
SS7ANSI	1201	Y	N	106	02-03-07 15:37:36	-
SS7ANSI	1202	Y	N	106	02-03-07 15:37:36	-
SS7ANSI	1203	Y	N	106	02-03-07 15:37:36	-
SS7ANSI	1204	Y	N	106	02-03-07 15:37:36	-
CCS7ITU	1205	Y	N	106	02-03-07 15:37:36	-
SCCP	1206	Y	N	106	02-03-07 16:07:36	-
SS7GX25	1207	Y	N	106	02-03-07 15:37:36	-
SS7GX25	1208	Y	N	106	02-03-07 15:37:36	-
SCCP	1213	Y	N	106	02-03-07 16:07:36	-
SCCP	1214	Y	N	106	02-03-07 16:07:36	-
EBDABLM	1215	Y	N	106	02-03-07 16:07:36	-
STPLAN	1216	Y	N	106	02-03-07 16:07:36	-
EBDADCM	1217	Y	N	106	02-03-07 16:07:36	-
ATMANSI	1301	Y	N	106	02-03-07 16:07:36	-
STPLAN	1304	Y	N	106	02-03-07 16:07:36	-
SS7ANSI	1305	Y	N	106	02-03-07 16:07:36	-
SS7GX25	1308	Y	N	106	02-03-07 16:07:36	-
SS7GX25	1314	Y	N	106	02-03-07 16:07:36	-
STPLAN	1317	Y	N	106	02-03-07 16:07:36	-
ATMANSI	1318	Y	N	106	02-03-07 16:07:36	-

Bulk Loading Troubleshooting and Backout Procedures

If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 11 and 12. If the databases are still not coherent after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

13. If the measurement collection function was turned off in either of these steps of the following procedures, turn the function back on with the `chg-meas` command and the `collect=on` parameter:

- Step 11 on page 9-19 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
- Step 12 on page 11-24 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
- Step 2 on page 11-31 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”

If the measurement collection function was not turned off, do not perform this step or step 14, but continue with step 15.

To turn on the measurement collection function, enter this command:

```
chg-meas:collect=on
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 17:02:57 GMT Rel 28.1.0
CHG-MEAS: MASP B - COMPLTD
```

14. Verify that the measurement collection function is turned on with the `rtrv-meas-sched` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 07:19:51 GMT Rel 28.1.0
COLLECT          = on
GTWYLSREPT      = both
-----
SYSTOT-STP      = on
SYSTOT-TT       = off
SYSTOT-STPLAN   = off
COMP-LNKSET     = on
COMP-LINK       = on
GTWY-STP        = on
GTWY-LNKSET     = on
MTCD-STP        = on
MTCD-LINK       = on
MTCD-STPLAN     = on
MTCD-LNKSET     = on
```

If the `rtrv-meas-sched` command output shows that the measurement collection function is still off, repeat steps 13 and 14. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

15. Change the terminal type from **NONE** to **OAP** for the respective terminals that were changed in the following steps; use the **chg-trm** command and the **type=oap** parameter:

- Step 4 on page 9-16 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
- Step 6 on page 11-22 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
- Step 8 on page 12-26 in Chapter 12, “Manual NE-to-NE Bulk Loading”

For this example, enter these commands:

```
chg-trm:trm=6:type=oap
```

```
chg-trm:trm=9:type=oap
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0  
CHG-TRM: MASP B - COMPLTD
```

16. Verify the changed terminal type with the **rtrv-trm** command. The terminal type is shown in the **TYPE** field in the **rtrv-trm** command output and must match the type shown in the respective **rtrv-trm** command output of the following steps:

- Step 1 on page 9-14 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
 - Step 3 on page 11-20 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
 - Step 5 on page 12-24 in Chapter 12, “Manual NE-to-NE Bulk Loading”
-

17. Return the OAP terminals to service with the **rst-trm** command. For this example, enter these commands:

```
rst-trm:trm=6
```

```
rst-trm:trm=9
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0  
Allow message sent to terminal
```

```
rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0  
Command Completed.
```

Bulk Loading Troubleshooting and Backout Procedures

18. Verify that the OAP terminals are in service with the `rept-stat-trm` command. In service terminals are shown in the `rept-stat-trm` command output with the entry `IS-NR` in the PST field. This is an example of the possible output:

```
rlghncxa03w 02-03-07 15:08:45 GMT Rel 28.1.0
TRM   PST           SST           AST
1     IS-NR          Active      -----
2     IS-NR          Active      -----
3     IS-NR          Active      -----
4     IS-NR          Active      -----
5     IS-NR          Active      -----
6     IS-NR         Active     -----
7     IS-NR          Active      -----
8     IS-NR          Active      -----
9     IS-NR         Active     -----
10    IS-NR          Active      -----
11    IS-NR          Active      -----
12    IS-NR          Active      -----
13    IS-NR          Active      -----
14    IS-NR          Active      -----
15    IS-NR          Active      -----
16    IS-NR          Active      -----
Command Completed.
```

If the `rept-stat-trm` command output shows that the OAP terminals are not in service, repeat steps 17 and 18. If the OAP terminals are still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

19. Back up the database using the `chg-db:action=backup:dest=fixed` command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) messages appear first.

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

20. Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the sample output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **N** is shown in the C field of the `rept-stat-db` output.

This is an example of the possible output:

```
rlghncxa03w 02-03-07 16:07:36 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C   LEVEL   TIME LAST BACKUP    C   LEVEL   TIME LAST BACKUP
-----
FD BKUP Y      74 02-03-07 16:07:36 GMT Y      74 02-03-07 16:07:36 GMT
FD CRNT Y     106                               Y     106
      MDAL 1117
      - - - - -
RD BKUP - - - - -

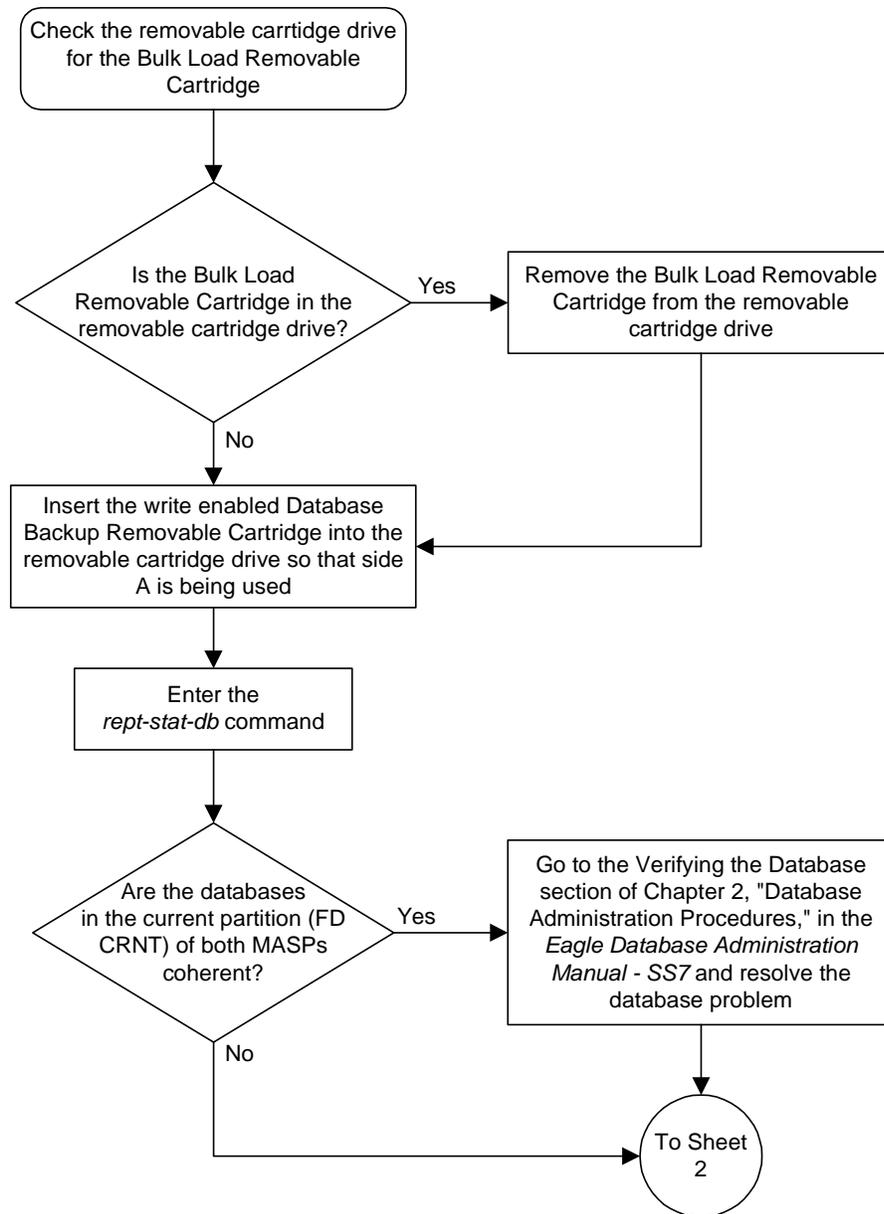
CARD/APPL  LOC  C  T  LEVEL           TIME LAST UPDATE  EXCEPTION
-----
SCCP      1101 Y N 106           02-03-07 16:07:36  -
GLS       1102 Y N 106           02-03-07 16:07:36  -
TDM-CRNT  1114 Y N 106           02-03-07 16:07:36  -
TDM-BKUP  1114 Y - 74           02-03-07 16:07:36  -
TDM-CRNT  1116 Y N 106           02-03-07 16:07:36  -
TDM-BKUP  1116 Y - 74           02-03-07 16:07:36  -
MDAL      1117 - - -           - - - - -           -
SS7ANSI   1201 Y N 106           02-03-07 15:37:36  -
SS7ANSI   1202 Y N 106           02-03-07 15:37:36  -
SS7ANSI   1203 Y N 106           02-03-07 15:37:36  -
SS7ANSI   1204 Y N 106           02-03-07 15:37:36  -
CCS7ITU   1205 Y N 106           02-03-07 15:37:36  -
SCCP      1206 Y N 106           02-03-07 16:07:36  -
SS7GX25   1207 Y N 106           02-03-07 15:37:36  -
SS7GX25   1208 Y N 106           02-03-07 15:37:36  -
SCCP      1213 Y N 106           02-03-07 16:07:36  -
SCCP      1214 Y N 106           02-03-07 16:07:36  -
EBDABLM   1215 Y N 106           02-03-07 16:07:36  -
STPLAN    1216 Y N 106           02-03-07 16:07:36  -
EBDADCM   1217 Y N 106           02-03-07 16:07:36  -
ATMANSI   1301 Y N 106           02-03-07 16:07:36  -
STPLAN    1304 Y N 106           02-03-07 16:07:36  -
SS7ANSI   1305 Y N 106           02-03-07 16:07:36  -
SS7GX25   1308 Y N 106           02-03-07 16:07:36  -
SS7GX25   1314 Y N 106           02-03-07 16:07:36  -
STPLAN    1317 Y N 106           02-03-07 16:07:36  -
ATMANSI   1318 Y N 106           02-03-07 16:07:36  -
```

If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 19 and 20. If the databases are still not coherent after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

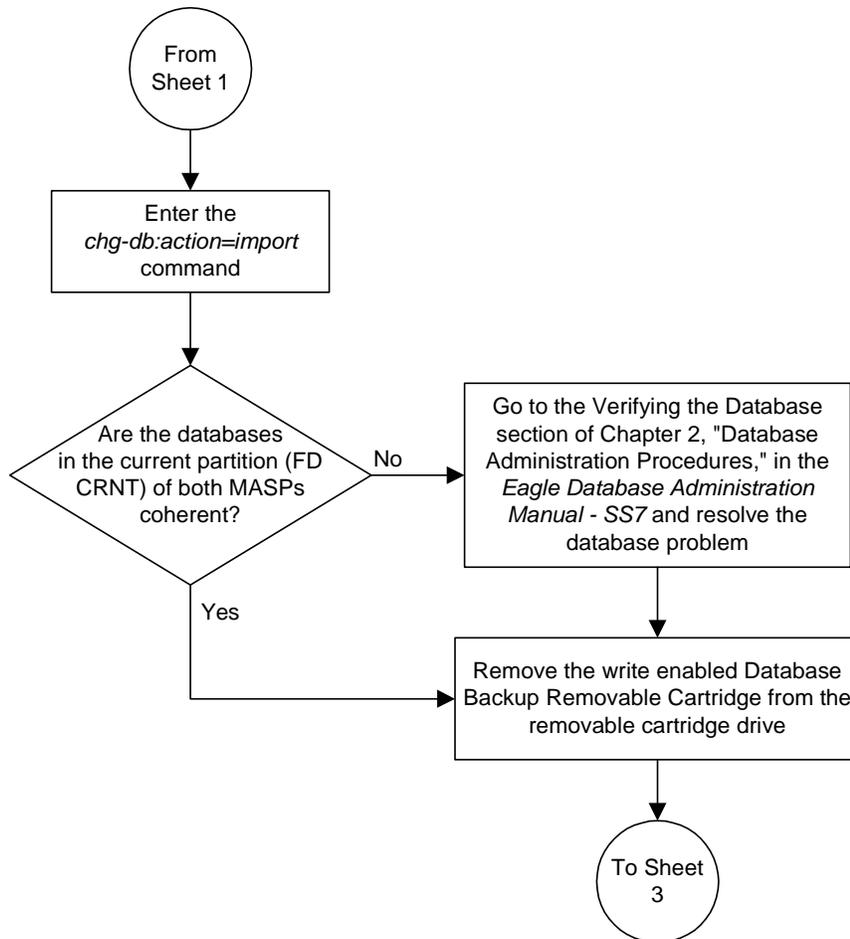
You have now completed this procedure.

Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 1 of 8)

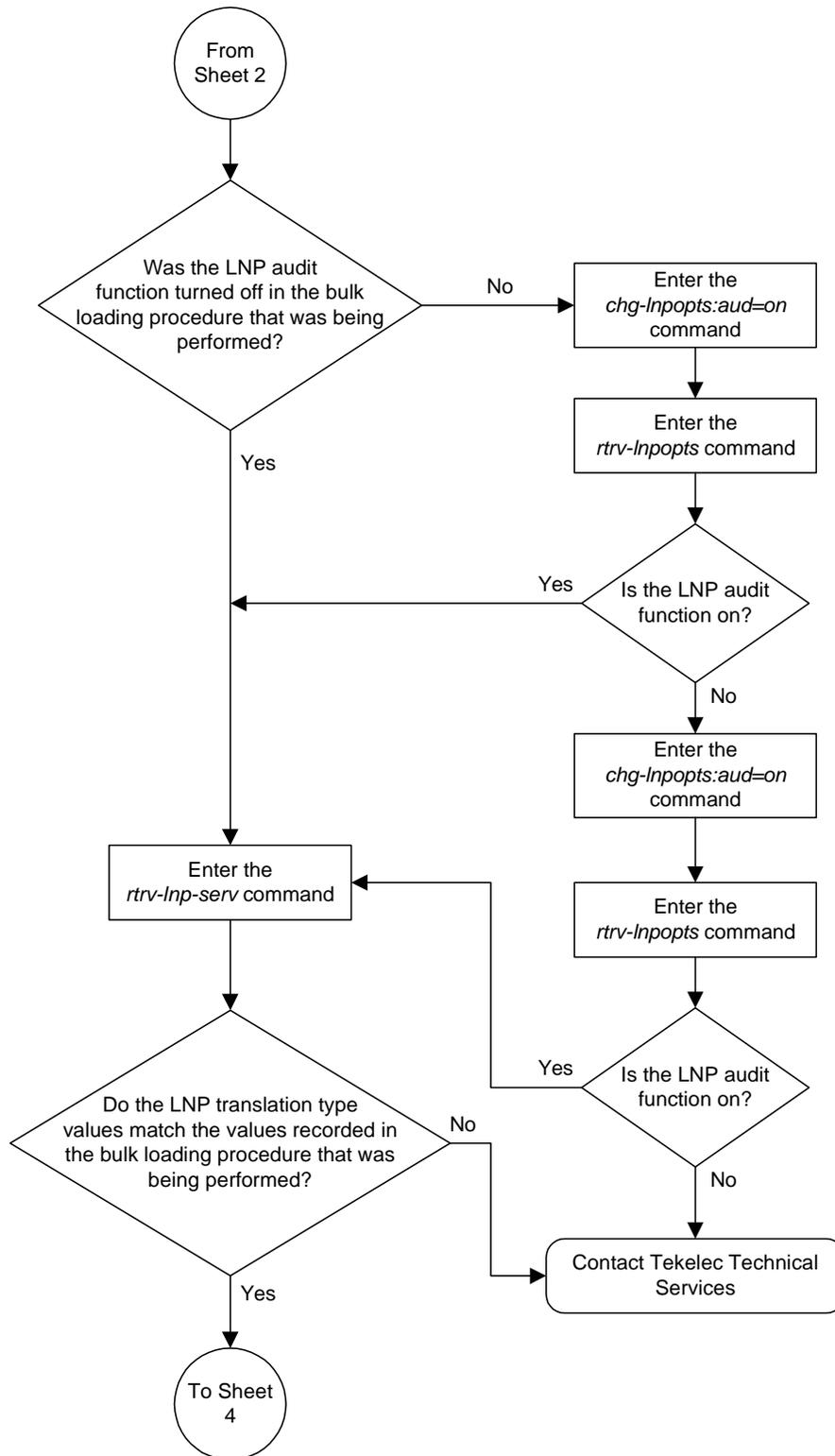


Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 2 of 8)

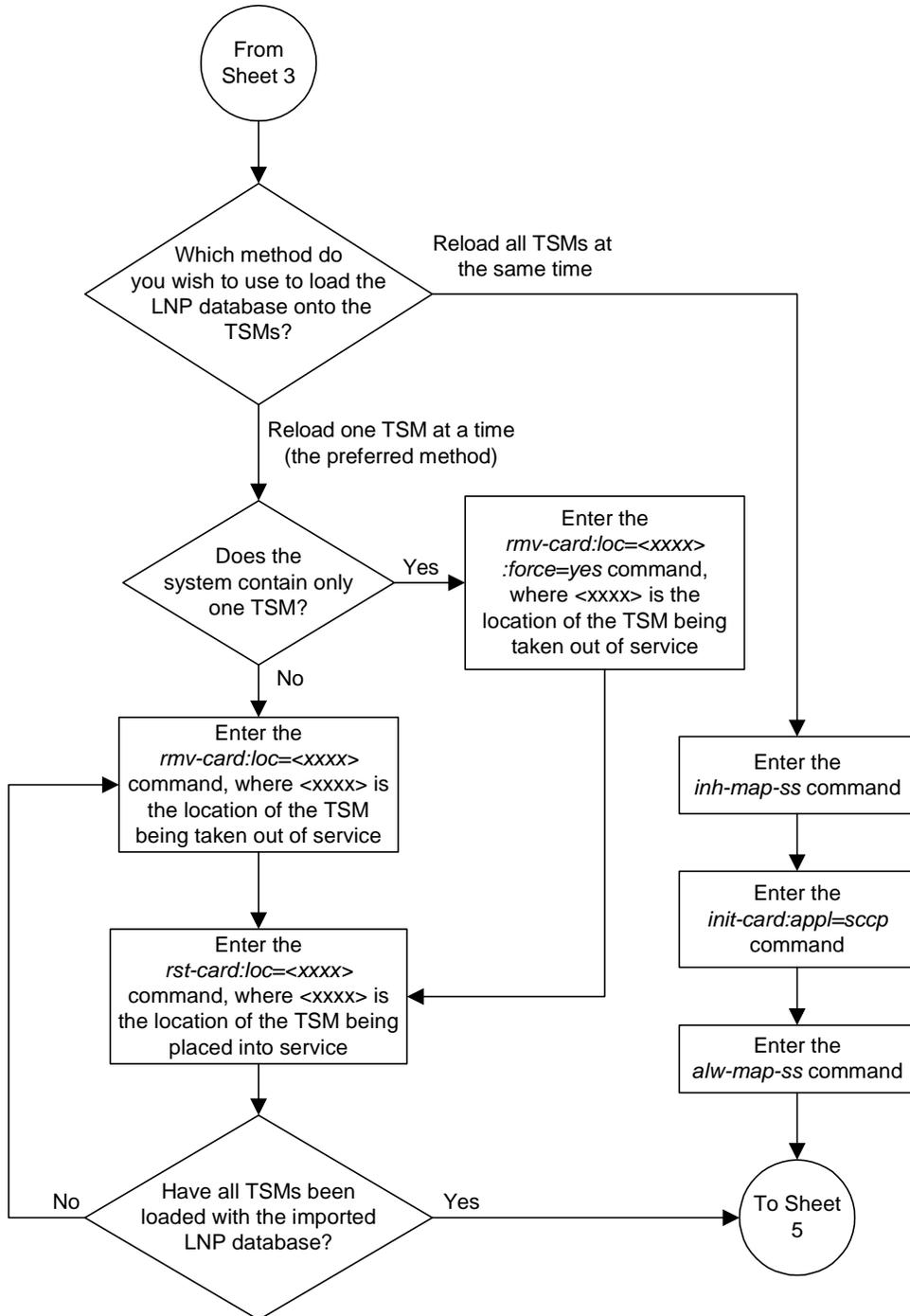


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 3 of 8)

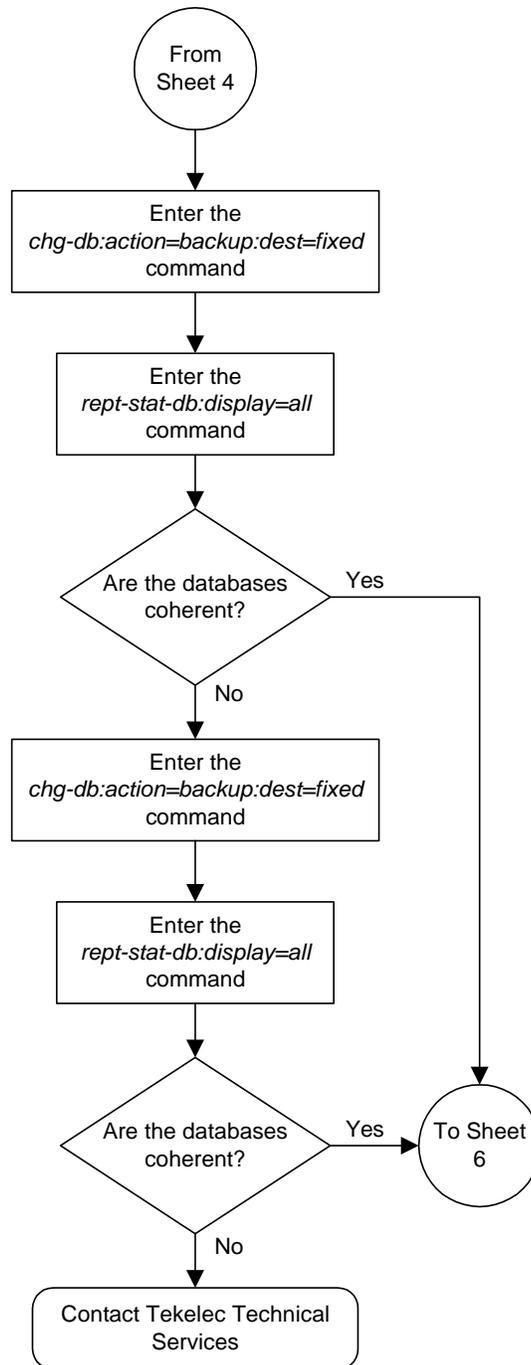


Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 4 of 8)

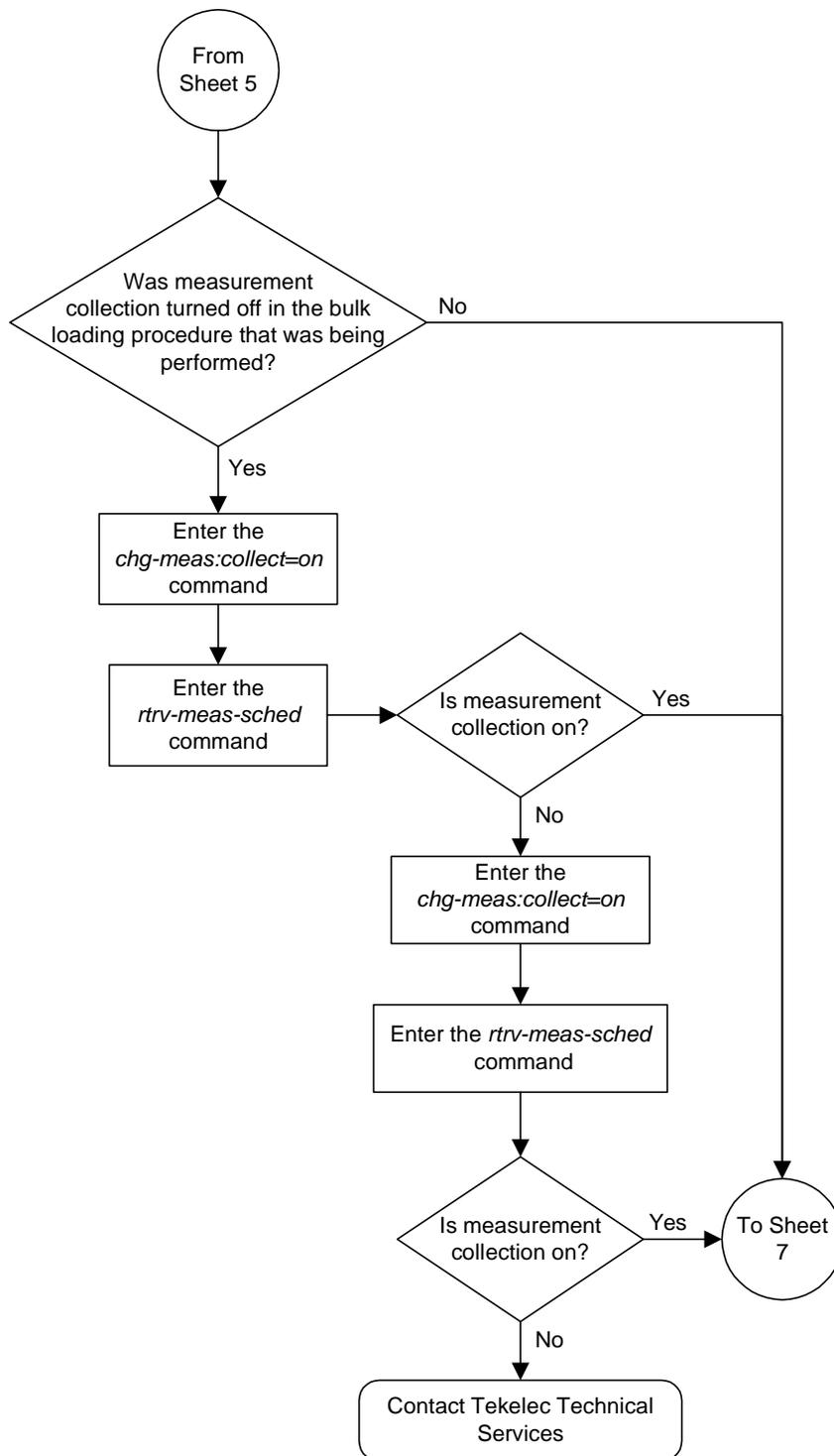


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 5 of 8)

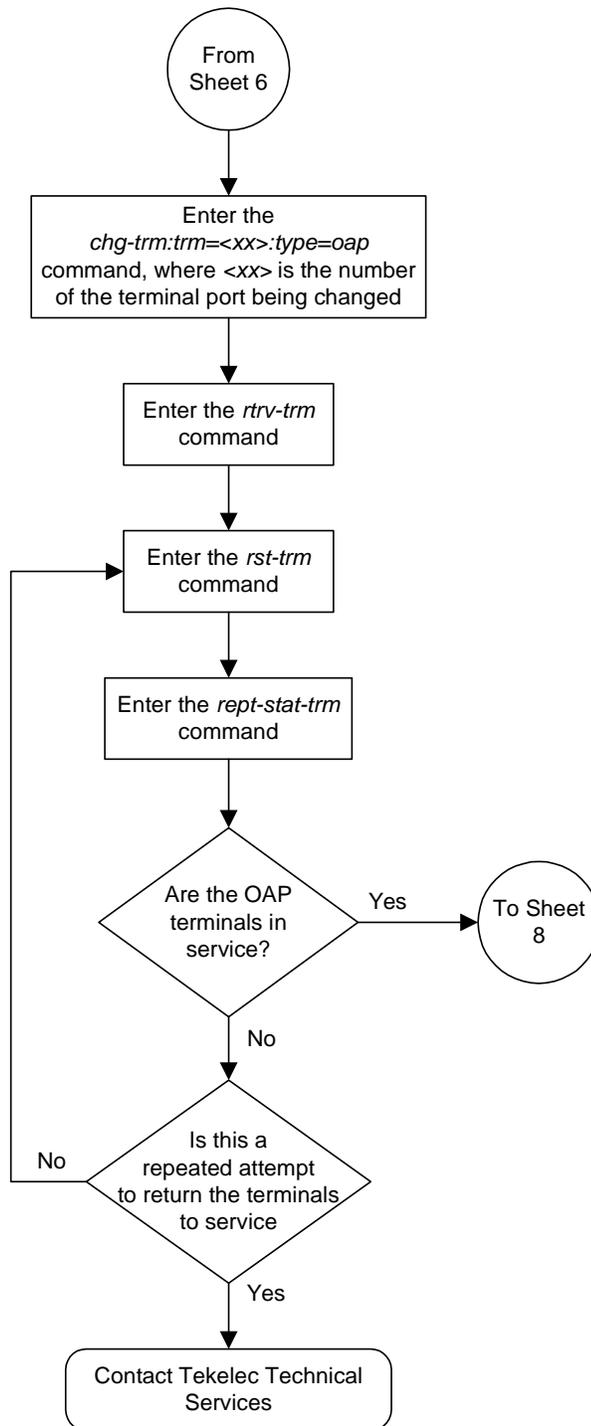


Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 6 of 8)

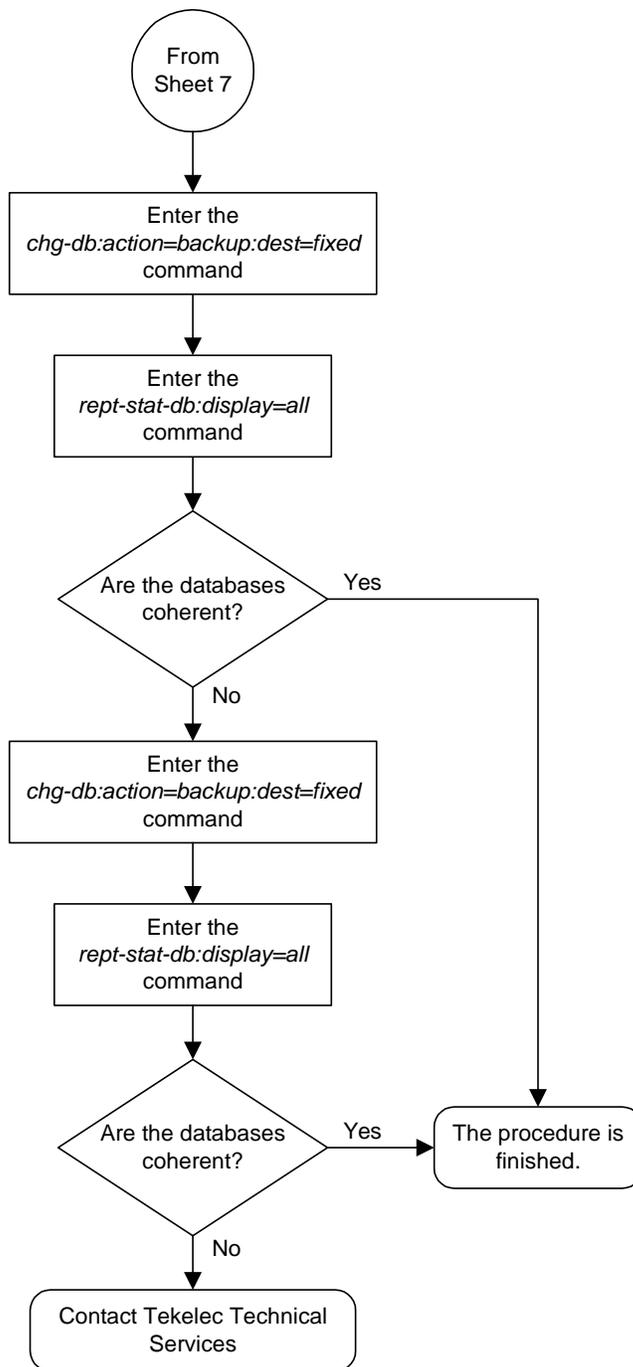


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 7 of 8)



Flowchart 13-1. Bulk Loading Backout Procedure Using the Database Backup Removable Cartridge (Sheet 8 of 8)



Backing Out Using the Backup Database of the NE's Fixed Disk

Perform this procedure from the Eagle STP if directed to do so in any of the procedures contained in Chapter 4, 9, 10, or 12, or by Tekelec Technical Services.

NOTE: Before you start this procedure and any time you encounter any problems while performing this procedure, contact Tekelec Technical Services for assistance (see "Technical Services and Support" on page 1-14).

Canceling the REPT-STAT-CARD and REPT-STAT-SLK Commands

Because the `rept-stat-card` and `rept-stat-slk` commands used in this procedure can output information for a long period of time, the `rept-stat-card` and `rept-stat-slk` commands can be canceled and the output to the terminal stopped. There are three ways that the `rept-stat-card` and `rept-stat-slk` commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the `rept-stat-card` or `rept-stat-slk` commands were entered.
- Enter the `canc-cmd` without the `trm` parameter at the terminal where the `rept-stat-card` or `rept-stat-slk` commands were entered.
- Enter the `canc-cmd:trm=<xx>`, where `<xx>` is the terminal where the `rept-stat-card` or `rept-stat-slk` commands were entered, from another terminal other than the terminal where the `rept-stat-card` or `rept-stat-slk` commands were entered. To enter the `canc-cmd:trm=<xx>` command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the `rtrv-secu-trm` command. The user's permissions can be verified with the `rtrv-user` or `rtrv-secu-user` commands.

For more information about the `canc-cmd` command, go to the Eagle STP *Commands Manual*.

Procedure

1. Verify that the databases in the backup partitions of both MASPs (FD BKUP) are coherent using the `rept-stat-db` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 16:07:48 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL      TIME LAST BACKUP  C  LEVEL      TIME LAST BACKUP
      -----
FD BKUP Y        35 02-03-05 10:19:18 GMT Y        35 02-03-05 10:19:18 GMT
FD CRNT  Y         106
      MDAL 1117
      -----
RD BKUP  -         -         -         -
```

