NENA
Recommended Data Standards
For Local Exchange Carriers, ALI Service
Providers & 9-1-1 Jurisdictions

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Prepared by:
National Emergency Number Association (NENA) Data Technical Committee and Data Working Groups

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INTRODUCTION

1.1 Purpose

This document sets forth NENA standards for all Service Providers involved in providing dial tone to end users whether or not they are the 9-1-1 Database Management System Provider or a Service Provider in an Enhanced 9-1-1 area. It includes Database Maintenance, Quality measurements, INP, LNP and Number Pooling recommendations to be utilized for any 9-1-1 system that provides information for data display. It defines measurements that support meaningful computations to allow for a better understanding of database quality and timeliness of database updates.

1.2 Copyright and Responsibility

This practice was written by the NENA Data Standards Technical Committee in conjunction with specific issue Data Working Groups. The NENA Executive Board has recommended this practice for industry acceptance and use. For more information about this practice, contact:

National Emergency Number Association
Phone: 800-332-3911
Fax: 614-933-0911

1.3 Disclaimer

This document has been prepared solely for the voluntary use of ALI System Providers, 9-1-1 Equipment Vendors, and Service Providers.

By using this practice, the user agrees that the National Emergency Number Association (NENA) will have no liability for any consequential, incidental, special, or punitive damages that may result.

1.4 Overview

This document defines the provisioning requirements for E9-1-1 data integrity, content and call delivery regardless of dial tone provider. It is the goal of these standards to support current and future development consistent with the concept of “One Nation, One Number”. It is assumed that Federal, State, or Local legislation will supersede these recommendations.

This document introduces the availability of NENA Database Administration software which may be downloaded from the NENA web page at www.nena9-1-1.org. There is no charge for this software which includes forms for MSAG Updates, E9-1-1 Inquires (ANI/ALI trouble resolution), and additional information. The software also allows the user to transmit the documents via various electronic methods. In addition this document defines recommendations for the data transmission of E9-1-1 updates by all Service providers providing dial tone within the boundaries of an Enhanced 9-1-1 Jurisdiction. Utilization of these recommendations will provide for timely activation of emergency service databases and help to minimize costs incurred by providing accurate and consistent provisioning of ALI data. Throughout the creation of these recommendations, the goal was to set standards that would allow the shortest amount of time a record would remain in an error condition. All entities must be aware of any time zone differences when discussing time frames such as one (1) business day.
1.5 Reason for Reissue

NENA reserves the right to modify this technical reference. Whenever it is reissued, the reason(s) will be provided in this paragraph.

March 2001 Revisions - The following new approved standards documents have been added into this document:

- Section 7: Government Entities Responsibilities
- Section 19: Audits/Reconciliations
- Section 24: Standards for Provision of 24 X 7 Telephone Company Contact Number to PSAP ALI Screen

March 2002 Revisions - The following standard has been revised:

- Section 22: Standards For Local Number Portability to include General LNP Standards, Resolution of Failed Migrates, Resolution of Stranded Unlock Records, Wireline/Wireless Porting

The following standard/Exhibit is new:

- Section 25: Service Provider Going Out-Of-Business
- Exhibit F: Resolution of Failed Migrate Records
- Exhibit G: Resolution of Migrate Received - DBMS Record Does Not Exist
- Exhibit H: Resolution of Insert Received - DBMS Record Exists (Different CO ID)
- Exhibit I: Resolution of Stranded Unlock Records (Action)

1.6 Year 2000 Compliance

All systems or any part of a system that are associated with the 9-1-1 process shall be designed and engineered to ensure that no detrimental or other noticeable impact of any kind, will occur as a result of the date change to the year 2000 or any date subsequent thereto. This shall include embedded application, computer based or any other type application.

To ensure true compliance the manufacturer shall provide verifiable test results to an industry acceptable test plan such as BellCore GR-2945 or equivalent.

1.7 Acronyms/Terms

Acronyms and terms utilized within this document reside within the NENA Master Glossary of 9-1-1 Terminology NENA 01-002

1.8 Reasons to Implement and Benefits

Industry adoption of these standards will:

- Ensure timely and accurate ALI updates
- Ensure the consistent provision of ALI data
- Improve the overall quality of the databases
- Facilitate official standards/guidelines for database management
- Assist counties, vendors, Local Exchange Carriers and ALI Service providers with establishment of quality goals and creation of a common set of quality measurements for 9-1-1 systems
- Ensure reliable 9-1-1 call delivery
- Improve communications and remove barriers across entities
- Standardize database maintenance processes
- Standardize database maintenance error codes/messages
- Standardize database maintenance forms
- Assist Local Exchange Carriers towards compliance with FCC order: CC Docket 95-116, complying with Local Number Portability
1.9 Implementation

How: Use of the standards will provide the basis for agreements between the 9-1-1 Jurisdictions, Service Providers and the 9-1-1 Database Management System Provider.

Quality Measurement reporting and measurement shall be by system, state and Service Provider as a minimum.

When: Should be used at the time that arrangements are being made between the 9-1-1 Jurisdictions, Service Providers and the 9-1-1 Database Management System Provider.

Many quality measurements will have two (2) figures associated with them. There will be a percentage at system cutover and a continuing percentage. Unless otherwise noted, measurements are to be made:

1. At 9-1-1 system cutover
2. A minimum of monthly thereafter

LNP standards should be completed prior to FCC mandated LNP conversion date schedule.

See related standards documents:
- NENA 02-010, NENA Recommended Formats and Protocols for Data Exchange
- NENA 06-001, NENA Recommended Standards for Local Service Provider Interconnection Information Sharing.

1.10 Acknowledgments

The standards have been created through the cooperative efforts of the following groups of volunteers:

<table>
<thead>
<tr>
<th>E9-1-1 Database Maintenance Working Group</th>
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<tbody>
<tr>
<td>Delaine Arnold</td>
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<tr>
<td>Marcus Andronici</td>
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<td>Marty Bausano</td>
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<td>Bernard Brabant</td>
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<td>Marcia Broman</td>
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<td>Susan Johnston</td>
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<td>Doug Kroupa</td>
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<td>Judy Cortiana</td>
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<tr>
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<td>MCI</td>
<td>Barbara Thornburg</td>
<td>WinStar Tel. [Data Comm Chair]</td>
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<tr>
<td>Beverly Hood</td>
<td>Sprint</td>
<td>Steve Wisely</td>
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**ALEC Database Issues Working Group**

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<td>Larry Thompson</td>
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<td>Phil Hollar</td>
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**Quality Measurements Working Group**

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<td>Delaine Arnold</td>
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<td>Mike Lucy</td>
<td>9-1-1 Solutions</td>
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<td>Lynn Chancellor</td>
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<td>Marcia Bromm</td>
<td>Metro 9-1-1 Board</td>
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<td>Judy Cortaina</td>
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<td>John Elliott</td>
<td>Westchester Co, NY</td>
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<td>Susan Johnston</td>
<td>Ameritech</td>
<td>Adelle Gottleib</td>
<td>RAM Comm. Consultants, TX</td>
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<td>Carolyn Maddox</td>
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<td>Beth Ozanich</td>
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<td>ALLTEL</td>
<td>Mike Vagnerini</td>
<td>Napa P.D. CA</td>
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<td>Bell Atlantic</td>
<td>Judy Valentine</td>
<td>Sweetwater Co, WY</td>
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<td>Pat Raulerson</td>
<td>U S West</td>
<td>Patricia Welte</td>
<td>Jacksonville, FL</td>
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<td>Lyman Smith</td>
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<td>Jack Zimmerman</td>
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**Local Number Portability Working Group**

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<tr>
<td>Barb Thornburg</td>
<td>Thornburg Consulting</td>
<td>Rick Jones (Chairperson-WNP)</td>
<td>Loves Park IL</td>
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<td>Frank Albenhaus</td>
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<td>Chris Kaewpradit</td>
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<td>Judy McFail</td>
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<td>Lucent</td>
<td>Dixie Palmer</td>
<td>WCCCA</td>
</tr>
<tr>
<td>Tim Dunn</td>
<td>Denver City &amp; County</td>
<td>Sandra Shkilevich</td>
<td>ICG</td>
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2. **GENERAL DATA STANDARDS**

2.1 9-1-1 data for Local Exchange Carriers (LECs) will be integrated into existing Automatic Location Identification / Selective Routing (ALI/SR) systems.

2.2 NENA-02-010 NENA Recommended Formats and Protocols for Data Exchange will be met for data exchange, format, content and transmission protocol.

2.3 All telephone number records must be Master Street Address Guide (MSAG) valid and meet all components of the recommended Measurements for Data Quality.

2.4 New services and features will not degrade the existing quality of the E9-1-1 System.

2.5 The LEC is responsible for directing 9-1-1 traffic from each of its end offices to the appropriate 9-1-1 selective router or PSAP as negotiated with the 9-1-1 Service Provider.

2.6 All LECs are responsible for network management of their network components in compliance with the Network Reliability Council Recommendations.

2.7 All LECs must meet the network standard of the E9-1-1 Service Provider for 9-1-1 call delivery.

2.8 The Local Exchange Carrier’s numbering plan follows the North American numbering standard.

2.9 Date Changes submitted by the LEC will be processed by the ALI Service Provider’s system following the recommended Measurements for Data Quality. “Processed” includes being capable of selective routing and PSAP display.

2.10 Any changes made to an MSAG i.e., ESN, Street, or Community name change, will be applied to all affected telephone number records within the ALI database.

2.11 When existing MSAGs are used to validate LEC telephone number records, the ALI Service Provider will negotiate the provision of a listing of valid street address information to the Local Exchange Carrier.

2.12 Addresses not recognized by the local addressing authority will be negotiated between the LEC and the addressing authority for MSAG inclusion.

2.13 The Company Identifier field in the NENA-02-010 NENA Recommended Formats for Data Exchange versions 1 and 2 should be used to identify the Local Exchange Carrier. Data in this field should be stored in the ALI database and be available for display at the PSAP. Display of this data should be controlled by each 9-1-1 district with consideration given to the capability of the PSAP equipment to display the data.

2.14 LEC data should be transferred to the ALI Service Provider electronically, following the NENA-02-010 NENA Recommended Protocols for Data Exchange, with attention paid to network security to ensure data reliability.