If the databases in the backup partitions of both MASPs (RD BKUP) are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If the databases in the backup partitions of both MASPs (RD BKUP) are not coherent, shown by the letter **N** in the C field of the `rept-stat-db` output, go to the “Verifying the Database” section in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.

2. Enter the `chg-db:action=restore:src=fixed` command to copy the database from the backup partition of the fixed disk to the current partition of the fixed disk. During command execution, these messages appear (the active MASP is displayed first):

```
RESTORE (FIXED) : MASP B - Restore starts on active MASP.
RESTORE (FIXED) : MASP B - Restore from fixed disk on active MASP complete.
RESTORE (FIXED) : MASP B - Restore starts on standby MASP.
RESTORE (FIXED) : MASP B - MASP(s) will reboot to load data.
RESTORE (FIXED) : MASP B - Restore from fixed disk on stdby MASP complete.
```

3. Verify that the current and backup databases are coherent by entering the `rept-stat-db` command. If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the sample output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **N** is shown in the C field of the `rept-stat-db` output.

```
rept-stat-db:display=all
```

Bulk Loading Troubleshooting and Backout Procedures

This is an example of the possible output:

```
rlghncxa03w 02-03-07 16:07:36 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<

          TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
          C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
-----
FD BKUP  Y          74 02-03-07 16:07:36 GMT Y          74 02-03-07 16:07:36 GMT
FD CRNT  Y          106                      Y          106
          MDAL 1117
          - - - - -
          RD BKUP  - - - - -

CARD/APPL  LOC  C  T  LEVEL    TIME LAST UPDATE  EXCEPTION
-----
SCCP       1101 Y  N  106    02-03-07 16:07:36  -
GLS        1102 Y  N  106    02-03-07 16:07:36  -
TDM-CRNT   1114 Y  N  106    02-03-07 16:07:36  -
TDM-BKUP   1114 Y  -  74     02-03-07 16:07:36  -
TDM-CRNT   1116 Y  N  106    02-03-07 16:07:36  -
TDM-BKUP   1116 Y  -  74     02-03-07 16:07:36  -
MDAL       1117 -  -  -      -                -
SS7ANSI    1201 Y  N  106    02-03-07 15:37:36  -
SS7ANSI    1202 Y  N  106    02-03-07 15:37:36  -
SS7ANSI    1203 Y  N  106    02-03-07 15:37:36  -
SS7ANSI    1204 Y  N  106    02-03-07 15:37:36  -
CCS7ITU    1205 Y  N  106    02-03-07 15:37:36  -
SCCP       1206 Y  N  106    02-03-07 16:07:36  -
SS7GX25    1207 Y  N  106    02-03-07 15:37:36  -
SS7GX25    1208 Y  N  106    02-03-07 15:37:36  -
SCCP       1213 Y  N  106    02-03-07 16:07:36  -
SCCP       1214 Y  N  106    02-03-07 16:07:36  -
EBDABLM    1215 Y  N  106    02-03-07 16:07:36  -
STPLAN     1216 Y  N  106    02-03-07 16:07:36  -
EBDADCM    1217 Y  N  106    02-03-07 16:07:36  -
ATMANSI    1301 Y  N  106    02-03-07 16:07:36  -
STPLAN     1304 Y  N  106    02-03-07 16:07:36  -
SS7ANSI    1305 Y  N  106    02-03-07 16:07:36  -
SS7GX25    1308 Y  N  106    02-03-07 16:07:36  -
SS7GX25    1314 Y  N  106    02-03-07 16:07:36  -
STPLAN     1317 Y  N  106    02-03-07 16:07:36  -
ATMANSI    1318 Y  N  106    02-03-07 16:07:36  -
EMDC       2107 Y  N  106    02-03-07 16:07:36  -
EMDC       2111 Y  N  106    02-03-07 16:07:36  -
```

If any of the databases are not coherent, go to the “Verifying the Database” section in Chapter 2 of the *Eagle STP Database Administration Manual - SS7* and resolve the database problem.

This command output also shows the locations of the network cards (LIMs, ASMs, TSMs, and ACMs) that need to be reloaded with the restored database. The network cards are shown in the `rept-stat-db` output in the CARD/APPL field by the application that is assigned to the card.

NOTE: If the `rept-stat-db` output from step 3 on page 13-28 does not show any cards running these applications, SS7ANSI, SS7GX25, CCS7ITU, ATMANSI, ATMITU, IPLIM, IPLIMI, SS7IPGW or IPGWI, skip steps 4 through 13, and go to step 14 on page 13-35.

-
4. Display the state of the signaling links associated with the cards shown in step 3 running these applications: SS7ANSI, SS7GX25, CCS7ITU, ATMANSI, ATMITU, IPLIM, IPLIMI, S7IPGW or IPGWI. Enter the `rept-stat-slk` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 21:16:37 GMT Rel 28.1.0
SLK   LSN       CLLI       PST       SST       AST
1201,A lsn1201a  ls01clli   IS-NR     Avail     ----
1201,B lsn1201b  -----   IS-NR     Avail     ----
1202,A lsn1202a  ls02clli   IS-NR     Avail     ----
1202,B lsn1202b  -----   IS-NR     Avail     ----
1203,A lsn1203a  ls03clli   IS-NR     Avail     ----
1203,B lsn1203b  -----   IS-NR     Avail     ----
1204,A lsn1204a  ls04clli   IS-NR     Avail     ----
1204,B lsn1204b  -----   IS-NR     Avail     ----
1205,A lsnitu1   -----   IS-NR     Avail     ----
1205,B lsnitu2   -----   IS-NR     Avail     ----
1207,A lsnx25    -----   IS-NR     Avail     ----
1208,A lsnx251   -----   IS-NR     Avail     ----
1301,A atm1217a lsn5clli   IS-NR     Avail     ----
1305,A lsn1305a ls05clli   IS-NR     Avail     ----
1308,A lsnx251   -----   IS-NR     Avail     ----
1314,A lsnx25    -----   IS-NR     Avail     ----
1318,A atm1217a lsn5clli   IS-NR     Avail     ----
```

If signaling links are assigned to cards running the SS7ANSI, CCS7ITU, ATMANSI, or ATMITU applications, go to step 5 to inhibit the signaling links.

If signaling links are assigned to cards running the SS7GX25, IPLIM, IPLIMI, (or, for Eagle STP Release 28.1, SS7IPGW or IPGWI) applications, go to step 6 to deactivate them.

- Using the outputs of steps 3 and 4 as a guide, select a card assigned to either the SS7ANSI, CCS7ITU, ATMANSI, or ATMITU applications to load the restored database onto. Inhibit the signaling links on that card using the `inh-slk` command. For this example, enter these commands:

```
inh-slk:loc=1201:port=a
```

```
inh-slk:loc=1201:port=b
```

NOTE: For signaling links assigned to the ATMANSI or ATMITU applications, only Port A of the card (`port=a` parameter) can be specified with the `inh-slk` command.

NOTE: Signaling links assigned to the SS7GX25, IPLIM, or IPLIMI (or, for Eagle STP Release 28.1, SS7IPGW or IPGWI) applications cannot be inhibited with the `inh-slk` command. If a card assigned to these applications must be reloaded, skip this step and go to step 6.



CAUTION: These command examples take the signaling links on card 1201 out of service and will interrupt service on the signaling links on card 1201.



CAUTION: Do not deactivate all the SS7 signaling links (LIMs assigned to the SS7ANSI application) in the system at the same time. Doing so will take all the SS7 signaling links out of service and isolate the Eagle STP from the network.



CAUTION: Do not deactivate all the ITU signaling links (LIMs assigned to the CCS7ITU application) in the system at the same time. Doing so will take all the ITU signaling links out of service and isolate the Eagle STP from the ITU network.



CAUTION: Do not deactivate all the ATM signaling links (LIMs assigned to the ATMANSI application) in the system at the same time. Doing so will take all the ATM signaling links out of service and interrupt service on all high-speed ATM signaling links.



CAUTION: Do not deactivate all the E1 ATM signaling links (LIMs assigned to the ATMITU application) in the system at the same time. Doing so will take all the E1 ATM signaling links out of service and interrupt service on all high-speed E1 ATM signaling links.

NOTE: After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:45:18 GMT Rel 28.1.0  
Inhibit Link message sent to card
```

6. Deactivate the signaling links on that card using the `dact-slk` command. For this example, enter these commands:

```
dact-slk:loc=1201:port=a
```

```
dact-slk:loc=1201:port=b
```

NOTE: For signaling links assigned to the SS7GX25, ATMANSI, ATMITU, SS7IPGW, or IPGWI applications, only Port A of the card (`port=a` parameter) can be specified with the `dact-slk` command.



CAUTION: These command examples take the signaling links on card 1201 out of service and will interrupt service on the signaling links on card 1201.



CAUTION: Do not deactivate all the signaling links in the system at the same time. Doing so will take all the signaling links out of service and cause all SS7 or X.25 traffic to be lost and isolate the system from the network.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:45:18 GMT Rel 28.1.0
Deactivate SLK message sent to card
```

7. Take the card specified in step 5 out of service using the `rmv-card` command. If the card contains the last signaling link in a linkset, the `force=yes` parameter must be specified. The name of the linkset that the signaling link is assigned to is shown in the LSN field of the `rept-stat-slk` command output, as shown in step 4. For this example, enter this command:

```
rmv-card:loc=1201:force=yes
```

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been inhibited.
```

8. Return the card that was inhibited in step 7 to service using the `rst-card` command. This command also loads the restored database onto the specified card. For this example, enter this command:

```
rst-card:loc=1201
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been allowed.
```

Bulk Loading Troubleshooting and Backout Procedures

9. Verify that the card is back in service using the `rept-stat-card` command. The card is back in service if the entry `IS-NR` is shown in the PST field. For this example, enter this command:

`rept-stat-card`

This is an example of the possible output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
CARD  VERSION      TYPE  APPL  PST      SST      AST
1101  002-202-000    ASM   SCCP   IS-NR    Active   -----
1102  002-202-000    ASM   GLS    IS-NR    Active   -----
1113  002-202-000    MASP  OAM    IS-NR    Active   -----
1114  -----        TDM   ----- IS-NR    Active   -----
1115  -----        MASP  OAM    IS-NR    Active   -----
1116  -----        TDM   ----- IS-NR    Active   -----
1117  -----        MDAL  ----- IS-NR    Active   -----
1201  002-202-000    LIM0CU SS7ANSI IS-NR    Active   -----
1202  002-202-000    LIM0CU SS7ANSI IS-NR    Active   -----
1203  002-202-000    LIMDS0 SS7ANSI IS-NR    Active   -----
1204  002-202-000    LIMDS0 SS7ANSI IS-NR    Active   -----
1205  002-202-000    LIMDS0 CCS7ITU IS-NR    Active   -----
1206  002-202-000    ASM   SCCP   IS-NR    Active   -----
1207  002-202-000    LIM0CU SS7GX25 IS-NR    Active   -----
1208  002-202-000    LIM0CU SS7GX25 IS-NR    Active   -----
1213  002-202-000    ASM   SCCP   IS-NR    Active   -----
1214  002-202-000    ASM   SCCP   IS-NR    Active   -----
1215  002-202-000    ASM   EBDABLM IS-NR    Active   -----
1216  002-202-000    ACM   STPLAN IS-NR    Active   -----
1217  002-202-000    DCM   EBDADCM IS-NR    Active   -----
1301  002-202-000    LIMDS0 ATMANSI IS-NR    Active   -----
1304  002-202-000    ACM   STPLAN IS-NR    Active   -----
1305  002-202-000    LIMDS0 SS7ANSI IS-NR    Active   -----
1308  002-202-000    LIM0CU SS7GX25 IS-NR    Active   -----
1314  002-202-000    LIM0CU SS7GX25 IS-NR    Active   -----
1317  002-202-000    ACM   STPLAN IS-NR    Active   -----
1318  002-202-000    LIMDS0 ATMANSI IS-NR    Active   -----
2111  002-202-000    DCM   EMDC   IS-NR    Active   -----
Command Completed.
```

If the `rept-stat-card` command output shows that the card is not in service, repeat steps 7 and 8. If the card is still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

-
10. Return the signaling links that were deactivated in step 6 to service using the `act-slk` command. For this example, enter these commands.

`act-slk:loc=1201:port=a`

`act-slk:loc=1201:port=b`

NOTE: For signaling links assigned to the SS7GX25, ATMANSI, ATMITU, SS7IPGW, or IPGWI applications, only Port A of the card (`port=a` parameter) can be specified with the `act-slk` command.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:55:49 GMT Rel 28.1.0
Activate SLK message sent to card
```

NOTE: Signaling links assigned to cards running these applications, SS7GX25, IPLIM, or IPLIMI, SS7IPGW, or IPGWI, cannot be specified for the alw-slk command. Skip this step for signaling links running these applications and go to step 12.

11. Return the signaling links that were inhibited in step 5 to service using the `alw-slk` command. For this example, enter these commands:

```
alw-slk:loc=1201:port=a
alw-slk:loc=1201:port=b
```

NOTE: For signaling links assigned to the ATMANSI or ATMITU applications, only Port A of the card (port=a parameter) can be specified with the alw-slk command.

After successful completion of each command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:45:18 GMT Rel 28.1.0
Allow Link message sent to card
```

12. Display the state of the signaling links that were activated in step 11. Enter the `rept-stat-slk` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 21:16:37 GMT Rel 28.1.0
SLK   LSN       CLLI       PST       SST       AST
1201,A lsn1201a  ls01clli  IS-NR     Avail     ----
1201,B lsn1201b  -----  IS-NR     Avail     ----
1202,A lsn1202a  ls02clli  IS-NR     Avail     ----
1202,B lsn1202b  -----  IS-NR     Avail     ----
1203,A lsn1203a  ls03clli  IS-NR     Avail     ----
1203,B lsn1203b  -----  IS-NR     Avail     ----
1204,A lsn1204a  ls04clli  IS-NR     Avail     ----
1204,B lsn1204b  -----  IS-NR     Avail     ----
1205,A lsnitu1   -----  IS-NR     Avail     ----
1205,B lsnitu2   -----  IS-NR     Avail     ----
1207,A lsnx25    -----  IS-NR     Avail     ----
1208,A lsnx251  -----  IS-NR     Avail     ----
1301,A atm1217a lsn5clli  IS-NR     Avail     ----
1305,A lsn1305a ls05clli  IS-NR     Avail     ----
1308,A lsnx251  -----  IS-NR     Avail     ----
1314,A lsnx25    -----  IS-NR     Avail     ----
1318,A atm1217a lsn5clli  IS-NR     Avail     ----
```

If the `rept-stat-slk` command output shows that the signaling links are not in service, repeat steps 8, 9, and 11. If the signaling links are still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

- Repeat steps 5 through 12 to load the restored database onto the other cards assigned to either the SS7ANSI, SS7Gx25, CCS7ITU, ATMANSI, ATMITU, IPLIM, IPLIMI, SS7IPGW or IPGWI applications.

NOTE: If the `rept-stat-db` output from step 3 on page 13-28 does not show any cards running these applications, SCCP, VSCCP, EBDABLM, GLS, EROUTE, or MCP, skip steps 14 through 17, and go to step 18 on page 13-37.

- From the output of step 3, select a card running one of these applications (SCCP, VSCCP, EBDABLM, GLS, EROUTE, or MCP) to load the restored database onto. Take the card out of service using the `rmv-card` command. If only one card running the SCCP, VSCCP, EBDABLM, GLS, or MCP is in the system, the `force=yes` parameter must be specified with the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1101
```



CAUTION: Do not take all the cards running the SCCP or VSCCP applications in the system out of service at the same time. Doing so will cause all global title translation and LNP traffic to be lost. Do not take all the cards running the GLS application in the system out of service at the same time. Doing so will cause the gateway screening feature to be disabled. Features requiring gateway screening, STP LAN, Calling Name Conversion Facility (CNCf), and Triggerless LNP will also be disabled.



CAUTION: If there is only one card running the SCCP or VSCCP applications in the system, taking the card out of service will cause the global title translation and LNP traffic to be lost. If there is only one card running the GLS application in the system, taking the card out of service will cause the gateway screening feature to be disabled. Features requiring gateway screening, STP LAN, Calling Name Conversion Facility (CNCf), and Triggerless LNP will also be disabled.



CAUTION: Taking the card running the EBDABLM application out of service will disable the Enhanced Bulk Download and Audit feature for the LNP database.



CAUTION: Do not take all the cards running the EROUTE application in the system out of service at the same time. Doing so will cause the Eagle Support for Integrated Sentinel feature to be disabled.



CAUTION: Do not take all the cards running the MCP application in the system out of service at the same time. Doing so will cause the Measurements Platform feature to be disabled.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0  
Card has been inhibited.
```

15. Return the card that was inhibited in step 14 to service using the `rst-card` command. This command also loads the restored database on the specified card. For this example, enter this command:

```
rst-card:loc=1101
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been allowed.
```

16. Verify that the card is back in service using the `rept-stat-card` command with the `mode=full` parameter. The card is back in service if the entry `IS-NR` is shown in the `PST` field. For this example, enter this command:

```
rept-stat-card:loc=1101:mode=full
```

This is an example of the possible output

```
rlghncxa03w 02-03-07 16:43:42 GMT Rel 28.1.0
CARD  VERSION      TYPE      APPL      PST      SST      AST
1101  002-201-000    ASM      SCCP      IS-NR    Active   -----
ALARM STATUS      = No Alarms.
IMT VERSION        = 002-201-000
PROM VERSION       = 002-201-000
IMT BUS A          = Conn
IMT BUS B          = Conn
CLOCK A           = Active
CLOCK B           = Idle
CLOCK I           = Idle
MBD BIP STATUS    = valid
DB STATUS          = valid
DBD MEMORY SIZE   = 256M
SCCP SERVICE      = 1201, 1202, 1203, 1204, 1205, 1207, 1208, 1301, 1305,
                  1308, 1314, 1318
SCCP % OCCUP      = 10%
Command Completed.
```

If the `rept-stat-card` command output shows that the card is not in service, or that the card running either the SCCP, VSCCP, or EBDABLM application is not carrying any SCCP traffic (shown by a number greater than zero in the `SCCP % OCCUP` field), repeat steps 14 and 15. If the card is still not in service, or if the card running either the SCCP, VSCCP, or EBDABLM application is still not carrying any traffic after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

17. Repeat steps 14 through 16 to load the restored database onto the other cards running any of the SCCP, VSCCP, EDBABLM, GLS, EROUTE, or MCP applications.
-

NOTE: If the `rept-stat-db:display=all` command output executed in step 3 on page 13-28 does not show any cards running either the STPLAN or VXWSLAN applications, skip steps 18 through 25 and continue with step 26 on page 13-39.

18. Display the state of the TCP/IP data links associated with the cards running either the STPLAN application or the VXWSLAN application) shown in step 3. Enter the `rept-stat-dlk` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 11:55:49 GMT Rel 28.1.0
DLK   PST           SST           AST
1216  IS-NR          Avail        ---
1304  IS-NR          Avail        ---
1317  IS-NR          Avail        ---
Command Completed.
```

19. From the outputs of step 3 on page 13-28 and step 18, select an STPLAN card to load the restored database onto. Deactivate the TCP/IP data link assigned to the STPLAN card that you wish to load the restored database onto using the `canc-dlk` command. For this example, enter this command:

```
canc-dlk:loc=1216
```

CAUTION: This command example takes the TCP/IP data link on card 1301 out of service and will interrupt service on the TCP/IP data link on card 1301.



Do not deactivate all the TCP/IP data links in the system at the same time. Doing so will take all the TCP/IP data links out of service and cause the STP LAN feature to be disabled.

If there is only one TCP/IP data link in the system, taking the card out of service will cause the STP LAN feature to be disabled.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:45:18 GMT Rel 28.1.0
Deactivate Link message sent to card.
Command Completed.
```

20. Take the card specified in step 19 out of service using the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1216
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been inhibited.
```

21. Return the card that was inhibited in step 20 to service using the `rst-card` command. This command also loads the restored database on the specified card. For this example, enter this command:

```
rst-card:loc=1216
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
Card has been allowed.
```

22. Verify that the STPLAN card is back in service using the `rept-stat-card` command. The STPLAN card is back in service if the entry `IS-NR` is shown in the `PST` field. This is an example of the possible output:

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
CARD  VERSION      TYPE  APPL  PST  SST  AST
1101  002-202-000  ASM   SCCP  IS-NR  Active  -----
1102  002-202-000  ASM   GLS   IS-NR  Active  -----
1113  002-202-000  MASP  OAM   IS-NR  Active  -----
1114  -----      TDM   -----  IS-NR  Active  -----
1115  -----      MASP  OAM   IS-NR  Active  -----
1116  -----      TDM   -----  IS-NR  Active  -----
1117  -----      MDAL  -----  IS-NR  Active  -----
1201  002-202-000  LIMOCU SS7ANSI IS-NR  Active  -----
1202  002-202-000  LIMOCU SS7ANSI IS-NR  Active  -----
1203  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1204  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1205  002-202-000  LIMDS0 CCS7ITU IS-NR  Active  -----
1206  002-202-000  ASM   SCCP  IS-NR  Active  -----
1207  002-202-000  LIMOCU SS7GX25 IS-NR  Active  -----
1208  002-202-000  LIMOCU SS7GX25 IS-NR  Active  -----
1213  002-202-000  ASM   SCCP  IS-NR  Active  -----
1214  002-202-000  ASM   SCCP  IS-NR  Active  -----
1215  002-202-000  ASM   EBDABLM IS-NR  Active  -----
1216  002-202-000  ACM   STPLAN IS-NR  Active  -----
1217  002-202-000  DCM   EBDADCM IS-NR  Active  -----
1301  002-202-000  LIMDS0 ATMANSI IS-NR  Active  -----
1304  002-202-000  ACM   STPLAN IS-NR  Active  -----
1305  002-202-000  LIMDS0 SS7ANSI IS-NR  Active  -----
1308  002-202-000  LIMOCU SS7GX25 IS-NR  Active  -----
1314  002-202-000  LIMOCU SS7GX25 IS-NR  Active  -----
1317  002-202-000  ACM   STPLAN IS-NR  Active  -----
1318  002-202-000  LIMDS0 ATMANSI IS-NR  Active  -----
2107  002-202-000  DCM   EMDC  IS-NR  Active  -----
2111  002-202-000  DCM   EMDC  IS-NR  Active  -----
Command Completed.
```

If the `rept-stat-card` command output shows that the STPLAN card is not in service, repeat steps 20, 21, and 22. If the STPLAN card is still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

23. Return the TCP/IP data link that was deactivated in step 19 to service using the `act-dlk` command. For this example, enter this command:

```
act-dlk:loc=1216
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-07 11:55:49 GMT Rel 28.1.0
Activate Link message sent to card.
```

24. Display the state of the TCP/IP data link that was activated in step 23. Enter the `rept-stat-dlk` command. This is an example of the possible output:

```
rlghncxa03w 02-03-07 11:55:49 GMT Rel 28.1.0
DLK    PST          SST          AST
1216   IS-NR          Avail       ---
1304   IS-NR          Avail       ---
1317   IS-NR          Avail       ---
Command Completed.
```

If the `rept-stat-dlk` command output shows that the TCP/IP data link is not in service, repeat steps 23 and 24. If the TCP/IP data link is still not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

25. Repeat steps 19 through 24 to load the restored database onto other STPLAN cards.
-

NOTE: If the `rept-stat-db` command output executed in step 3 on page 13-28 does not show a card running the EBDADCM application, skip steps 26 through 28 and go to step 34 on page 13-43.

26. Take the card out of service using the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1217
```



CAUTION: Taking the card running the EBDADCM application out of service will disable the Enhanced Bulk Download and Audit feature.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-05 11:11:28 EDT Rel 28.1.0
Card has been inhibited.
```

27. Return the card that was inhibited in step 26 to service using the `rst-card` command. For this example, enter this command:

```
rst-card:loc=1217
```

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 02-03-05 11:11:28 EDT Rel 28.1.0
Card has been allowed.
```

28. Verify that the card running the EBDADCM application is back in service using the `rept-stat-card` command. The card running the EBDADCM application is back in service if the entry `IS-NR` is shown in the PST field.

This is an example of the possible output

```
rlghncxa03w 02-03-07 11:11:28 GMT Rel 28.1.0
CARD  VERSION      TYPE  APPL  PST  SST  AST
1101  002-202-000    ASM   SCCP  IS-NR  Active  -----
1102  002-202-000    ASM   GLS   IS-NR  Active  -----
1113  002-202-000    MASP  OAM   IS-NR  Active  -----
1114  -----        TDM   -----  IS-NR  Active  -----
1115  -----        MASP  OAM   IS-NR  Active  -----
1116  -----        TDM   -----  IS-NR  Active  -----
1117  -----        MDAL  -----  IS-NR  Active  -----
1201  002-202-000    LIMOCU SS7ANSI  IS-NR  Active  -----
1202  002-202-000    LIMOCU SS7ANSI  IS-NR  Active  -----
1203  002-202-000    LIMDS0 SS7ANSI  IS-NR  Active  -----
1204  002-202-000    LIMDS0 SS7ANSI  IS-NR  Active  -----
1205  002-202-000    LIMDS0 CCS7ITU  IS-NR  Active  -----
1206  002-202-000    ASM   SCCP  IS-NR  Active  -----
1207  002-202-000    LIMOCU SS7GX25  IS-NR  Active  -----
1208  002-202-000    LIMOCU SS7GX25  IS-NR  Active  -----
1213  002-202-000    ASM   SCCP  IS-NR  Active  -----
1214  002-202-000    ASM   SCCP  IS-NR  Active  -----
1215  002-202-000    ASM   EBDABLM  IS-NR  Active  -----
1216  002-202-000    ACM   STPLAN  IS-NR  Active  -----
1217  002-202-000    DCM   EBDADCM  IS-NR  Active  -----
1301  002-202-000    LIMDS0 ATMANSI  IS-NR  Active  -----
1304  002-202-000    ACM   STPLAN  IS-NR  Active  -----
1305  002-202-000    LIMDS0 SS7ANSI  IS-NR  Active  -----
1308  002-202-000    LIMOCU SS7GX25  IS-NR  Active  -----
1314  002-202-000    LIMOCU SS7GX25  IS-NR  Active  -----
1317  002-202-000    ACM   STPLAN  IS-NR  Active  -----
1318  002-202-000    LIMDS0 ATMANSI  IS-NR  Active  -----
2107  002-202-000    DCM   EMDC   IS-NR  Active  -----
2111  002-202-000    DCM   EMDC   IS-NR  Active  -----
Command Completed.
```

If the `rept-stat-card` command output shows that the card running the EBDADCM application is not in service, repeat steps 26, 27, and 28. If the card running the EBDADCM application is not in service after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

NOTE: If the `rept-stat-db` command output executed in step 3 on page 13-28 does not show any cards running the EMDC application, skip steps 29 through 33 and continue with step 34 on page 13-43.

29. Display the status of the DCMs running the `EMDC GPL` using the `rept-stat-ndc` command. The status of the DCMs is shown in the PST field of the `rept-stat-ndc` command output. This is an example of the possible output:

```
RLGHNCXA03W 02-03 09:12:36 EDT Rel 28.1.0
CARD  VERSION      TYPE  APPL      PST          SST          AST
2107  002-202-000  DCM   EMDCA     IS-NR        Active       -----
      DCM A IP CONNECTION          IS-NR        Avail        -----
      OAP A IP CONNECTION          IS-NR        Avail        -----
      OAP A NDC AGENT              IS-NR        Active       -----

CARD  VERSION      TYPE  APPL      PST          SST          AST
2111  002-202-000  DCM   EMDCA     IS-NR        Idle         -----
      DCM B IP CONNECTION          IS-NR        Avail        -----
      OAP B IP CONNECTION          IS-NR        Avail        -----
      OAP B NDC AGENT              IS-NR        Idle         -----

      NDC Q.3 ASSOCIATION [OAP A]  IS-NR        Avail        -----
      DCM-DCM IP CONNECTION        IS-NR        Avail        -----
      OAP-OAP SERIAL CONNECTION    IS-NR        Avail        -----
```

ALARM STATUS:

Command Completed.

30. Take one of the cards shown in step 29 out of service using the `rmv-card` command. For this example, enter this command:

```
rmv-card:loc=1207
```



CAUTION: This command example takes the card 1207 out of service

Do not deactivate both cards running the `emdc GPL` at the same time. Doing so will disable the GR-376 feature.

After successful completion of this command, the system returns the following output:

```
RLGHNCXA03W 02-03 11:11:28 EDT Rel 28.1.0
Card has been inhibited.
```

31. Return the card that was inhibited in step 30 to service using the `rst-card` command. For this example, enter this command:

```
rst-card:loc=1207
```

After successful completion of this command, the system returns the following output:

```
RLGHNCXA03W 02-03-05 11:11:28 EDT Rel 28.1.0
Card has been allowed.
```

32. Verify that the card running the EMDC application is back in service using the `rept-stat-card` command. The card running the EMDC application is back in service if the entry `IS-NR` is shown in the PST field.

```
RLGHNCXA03W 02-03 09:12:36 GMT Rel 28.1.0
CARD  VERSION      TYPE  APPL    PST          SST          AST
2107  002-202-000  DCM   EMDCA    IS-NR        Active       -----
      DCM A IP CONNECTION                IS-NR        Avail        -----
      OAP A IP CONNECTION                IS-NR        Avail        -----
      OAP A NDC AGENT                    IS-NR        Active       -----

CARD  VERSION      TYPE  APPL    PST          SST          AST
2111  002-202-000  DCM   EMDCA    IS-NR        Idle         -----
      DCM B IP CONNECTION                IS-NR        Avail        -----
      OAP B IP CONNECTION                IS-NR        Avail        -----
      OAP B NDC AGENT                    IS-NR        Idle         -----

      NDC Q.3 ASSOCIATION [OAP A]        IS-NR        Avail        -----
      DCM-DCM IP CONNECTION              IS-NR        Avail        -----
      OAP-OAP SERIAL CONNECTION          IS-NR        Avail        -----
```

ALARM STATUS:

Command Completed.

If the `rept-stat-ndc` command output shows that the card running the EMDC application is not in service, repeat steps 29 through 32. If the card running the EMDC application is still not in service after repeating these steps, contact Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

33. Repeat steps 29 through 32 to load the restored database onto the other card running the EMDC application.

34. Determine the status of the measurement collection function to return the function to its state shown in the `rtrv-meas-sched` command output of these steps:

- Step 10 on page 9-18 in Chapter 9, “Distributing the LNP Database after LSMS-Based Operation or RTDB Copy”
- Step 11 on page 11-24 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”
- Step 1 on page 11-31 in Chapter 11, “Preparing the Network Element for Manual Bulk Loading”

To determine the status of the measurement collection function, enter this command:

```
rtrv-meas-sched
```

This is an example of the possible output:

```
rlghncxa03w 02-03-07 07:19:51 GMT Rel 28.1.0
COLLECT           = on
GTWYLSREPT        = both
-----
SYSTOT-STP       = on
SYSTOT-TT        = off
SYSTOT-STPLAN    = off
COMP-LNKSET      = on
COMP-LINK        = on
GTWY-STP         = on
GTWY-LNKSET      = on
MTCD-STP         = on
MTCD-LINK        = on
MTCD-STPLAN      = on
MTCD-LNKSET      = on
```

NOTE: If the status of the measurement collection function shown in the referenced procedures matches the output of the `rtrv-meas-sched` command in step 34, skip steps 35 and 36, and go to step 37 on page 13-44.

35. Turn the measurement collection function on or off. To turn on the function, enter this command:

```
chg-meas:collect=on
```

To turn off the function, enter this command:

```
chg-meas:collect=off
```

After successful completion of either command, the system returns the following output:

```
rlghncxa03w 02-03-07 17:02:57 GMT Rel 28.1.0
CHG-MEAS: MASP B - COMPLTD
```

36. Verify that the status of the measurement collection function has changed according to the command entered in step 35. Enter this command:

rtrv-meas-sched

This is an example of the possible output:

```
rlghncxa03w 02-03-07 07:19:51 GMT Rel 28.1.0
COLLECT          = off
GTWYLSREPT      = both
-----
SYSTOT-STP      = on
SYSTOT-TT       = off
SYSTOT-STPLAN   = off
COMP-LNKSET     = on
COMP-LINK       = on
GTWY-STP        = on
GTWY-LNKSET     = on
MTCN-STP        = on
MTCN-LINK       = on
MTCN-STPLAN     = on
MTCN-LNKSET     = on
```

If the **rtrv-meas-sched** command output shows that the measurement collection function is still off, repeat steps 35 and 36. If the function is still off after repeating these steps, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

37. Back up the database using the **chg-db:action=backup:dest=fixed** command. The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) messages appear first.

```
BACKUP (FIXED) : MASP B - Backup starts on active MASP.
BACKUP (FIXED) : MASP B - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP B - Backup starts on standby MASP.
BACKUP (FIXED) : MASP B - Backup on standby MASP to fixed disk complete.
```

Bulk Loading Troubleshooting and Backout Procedures

- 38.** Verify that the databases are coherent with the `rept-stat-db:display=all` command. If the databases are coherent, the letter **Y** is displayed in the C field of the `rept-stat-db` command output for each database, as shown in bold in the example output of the `rept-stat-db` command. If any of the databases are not coherent, the letter **N** is shown in the C field of the `rept-stat-db` output. This is an example of the possible output:

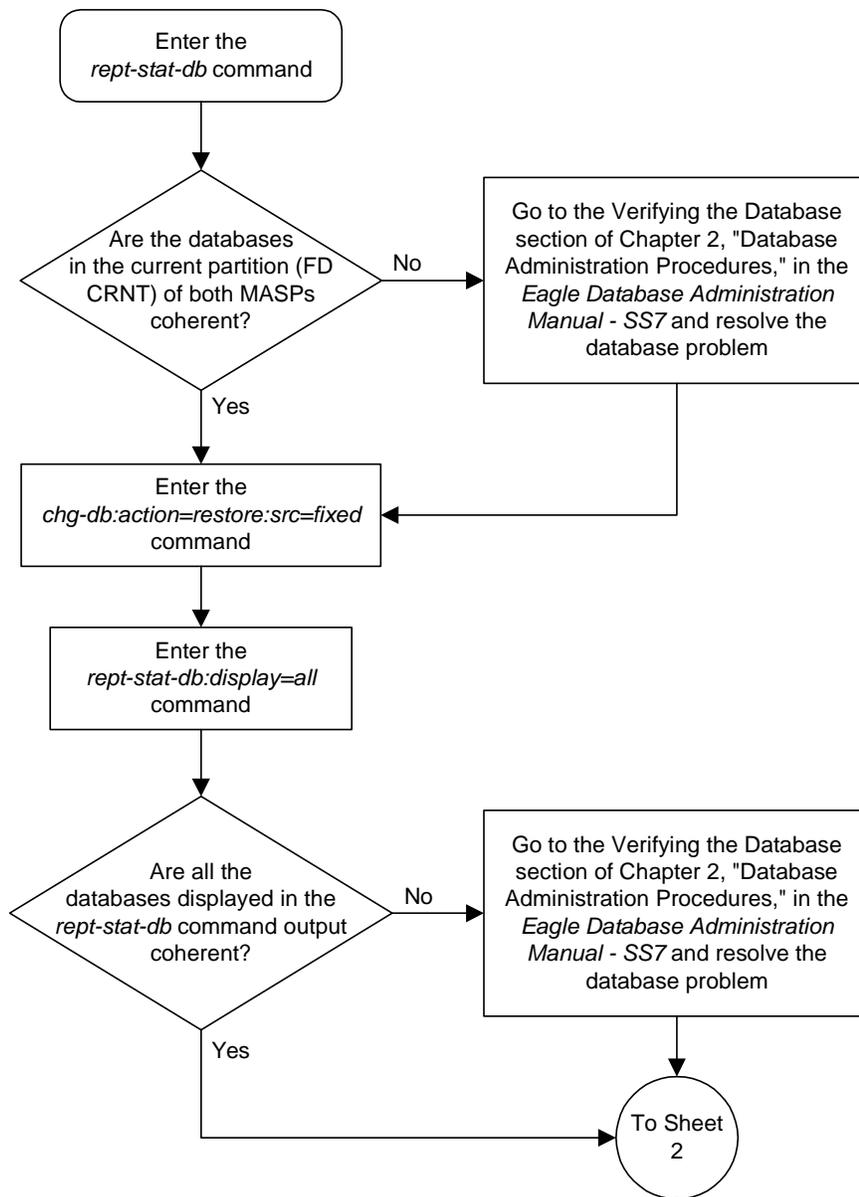
```
rlghncxa03w 02-03-07 16:07:36 GMT Rel 28.1.0
DATABASE STATUS: >> OK <<
      TDM 1114 ( STDBY)                TDM 1116 ( ACTV )
      C  LEVEL    TIME LAST BACKUP    C  LEVEL    TIME LAST BACKUP
      -  - - - - - - - - - - - - - - -  -  - - - - - - - - - - - - - - -
FD BKUP Y      74 02-03-07 16:07:36 GMT Y      74 02-03-07 16:07:36 GMT
FD CRNT Y     106                               Y     106
MDAL 1117
      -  - - - - - - - - - - - - - - -
RD BKUP - - - - -