2.15 It is the responsibility of the LEC to notify the ALI Service Provider of new or additional NPA NXX assignments prior to the establishment of 9-1-1 data exchange.
2.16 It is recommended that the ALI Service Provider in the area affected by an NPA split, lead and coordinate the 9-1-1-conversion effort. The capability of the ALI Service Provider will dictate the method for converting the ALI database, which may require reloads of telephone number data and/or ALI database conversion. All LECs in the affected area must participate in the planning process to provide lists of their prefixes and agree upon dates for the conversion of their databases and subsequent update requests. The ALI Service Provider should notify the PSAPs as well as coordinate required changes within the E9-1-1 tandem switches.

2.17 It is recommended that all LECs allow caller information to be retrieved based upon the ANI generated by the switch as well as the ported number. This will depend upon the capabilities of the ALI Service Provider’s software and database where reverse lookups are permitted by regulatory entities.

2.18 9-1-1 data included for exchange or storage for ALI retrieval should not include telephone numbers for non-generating dial tone classes of service.

2.19 The LEC responsible for establishing telephone service and billing records for the end user is also responsible for providing the ALI data to the ALI Service Provider. Various methods may be employed to update the ALI database and depend upon agreements between LECs and ALI Service Providers, with attention paid to state legislative requirements.

2.20 Periodic reconciliation of the 9-1-1 database with the originator’s database is recommended as specified in the recommended Measurements for Data Quality.

2.21 Confirmation of data transactions from the LEC to the ALI Service Provider will be made available to the LEC. The confirmation will include the information from the populated fields of each specific transaction, the error code(s) if update was not successful, and statistical data of the total number of records received, processed, accepted and rejected.

2.22 The ALI Service Provider may provide database extracts containing LEC telephone number data to PSAPs for inclusion in on-premise ALI databases or LEC address information for inclusion in CAD systems.

2.23 The ALI Service Provider shall restrict the usage of LEC data to emergency purposes as mandated by legislation. LEC data shall not be provided to other entities without the written permission of the LEC.

3. ELECTRONIC MAINTENANCE DOCUMENT

NOTE: See Exhibits C - G for screen prints.

3.1 It is recommended that the NENA 9-1-1 Database Administration Forms software be used to replace existing 9-1-1 manual maintenance forms. This optional software includes forms for MSAG Updates, E9-1-1 ANI/ALI Trouble Resolution Inquiries, and additional information. NOTE: It is not the intent of NENA to preempt any existing electronic communication that may exist today from your current Database Provider.

3.2 9-1-1 Database Management System Providers, Service Providers and Jurisdictions may use the NENA 9-1-1 Database Administration Forms as a standard method for communicating ANI/ALI discrepancies, MSAG changes, and additional information.

3.3 This Electronic form provides a consistent means to exchange 9-1-1 data between 9-1-1
Database Management System Providers, Service Providers, and Jurisdictions for the purpose of maintaining accurate customer records and MSAG entries.

3.4 The Electronic form is a WINDOWS based application (Versions 3.1, 3.11, Win95 & NT are supported). The user screen resembles 3 file tabs. The first ‘tab’ is a form to enter ANI/ALI Trouble Reports, the second ‘tab’ is a form to enter MSAG related data and the 3rd ‘tab’ is a blank page for entering additional information in free form text.

3.5 The form can be saved in a file with the extension " .daf " (encrypted data file) or " .txt " (text file). This file may be encrypted for confidential transmission via Internet, modem or floppy disk.

3.6 The encrypted file may only be viewed using the NENA 9-1-1 Database Administration Forms software. If a hard copy is required, the records may be printed for filing and/or faxing.

3.7 Each record within a file has a system assigned control number and is date/time stamped to assist in tracking the progress of each record.

3.8 Each file produced by the software application may contain up to 50 sets of ANI/ALI Trouble Reports and/or MSAG records and/or Additional Information. Attached to each record are the name, address and contact information of the person originating the form and the last referral contact information.

3.9 The NENA 9-1-1 Database Administration Form may be obtained free of charge by accessing the NENA home page on the Internet (www.nena9-1-1.org) or may be ordered from NENA at a nominal processing charge.

3.10 The same considerations should be given to electronic files as with current paper records; i.e.; retention, security, backups, archiving.

4. 9-1-1 DATABASE MANAGEMENT SYSTEM PROVIDER RESPONSIBILITIES

4.1 9-1-1 Database Management System Providers will process each Service Provider’s update file(s) and provide positive electronic confirmation of processing of 9-1-1 Data Management System updates to all Service Providers within one (1) business day of receipt of the file from the Service Provider. The confirmation will include the entire TN record processed, date and time processed, number of records processed, number of records, which erred, and the actual error records. This can be accomplished with NENA V3. As a long-term solution, Service Providers want confirmation of not only Data Management System updates, but also confirmation of ALI and selective router updates being processed.

4.2 9-1-1 Database Management System Providers will not correct a Service Provider’s telephone number records without the Service Providers written authorization.