CARD/APPL  LOC  C  T  LEVEL    TIME LAST UPDATE  EXCEPTION
-----
SCCP       1101 Y N 106      02-03-07 16:07:36  -
GLS        1102 Y N 106      02-03-07 16:07:36  -
TDM-CRNT   1114 Y N 106      02-03-07 16:07:36  -
TDM-BKUP   1114 Y - 74      02-03-07 16:07:36  -
TDM-CRNT   1116 Y N 106      02-03-07 16:07:36  -
TDM-BKUP   1116 Y - 74      02-03-07 16:07:36  -
MDAL       1117 - - - - -      -                  -
SS7ANSI    1201 Y N 106      02-03-07 15:37:36  -
SS7ANSI    1202 Y N 106      02-03-07 15:37:36  -
SS7ANSI    1203 Y N 106      02-03-07 15:37:36  -
SS7ANSI    1204 Y N 106      02-03-07 15:37:36  -
CCS7ITU    1205 Y N 106      02-03-07 15:37:36  -
SCCP       1206 Y N 106      02-03-07 16:07:36  -
SS7GX25    1207 Y N 106      02-03-07 15:37:36  -
SS7GX25    1208 Y N 106      02-03-07 15:37:36  -
SCCP       1213 Y N 106      02-03-07 16:07:36  -
SCCP       1214 Y N 106      02-03-07 16:07:36  -
EBDABLM    1215 Y N 106      02-03-07 16:07:36  -
STPLAN     1216 Y N 106      02-03-07 16:07:36  -
EBDADCM    1217 Y N 106      02-03-07 16:07:36  -
ATMANSI    1301 Y N 106      02-03-07 16:07:36  -
STPLAN     1304 Y N 106      02-03-07 16:07:36  -
SS7ANSI    1305 Y N 106      02-03-07 16:07:36  -
SS7GX25    1308 Y N 106      02-03-07 16:07:36  -
SS7GX25    1314 Y N 106      02-03-07 16:07:36  -
STPLAN     1317 Y N 106      02-03-07 16:07:36  -
ATMANSI    1318 Y N 106      02-03-07 16:07:36  -
```

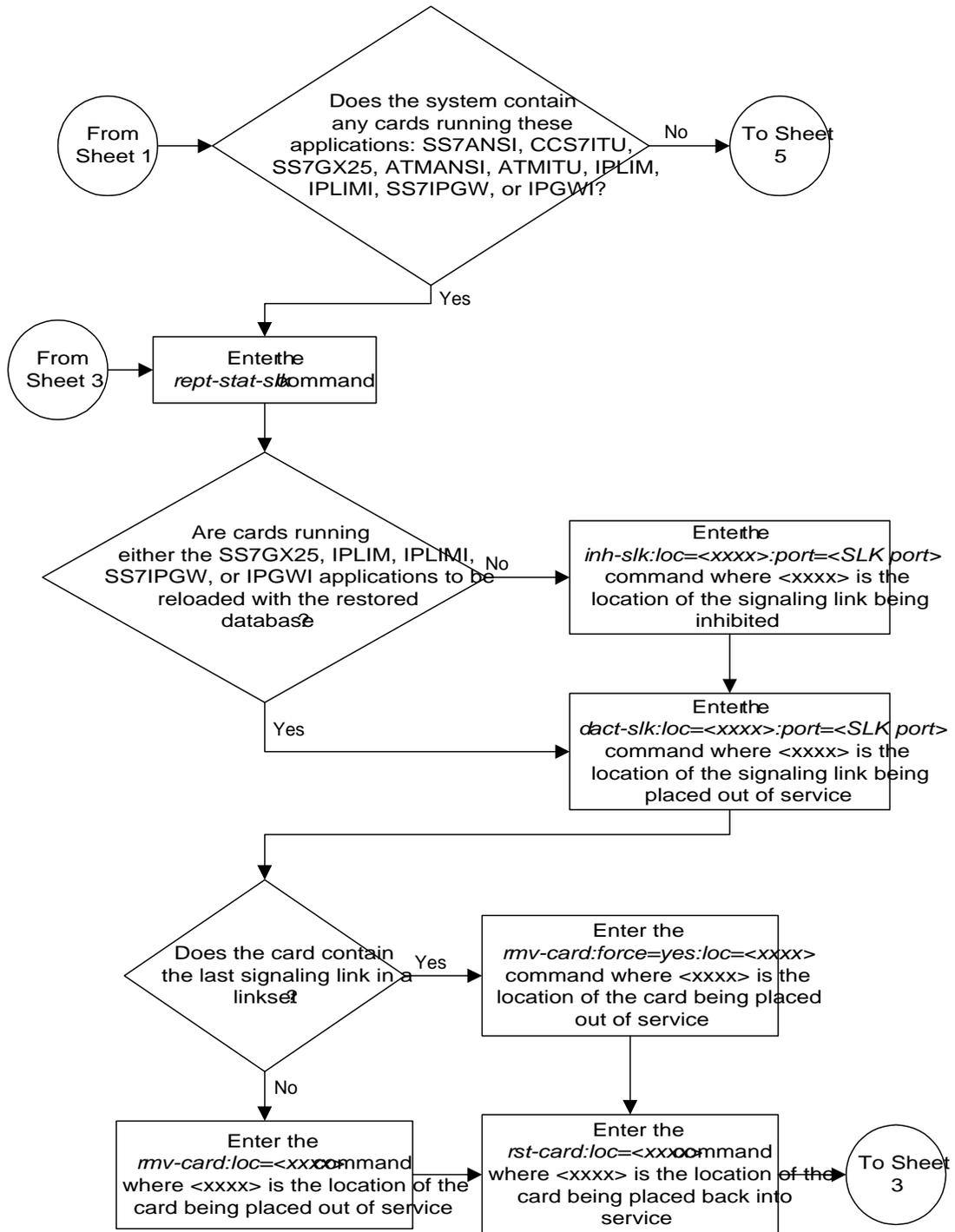
If the `rept-stat-db` command output shows that the databases are not coherent, repeat steps 37 and 38. If the databases are still not coherent after repeating these steps, contact the Tekelec Technical Services department (see “Technical Services and Support” on page 1-14).

You have now completed this procedure.

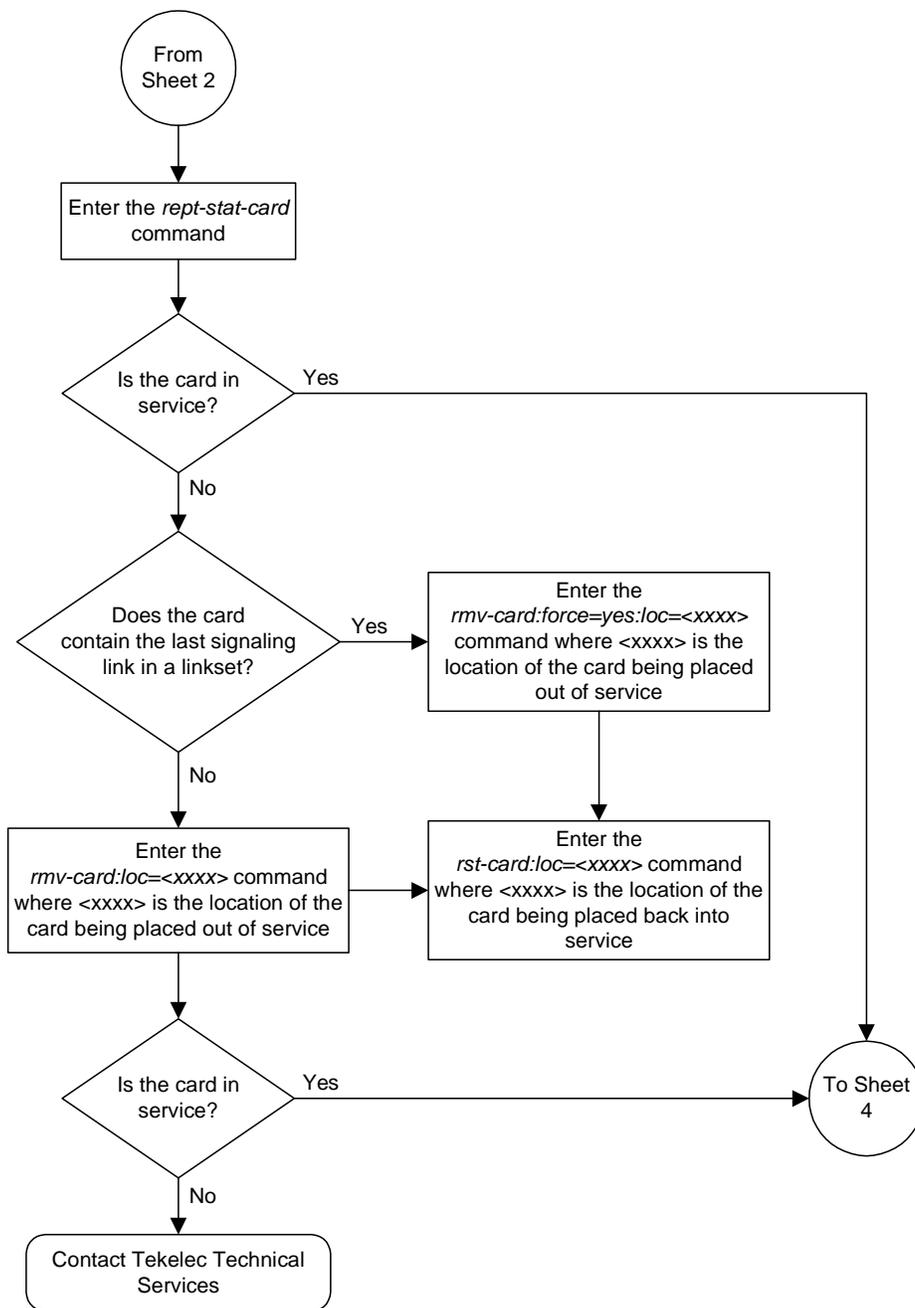
Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 1 of 11)



Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 2 of 11)

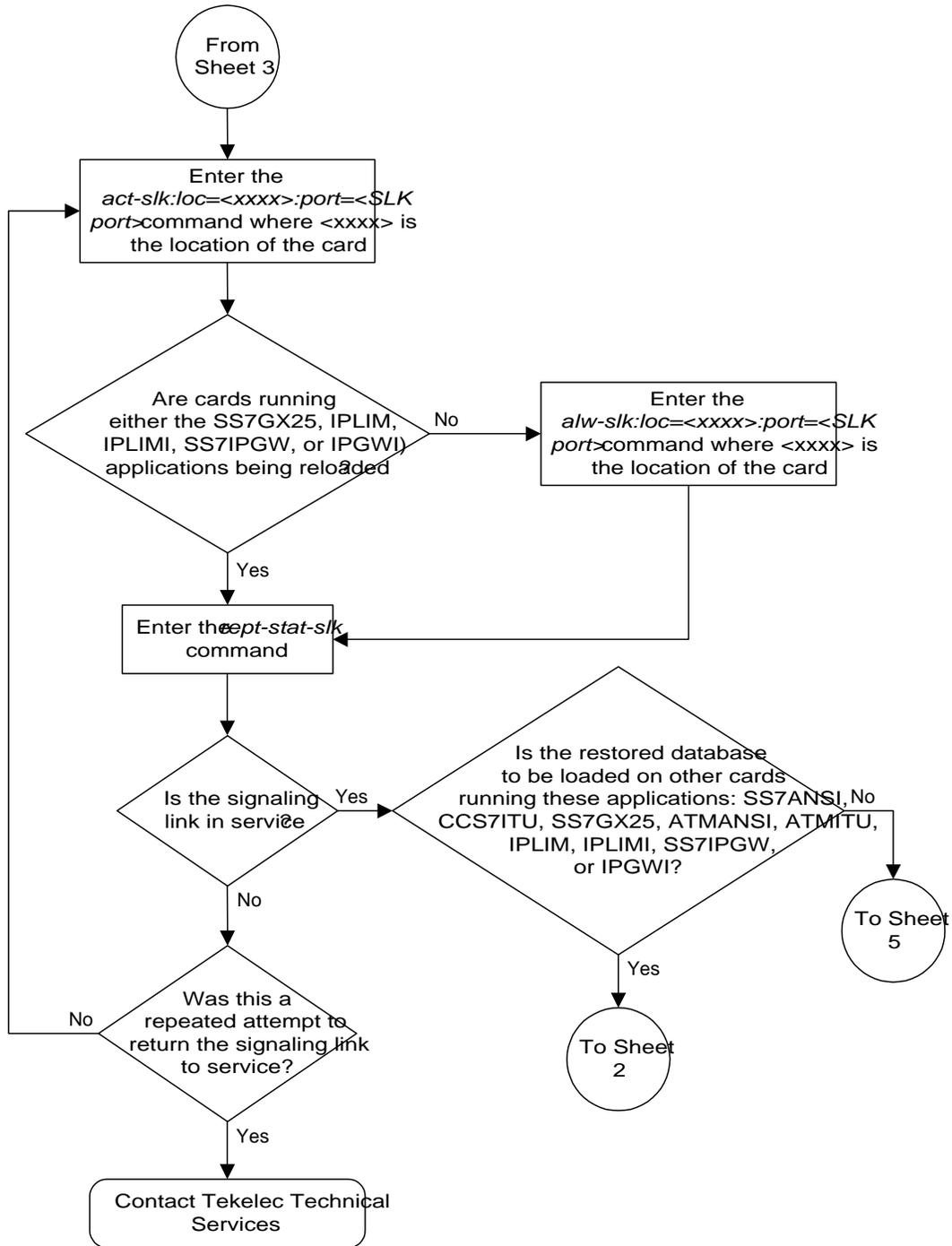


Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 3 of 11)

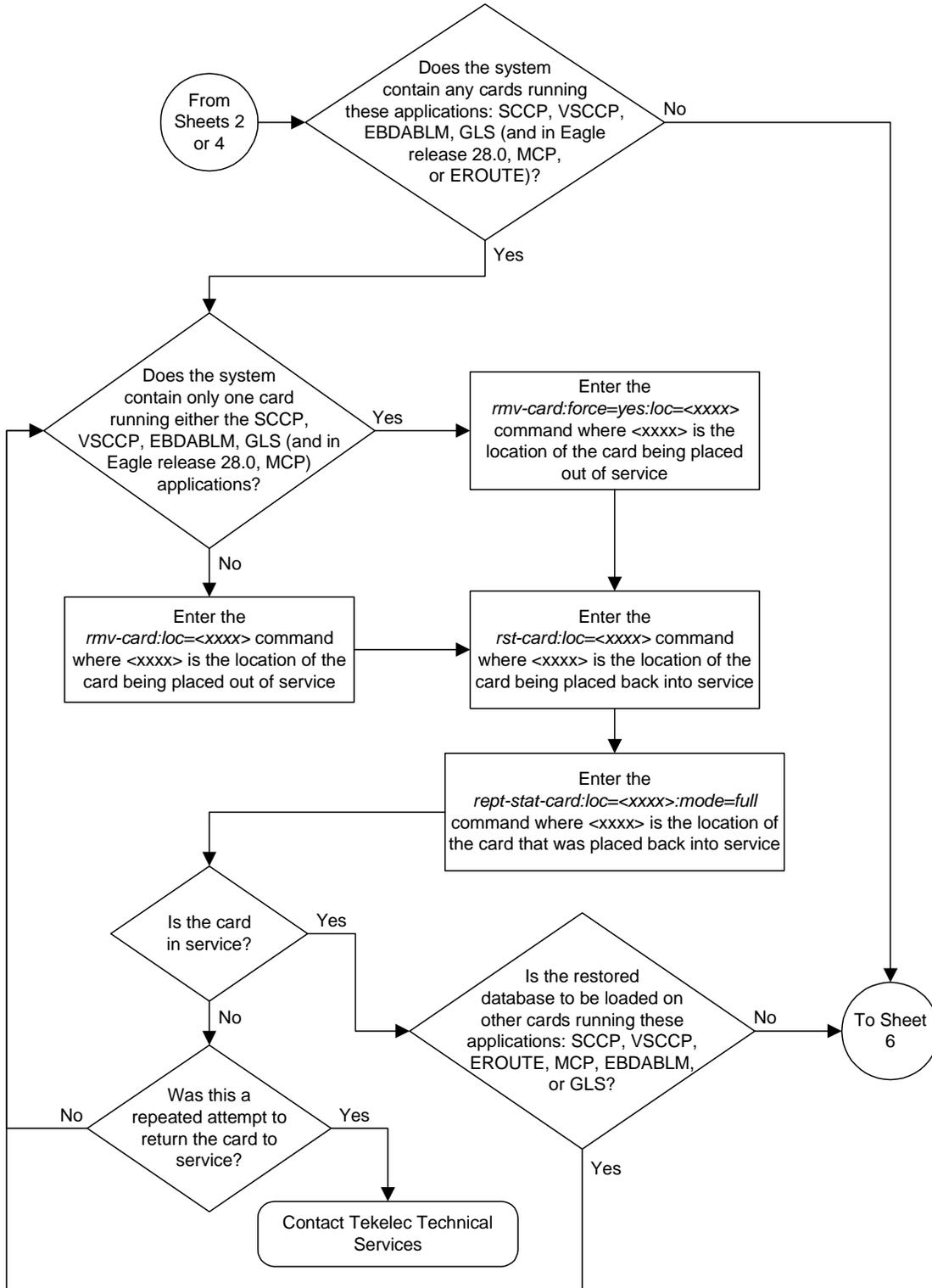


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 4 of 11)

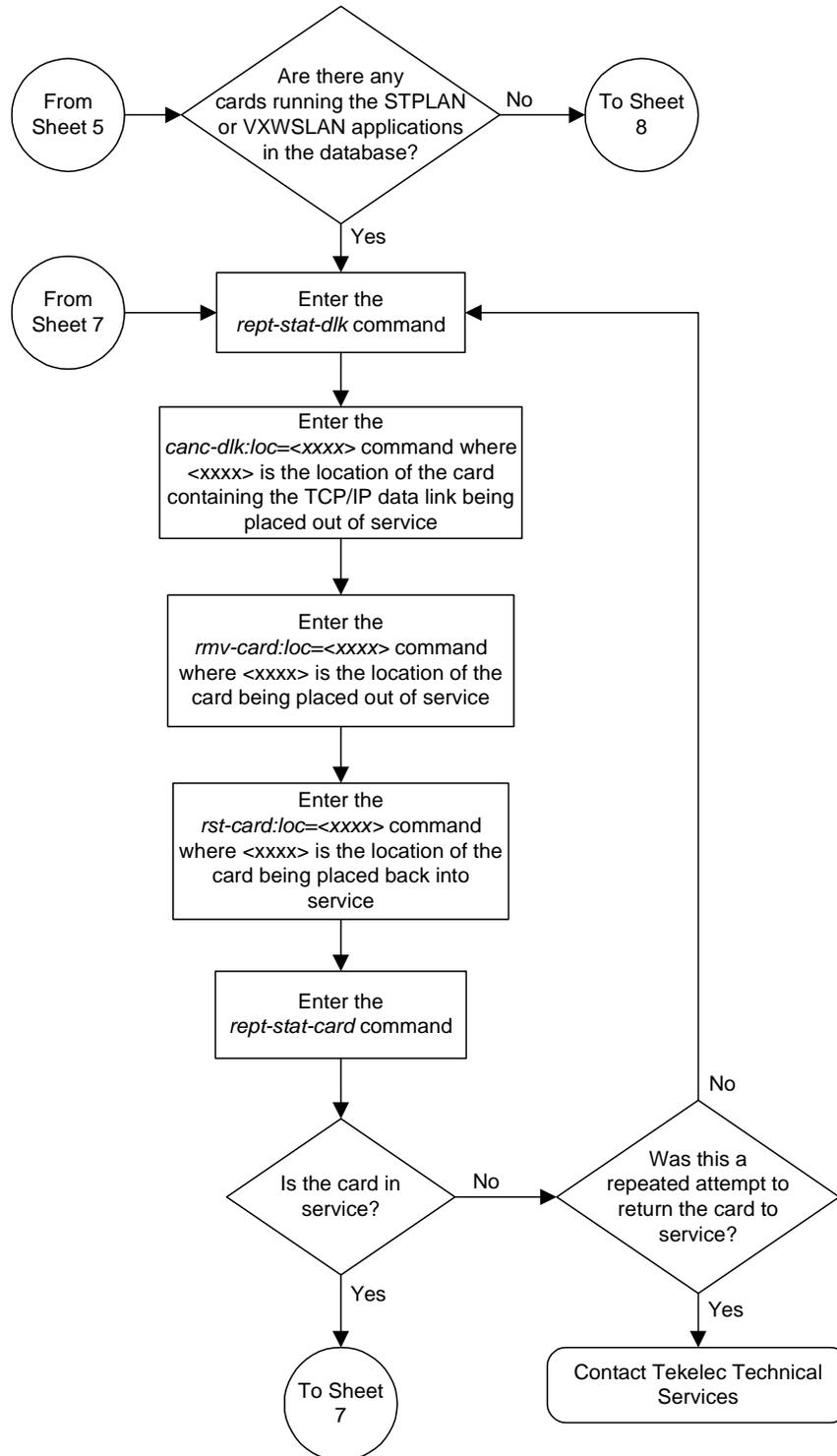


Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 5 of 11)

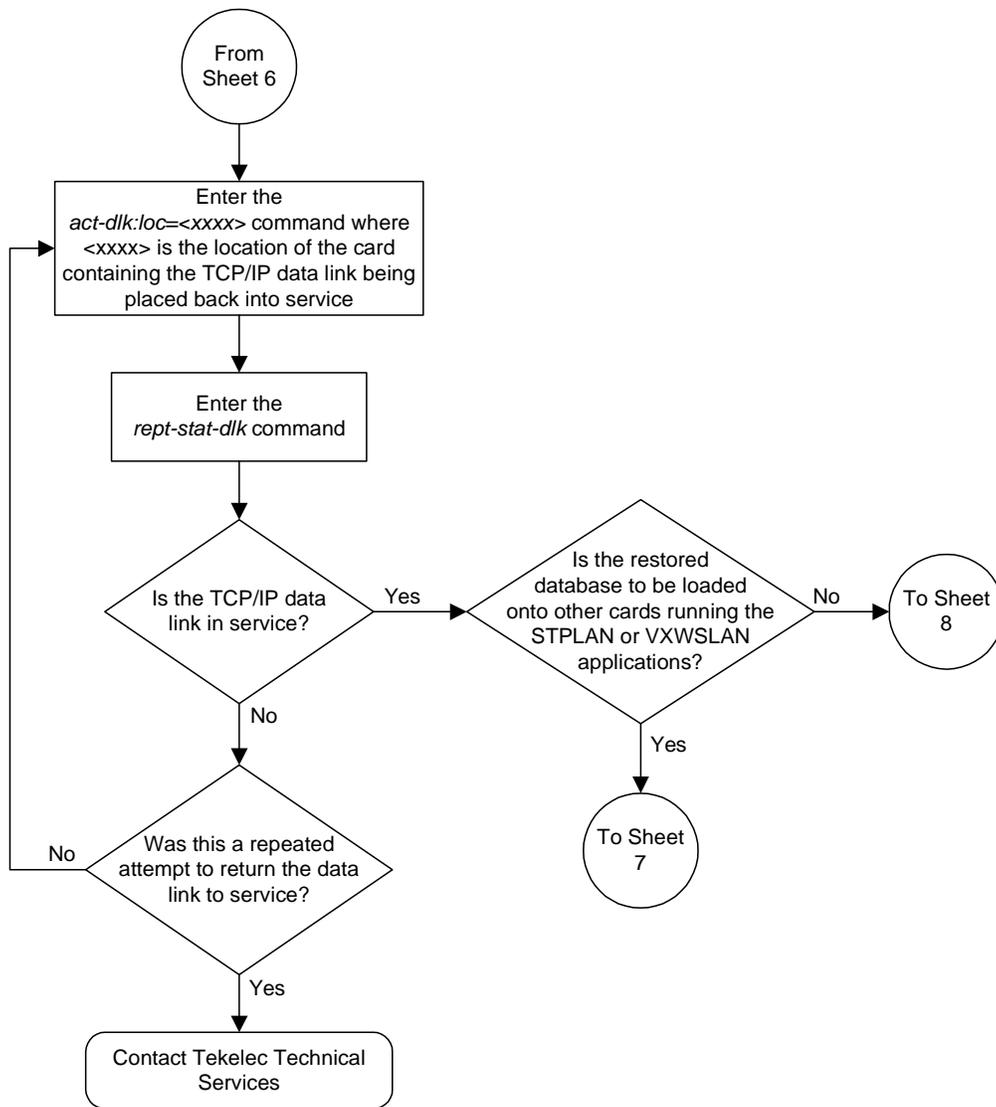


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 6 of 11)

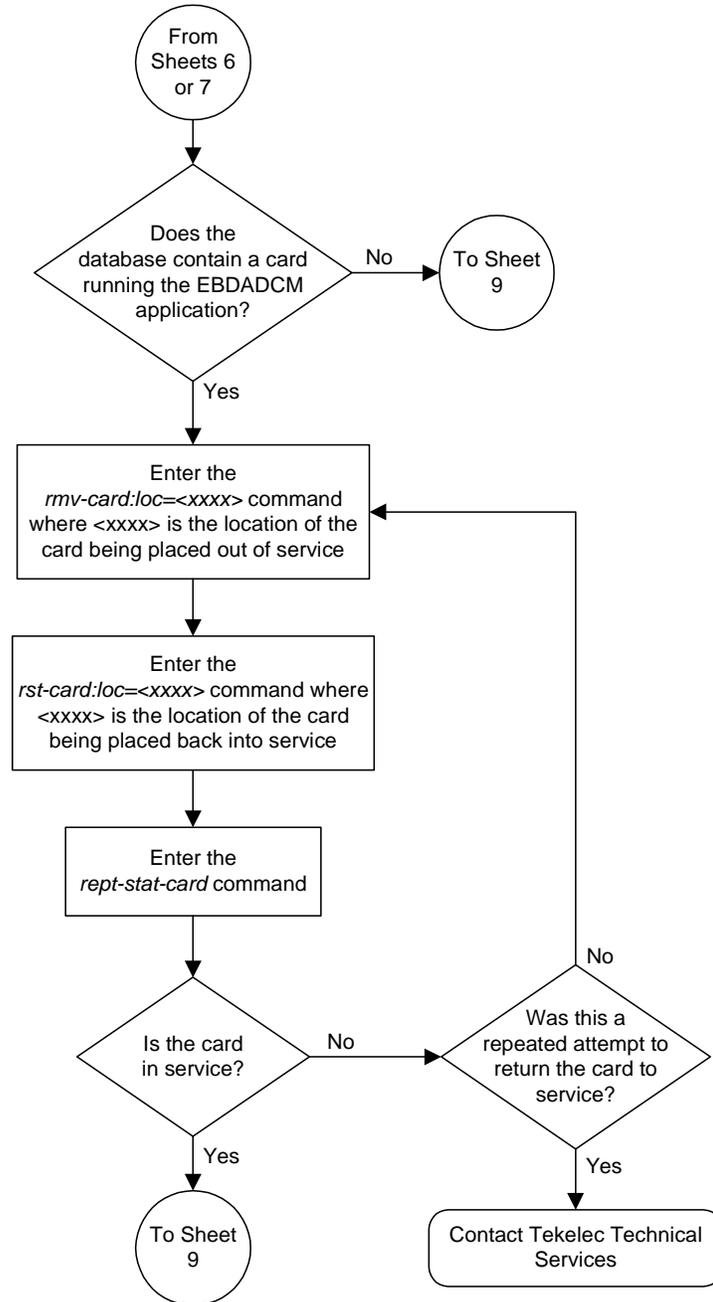


Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 7 of 11)

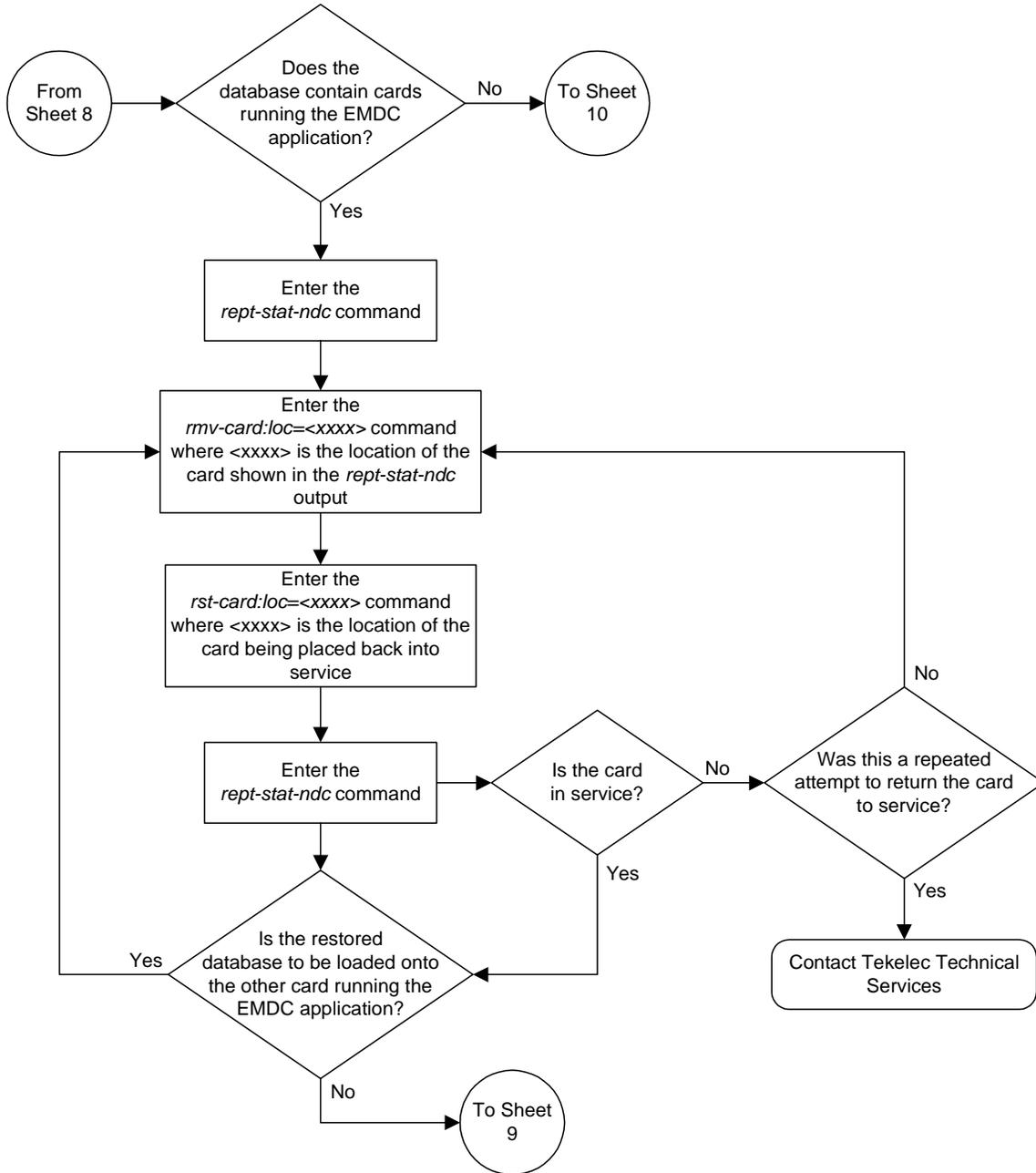


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 8 of 11)

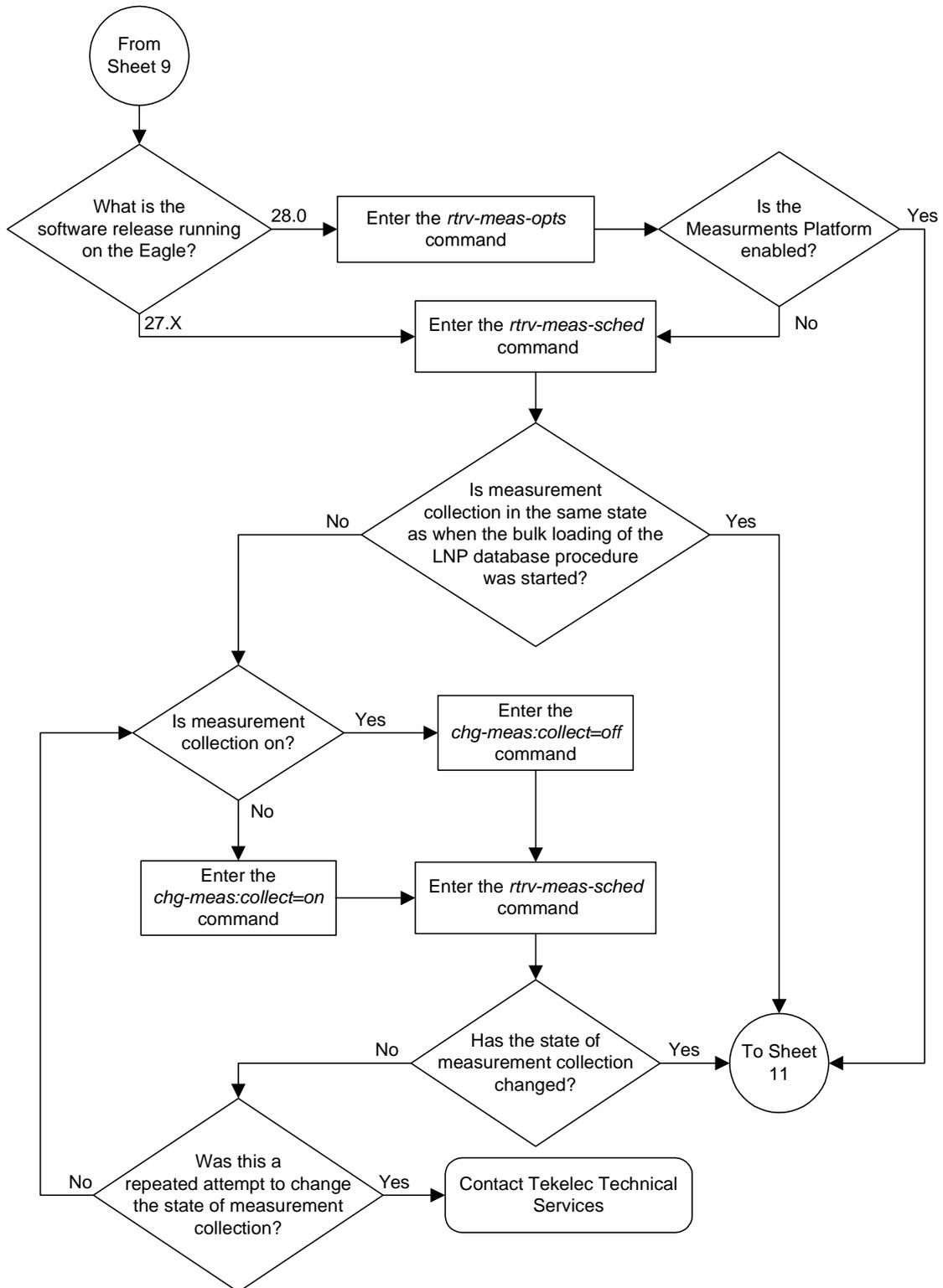


Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 9 of 11)

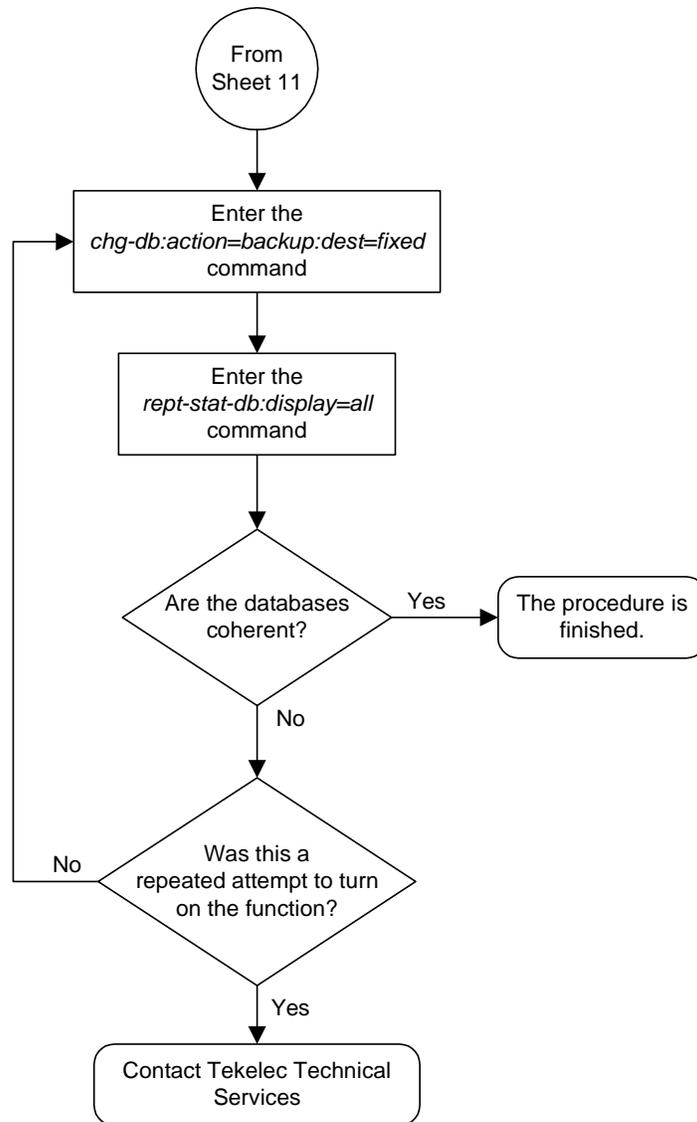


Bulk Loading Troubleshooting and Backout Procedures

Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 10 of 11)



Flowchart 13-2. Bulk Loading Backout Procedure Using the Backup Database of the Eagle STP's Fixed Disk (Sheet 11 of 11)



A

LSMS GUI Messages

I

Introduction.....	A-2
GUI Messages Start Here.....	A-3

Introduction

This appendix lists in alphabetical order the messages that can appear when you are using the LSMS graphical user interface (GUI) functions described in this book. For each message, this appendix shows the probable cause for the message, which LSMS LNP Database Synchronization GUI functions the message can appear for, and suggested recovery steps if the message indicates an error situation.

For information about other messages that may occur during the procedures described in this manual, refer to one of the following:

- *LSMS Maintenance Manual* for error messages that may occur from LSMS commands
- *Eagle STP Commands Error Recovery Manual* for error messages that may occur from commands entered at the network element

NOTE: If you see a message that does not appear in this appendix, it may be a Versant error message, which can be posted when access is attempted to the supplemental database or to a regional database.

If you cannot find the message in this appendix, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

LSMS GUI Messages

A GTT group has not been assigned to the EMS.

May Occur During:

Any BLM-based LNP database synchronization operation

Explanation

The attempted operation cannot be performed until a GTT group is assigned to the EMS. The operation is not started.

Recovery

Assign a GTT group to the EMS for which the operation is being performed (for information about assigning a GTT group, refer to the *LSMS Database Administration Manual*) and try the operation again.

A TN filter has not been assigned to the EMS.

May Occur During:

Any LNP database synchronization operation

Explanation

The attempted operation cannot be performed until a TN filter is assigned to the EMS. The operation is not started.

Recovery

Assign one or more regional TN filters or a single custom TN filter to the EMS for which the operation is being performed (for information about assigning TN filters, refer to the *LSMS Database Administration Manual*) and try the operation again.

An LNP DB synchronization operation is already in progress for NE.

May Occur During:

Any LNP database synchronization operation

Explanation

The attempted operation cannot be performed because another LNP database synchronization operation is already in progress for that network element. Only one bulk load, audit, or user-initiated resynchronization operation for a given network element can be initiated at one time.

Recovery

Wait until the LNP database synchronization operation currently in progress completes and try the operation again. If the error persists, contact your system administrator to determine whether a user at another location may still have an LNP database synchronization operation window open for this network element.

Audit input queue failure**May Occur During:**

Audit

Explanation

The auditor was attempting to read LSMS data to be audited, but that queue had a failure. The audit is not completed.

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Audit input queue shutdown**May Occur During:**

Audit

Explanation

The auditor was attempting to read LSMS data to be audited, but that queue was shut down. The audit is not completed.

LSMS GUI Messages

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Audit input queue timeout. Please contact Tekelec Technical Services

May Occur During:

Audit

Explanation

The auditor was attempting to read LSMS data to be audited, but that queue has stayed empty too long. The audit is not completed.

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Audit NE input queue failure

May Occur During:

Audit

Explanation

The auditor was attempting to read network element data to be audited, but that queue had a failure. The audit is not completed.

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Audit NE input queue shutdown

May Occur During:

Audit

Explanation

The auditor was attempting to read data to be audited from the network element, but that queue was shut down. The audit is not completed.

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Audit NE input queue timeout. Please contact Tekelec Technical Services

May Occur During:

Audit

Explanation

The auditor was attempting to read data to be audited from the network element, but no response was received in the allowed time. The audit is not completed.

Recovery

Try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Auditing of <objType> is not supported by the NE.

May Occur During:

Audit

Explanation

An audit was attempted to be performed on a network element that does not support the object type indicated by <objType>, where <objType> is one of the following:

- NPA Split
- Number Pool Blocks
- Subscription Versions
- Default GTTs
- Override GTTs

The audit is not performed.

Recovery

Select “All Database Objects in Specified Ranges” radio button and select only the object types that are supported by the version of software running on the network element.

BLM database is incoherent

May Occur During:

Any BLM-based operation

Explanation

An attempt to connect to the network element failed. The operation did not start.

Recovery

Issue the `init-card:appl=ebdablm` command on the network element and try the operation again.

BLM internal error

May Occur During:

Any BLM-based operation

Explanation

An attempt to connect to the network element failed. The operation did not start.

Recovery

Issue the `init-card:appl=ebdablm` command on the network element and try the operation again.

`BLM still initializing - retry later`

May Occur During:

Any BLM-based operation

Explanation

An attempt was made to connect to the network element while it was initializing. The operation did not start.

Recovery

Wait until the BLM on the network element is reloaded and try the operation again.

`Bulk Load is required. NE's LNP DB timestamp (<timestamp>) is invalid`

May Occur During:

Reconcile or user-initiated resynchronization

Explanation

The network element's LNP database timestamp (DBTS) is invalid. The operation is not started.

Recovery

A bulk download is required. Contact Tekelec Technical Services (see page 1-14).

LSMS GUI Messages

Bulk Load is required. NE's LNP DB timestamp (<timestamp>) is older than 7 days

May Occur During:

Reconcile or user-initiated resynchronization

Explanation

The LSMS user attempted to reconcile or resynchronize a network element's LNP database whose DBTS is older than seven days. (The transaction logs needed to perform this operation go back only seven days.) The operation is not started.

Recovery

A bulk download is required.

Connection already in use at NE '<IP address>'

May Occur During:

Any non-ELAP-based LNP database synchronization operation

Explanation

An attempt was made to start an LNP database synchronization operation to a network element for which an LNP database synchronization operation is already running. The operation is not performed.

Recovery

Do the following:

1. Examine the notifications area of the LSMS GUI to determine whether another LNP database synchronization operation is already running (look for event numbers 8066 through 8085 and read the message text to determine what has occurred). If another LNP database synchronization operation is in progress, wait until it has completed, and try your operation again.
 2. If this error still occurs, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).
-

Connection already in use or operation not enabled at NE '<IP address>'

May Occur During:

Any ELAP-based LNP database synchronization operation

Explanation