4.3 9-1-1 Database Management System Providers will work Function of Change (FOC) errors with written authorization and return the remaining errors to the appropriate Service Provider in an electronic format. FOC errors are:

- Record Already Exists, Insert Not Allowed
- Record Does Not Exist for A Change
- Record Does Not Exist for A Delete
- Customer Code Does Not Match
- Unlock Attempted on a Non-existent TN
- Migrate Attempted on a Non-existent TN

4.4 9-1-1 Database Management System Providers will be responsible for loading ALI systems. Service Providers will not update ALI systems directly.
4.5 Where not restricted by law, it is recommended that 9-1-1 Database Management System Providers provide reverse ALI lookup capabilities during an emergency situation (see Section 17). Some types of service (multi-party lines, DID lines) do not generate ANI, which in turn will not request an ALI lookup. Manual query capability by the Jurisdiction may assist with dispatching emergency services.

4.6 When a telephone subscriber disconnects their telephone service, the number should be deleted from the 9-1-1 ALI and database management system.

4.7 It is recommended that 9-1-1 Database Management System Providers allow at a minimum ‘browse/read only’ access for all Service Providers to review their own data.

4.8 In order to maintain database accuracy and update timeliness, 9-1-1 Database Management System Providers must forward copies of all MSAG Update Requests, ANI/ALI Trouble Reports, Daily Error Files, No Record Found reports within one (1) business day to all Service Providers.

4.9 All Service Providers’ TN records should contain a unique COMPANY ID that is officially registered with NENA.

4.10 It is recommended that only MSAG valid records be updated to the ALI database. No record found conditions should occur rather than the posting of non-MSAG valid data to the ALI database.

5. SERVICE PROVIDER RESPONSIBILITIES

5.1 It is recommended that all Service Providers MSAG validate 9-1-1 daily updates.

5.2 If a Service Provider is pre-scrubbing their records, they must work closely with the 9-1-1 Database Management System Provider and the Jurisdiction in order to maintain a mirror image of the 9-1-1 Database Management System Provider’s MSAG.

5.3 If a Service Provider uses an abbreviation or a postal community name field in their service order system and this is the same data which is being provided to 9-1-1, it is the Service Providers responsibility to transmit the correct spelling of the MSAG community name before sending the record to the 9-1-1 Database Management System Provider. If Service Providers do not transmit MSAG valid data to Database Management System Providers, records will error and as such will be transmitted back to the Service Provider for correction. This will cause a delay in updating the ALI database.

5.4 Exchange name validation is no longer valid with Service Provider Local Number Portability; therefore, all records must be supplied with a valid MSAG Community Name. Valid MSAG Community Name (used to validate daily updates) is defined as the community name the Jurisdiction wants to see displayed for the purpose of dispatching emergency services. If the Jurisdiction chooses not to use postal communities as their MSAG Community Name, the Service Provider will need to be advised by the Jurisdiction what the valid Postal Community Name is for that particular MSAG range. NENA Version 3 and 4 will have two community name fields: MSAG Community Name and Postal Community Name.

5.5 If a Service Provider is reselling services for another Service Provider, the Company ID on the record must be the ID of the dial tone provider, not the billing company. If a Jurisdiction encounters any problems with dispatching, they will want the 24-hour trouble number for the dial tone provider. Note: NENA V3 and 4 allows for two Company ID’s: COMPANY ID 1 is for the dial tone provider and COMPANY ID 2 is for the ALI provider.

5.6 All Service Provider’s TN records should contain at a minimum a unique COMPANY ID 1. The NENA Company ID should also be included on any TN listings or white page listings that may be sent to a Jurisdiction for their use with readdressing.
5.7 Each Service Provider is responsible for ensuring their customer records are transmitted to the appropriate Database Management and/or Selective Routing System Provider within one (1) business day of when the service change occurs. This may entail sending the same updates to multiple providers if one company is providing selective routing and another company is providing ALI lookup.

6. **NEW ENHANCED 9-1-1 CONVERSION RECOMMENDATIONS**

6.1 At the time the 9-1-1 Database Management System Provider enters into an E9-1-1 Contract or signs a Letter Of Agreement with a Jurisdiction, the 9-1-1 Database Management System Provider is responsible for notifying all Service Providers within that Jurisdiction’s boundaries of the conversion to a new Enhanced 9-1-1 system. Service Providers include wireless service providers. This will allow all dial tone providers sufficient time to negotiate the appropriate contracts/agreements required for MSAG development and to prepare their customer records for E9-1-1. All customer timelines and commitments must be jointly agreed upon by the 9-1-1 Database Management System Provider and all Service Providers. 9-1-1 Database Management System Providers may not make commitments for Service Providers.

6.2 Within 30 days of Contract or Letter of Agreement signing, the 9-1-1 Database Management System Provider will host a meeting and/or conference call with all Service Providers, the United States Postal Service, and the Jurisdiction’s address coordinator and/or address vendor to discuss conversion requirements and procedures.

6.3 The 9-1-1 Database Management System Provider and each Service Provider will provide their Street Address Guide (SAG), if available, at the time of the conversion meeting/call in order to develop an initial MSAG.

6.4 Actual telephone customer service records should not be used to create an MSAG in order that all records will validate to ALI. Actual telephone records may be used to create a preliminary SAG; however, the initial load of these TN records into the 9-1-1 Database Management System should NOT occur until the final MSAG is approved by the Jurisdiction.

6.5 It is recommended that city style, (911 Dispatch Lane, 911911 Highway 11) United States Postal Service approved addressing be adhered to. United States Postal Service Publication 28 is the recommended standard and is available through the National Address Information Center in Memphis, TN, at 1-800-238-3150.

6.6 It is recommended that the Jurisdiction coordinate addressing standards with the United States Postal Service to ensure accurate and common addressing.

6.7 It is recommended that Jurisdictions, database management system providers, and service providers have a 98% database accuracy (MSAG valid ALI records) prior to taking ‘LIVE’ Enhanced 9-1-1 calls.

6.8 During conversion each Service Provider will work directly with the Jurisdiction to obtain MSAG valid readdressing for their telephone service records.

6.9 The use of fictitious addresses or “NO ADDRESS” is not recommended.

6.10 The Jurisdiction’s authorized 9-1-1 Database Coordinator is the only entity allowed to approve changes to the MSAG. No 9-1-1 Database Management System Provider or Service Provider may make MSAG changes without written authorization from the Jurisdiction except for internal telco type fields such as county code and exchange code.
6.11 It is recommended that the Jurisdiction work with the appropriate Service Provider to gather each resident’s name, telephone number, old address and new address in those areas being readdressed for Enhanced 9-1-1. The key inquiry field in most service order systems is telephone number. Depending on State Legislation and/or Public Service Commission regulations, a telephone company may be able to assist the Jurisdiction during the initial conversion process by providing a customer listing.

6.12 Preliminary TN listings or White Page Listings that are provided by a Service Provider to a Jurisdiction who is addressing should also contain the SP’s NENA Company ID 1 as a field in each record. This will allow the Jurisdiction and/or their addressing vendor to return any address correction to the appropriate Service Provider.

7. GOVERNMENT ENTITIES RESPONSIBILITIES

7.1 General

7.1.1 It is recommended that Jurisdictions acknowledge and make their management aware that with the implementation and maintenance of Enhanced 9-1-1, there must be a commitment in both staffing and response to the Service Providers and/or the Database Management System Provider, whichever is applicable.

7.1.2 If a Jurisdiction has multiple PSAPs, cities, townships, etc who are responsible for their own addressing and error resolution, it is recommended that they flow their information to a single focal point in the Jurisdiction, normally referred to as a Jurisdiction 9-1-1 Coordinator or Jurisdiction 9-1-1 Database Coordinator.

7.1.3 It is a Jurisdiction’s responsibility to notify all known Service Providers of the Jurisdiction’s current contact name, telephone number, fax number, and mailing address. Refer to NENA 06-001, NENA Standards for Local Service Provider Interconnection Information Sharing.

7.1.4 It is recommended that every attempt be made to return written inquiries from Service Providers within one (1) business day.

7.2 Conversion

7.2.1 Upon notification from the addressing authority that a readdressing or annexation project is being implemented, it is the Jurisdiction’s responsibility to provide advance notification to all known Service Providers. The jurisdiction may negotiate with their DBMSP to provide this advance notification. The Database Management System Provider is then responsible for notifying all Service Providers so they can prepare for the additional work volume.

7.2.2 The local addressing authority is responsible for notifying all property owners of their new address once agreement from the Postal Service and the Jurisdiction’s 9-1-1 Database Coordinator has been received.

7.2.3 Once the post office has implemented the addressing by updating their Address Management System, the local addressing authority is responsible for providing all readdressing to the Jurisdiction’s 9-1-1 Database Coordinator who in turn will supply the information to the appropriate Service Provider(s). The local addressing authority is responsible for addressing (naming & numbering) within its boundaries and supplying the Jurisdiction 9-1-1 Database Coordinator with the final postal approved addressing. All readdressing should be sorted by either NENA Company ID 1, NPA/NXX or some other locally determined method which will allow the work to be sent to the correct Service Provider. Refer to Section 2. General Data Standards in NENA 02-011 and NENA 06-001, NENA Standards for Local Service Provider Interconnection Information Sharing.
NOTE: Postal Approval may not be required in all cases. For example, a township or village where there are no mail carriers and all residents must pick up their mail at their post office box. Another example might be communication boxes along railroad tracks or major highways.

7.3 Maintenance

7.3.1 The Jurisdiction’s 9-1-1 Database Coordinator is responsible for ensuring that postal approved addressing is distributed to the appropriate Service Providers. The Coordinator may perform this task or assign it to a local addressing authority.

7.3.2 Jurisdictions are responsible for the maintenance and content of their MSAG. As street changes or additions are made within the Jurisdiction’s boundaries, the Jurisdiction’s 9-1-1 Database Coordinator is responsible for completing an MSAG Update Request/Ledger and ensuring that all known Service Providers receive a copy within one (1) business day. Refer to Exhibit B for complete flow. The jurisdiction may negotiate with their DBMSP to provide copies of the MSAG Update Requests to other SPs. The Database Management System Provider is then responsible for forwarding a copy of all MSAG Update Requests within one (1) business day to all Service Providers.

7.3.3 As no record founds, misroutes, or erroneous ALI displays are noted at the PSAP, a 9-1-1 Inquiry form should be completed by the calltaker and returned to the Jurisdiction’s 9-1-1 Database Coordinator within one (1) business day. The 9-1-1 Database Coordinator is then responsible for reviewing, researching, and forwarding the inquiry to the Database Management System Provider within one (1) business day. Refer to Exhibit A for complete flow.