An attempt was made to start an LNP database synchronization operation to a network element which has the 48 Million Numbers feature installed and for which one of the following is true:

- An LNP database synchronization operation is already running
- The ELAP is not enabled to receive the operation.

The operation is not performed.

Recovery

Do the following:

1. Examine the notifications area of the LSMS GUI to determine whether another LNP database synchronization operation is already running (look for event numbers 8066 through 8085 and read the message text to determine what has occurred). If another LNP database synchronization operation is in progress, wait until it has completed, and try your operation again.
2. Contact the NE operator to determine whether the ELAP has been enabled for this synchronization operation. For more information about enabling the ELAP, see step 2 on page 5-13 or step 4 on page 7-16.
3. If this error still occurs, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

DCM IP address is not configured

May Occur During:

BLM-based bulk load, reconcile, or resynchronization

Explanation

The requested operation requires the DCM IP address to be configured. The operation is not started.

Recovery

From the main GUI menu, select **Configure>LNP System>EMS>Modify** and specify an IP address (for more information, refer to the *LSMS Configuration Manual*). Then retry the operation.

Disk space in <directory> is insufficient for operation.

May Occur During:

Audit

Explanation

The directory identified by <directory> is used for storing temporary files. It does not have sufficient space to perform the operation. The audit is not performed.

Recovery

Remove all unnecessary files from the specified directory (to determine the amount of disk space needed for the operation, look at the *LSMSTrace.log*). Try the operation again.

Download canceled by the NE operator

May Occur During:

BLM-based bulk load, reconcile, or resynchronization

Explanation

After a download has started sending updates and other messages to the network element, the network element operator has issued a `chg-db:action=canceled1` command at the network element. The operation is not completed and any data downloaded will be replaced when the BLM reboots.

Recovery

Contact the network element operator to issue the `chg-db:action=beginedl` command again and then perform the operation again.

Download not allowed - Eagle OAM did not respond

May Occur During:

BLM-based bulk load, reconcile, or resynchronization

Explanation

An attempt was made to download to the network element, but the DCM could not communicate with the OAM on the Eagle. The operation did not start.

Recovery

The DCM and/or the OAM may need to be rebooted (`init-card`) on the network element. Then try the operation again.

Eagle BLM Protocol violation. Please contact Tekelec Technical Services.

May Occur During:

BLM-based bulk load, reconcile, or resynchronization

Explanation

An attempt was made to send a message to the network element, but the network element was not in the proper state to receive the type of message sent. The operation did not complete.

Recovery

The DCM and/or the OAM may need to be rebooted (`init-card`) on the network element. Then try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

LSMS GUI Messages

EBDA session ID already in use. Retry operation.

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt was made to start an LNP database synchronization operation to a network element using a session ID that was already in use by another LNP database synchronization operation. The operation did not start.

Recovery

Try the operation again.

Error in receiving NE data (errno=<nnn>)

May Occur During:

Any LNP database synchronization operation

Explanation

An error occurred while waiting to receive a message from the network element. The operation is not completed. The connection was probably dropped.

Recovery

Find out why the error occurred and try it again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Failed aborting operation in progress.

May Occur During:

Any LNP database synchronization operation

Explanation

The operation in progress cannot be aborted.

Recovery

Look in the *LSMSTrace.log* for the reason for the failure. Correct the problem and retry the operation. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Failed committing data downloaded to the NE.

May Occur During:

Any LNP database synchronization operation

Explanation

The operation was not completed. One of the following may have occurred:

- The NE operator canceled the download
- A timeout occurred while waiting for an acknowledgement
- The connection has been dropped.

Changes have not been committed, so the download has had no effect.

Recovery

Try the operation again.

Failed connecting to NE '<IP address>'.

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt was made to start an operation to a network element, but an error prevented the establishment of the connection. The operation is not performed.

Recovery

Verify that the displayed IP address is correct. Then, try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

LSMS GUI Messages

Failed discarding data downloaded to the network element's LNP database.

May Occur During:

Any LNP database synchronization operation

Explanation

The operation was not completed. One of the following may have occurred:

- A timeout occurred while waiting for an acknowledgement
- The connection has been dropped
- The network element operator has canceled the download

Recovery

Try the operation again.

Failed initializing EBDA process.

May Occur During:

Any LNP database synchronization operation

Explanation

An error occurred during the initialization of the EBDA process. The operation is not performed.

Recovery

Look in the *LSMSTrace.log* for the reason for the failure. Correct the problem and retry the operation. If the error persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

Failed receiving data over normal update connection with NE (errno=<nn>)

May Occur During:

Audit only or audit and reconcile.

Explanation

An attempt was made to read a message from the network element, but no response was received in the allowed time. The cause may be a dropped connection with the network element. The operation is not performed.

Recovery

Try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Failed sending data over normal update connection with NE (errno=<nn>

May Occur During:

Audit and reconcile.

Explanation

A failure occurred while auditing or reconciling the network element's LNP database using the normal update connection with the network element. The operation is terminated.

Recovery

To determine the reason for failure, look in the *LSMSTrace.log*. Try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Failed starting operation

May Occur During:

Any LNP database synchronization operation

Explanation

The requested operation failed to start.

Recovery

Look in the *LSMSTrace.log* for the reason for the failure. Correct the problem and retry the operation. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

LSMS's normal update connection with NE is not currently established

May Occur During:

Audit and Reconcile

Explanation

The LSMS user attempted to perform an operation that requires the normal update, but that connection is not currently established. The normal update connection is the connection between the LSMS and one of the following at the network element:

- OAP (for a network element that has Eagle Release 28.x with ELAP 2.0 installed but does not have the 48 Million Numbers feature installed)
- MPS (for a network element that has the 48 Million Numbers feature installed)

The operation is not started.

Recovery

Establish the connection and try the operation again.

Maximum number of discrepancies has been reached - Bulk Load required.

May Occur During:

Audit

Explanation

The maximum number of discrepancies that can be detected in the network element's LNP database by an audit before a bulk load is required has been reached. The operation is terminated.

Recovery

Perform a Bulk Load operation to the network element (for more information, see “Choosing a Synchronization Procedure” on page 3-4).

Maximum number of simultaneous Bulk Load LNP DB synchronization operations has been reached.

May Occur During:

Bulk Load

Explanation

The LSMS user attempted to perform a Bulk Load LNP database synchronization operation while the maximum permitted number of Bulk Load operations are currently in progress. The operation was not started.

Recovery

Try the operation again.

Maximum number of simultaneous LNP DB synchronization operations has been reached.

May Occur During:

Any LNP database synchronization operation

Explanation

The LSMS user attempted to perform an LNP database synchronization operation while the maximum permitted number of LNP database synchronization operations are currently in progress. The operation was not started.

Recovery

Try the operation again.

LSMS GUI Messages

NE dropped the connection (errno=<nn>)

May Occur During:

Any LNP database synchronization operation

Explanation

A message was sent to the network element, but the network element dropped the connection without sending a response message. The operation has failed.

Recovery

Try the operation again. If the problem persists, contact Tekelec Technical Services with the errno (see “Technical Services and Support” on page 1-14).

NE has reset the connection (errno=<nn>)

May Occur During:

Any LNP database synchronization operation

Explanation

A message was sent to the network element, but the network element reset the connection without sending a response message. The operation has failed.

Recovery

Try the operation again. If the problem persists, contact Tekelec Technical Services with the errno (see “Technical Services and Support” on page 1-14).

Network element is currently being re-synced with the LSMS. Operation terminated.

May Occur During:

Audit only or audit and reconcile

Explanation

The user attempted to perform an operation that uses the normal update connection with the network element while an automatic resynchronization (also called a short synchronization) is in progress. The operation is not started.

Recovery

Do either of the following and then try the operation again:

- Look in the notifications area of the LSMS GUI console window for the following notifications, where <CLLI> is the Common Language Location Identifier for the network element for which you wish to perform the operation.

1. Verify that the following notification has been posted:

```
[Major]: <Timestamp> 8054 <CLLI>: Short Synchronization Started
```

2. Wait until the following notification is posted before trying the operation again:

```
[Cleared]: <Timestamp> 8059 <CLLI>: Short Synchronization Complete
```

- Perform the following steps to determine whether the eagle agent process is currently using the normal update connection:

1. Log in to the active server as `root`.

2. Enter the following command:

```
# $LSMS_DIR/install/eagle status <CLLI>
```

3. Examine the output to determine whether the eagle agent is currently resynchronizing with the network element.

One or more NPAC regions in the regional TN filter are set inactive.

May Occur During:

Any LNP database synchronization operation

Explanation

The regional TN filters for the EMS of this network element include at least one NPAC region that is currently set to inactive. The operation is not performed.

Recovery

Do one of the following and then try the operation again:

- Activate all NPAC regions that are selected in the EMS's regional TN filter by doing the following:
 1. On the LSMS GUI console window, right-click anywhere in the NPAC status area and ensure that all NPAC regions are clicked (this ensures that even inactive regions are displayed on the console window).
 2. From the main menu, select **LSMS>EMS Routing>View**.
 3. Determine whether any of the NPAC regions shown as highlighted in the View EMS Routing window are shown as having inactive status on the console. Activate those NPAC regions by right-clicking the NPAC status icon and selecting **Associate**.
- Deselect all inactive NPAC regions that are selected in the EMS's regional TN filter by doing the following:
 1. On the LSMS GUI console window, right-click anywhere in the NPAC status area and ensure that all NPAC regions are clicked (this ensures that even inactive regions are displayed on the console window).
 2. From the main menu, select **LSMS>EMS Routing>View**.
 3. Select only the NPAC regions that have active status on the console.
 4. Click OK.

One or more NPAC regions must be set active.

May Occur During:

Any LNP database synchronization operation

Explanation

There are currently no active NPAC regions. The operation is not performed.

Recovery

Do the following and then try the operation again:

- Activate all NPAC regions that are selected in the EMS's regional TN filter by doing the following:
 1. On the LSMS GUI console window, right-click anywhere in the NPAC status area and ensure that all NPAC regions are clicked (this ensures that even inactive regions are displayed on the console window).
 2. From the main menu, select **LSMS>EMS Routing>View**.
 3. Determine whether any of the NPAC regions shown as highlighted in the View EMS Routing window are shown as having inactive status on the console. Activate those NPAC regions by right-clicking the NPAC status icon and selecting **Associate**.
-

Only auditing of NPBs by NPA-NXX-X range is supported for NEs w/o DCM/BLM hardware.

May Occur During:

Audit

Explanation

An audit of NPBs by NPA-NXX range was requested, but the network element can support audits of number pool blocks only by NPA-NXX-X range or by time range. The audit is not performed.

Recovery

Select NPA-NXX-X range or time range for the audit.

Only auditing of NPBs and SVs is supported for NEs w/o DCM/BLM hardware.

May Occur During:

Audit

Explanation

An audit of NPA splits, Default GTTs and/or Override GTTs was requested, but the network element can support only audits of subscription versions and/or number pool blocks. The audit is not performed.

Recovery

Select one of the following:

- Audit by time range
- Audit by range of SVs by TN range and/or NPBs by NPA-NXX-X range

Only auditing of SVs by TN range is supported for NEs w/o DCM/BLM hardware.

May Occur During:

Audit

Explanation

An audit of TNs by NPA-NXX range was requested, but the network element can support audits of subscription versions only by TN range or by time range. The audit is not performed.

Recovery

Select TN range or time range for the audit.

Operation automatically terminated - client unexpectedly disconnected.

May Occur During:

Any LNP database synchronization operation (only recorded in log file)

Explanation

The operation in progress is terminated. The Local Service Manager (*lsman*) server process terminated its connection with the EBDA process.

Recovery

Verify that the *lsman* process is running using the `sup status` command (for information about using this command, refer to the *LSMS Maintenance Manual*).

- If the *lsman* process is currently running, it may have been automatically restarted since the LNP database synchronization operation was attempted. Try the operation again.
- If the *lsman* process is not currently running, it should be restarted automatically within a few minutes. Wait a few minutes and repeat the `sup status` command. If it is now running, try the operation again.

If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Operation forcefully terminated by external process.

May Occur During:

Any LNP database synchronization operation (only recorded in log file)

Explanation

The operation in progress is terminated. The LSMS user has logged out while an LNP database operation is in progress.

Recovery

Log back in and try the operation again.

Out of memory

May Occur During:

Audit

Explanation

The operation process discovered it was out of heap space when sending a message to another thread within this operation. The operation is not completed.

Recovery

Contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

`Problem with the NE connection (errno=<nn>)`

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt to send a message to the network element failed with an unexpected error. The operation did not complete.

Recovery

Try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

`Protocol violation on connection with NE. Please contact Tekelec Technical Services.`

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt was made to send a message to the network element, but the network element was not in the proper state to accept that kind of message. Probably the network element is in a reset state because the connection was dropped or the network element operator issued a `chg-db:action=canceled1` command. The operation was not completed.

Recovery

Try the operation again. A different error message should appear. Follow the recovery procedure recommended for that error message.

Re-sync operation is not permitted while the LSMS is connected with the NE.

May Occur During:

User-initiated resynchronization

Explanation

The user attempted to initiate a resynchronization when the LSMS is connected to the network element.

Recovery

When the LSMS has a connection to the OAP (for a network element that has Eagle STP Release 28.x with ELAP 2.0 installed) or the MPS (any release), there is no need for a user-initiated resynchronization. If the connection to the OAP or MPS is down and this error still appears, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Received unexpected response from the NE

May Occur During:

Audit

Explanation

A message that is neither a normal response nor any of the expected error responses was received from the network element in response to an audit request. The audit is not completed.

Recovery

Try the operation again. If the problem persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Received unexpected response over normal update connection - protocol violation

May Occur During:

Audit only or audit and reconcile

Explanation

A message that is neither a normal response nor any of the expected error responses was received from the network element over the normal update connection in response to an audit or update request. The operation is terminated.

Recovery

Try the operation again. If the problem persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

The entire range of NPA Splits must be selected if auditing NPBs, SVs and/or Default GTTs.

May Occur During:

Audit

Explanation

The user attempted to initiate an audit of one or more of the following without specifying the entire range of NPA Splits:

- Default GTTs
- NPBs by NPA-NXX range
- SVs by NPA-NXX range

The operation is not started. (An audit by time range or an OAM-based audit of NPBs by NPA-NXX-X range and/or SVs by TN range does not require or support auditing of NPA Splits.)

Recovery

Select one of the following values for the Old NPA range and try the operation again:

- ALL
 - 200-999
-

Timeout connecting to NE. IP-address '<IP address>' (errno=<nnn>)

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt was made to start an operation to a network element, but the connection was not established because of an unexpected error. The operation is not performed.

Recovery

Verify that the displayed IP address is correct, then try again. If the error persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

Timeout receiving data from the NE

May Occur During:

Any LNP database synchronization operation

Explanation

An attempt was made to read a message from the network element (NE), but no response was received in the allowed time. The operation is not completed. The connection was probably dropped.

Recovery

Try the operation again. If the error persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

Timeout sending data to NE (errno=<nn>)

May Occur During:

Any LNP database synchronization operation

Explanation

Too much time elapsed while trying to send a message to the network element. The operation is not completed. The connection was probably dropped.

Recovery

Find out why the timeout occurred, and try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).

Unable to access normal update connection.

May Occur During:

Audit only or audit and reconcile

Explanation

The EBDA process was not able to connect to an eagle agent process to perform the requested synchronization operation to an NE's LNP database. Either the eagle agent is not running or it is currently performing an automatic resynchronization with the LSMS. The operation is not performed.

Recovery

Do the following:

1. Use the `eagle status` command to verify that the eagle agent process is running (for information about using this command, refer to the *LSMS Maintenance Manual*).
 2. If the *eagle agent* process is not running, contact the system administrator to determine whether the *eagle agent* process was manually stopped. If it was not manually stopped, it should be automatically restarted soon.
 3. Try the operation again. If the error persists, contact Tekelec Technical Services (see “Technical Services and Support” on page 1-14).
-

Unable to connect to EBDA process**May Occur During:**

Any LNP database synchronization operation

Explanation

Although the EBDA process started when the LNP database synchronization operation was started through the GUI, by the time the Local Services Manager (*lsman*) needed to connect to an EBDA process to start the requested synchronization operation to an NE's LNP database, it was unable to connect. The operation is not performed.

Recovery

Do the following:

1. Log in to the active server as `root`.
2. Determine whether the EBDA process is running by entering the following command, where `<CLLI>` is the Common Language Location Identifier for the network element for which you wish to perform an LNP database synchronization operation:

```
# ps -ef |grep ebda |grep -v <CLLI>
```

3. If no output appears, the EBDA process is no longer running, so try the operation again.
4. If output appears, the EBDA process is running although the *lsman* process is unable to connect to it. Enter the following command to kill the EBDA process (where `<pid>` is the process ID returned by the command in step 2), and then try the operation again.

```
# kill -SIGKILL <pid>
```

5. If the error persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

Unable to start EBDA process**May Occur During:**

Any LNP database synchronization operation

Explanation

The Local Services Manager (*lsman*) was not able to start an EBDA process for the requested synchronization operation to an NE's LNP database. The operation is not performed.

Recovery

Try the operation again. If the error persists, contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

Unknown EBDA session ID. Connection to EBDA process has been lost.

May Occur During:

Any LNP database synchronization operation

Explanation

In the course of performing the operation, the EBDA process died. The operation was not completed.

Recovery

Contact Tekelec Technical Services (see "Technical Services and Support" on page 1-14).

User is not authorized to perform operation to NE's LNP database.

May Occur During:

Any LNP database synchronization operation

Explanation

SPID security is enabled. The LSMS user is not authorized to perform the LNP database synchronization operation for the specified network element. The operation was not started.

Recovery

Contact your system administrator to be given authorization to access the data of the login SPID.

B

Enabling LSMS Audit on ELAP

Introduction.....	B-2
Enabling an LSMS Audit for Eagle STP Release 28.x with ELAP 1.0	B-2
Enabling an LSMS Audit for Eagle STP Release 28.x and later with ELAP 2.0/3.0.....	B-4

Introduction

Under normal conditions, an audit does not require any operator action at the network element. However, if the network element has ELAPs (the 48 Million Numbers feature is installed), it is possible for the NE operator to disable the ability to process an audit. This is sometimes necessary when the NE operator is trying to debug a problem. If the NE operator has disabled the ability to process an audit, the LSMS will receive a rejection that is posted on the GUI as the following error message:

```
Connection already in use or operation not enabled at NE '<IP address>'
```

If this message occur, request that the network element perform the procedure described in either of the following sections, depending on which release of Eagle STP is installed:

- “Enabling an LSMS Audit for Eagle STP Release 28.x with ELAP 1.0” on page B-2
- “Enabling an LSMS Audit for Eagle STP Release 28.x and later with ELAP 2.0/3.0” on page B-4

Enabling an LSMS Audit for Eagle STP Release 28.x with ELAP 1.0

If the network element has the 48 Million Numbers feature installed on an Eagle Release 28.x with ELAP 1.0, and the LSMS operator requests that the NE operator enable an LSMS audit, perform the following procedure:

Procedure - Enabling Audit for Eagle STP Release 28.x with ELAP 1.0

1. Log into the ELAP user interface; enter the “elapmaint” user name and password. (The password is not displayed as you enter it.)

```
login: elapmaint
Password:
Last login: Wed Feb  2 14:30:42 from 192.168.61.56
```

2. Enter the ELAP to work on (A or B); select the active ELAP. (If you select the standby ELAP, you can choose the `Select Mate ELAP` menu item to change the selected ELAP to the active ELAP.)

```
Please select an ELAP to work on [A]: {AaBb}
```

The maintenance menu is displayed. The banner above the menu indicates the active/standby status of the ELAP that you selected. The status should be active.

Enabling LSMS Audit on ELAP

```
ELAP {ELAP GPL number} user interface (MPS platform version {platform
version})
```

```
User "elapmaint" logged in to MPS A (ACTIVE).
```

```
ELAP A (ACTIVE) is currently selected.
```

```
LSMS Bulk Download is disabled. Provisioning is allowed.
```

```

/---- ELAP Maintenance Menu -----\
/-----\
| 1 | Select Mate ELAP                |
|----|-----|
| 2 | Force ELAP to Become Standby   |
|----|-----|
| 3 | Remove Standby Restriction     |
|----|-----|
| 4 | Turn RTDB Audit On (currently ON)|
|----|-----|
| 5 | Turn RTDB Audit Off (currently ON)|
|----|-----|
| 6 | Start ELAP Software            |
|----|-----|
| 7 | Stop ELAP Software             |
|----|-----|
| 8 | Display Release Levels         |
|----|-----|
| 9 | Transaction Log                |
|----|-----|
|10 | Decode Eagle Output of MPS Alarms|
|----|-----|
|11 | Toggle LSMS HS Audit           |
|----|-----|
|12 | Display LSMS HS Audit          |
|----|-----|
|13 | Toggle LSMS HS Bulk Download/LSMS HS Resync|
|----|-----|
|14 | Toggle LSMS Connection (currently ENABLED)|
|----|-----|
| e | Exit                            |
\-----/
```

```
Enter Choice:
```

-
3. Choose the `Toggle LSMS HS Audit` menu item. Enter the number of the menu item after the Enter Choice Prompt, and press Return.

```
Enter Choice: 11
```

You have now completed this procedure.

Enabling an LSMS Audit for Eagle STP Release 28.x and later with ELAP 2.0/3.0

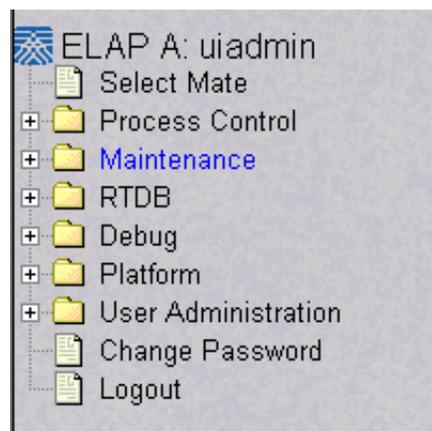
If the network element has the 48 Million Numbers feature installed on an Eagle Release 28.x and later with ELAP 2.0/3.0, and the LSMS operator requests that the NE operator enable an LSMS audit, perform the following procedure:

Procedure - Enabling Audit for Eagle STP Release 28.x and later with ELAP 2.0/3.0

1. Log in to the ELAP GUI with the name and password of any user who is authorized to use the Maintenance menu items (for more information about connecting to the ELAP GUI and user authorization, refer to the *Eagle ELAP Administration Manual*).

The ELAP GUI displays, as shown in Figure B-1.

Figure B-1. ELAP Main Menu

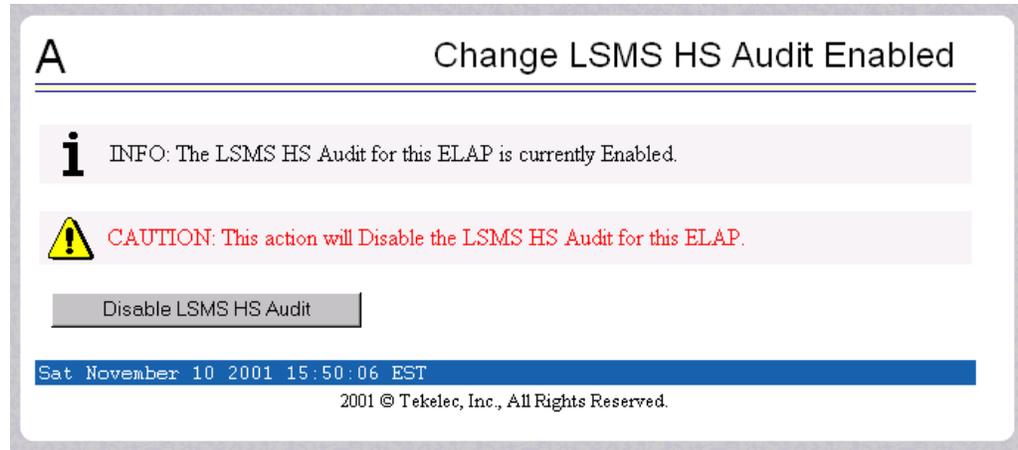


If the ELAP that you logged into is not Active, and the other ELAP is active, select **Select Mate** from the main menu. (If both ELAPs are Standby, correct the situation preventing one ELAP from taking the active role, and repeat this step.)

Enabling LSMS Audit on ELAP

2. Select **Maintenance>LSMS HS Audit>Change Enabled**. The window shown in Figure B-2 displays.

Figure B-2. Enabling Change HS Audit



3. If the Information field indicates that the LSMS HS Audit for this ELAP is currently Disabled (as shown in Figure B-2), click the Enable LSMS HS Audit for this ELAP button. (If the Information field indicates that the LSMS HS Audit for this ELAP is Enabled, the ELAP is already prepared for the audit from the LSMS.)

You have now completed this procedure.

C

LNP Database Synchronization Files

I

Introduction.....	C-2
Log Files.....	C-2
Discrepancy Files.....	C-14

Introduction

This appendix describes the contents of the following files that are created for LNP Database Synchronization operations.

- A log file is created to record the results of each audit, electronic bulk load, or user-initiated resynchronization (see “Log Files” on page C-2)
- After an audit, the LSMS user has the option to view a discrepancy file that shows the full records at both the LSMS and at the network element for any discrepancies found in subscription versions or number pool blocks (see “Discrepancy Files” on page C-14)

Log Files

When the LSMS user starts an audit, electronic bulk load, or user-initiated resynchronization operation, the LSMS creates a log file to record the results of the operation.

Location of LNP Database Synchronization Log Files

Table C-1 shows the names of various LNP database synchronization log files and the directories where they are stored. In this table, <CLLI> indicates the Common Language Location Identifier of the network element for which the LNP database synchronization operation is performed, and <MMDD> indicates the month and day the operation was performed. Log files are maintained only for a period of seven days; after a log file has been stored seven days, it is automatically deleted.

Table C-1. LNP Database Synchronization Log File Directories

LNP Database Synchronization Operation	Log File Directory and Name
Audit	/usr/local/LSMS/logs/<CLLI>/LsmsAudit.log.<MMDD>
Electronic bulk load	/usr/local/LSMS/logs/<CLLI>/LsmsBulkload.log.<MMDD>
User-initiated resynchronization	/usr/local/LSMS/logs/<CLLI>/LsmsResync.log.<MMDD>

LNP Database Synchronization Files

Viewing an LNP Database Synchronization Log File

An LNP database synchronization log file can be viewed in any of the following ways:

- By clicking the View Log button on the window used to start the operation any time after the operation has started
- By selecting **Logs>Other...** from the main LSMS menu; in the file chooser dialog that displays, scroll to find the directory named <CLLI>, where <CLLI> is the Common Language Location Identifier (CLLI) of the network element the operation is performed for, double-click the directory to open it, and double-click the file name that corresponds to the month and day the operation was performed
- By highlighting the EMS status icon for the network element the operation is performed for, right-clicking and selecting **Logs>LNP Database Synchronization><operation>**, where <operation> is the operation being performed; in the file chooser dialog that displays, double-click the file name that corresponds to the month and day the operation was performed

LNP Database Synchronization Log File Contents

An LNP database synchronization log file consists of a number of sections. Table C-2 shows which sections are present for each type of log file. The sections are described in “Header Section” on page C-4 through “Figure C-8 shows an example of a download summary section.” on page C-13.

Table C-2. LNP Database Synchronization Log File Contents

Log File Section	LNP Database Synchronization Operation Type A=Audit/Recondile, B=Bulk Load, R=Resync		
	OAM-Based	BLM-Based	ELAP-Based
Header	A	A, B, R	A, B, R
Audit	A	A	A
Reconcile	A	A	A
Bulk Load		B	B
Re-sync		A, B, R	A, B, R
Summary	A	A, B, R	A, B, R
Download Commit/Discard		A, B, R	B, R

Header Section

The log file for every type of LNP database synchronization has a header section, which includes:

- Name of the user that started the operation
- Common Language Location Identifier (CLLI) of the network element for which the operation is performed
- Date and time a connection was established with the network element (displayed only for operations that use the DCM/BLM or ELAP connection)
- IP address and port number of the network element for which the operation is being performed (displayed only for operations that use the DCM/BLM or ELAP connection)

Figure C-1 shows an example of a header section.

Figure C-1. Header Section Example