NOTE: In some areas, where applicable, 9-1-1 Inquiry forms for erroneous ALI displays are routed directly to the entity providing the dialtone (Service Provider) based on the NENA Company ID 1 displayed at the time of the call.

7.4 DBMSP ELT Tables to Jurisdiction’s ESN Listing

It is recommended that on a quarterly basis, Jurisdiction’s obtain a copy of their ELT (English Language Translation) tables from the DBMSP to ensure the descriptions agree with their ESN listings.

7.5 It is recommended that the Jurisdiction MSAG be compared with the DBMSP MSAG at least twice a year.

If a Jurisdiction is also maintaining an MSAG on their internal systems it would be a benefit for the Jurisdiction to request a copy of their MSAG from the DBMSP at least twice a year and perform their own internal compare. If an accurate electronic audit is performed, the database coordinator need only review the discrepancies.

Performing this type of compare will create benefits by reducing daily errors, NRFs, misroutes, processing 9-1-1 inquiry forms, and liability

Recommended Minimum Set of Fields for Audit: Prefix Directional, Street Name, Street Suffix, Post Directional, Low Range, High Range, MSAG Community Name, Postal Community Name, State, Odd/Even/Both, and ESN.

Recommended Output Files/Reports: Reports that reflect any discrepancies in any of the compared fields. The DBMSP will need concurrence from the Jurisdiction as to which entries need correcting. This can be accomplished by the Jurisdiction creating an MSAG Update Request to the DBMSP and all known SPs. (See section 7.3.2)

8. STANDARDS FOR ERROR RESOLUTION PROCESS

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8.1 9-1-1 Database Management System Providers will work Function of Change (FOC) errors with written authorization and return the remaining errors to the appropriate Service Provider in an electronic format. FOC errors are:
- Record Already Exists, Insert Not Allowed
- Record Does Not Exist for A Change
- Record Does Not Exist for A Delete
- Customer Code Does Not Match
- Unlock Attempted on a Non-existent TN
- Migrate Attempted on a Non-existent TN

8.2 Each Service Provider is responsible for resolving their own errors by working directly with the Jurisdiction.

8.3 If an MSAG Update is required to correct an error, the Jurisdiction will send an MSAG Update form to their 9-1-1 Database Management System Provider and ALL Service Providers.

NOTE: By using the NENA 9-1-1 Database Administration Forms software provided on the Internet, a Jurisdiction will be able to Email all Service Providers and the 9-1-1 Database Management System Provider at one time. This will allow all parties requiring the information to receive it at the same time.

8.4 After receiving confirmation of the MSAG change from the 9-1-1 Database Management System Provider, the appropriate Service Provider(s) will issue correcting service orders which will flow to the 9-1-1 Data Provider in the daily update process.

8.5 In an effort to maintain the integrity of the 9-1-1 databases and to provide accurate ALI bids, it is recommended that Jurisdictions resolve errors within one (1) business day of notification.

9. ANI/ALI TROUBLE REPORTING PROCESS

9.1 All ANI/ALI Trouble Reports are to be sent to the 9-1-1 Database Management System Provider.

9.2 The 9-1-1 Database Management System Provider will determine if there are any database or selective routing problems on their end prior to forwarding the trouble report to the appropriate Service Provider.

9.3 Within one (1) business day, the 9-1-1 Database Management System Provider will forward all ANI/ALI Trouble Reports to the appropriate Service Provider indicating whether or not trouble was found on their end or if the Service Provider needs to also check their equipment and systems.

9.4 The Service Provider will have one (1) business day to resolve the ANI/ALI Trouble Report and return it to the 9-1-1 Database Management System Provider. Upon receipt, the 9-1-1 Database Management System Provider will return a completion notification to the originator.

9.5 Refer to Exhibit A for Process Flow.

10. MSAG MODIFICATION PROCESS FLOW

10.1 The Jurisdiction’s authorized 9-1-1 Database Coordinator is the only entity allowed to approve changes to the MSAG. No 9-1-1 Database Management System Provider or Service Provider may make MSAG changes without written authorization from the Jurisdiction except for internal telco type fields such as county code and exchange code.
All Service Providers will obtain an initial complete MSAG via the negotiated medium (CD-ROM, file transfer, diskette, Email, paper) from the 9-1-1 Database Management System Provider per the negotiated contracts. As Jurisdictions request changes to their MSAG, the 9-1-1 Database Management System Provider must forward a copy of the request to all Service Providers within one (1) business day. This is necessary to ensure all subscriber records contain MSAG valid addresses.

If a Jurisdiction is requesting an MSAG range deleted and there are TN records attached to the MSAG, it is recommended that the Database Management System Provider print the associated TN’s and return to the Jurisdiction 9-1-1 Database Coordinator prior to making any MSAG changes.

Refer to Exhibit B for Process Flow.

The 9-1-1 Database Management System Provider will provide centralized/regional ALI systems’ “No Record Found Reports” to the appropriate Service Provider on a daily basis.

It is recommended that Service Providers generate a service order update back to the Database Management System Provider within one (1) business day, if appropriate. Service Providers must send back an explanation within one (1) business day as to whether the record was updated or the NRF was a type of service that could not be fixed; i.e.; Express Dial Tone Service, Quick Connect Service, call from illegal service, etc.