```
Fri Oct 5 12:01:33 EST 2001
```

```
Username: lsmsuser  
NE CLLI: MRSVNC27560
```

```
Fri Oct 5 12:01:32 EST 2001  
Connection established with network element (192.168.61.202:1030)
```

Audit Section

The log file for every type of audit has an audit section, which includes:

- Type of LNP data currently being audited
- Date and time the audit started and completed
- List of duplicates and discrepancies found in the network element's LNP database for the type of data being audited. The list contains:
 - LNP data type's key field, as shown in Table C-3

Table C-3. LNP Data Type Key Fields

LNP Data Type	Key Field
Subscription version (SV)	TN
Number pool block (NPB)	NPA-NXX-X
NPA Split	Old NPA
Default GTT	NPA-NXX
Override GTT	LRN

- Type of discrepancy, as described in Table C-4

Table C-4. LNP Data Type Key Fields

Discrepancy Type	Meaning
DUPLICATE	Receiving a checksum more than once for the same LNP object from the LSMS or the NE indicates that a duplicate LNP object exist.
MISSING	Not receiving a checksum for a LNP object that resides in the LSMS database indicates that the NE is missing that LNP object.
EXTRA	Receiving a checksum for a LNP object from the NE that does not reside in the LSMS database indicates that the NE has an extra LNP object which needs to be deleted.
DIFFERENT	Mismatching checksums indicate that the NE has the LNP data object in its database; however, one or more attributes of that LNP data object (for example, LRN) are different from the one on the LSMS.

- For duplicate NPBs or SVs found in the LSMS LNP database, the NPAC regions in whose databases the duplicates reside

Figure C-2 shows an example of an audit section.

Figure C-2. Audit Section Example

```
Audit of Subscription Versions started on Fri Oct 5 12:01:33 EST 2001

4445550002 DUPLICATE (NE)
4445550003 DUPLICATE (LSMS - Midwest and Southeast NPAC regions)
9194605513 MISSING
9194605557 MISSING
9194600001 EXTRA
9194600000 DIFFERENT

Audit of Subscription Versions completed on Fri Oct 5 13:05:13 EST 2001
```

Reconcile Section

When the user chooses to reconcile at the end of any type of audit, the log file for the audit has a reconcile section, which includes:

- Date and time the reconcile started and completed
- The following information for all commands that failed or were rejected by the network element (the maximum number of command rejections logged per operation is 100,000):
 - Date
 - Time
 - Failure reason
 - Command name
 - Attributes

Figure C-3 shows an example of a reconcile section.

Figure C-3. Reconcile Section Example

```
Reconcile started on Fri Oct 5 13:05:33 EST 2001

Fri Oct 5 13:05:43 EST 2001
E3197 Cmd Rej: NGT# Translation Type is not reserved for LNP

UPDATE-DEFAULT-GTT:

      NPA-NXX:      919555
      SPID:         TKLC
      AIN:          LA
      IN:           NLI
      TT:           15
      DPC:          002002002
      SSN:          55
      RI:           D
      NGT:          20
      TT:           25
      DPC:          003003003
      SSN:          40
      RI:           D
      NGT:          0
      TT:           120
      DPC:          004004004
      SSN:          200
      RI:           D
      NGT:          0
      TT:           245
      DPC:          219040022
      SSN:          0
      RI:           G
      NGT:          0

Reconcile completed on Fri Oct 5 13:06:01 EST 2001
```

Bulk Load Section

For BLM-based or ELAP-based electronic bulk loads, the log file has a bulk load section, which includes:

- Date and time the bulk load started and completed
- The following information for all commands that failed or were rejected by the network element (the maximum number of command rejections logged per operation is 100,000):
 - Date
 - Time
 - Failure reason
 - Command name
 - Attributes

Figure C-4 shows an example of a bulk load section.

Figure C-4. Bulk Load Section Example

```

Bulk Load started on Fri Oct 5 12:01:33 EST 2001

Fri Oct 5 12:05:33 EST 2001
E3139 Cmd Rej: Translation Type is already in LNP database

UPDATE-LNP-SERVICE:
  AIN TT:      1
  IN TT:       6
  CNAM TT:     6
  LIDB TT:     2
  CLASS TT:    3
  ISVM TT:     5

Fri Oct 5 12:05:53 EST 2001
E3205 Cmd Rej: NPANXX already Split

UPDATE-NPA-SPLIT:
  NEW NPA-NXX: 919555
  OLD NPA-NXX: 919556

Fri Oct 5 12:09:01 EST 2001
E3130 Cmd Rej: Failed Reading LNP NPANXX table

UPDATE-SUBSCRIPTION-VERSION:
  TN:          9195555555
  LRN:         7878787878
  SPID:        TKLC
  LNP-TYPE:    0
  CLASS-DPC:   002002002
  CLASS-SSN:   82
  LIDB-DPC:
  LIDB-SSN:
  ISVM-DPC:    002002002
  ISVM-SSN:    14
  CNAM-DPC:    002002002
  CNAM-SSN:    3

```

LNP Database Synchronization Files

Fri Oct 5 12:12:11 EST 2001

E2466 Cmd Rej: Translation TYPE specified does not exist

UPDATE-DEFAULT-GTT:

NPA-NXX: 919555
SPID: TKLC
AIN: LA
IN: NLI
TT: 15
DPC: 002002002
SSN: 55
RI: D
NGT: 20
TT: 0
DPC: 001001000
SSN: 0
RI: G
NGT: 0
TT:
DPC:
SSN:
RI:
NGT:
TT:
DPC:
SSN:
RI:
NGT:

Fri Oct 5 12:28:22 EST 2001

E3261 Cmd Rej: NMRGT# Translation Type is not a reserved service for LNP

UPDATE-OVERRIDE-GTT:

LRN: 9194600000
SPID: TKLC
TT: 011
DPC: 001001001
SSN: 055
RI: G
NGT: 008
RGTA: T
TT:
DPC:
SSN:
RI:
NGT:
RGTA:
TT:
DPC:
SSN:
RI:
NGT:
RGTA:
TT:
DPC:
SSN:
RI:
NGT:
RGTA:

Bulk Load completed on Fri Oct 5 12:30:33 EST 2001

Resynchronization Section

The log files for a BLM-based and ELAP-based user-initiated resynchronizations contain a resynchronization section. In addition, the following types of LNP database synchronization operations contain a resynchronization section; these operations use the automatic resynchronization function of the LSMS to transmit all data updates that may have been received at the LSMS during the time the LNP database operation was occurring:

- BLM-based audit with reconcile using the connection to the BLM
- BLM-based bulk load
- ELAP-based bulk load

The resynchronization section includes:

- Date and time the resynchronization started and completed
- Network element's LNP database timestamp (DBTS); this is included in the log file only for user-initiated resynchronization operations
- The following information for all commands that failed or were rejected by the network element (the maximum number of command rejections logged per operation is 100,000):
 - Date
 - Time
 - Failure reason
 - Command name
 - Attributes
- Network element's LNP DBTS after the resynchronization operation completed

Figure C-5 shows an example of a resynchronization section.

Figure C-5. Resynchronization Section Example

```

Re-sync started on Fri Oct 5 13:06:02 EST 2001

Old NE LNP Database Time Stamp: Wed Oct 3 06:25:43 EST 2001

Fri Oct 5 13:06:42 EST 2001
E3130 Cmd Rej: Failed Reading LNP NPANXX table

UPDATE-NUMBER-POOL-BLOCK:
  TIMESTAMP: 20011003130746
  NPA-NXX-X: 9195555
  LRN:          7878787878
  SPID:         TKLC
  LNP-TYPE:     1
  CLASS-DPC:    002002002
  CLASS-SSN:    82

```

LNP Database Synchronization Files

```
LIDB-DPC:
LIDB-SSN:
ISVM-DPC:      002002002
ISVM-SSN:      14
CNAM-DPC:      002002002
CNAM-SSN:      3

Fri Oct 5 13:07:42 EST 2001
E3234 Cmd Rej: TN does not exist

DELETE-SUBSCRIPTION-VERSION:
  TIMESTAMP: 20011003130746
  TN:        8031023801

Fri Oct 5 13:08:03 EST 2001
E3169 Cmd Rej: NPA-NXX does not exist

DELETE-NPA-SPLIT:
  TIMESTAMP: 20011003130746
  NPA-NXX:   803102

Fri Oct 5 13:08:31 EST 2001
E3169 Cmd Rej: NPA-NXX does not exist

DELETE-DEFAULT-GTT:
  TIMESTAMP: 20011003130746
  NPA-NXX:   803102

Fri Oct 5 13:10:42 EST 2001
E3270 Cmd Rej: LRN does not exist

DELETE-OVERRIDE-GTT:
  TIMESTAMP: 20011003130746
  LRN:       8031020000

New NE LNP Database Time Stamp: Fri Oct 5 13:06:17 EST 2001

Re-sync completed on Fri Oct 5 13:16:17 EST 2001
```

Summary Section

Every LNP database synchronization log file contains a summary section. The contents of the summary section depends on the type of LNP database synchronization operation, as described in the following sections:

- “Summary Section for Audit Operation” on page C-11
- “Summary Section for Download Operations” on page C-13

Summary Section for Audit Operation

The log file for an audit includes an audit summary section, which includes:

- Range (data or time) of the LNP data type audited
- Total number of LNP data objects audited on both the LSMS and the network element

- Total number of LNP data objects that are identical on both the LSMS and the network element
- Total number of LNP data objects found for each type of discrepancy and total number of discrepancies
- The following items, which are included only when duplicates are detected:
 - Total number of LNP data objects found to be duplicate on the LSMS
 - Total number of LNP data objects found to be duplicate on the NE
 - A note explaining that duplicate data cannot be corrected by performing a reconcile

Figure C-6 shows an example of an audit summary section for an audit performed for an NPA-NXX range.

Figure C-6. Audit Summary Section Example for NPA-NXX Range

```

000000 NPA-NXX Start
      999999 NPA-NXX End
      6805 Total audited on LSMS
      6804 Total audited on NE
      6801 Same on Both
          1 Different on NE
          2 Missing on NE
          1 Extra on NE
          4 Total Discrepancies
          1 Duplicates on LSMS
          1 Duplicates on NE
    
```

Note: Duplicate data has been found in the LSMS and/or NE LNP database. Duplicate data cannot be corrected by performing a reconcile LNP database synchronization operation. Please contact Tekelec Technical Service.

Figure C-7 shows an example of an audit summary section for an audit performed for a time range.

Figure C-7. Audit Summary Section Example for Time Range

```

20011003000000 Start Time
20011005153021 End Time
      6805 Total audited on LSMS
      6804 Total audited on NE
      6801 Same on Both
          1 Different on NE
          2 Missing on NE
          1 Extra on NE
          4 Total Discrepancies
    
```

Summary Section for Download Operations

Each of the following LNP database synchronization operations consists of a period during which LNP data is downloaded to the network element without being interspersed with normal data updates:

- Reconcile phase of a BLM-based audit with reconcile using the connection to the BLM
- BLM-based and ELAP-based electronic bulk load
- BLM-based and ELAP-based user-initiated resynchronization

The log files for these types of operations includes a download summary section, which includes:

- Total number of objects that were successfully downloaded and applied to the network element's LNP database
- Total number of objects that were successfully downloaded to, but rejected by, the network element

Figure C-8 shows an example of a download summary section.

Figure C-8. Download Summary Section Example

NPA Splits	4	Downloaded	0 errors
Number Pool Blocks	5	Downloaded	0 errors
Subscription Versions	4	Downloaded	0 errors
Default GTTs	3	Downloaded	0 errors
Override GTTs	3	Downloaded	0 errors
Total	19	Downloaded	0 errors

Download Commit/Discard Section

The log files for the following types of LNP database synchronization operations include a download commit/discard section:

- BLM-based audit with reconcile using the connection to the BLM
- BLM-based and ELAP-based electronic bulk load
- BLM-based and ELAP-based user-initiated resynchronization

The download commit/discard section includes:

- Date and time the download started and completed
- Status of the commit or discard request

Figure C-9 shows an example of a reconcile section.

Figure C-9. Download Commit/Discard Section Example

```
Commit completed on Fri Oct 5 13:08:03 EST 2001
```

Discrepancy Files

After an audit has completed, the LSMS user has the option of viewing full records information about any subscription version (SV) or number pool block (NPB) data objects that were found to be missing, extra, or different.

Location of Discrepancy Files

Table C-5 shows the names of the two types of discrepancy files and the directories where they are stored. In this table, <CLLI> indicates the Common Language Location Identifier of the network element for which the audit was performed, and <MMDD> indicates the month and day the audit was performed. Log files are maintained only for a period of seven days; after a log file has been stored seven days, it is automatically deleted.

Table C-5. LNP Database Synchronization Log File Directories

LNP Data Object Type	Full-Record Discrepancy File Directory and Name
Subscription version	<i>/usr/local/LSMS/logs/<CLLI>/LsmsAudit.sv.discrepancy.log.<MMDD></i>
Number pool block	<i>/usr/local/LSMS/logs/<CLLI>/LsmsAudit.npb.discrepancy.log.<MMDD></i>

Viewing a Discrepancy File

An LNP database synchronization log file can be viewed in any of the following ways:

- By clicking the View Discrepancies button on the Audit Results tab of the Audit window used to start an audit of SVs or NPBs any time after the audit has completed
- By selecting **Logs>Other...** from the main LSMS menu; in the file chooser dialog that displays, scroll to find the directory named <CLLI>, where <CLLI> is the Common Language Location Identifier (CLLI) of the network element the operation is performed for, double-click the directory to open it, and double-click the file name that corresponds to the month and day the operation was performed
- By highlighting the EMS status icon for the network element the operation is performed for, right-clicking and selecting **Logs>LNP Database Synchronization-><operation>**, where <operation> is the operation being performed; in the file chooser dialog that displays, double-click the file name that corresponds to the month and day the operation was performed

Discrepancy File Contents

A discrepancy file consists of the following sections:

- Header section (see “Header Section” on page C-15)
- Discrepancy section (see “Header Section” on page C-15)
- Summary section (see “Discrepancy Summary Section” on page C-17)

Header Section

Each type of discrepancy file contains a header section, which includes:

- Date and time the discrepancy file was generated
- Name of the user that started the operation
- Common Language Location Identifier (CLLI) of the network element for which the operation is performed

Figure C-10 shows an example of a header section.

Figure C-10. Example of a Discrepancy File Header Section

```
Fri Oct 5 15:18:03 EST 2001
```

```
Username: lsmsuser  
NE CLLI: MRSVNC27560
```

Discrepancy Section

Each type of discrepancy file contains a discrepancy section, which includes:

- Date and time the discrepancy file was generated
- Type of LNP data discrepancy
- Side-by-side comparison of LSMS and network element LNP data records (including attributes names and values)

A full-record discrepancy file contains up to a maximum of 1000 discrepancies.

Figure C-11 shows an example of a discrepancy section for an audit of Number Pool Blocks (NPBs).

Figure C-11. Discrepancy Section Example, Audit of NPBs

Full-record details of Number Pool Block discrepancies

DIFFERENT	NE	LSMS
NPA-NXX-X:	9194603	9194603
LRN:	2923640000	2923640000
SPID:	TKLC	TKLC
CLASS DPC:	230101171	230101171
CLASS SSN:	30	30
IDB DPC:	100100100	100100100
LIDB SSN:	45	45
ISVM DPC:	200200200	
ISVM SSN:	25	
CNAM DPC:	031002008	031002008
CNAM SSN:	40	40
MISSING	NE	LSMS
NPA-NXX-X:		031023232
LRN:		2923640000
SPID:		TKLC
CLASS DPC:		230101171
CLASS SSN:		30
LIDB DPC:		100100100
LIDB SSN:		45
ISVM DPC:		200200200
ISVM SSN:		25
CNAM DPC:		031002008
CNAM SSN:		40

Figure C-12 shows an example of a discrepancy section for an audit of subscription versions (TNs).

Figure C-12. Discrepancy Section Example, Audit of TNs

Full-record details of Subscription Version discrepancies

DIFFERENT	NE	LSMS
TN:	9194603232	9194603232
LRN:	2923640000	2923640000
SPID:	TKLC	TKLC
CLASS DPC:	230101171	230101171
CLASS SSN:	30	30
IDB DPC:	100100100	100100100
LIDB SSN:	45	45
ISVM DPC:	200200200	
ISVM SSN:	25	
CNAM DPC:	031002008	031002008
CNAM SSN:	40	40

Discrepancy Summary Section

Each type of discrepancy file contains a summary section, which includes:

- Total number of each type of discrepancy included in the report
- Date and time the discrepancy file was completed

Figure C-13 shows an example of a discrepancy summary section.

Figure C-13. Discrepancy Summary Section Example

```
SUMMARY
-----
      1 Different on NE
      0 Missing on NE
      1 Extra on NE
      2 Total Discrepancies

Fri Oct 5 15:18:03 EST 2001
```

LNP Database Synchronization Files

D

Synchronization Performance Estimates

I

Introduction.....	D-2
Recommended Network Bandwidth.....	D-2
Performance of LSMS to NE Operations.....	D-3
Performance of NE to NE Operations	D-4

Introduction

This appendix provides estimates of the transaction rates for the various LNP database synchronization operations. Using these estimates can help you decide which type of operation to use.

Recommended Network Bandwidth

To use any LNP database synchronization operation other than manual bulk load, it is recommended that the network connection between the LSMS and each network element have a minimum bandwidth that is equal to or greater than 50% of a T1 line (a minimum bandwidth of at least 96,000 bytes per second).

The estimates shown in this appendix assume that the LNP database synchronization operation uses bandwidth of 96,000 bytes per second.

Performance of LSMS to NE Operations

Table D-1 on page D-3 shows the performance estimates of various LNP database synchronization operations. These estimates are based on a single LNP database synchronization operation running on an E450 LSMS system with minimal system activity.

Table D-1. LNP Database Synchronization Performance Estimates

LNP Database Synchronization Operation	Connection (Note)	Data Objects Per Hour	Worst Case Performance Based On:
OAM-based audit (TN, NPA-NXX-X, and Time Range only)	Normal	7500	Greatest amount of time it takes to look up data in the LNP databases and calculate checksums (LSMS - 600 objects per second, NE - 1.5 objects per second).
BLM-based audit ELAP-based audit	Dedicated	1,000,000 to 2,000,000	Amount of time it takes to look up data in the LNP databases and calculate checksums (LSMS - 600 objects per second, NE - 3400 objects per second) and on the number of discrepancies the LSMS finds (the LSMS can record up to 1 million discrepancies per hour) .
BLM-based bulk load BLM-based reconcile BLM-based user-initiated resynchronization ELAP-based bulk load ELAP-base user-initiated resynchronization	Dedicated	1,000,000	Amount of time it takes to look up data in the LSMS and create an update command (600 objects per second) transmit it (assuming 50% of T1, 750 Kbps) and insert data into NE database (333 objects per second).
ELAP-based reconcile	Normal	90,000	Amount of time it takes to look up data in the LSMS and create an update command (600 objects per second) transmit it (25 objects per second) and insert data into NE database (333 objects per second).

Performance of NE to NE Operations

Table D-2 shows estimates of the time required to copy an RTDB across the customer network, depending on the speed of the customer network.

Table D-2. Estimating Time to Copy RTDB Across Customer Network

Speed of Customer Network	Estimated Time to Copy One Million Numbers
100 Megabits/second	11.5 seconds*
10 Megabits/second	40 seconds*
1.44 Megabits/second	3.7 minutes
128 Kilobits/second	41.67 minutes
56 Kilobits/second	95.25 minutes
* At this network speed, system performance is limited by ELAP disk	

Index

Numerics

- 12 Million Telephone Number Support
 - configuration needed, 2-9
- 12 Million Telephone Number Support feature, 10-18
 - turning on, chg-feat, 10-19
- 48 Million Numbers
 - configuration needed, 2-13
- 48 Million Numbers Support
 - configuration needed, 2-13
- 6 Million Number Support
 - configuration needed, 2-7
- 96 Million, 2-14

A

- aborting
 - audit, 6-20
 - electronic bulk download, 7-19
 - reconcile, 6-13, 6-26
 - user-initiated resynchronization, 5-18
- act-flash command, 4-16
- activating signaling links, act-slk, 13-33, 13-39
- act-slk command, 13-33, 13-39
- adding BLM, ent-card, 4-17
- ALIAS field, 7-15
- allowing
 - card, rst-card, 4-16, 4-17, 13-32, 13-36, 13-38, 13-40
 - mated application subsystem,
 - alw-map-ss, 9-5, 9-28, 10-28, 12-33, 13-13
 - OAP terminal, rst-trm, 9-30, 10-31, 12-34
 - signaling links, alw-slk, 13-34
 - TSM, 9-4, 9-26, 10-27, 12-32, 13-12
- alw-map-ss command, 9-5, 9-28, 10-28, 12-33, 13-13
- alw-slk command, 13-34
- applications
 - EBDABLM, 4-11
 - EBDADCM, 4-11
- associating new NPANXX with old NPANXX, ent-split-npa, 10-24

- ATMANSI application, 13-32
- audit
 - aborting, 6-20
 - log file, 6-28
 - managing, 6-15
 - overview, 6-2
 - restrictions, 6-6
- audit and reconcile
 - options, 2-20, 6-8
- audit function
 - turning off, chg-lnpopts, 12-9, 12-28
 - turning on, chg-lnpopts, 12-11, 13-10
- automatic resynchronization, 2-4, 2-17, 5-2, 5-3, 5-4

B

- backing up
 - changes, chg-db, 4-35, 9-31, 10-31, 11-25, 11-41, 12-35, 13-14, 13-17, 13-44
 - database to Bulk Load removable cartridge, chg-db, 11-10, 12-10
 - to removable cartridge, 4-34
- basic phases
 - resynchronization, 2-24
 - procedures, 3-10
- BLM
 - adding, ent-card, 4-17
 - allowing, rst-card, 4-17
- booting
 - TSMs, 13-4
- bpdcn flash GPL, 4-15
- bulk download directory, removing all files, 10-7
- bulk downloading
 - choosing a method, 3-6
 - electronic bulk download, 2-5
 - options, 2-24
- bulk load log file, 7-19

Bulk Load removable cartridge
 backing up database to, chg-db, 11-10
 copying
 from active fixed disk to removable
 cartridge, copy-gpl, 11-10
 LNP database from cartridge,
 chg-db:action=import, 10-17,
 12-27
 displaying files, disp-disk-dir, 10-14,
 11-11
 inserting, 10-14, 11-7, 11-33, 11-35, 12-5,
 12-21
 preparing, 11-6, 11-19
 removing, 11-14, 13-8
 bulk loading
 manual bulk downloads, 2-5
 overview, 2-21

C

canc-dlk command, 13-37
 canceling
 rept-stat-card, 4-10, 13-27
 rept-stat-slk, 13-27
 card
 allowing, rst-card, 13-32, 13-36, 13-38,
 13-40
 inhibiting, rmv-card, 4-24, 4-29, 13-32,
 13-35, 13-37, 13-39
 removing, dlt-card, 4-29
 verifying status, rept-stat-card, 4-17,
 4-23, 4-24, 4-27, 4-28, 13-33, 13-36,
 13-38, 13-40
 card locations
 DCM, 4-12
 changing
 link parameters, chg-ip-lnk, 4-15
 LNP services, chg-lnp-serv, 9-24, 10-22
 OAP terminal type, chg-trm, 9-16, 9-30,
 10-30, 11-22, 12-26, 12-34, 13-6, 13-16
 unsolicited message output group
 assignments, 4-9, 11-3
 chg-db command, 9-20
 chg-db:action=import command, 10-16,
 10-17, 11-13, 12-27, 13-9
 chg-db:action=restore:src=fixed
 command, 13-28
 chg-ip-lnk command, 4-15

chg-lnpopts command, 9-17, 9-21, 10-20,
 12-9, 12-11, 12-28, 13-10
 chg-lnp-serv command, 9-23
 chg-meas command, 9-19, 9-29, 11-24,
 11-31, 12-8, 13-15, 13-43
 chg-trm command, 9-16, 9-30, 10-30, 11-22,
 12-26, 12-34, 13-6, 13-16
 cvnt_lsms_db command, 10-8
 coherent database
 verifying,
 rept-stat-db:display=all, 9-32,
 10-32, 12-36
 command line interface (lsmsclaa),
 LSMS, 6-31
 commands
 act-flash, 4-16
 act-slk, 13-33, 13-39
 alw-map-ss, 9-5, 9-28, 10-28, 12-33,
 13-13
 alw-slk, 13-34
 canc-dlk, 13-37
 canceling
 rept-stat-card, 4-10, 13-27
 rept-stat-slk, 13-27
 chg-db, 9-20
 chg-db:action=import, 10-16, 10-17,
 11-13, 12-27, 13-9
 chg-db:action=restore:src=fixed, 13-28
 chg-ip-lnk, 4-15
 chg-lnpopts, 9-17, 9-21, 10-20, 12-9,
 12-11, 12-28, 13-10
 chg-lnp-serv, 9-23
 chg-meas, 9-19, 9-29, 11-24, 11-31, 12-8,
 13-15, 13-43
 chg-trm, 9-16, 9-30, 10-30, 11-22, 12-26,
 12-34, 13-6, 13-16
 copy-gpl, 4-35, 10-14, 11-10, 11-25,
 11-41, 12-9, 12-21
 cvnt_lsms_db command, 10-8
 dact-slk, 13-32
 disp-disk-dir, 10-14, 11-11
 disp-lba, 10-15, 11-12
 dlt-card, 4-23, 4-25, 4-27, 4-29
 dlt-split-npanxx, 10-25
 ent-card, 4-17
 ent-lnp-serv, 10-22, 12-29
 ent-split-npa, 10-24, 10-25
 export_lsms_db, 10-6

Index

- format-disk, 4-35, 11-9, 11-34
- inh-map-ss, 9-5, 9-28, 10-28, 12-33, 13-13
- inh-slk, 13-31
- init-flash, 4-15
- ls, 10-7
- ping, 4-18
- rept-stat-card, 4-10, 4-13, 4-17, 4-23, 4-24, 4-27, 4-28, 13-27, 13-33, 13-36, 13-38, 13-40
- rept-stat-db, 9-32, 10-19, 10-32, 13-8, 13-10, 13-28
- rept-stat-db:display=version, 4-34, 10-29, 11-8, 11-34, 11-42, 13-14, 13-18, 13-28, 13-45
- rept-stat-dlk, 13-37
- rept-stat-gpl, 4-16
- rept-stat-sccp, 9-6, 9-29, 13-7
- rept-stat-slk, 13-27, 13-34, 13-39
- rept-stat-trm, 9-15, 9-31, 10-31, 11-21, 12-25, 12-35, 13-5
- rmv-card, 4-24, 4-29, 9-4, 9-26, 10-27, 12-32, 13-12, 13-32, 13-35, 13-37, 13-39
- rmv-trm, 9-15, 11-21, 12-25, 13-5
- rst-card, 4-16, 4-17, 9-4, 9-26, 10-27, 12-32, 13-12, 13-32, 13-36, 13-38, 13-40
- rst-trm, 9-30, 10-31, 12-34
- rtrv-feat, 4-9, 11-3
- rtrv-lnp-npanxx, 10-24
- rtrv-lnpopts, 9-17, 9-18, 9-21, 10-20, 11-22, 11-23, 11-32, 12-8, 12-9, 12-11, 12-28, 13-11
- rtrv-lnp-serv, 7-14, 9-13, 9-25, 10-23, 11-14, 11-19, 11-43, 12-6, 12-29, 12-31, 13-11
- rtrv-meas-sched, 9-18, 10-30, 11-24, 11-31, 12-7, 12-8, 12-12, 12-34, 13-15, 13-43, 13-44
- rtrv-mem, 10-26, 11-43, 12-6, 12-23
- rtrv-secu-trm, 4-8, 11-3
- rtrv-secu-user, 4-8, 11-3
- rtrv-shlf, 4-12
- rtrv-trm, 4-9, 9-14, 9-16, 11-3, 11-20, 12-24, 13-4, 13-6, 13-16
- tst-disk, 10-17, 11-9, 11-10
- comparing translation type values, 9-13
- configuring LSMS and network element for BLM-based or ELAP-based operation, 4-4
- converting LNP database into network element format, `cnvt_lsms_db`, 10-8
- copy RTDB
 - from ELAP mate, 3-7
 - from standby ELAP on mated network element, 3-8
- `copy-gpl` command, 4-35, 10-14, 11-10, 11-25, 11-41, 12-9, 12-21
- copying
 - approved GPL to backup removable cartridge, 11-41, 12-9, 12-21
 - approved GPLs and system release table from active fixed disk to Bulk Load removable cartridge, `copy-gpl`, 11-10
 - approved GPLs from active fixed disk to Database Backup removable cartridge, `copy-gpl`, 11-25
 - approved GPLs to active fixed disk, `copy-gpl`, 4-35, 10-14, 11-41
 - database from backup to current partition of fixed disk, `chg-db:action=restore:src=fixed`, 13-28
 - downloaded LNP database from BLM to fixed disks, `chg-db`, 9-13
 - LNP database
 - from Bulk Load removable cartridge, `chg-db:action=import`, 10-17, 12-27
 - from Database Backup removable cartridge, `chg-db:action=import`, 13-9
 - performance time, 9-20
 - LNP database from BLM to fixed disks, `chg-db`, 9-20
- creating
 - NPANXX split, `ent-split-npa`, 10-25
- `cnvt_lsms_db` command, re-entering, 10-8

D

dact-slk command, 13-32

database

- backing up to Bulk Load removable cartridge, chg-db, 12-10
- copying
 - from backup to current partition of fixed disk,
 - chg-db:action=restore:src=fixed, 13-28
 - verifying version, 4-34, 11-35, 11-42
- Database Backup removable cartridge
 - copying LNP database from cartridge,
 - chg-db:action=import, 13-9
 - inserting, 11-19, 11-35, 13-8
 - removing, 11-25
- database directories, listing, 10-7
- database maintenance required
 - notification, 3-3
- database time stamp (DBTS), 5-5, 5-6
- database version, verifying,
 - rept-stat-db:display=version, 12-7, 12-10, 12-21

DCM

- allowing card, rst-card, 4-16
- card locations, 4-12
- part number, 4-11
- removing, dlt-card, 4-23, 4-25, 4-27

deactivating

- signaling links, dact-slk, 13-32
- TCP/IP data links, canc-dlk, 13-37

determining LNP translation type services,

- rtrv-lnp-serv, 11-19

disp-disk-dir command, 10-14, 11-11

displaying

- contents LNP_STAT.BKP table,
 - disp-lba, 10-15, 11-12
- database version
 - active/standby MASP and removable cartridge,
 - rept-stat-db, 13-8, 13-10
- database version, rept-stat-db, 10-19
- database version,
 - rept-stat-db:display=version, 4-34, 10-29, 11-8, 11-34, 11-42, 13-14, 13-18, 13-28, 13-45
- files on Bulk Load removable cartridge,
 - disp-disk-dir, 10-14, 11-11

- LNP 4Digit table memory allocation,
 - rtrv-mem, 10-26, 11-43, 12-6, 12-23
- LNP options, rtrv-lnpopts, 9-17, 9-18, 9-21, 10-20, 11-22, 11-23, 11-32, 12-8, 12-9, 12-11, 12-28, 13-11
- LNP services, rtrv-lnp-serv, 9-25, 10-23, 12-31
- LNP translation type services,
 - rtrv-lnp-serv, 7-14, 11-14, 11-43, 12-6, 12-29, 13-11
- measurement collection status,
 - rtrv-meas-sched, 10-30, 11-24, 11-31, 12-7, 12-8, 12-12, 12-34, 13-15, 13-43, 13-44
- NPANXX data, 10-24
- signaling links, rept-stat-slk, 13-34, 13-39
- status of measurement collection,
 - rtrv-meas-sched, 9-18
- TCP/IP data link status, 13-37
- terminal configuration, 9-14, 13-16
- terminal status, rept-stat-trm, 9-15, 9-31, 10-31, 11-21, 12-25, 12-35, 13-5
- TSM status, 13-7

disp-lba command, 10-15, 11-12

distributing the LNP database

- when required, 9-12

distributing the LNP database,

- flowchart, 9-10, 9-11, 9-34

dlt-card command, 4-23, 4-25, 4-27, 4-29

dlt-split-npanxx command, 10-25

E

E3660, 10-18

EBDABLM application, 4-11

EBDABLM GPL, 4-13

EBDADCM application, 4-11

EBDADCM GPL, 4-13

electronic bulk download

- aborting, 7-19
- feature requirements, 7-2
- managing, 7-9

Emergency response, 1-14

ent-card command, 4-17

ent-lnp-serv command, 10-22, 12-29

ent-split-npa command, 10-25

environmental conditions, 1-9

Index

establish an association, 5-6
export_lsms_db command, 10-6
external ports, 4-6
extracting LNP database from LSMS, 10-4

F

feature requirements
 electronic bulk download, 7-2
 user-initiated resynchronization, 5-3
fields
 ALIAS, 7-15
 SERV, 7-15
flowchart
 distributing the LNP database, 9-10,
 9-11, 9-34
 loading LNP database onto the network
 element, 10-33
format-disk command, 4-35, 11-9, 11-34
formatting removable cartridge,
 format-disk, 4-35, 11-9, 11-34

G

GPLs
 EBDABLM, 4-13
 EBDADCM, 4-13

H

hardware configuration
 verifying, rept-stat-card, 4-13

I

inhibiting
 card, rmv-card, 4-24, 4-29, 13-32, 13-35,
 13-37, 13-39
 mated application subsystem,
 inh-map-ss, 9-5, 9-28, 10-28, 12-33,
 13-13
 signaling links, inh-slk, 13-31
 TSM, rmv-card, 9-4, 9-26, 10-27, 12-32,
 13-12
inh-map-ss command, 9-5, 9-28, 10-28,
 12-33, 13-13
inh-slk command, 13-31
init-flash command, 4-15

inserting
 Bulk Load removable cartridge, 10-14,
 11-7, 11-33, 11-35, 12-5, 12-21
 Database Backup removable
 cartridge, 11-19, 11-35, 13-8
 removable cartridge, 4-32, 11-5, 11-41

L

labeling removable cartridge, 4-31, 11-4
link parameters, changing, chg-ip-lnk, 4-15
listing database directories, 10-7
LNP 4Digit table memory allocation
 displaying, rtrv-mem, 10-26, 11-43,
 12-6, 12-23
 recording, 11-43
LNP audit function
 turning off, chg-lnpopts, 9-17
 turning on, chg-lnpopts, 9-21, 10-20
LNP data, overview, 1-2, 2-3
LNP database
 alarms, 9-4, 9-25, 10-26, 12-31, 13-12
 converting into network element format,
 cnvt_lsms_db, 10-8
 copying from BLM to fixed disks,
 chg-db, 9-13, 9-20
 distributing to all TSMs, 9-12
 extracting from LSMS, 10-4
 loaded onto all TSMs, 9-13
 loading onto the network
 element, 10-13
 updates, preventing, 9-13
 verifying version, 4-34, 11-35, 11-42
LNP feature, verifying, rtrv-feat, 4-9, 11-3
LNP options, displaying,
 rtrv-lnpopts, 9-17, 9-18, 9-21, 10-20,
 11-22, 11-23, 11-32, 12-8, 12-9, 12-11,
 12-28, 13-11
LNP services
 changing, chg-lnp-serv, 9-24, 10-22
 displaying, rtrv-lnp-serv, 9-25, 10-23,
 12-31
 verifying, supported.cfg file, 10-5
LNP translation type services
 determining, rtrv-lnp-serv, 11-19
 displaying, rtrv-lnp-serv, 7-14, 11-14,
 11-43, 12-6, 12-29, 13-11

- matching recorded and imported values, 10-21, 12-29, 13-11
- LNP translation type values
 - matching recorded and imported, 9-22
- LNP_STAT.BKP table
 - displaying, disp-lba, 10-15, 11-12
 - LBA value of, 10-14, 11-11
- loading
 - LNP database onto the network element procedure, 10-13
- loading LNP database onto the network element
 - flowchart, 10-33
- LOC parameter, ent-card, 4-11
- local number portability (LNP), 2-2
- log file
 - audit, 6-28
 - used for automatic resynchronization, 5-4, 5-5
 - user-initiated resynchronization, 5-21, 7-23
- losing traffic, 13-7
- low-speed reconcile, 2-5
- ls command, 10-7
- LSMS
 - command line interface (lsmsclaa), 6-31
 - console, 10-5
 - data, 1-2, 2-3

M

- managing
 - audit, 6-15
 - electronic bulk download, 7-9
 - resynchronization, 5-2, 7-2
 - user-initiated resynchronization, 5-12
- manual bulk download methods, 2-5
- MASPs, 10-17, 10-19, 12-27
- matching LNP translation type values, 9-22, 10-21, 12-29, 13-11
- mated application subsystem
 - allowing, alw-map-ss, 9-5, 9-28, 10-28, 12-33, 13-13
 - inhibiting, inh-map-ss, 9-5, 9-28, 10-28, 12-33, 13-13
- measurement collection
 - displaying status, rtrv-meas-sched, 9-18

- turning off, chg-meas, 9-19, 11-24, 11-31, 12-8, 13-43
- turning on, chg-meas, 9-29, 13-15, 13-43
- turning on/off, chg-meas, 9-13
- measurement collection status
 - displaying, rtrv-meas-sched, 10-30, 11-24, 11-31, 12-7, 12-8, 12-12, 12-34, 13-15, 13-43, 13-44
- Measurements Platform, 9-18, 11-23
- Measurements Platform option, 9-18, 11-23
- mismatched translation type values, 13-3

N

- NEBS, 1-9
- network configuration overview, 4-4
- network element data
 - automatic resynchronization of, 5-4
- Network Equipment Building System, 1-9
- non-support of translation types after import of database, 9-22, 10-13, 10-21, 11-19
- notification, database maintenance
 - required, 3-3
- notifications, 5-4, 5-5, 5-6
- NPAC, 1-2, 2-2
- npanxx, 10-3
- NPANXX data
 - displaying, rtrv-lnp-npanxx, 10-24
- NPANXX split
 - creating, ent-split-npa, 10-25
 - removing, dlt-split-npanxx, 10-25
 - reversing, 10-24
- Number Portability Administration Center (NPAC), 1-2, 2-2

O

- OAP configuration, updating, 9-23, 10-22, 12-30
- OAP terminal type
 - changing, chg-trm, 11-22
- OAP terminal types
 - verifying, 11-20
- OAP terminals
 - allowing, rst-trm, 9-30, 10-31, 12-34
 - changing type, chg-trm, 9-16, 9-30, 10-30, 12-26, 12-34, 13-6, 13-16
 - displaying, 12-24, 13-4

Index

- ports, recording value of, 9-14
- recording port values, 13-4
- recording values of ports, 12-24
- returning to service, rmv-trm, 13-16
- taking out of service, rmv-trm, 9-15, 11-21, 12-25, 13-5
- verifying change of type, 9-16, 13-6
- optional feature
 - required to support up to 8 million ported numbers, 2-10
- optional features
 - required to support up to 12 million ported numbers, 2-10
 - required to support up to 48 million ported numbers, 2-14
- options, audit and reconcile, 6-8

P

- parameters, ent-card (APPL, FORCE, LOC, TYPE), 4-11
- part numbers, DCM, 4-11
- performance time, copying LNP database, 9-20
- ping command, 4-18
- preparing Bulk Load removable cartridge, 11-6, 11-19
- preventing LNP database updates, 9-13

R

- reconcile
 - aborting, 6-13, 6-26
 - over connection to OAP
 - stages, 6-11
 - overview, 2-5
- reconciling
 - low-speed reconcile, 2-5
 - not over normal channel, 2-5
- recording
 - LNP 4Digit table memory allocation, 11-43
 - timestamp, 10-9
 - values of OAP terminal ports, 12-24, 13-4
- re-entering
 - cvnt_lsms_db command, 10-8

- user-defined LNP services or alias translation types,
 - ent-lnp-serv, 9-23, 10-22, 12-29
- removable cartridge
 - backing up to, 4-34
 - formatting, format-disk, 4-35, 11-9, 11-34
 - inserting, 4-32, 11-5, 11-41
 - labeling, 4-31, 11-4
 - removing, 4-33, 11-6, 11-35, 11-43
 - verifying
 - formatting, 10-16, 11-13
 - integrity, tst-disk, 10-17, 11-9, 11-10
 - write-enabling, 4-31, 11-4
- removing
 - all files in bulk load directory, 10-7
 - Bulk Load removable cartridge, 11-14, 13-8
 - card, dlt-card, 4-29
 - Database Backup removable cartridge, 11-25
 - DCM, dlt-card, 4-23, 4-25, 4-27
 - NPANXX record,
 - dlt-split-npanxx, 10-25
 - removable cartridge, 4-33, 11-6, 11-35, 11-43
- rept-stat-card command, 4-10, 4-13, 4-17, 4-23, 4-24, 4-27, 4-28, 13-27, 13-33, 13-36, 13-38, 13-40
- rept-stat-db command, 9-32, 10-19, 10-32, 13-8, 13-10, 13-28
- rept-stat-db:display=version
 - command, 4-34, 10-29, 11-8, 11-34, 11-42, 13-14, 13-18, 13-28, 13-45
- rept-stat-dlk command, 13-37
- rept-stat-gpl command, 4-16
- rept-stat-sccp command, 9-6, 9-29, 13-7
- rept-stat-slk command, 13-27, 13-34, 13-39
- rept-stat-trm command, 9-15, 9-31, 10-31, 11-21, 12-25, 12-35, 13-5
- rerouting global title translation traffic to mate, 9-5, 9-28, 10-28, 12-33, 13-13
- restoring
 - system database, 13-2
 - translation type values, 9-13
- resynchronization
 - automatic, 2-4, 2-17, 5-2
 - basic phases, 2-24

LSMS and network element, 2-17
 managing, 5-2, 7-2
 options, 2-19
 procedures, basic phases, 3-10
 user-initiated, 2-4, 2-18, 3-6, 5-2
 aborting, 5-18
 after electronic bulk
 download, 7-17
 returning to service
 OAP terminals, rst-trm, 13-16
 reverse ent-split-npa command, 10-24
 rmv-card command, 4-24, 4-29, 9-4, 9-26,
 10-27, 12-32, 13-12, 13-32, 13-35, 13-37,
 13-39
 rmv-trm command, 9-15, 11-21, 12-25, 13-5
 router filtering, 4-6
 rst-card command, 4-16, 4-17, 9-4, 9-26,
 10-27, 12-32, 13-12, 13-32, 13-36, 13-38,
 13-40
 rst-trm command, 9-30, 10-31, 12-34
 rtrv-feat command, 4-9, 11-3
 rtrv-lnp-npanxx command, 10-24
 rtrv-lnpopts command, 9-17, 9-18, 9-21,
 10-20, 11-22, 11-23, 11-32, 12-8, 12-9,
 12-11, 12-28, 13-11
 rtrv-lnp-serv command, 7-14, 9-13, 9-25,
 10-23, 11-14, 11-19, 11-43, 12-6, 12-29,
 12-31, 13-11
 rtrv-meas-sched command, 9-18, 10-30,
 11-24, 11-31, 12-7, 12-8, 12-12, 12-34,
 13-15, 13-43, 13-44
 rtrv-mem command, 10-26, 11-43, 12-6,
 12-23
 rtrv-secu-trm command, 4-8, 11-3
 rtrv-secu-user command, 4-8, 11-3
 rtrv-shlf command, 4-12
 rtrv-trm command, 4-9, 9-14, 9-16, 11-3,
 11-20, 12-24, 13-4, 13-6, 13-16

S

SERV field, 7-15
 short synchronization, 5-4
 signaling links
 activating, act-slk, 13-33, 13-39
 allowing, alw-slk, 13-34
 deactivating, dact-slk, 13-32
 displaying, rept-stat-slk, 13-34, 13-39

 inhibiting, inh-slk, 13-31
 Signaling System #7, 1-9
 SS7, 1-9
 standard features, 2-8
 starting electronic bulk load, 7-16
 subscription version, 6-7
 system database, restoring, 13-2

T

taking out of service
 OAP terminals, rmv-trm, 9-15, 11-21,
 12-25, 13-5
 TCP/IP data links
 deactivating, canc-dlk, 13-37
 displaying status, 13-37
 Technical services, 1-14
 terminal
 configuration, displaying, 13-16
 terminal configuration, displaying, 9-14
 terminal status
 displaying, rept-stat-trm, 9-15, 9-31,
 10-31, 11-21, 12-25, 12-35, 13-5
 timestamp recording, 10-9
 translation types
 comparing values, 9-13
 mismatched values, 13-3
 restoring, 9-13
 verifying, 7-14
 Triggerless LNP feature, 9-17, 9-18, 9-21,
 10-20, 11-22, 11-23, 11-32, 11-33, 12-9,
 12-11, 12-28, 13-11
 troubleshooting database downloading
 procedure, 13-4
 TSM
 allowing card, 9-4, 9-26, 10-27, 12-32,
 13-12
 displaying status, 13-7
 inhibiting, rmv-card, 9-4, 9-26, 10-27,
 12-32, 13-12
 keeps booting, 13-4
 verifying status, 9-6, 9-29
 tst-disk command, 10-17, 11-9, 11-10

Index

- turning off
 - audit function, chg-lnpopts, 9-17, 12-9, 12-28
 - measurement collection, chg-meas, 9-19, 11-24, 11-31, 12-8, 13-43
- turning on
 - 12 Million Telephone Number Support feature, chg-feat, 10-19
 - audit function, chg-lnpopts, 9-21, 10-20, 12-11, 13-10
 - measurement collection, chg-meas, 9-29, 13-15, 13-43
- turning on/off
 - measurement collection, chg-meas, 9-13

U

- UAM 0429, 9-5, 9-20, 9-28, 10-17, 10-28, 12-27, 12-33, 13-9, 13-13
- UAM 0431, 9-5, 9-26, 9-27, 9-28, 10-27, 10-28, 12-32, 12-33, 13-13
- UDP echo, 4-6
- unsolicited message output groups
 - assignments
 - changing, 4-9, 11-3
 - verify, rtrv-trm, 4-9, 11-3
- updating OAP configuration, 9-23, 10-22, 12-30
- user-defined LNP services or alias
 - translation types
 - re-entering, ent-lnp-serv, 9-23, 10-22, 12-29
- user-initiated
 - aborting, 5-18
 - managing, 5-12
- user-initiated resynchronization, 5-2
 - after bulk download notification, 3-6
 - BLM-based timeline, 5-10
 - ELAP-based timeline, 5-8
 - feature requirements, 5-3, 7-2
 - log file, 5-21, 7-23
 - overview, 2-4, 2-18

V

- verifying
 - backup partitions, rept-stat-db, 13-28
 - card status, rept-stat-card, 4-17, 4-23, 4-24, 4-27, 4-28, 13-33, 13-36, 13-38, 13-40
 - coherent database,
 - rept-stat-db:display=all, 9-32, 10-32, 12-36
 - database version,
 - rept-stat-db:display=version, 4-34, 11-35, 11-42, 12-7, 12-10, 12-21
 - formatting of removable cartridge, 10-16, 11-13
 - hardware configuration, rept-stat-card, 4-13
 - integrity of removable cartridge,
 - tst-disk, 10-17, 11-9, 11-10
 - LNP database version, 4-34, 11-35, 11-42
 - LNP feature, rtrv-feat, 4-9, 11-3
 - LNP services, supported.cfg file, 10-5
 - OAP terminal types, 9-16, 11-20, 12-24, 13-4, 13-6
 - shelf entered in database, rtrv-shlf, 4-12
 - translation types, 7-14
 - TSM card status, 9-6, 9-29

W

- write-enabling removable cartridge, 4-31, 11-4