### RECOMMENDED STANDARD ERROR CODES

<table>
<thead>
<tr>
<th>Group</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Errors</td>
<td>100</td>
<td>Illegal Class of Service</td>
</tr>
<tr>
<td></td>
<td>101</td>
<td>Illegal Type of Service</td>
</tr>
<tr>
<td></td>
<td>102</td>
<td>Illegal Function Code</td>
</tr>
<tr>
<td></td>
<td>103</td>
<td>Not MSAG Valid</td>
</tr>
<tr>
<td></td>
<td>104</td>
<td>House Number Not Valid [if DMS/DBMS capable]</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>Street Name Not Valid [if DMS/DBMS capable]</td>
</tr>
<tr>
<td></td>
<td>106</td>
<td>Directional Not Valid [if DMS/DBMS capable]</td>
</tr>
<tr>
<td></td>
<td>107</td>
<td>Community Name Not Valid [if DMS/DBMS capable]</td>
</tr>
<tr>
<td></td>
<td>108</td>
<td>Exchange Matching Failed</td>
</tr>
</tbody>
</table>

| Functional Errors | 200  | Record Already Exists, Insert Not Allowed             |
|                   | 201  | Record Does Not Exist for A Change                    |
|                   | 202  | Record Does Not Exist for A Delete                    |
|                   | 203  | Customer Code Does Not Match                         |
|                   | 204  | Unlock Attempted on a Non-existent TN                |
|                   | 205  | Migrate Attempted on a Non-existent TN               |

| Portability Errors | 300  | Unlock Attempted on an Unlocked TN (different Company ID) |
|                   | 301  | Migrate Attempted on a Locked TN                     |
|                   | 302  | Insert Attempted on a TN that is Unlocked             |
|                   | 303  | Change Attempted on a TN that is Unlocked             |
|                   | 304  | Delete Attempted on a TN that is Unlocked             |
|                   | 305  | Company ID’s Do Not Match on a Change or Delete       |
|                   | 306  | Company ID’s Do Not Match on Unlock                   |

### RECOMMENDED STANDARD FUNCTION CODES
13.1 I - Insert telephone record.

13.2 C - Change telephone record requires Company ID field to match.

13.3 D - Delete telephone record requires Company ID field to match.

13.4 U - Unlock telephone record transaction sent by the Donor Company. This will make the telephone number available for the Recipient Company to overwrite the embedded telephone number record. The “U” function code requires a match on the company-id.

13.5 M - Migration transaction sent by the Recipient Company. This transaction requires an “unlocked” record in the 9-1-1 database and will replace the customer information and the Company ID on the "unlocked" record. The “M” function code does not require a match of Company ID. If there is not a “U” record with the same telephone number in the 9-1-1 ALI database the “M” transaction will be treated as an error with a unique error code or a unique process.

NOTE: It is recommended that a complete record be sent.

13.6 E – Delete ALL ERROR RECORDS associated with the corresponding CALLING TELEPHONE NUMBER that are in the Database Management System Provider’s error file. No updates are made to the TN/ALI database when FOC=E. Provides method for Service Providers to clean up any errors if no subsequent activity will be issued for the CTN.

14. METHOD OF COMMUNICATING

14.1 It is recommended that Service Providers transmit initial loads, daily updates, error files, MSAG updates, complete MSAG’s, and 9-1-1 inquiries in a mechanized electronic format.

14.2 All TN records {9-1-1 Database Management System Provider and Service Providers} will contain an entry in the Company ID field which is officially registered with NENA.

15. NEW NXX NOTIFICATION

Most Service Providers have an internal procedure for adding new NXX’s. As long as there are new NPA/NXX assignments being made and due to the critical nature of 9-1-1 service, it is recommended that each Service Provider notify in writing the 9-1-1 Database Management System Provider and the Jurisdiction when a new NXX is being added in an exchange. It is also necessary that a default PSAP and ESN be identified for each new NXX or new incoming trunk group in order that the selective router/tandem can be updated. It is further recommended that the following information be provided:

* NEW NXX
* NPA
* EXCHANGE NAME/RATE CENTER
* EXCHANGE (4 character abbr. in MSAG) [ALEC’S MAY NOT USE]
16. NPA SPLIT NOTIFICATION

Most Service Providers have an internal procedure for working NPA splits. However, due to the critical nature of 9-1-1 service, it is recommended that each Local Service Provider notify in writing the 9-1-1 Database Management System Provider and the Jurisdiction when an NPA split is occurring. It is further recommended that the following information be provided:

* OLD NPA
* NEW NPA
* NXX
* EXCHANGE NAME/RATE CENTER
* EXCHANGE (4 character abbr. in MSAG) [ALEC’S MAY NOT USE]
* DATE BILLING SYSTEM WILL START TRANSMITTING NEW NPA
* DATE OF ANI (SWITCH) CONVERSION
* DATE OF PERMISSIVE DIALING
* DATE OF MANDATORY DIALING

The following 9-1-1 databases may need to be updated:
- Automatic Location Identification (ALI)
- Selective Routers/Tandems
- PSAP Equipment

NPA splits must be a coordinated effort between the 9-1-1 Database Management System Provider and all Service Providers. When the 9-1-1 Database Management System Provider has been notified of an NPA split it is recommended that they assume coordination responsibilities for updating all affected 9-1-1 databases under their control.

17. RECOMMENDED GUIDELINES FOR ALI RETRIEVAL CONDITIONS

Retrieval Conditions for ALI Database Records: A 9-1-1 Jurisdiction may retrieve or otherwise have access to an ALI record under the following conditions:

1. An automatic retrieval and display may be made to a telecommunicator (i.e., Jurisdiction call taker or dispatcher) when that telecommunicator answers a 9-1-1 call. This provisioning meets the Electronic Communications Privacy Act of 1986 (ECPA) in that by placing a 9-1-1 call, the caller is granting permission for its telephone company to disclose the information to a government agency.

2. Where not restricted by law, a telecommunicator is authorized to manually retrieve a caller's ALI on the basis of the caller providing the caller's telephone number (ANI). This permission is granted because a call may arrive without the ANI or the caller may be calling from a neighbor's phone, for example, to report a fire at the caller's location which is in a different fire district than the neighbor's location. This meets the ECPA requirement in that the caller is granting permission.

3. Where not restricted by law, a Jurisdiction's administrator may retrieve an ALI record to insert information received from the subscriber into the "Comments" field of the record. Because the subscriber is requesting the entry, permission is given, meeting the ECPA requirements. The Jurisdiction administrator is prohibited from disclosing this information to any other person.

The following information is shown as an explanation of the impact of ECPA (Electronic Communications Privacy Act).

Confidential Nature of the ALI Database -------------------------------

1. Legal basis for confidential nature:
While the ALI database is specifically created for use by a 9-1-1 Jurisdiction, it contains confidential telephone company information that may not be disclosed except under conditions that meet the requirements of the Electronic Communications Privacy Act 1986 (ECPA), 18 USC [section symbol] 2701, et sequens. ECPA prohibits regulated telecommunications companies from disclosing to government agencies customer record information without either the customer's permission or a legal mandate. In particular, 18 USC [section symbol] 2703(c) provides regulated disclosure of "a record or other information pertaining to a subscriber to or customer of such service not including the contents of communications covered by subsection (a) or (b) of this section..." Subparagraph (c)(1)(B) permits disclosure to a governmental agency only with (i) subpoena, (ii) warrant, (iii) court order, or (iv) "consent of the subscriber or customer to such disclosure." The name, address and phone number of a customer constitute a "record or other information pertaining to a ...customer" as used in [section symbol] 2703(c).

2. Application of ECPA to ALI database

The key aspect of ECPA is "disclosure," whereby if the 9-1-1 Jurisdiction already has a subscriber's name, telephone number and address information via the published white pages of a telephone directory or other source, the confidentiality requirement listed above does not apply. Similarly, once a person has called 9-1-1 and previously confidential information is provided to the 9-1-1 district as a result of that call, the telephone company has no confidential requirement for that information regarding that governmental entity as it has been disclosed by the caller. The confidential requirement of the ALI database pertains to the nonlisted telephone address, which the customer has requested that the telephone company neither publish in a directory nor disclose upon being asked for that information. Because that confidential information is a part of the ALI database, the ALI database itself must be handled as if it were completely confidential.

18. MEASUREMENTS FOR DATA QUALITY

18.1 ALI Records - The number of working subscriber records available to be retrieved as a result of a 9-1-1 call.

Responsibility: ALI Service Provider

Background Logic: "Working subscriber records" should not include disconnected records or subscribers that have moved beyond the 911 service area.

18.2 ALI Call Retrievals - The number of requests for ALI that are not duplicated within a two (2) minute time frame.

Responsibility: ALI Service Provider

Background Logic: This means that if a Call Retrieval came in at 8:00 A.M. and another came in at 8:01 A.M. on the same telephone number, it would only count as one Call Retrieval. If a retrieval came in at 8:00 A.M. and another at 8:02 A.M. on the same telephone number, two Call Retrievals would be counted.

18.3 ALI Customer Retrievals - The number of requests for ALI that are not duplicated within a twenty-four (24) hour time frame.

Responsibility: ALI Service Provider

Background Logic: If a call came in at 9:00 P.M. and another call from the same telephone number came in at 10:00 A.M. the next day, only one Customer Retrieval would be counted.

ALI Retrieval Background Logic: The ALI Retrievals are broken into two (2) separate elements in order to establish a relationship for the quality of the Retrievals as well as a measurement of the quality of the overall customer database. The number of opportunities that the database has to
provide a response to a customer call about a single incident is different than the number of retrievals that is made from the database since it is possible for multiple retrievals to be generated by hitting the "repeat ALI" button or transferring the call to another answering point. A "database opportunity" is a retrieval from the database that is not duplicated within a twenty-four (24) hour period. The intent of the Customer Retrievals is to measure incidents/opportunities. The twenty-four (24) hour interval would align more to the quality of the database in that the error most likely would align to the number of actual calls received.

18.4 **Customer Records Processed** - The number of telephone number records from the participating data provider that should be loaded into the database. This number includes those records accepted by the database as well as those written to error files.

**Responsibility:** ALI Service Provider

18.5 **Total Unresolved Discrepancies** - At the time of the Public Service Conversion and monthly thereafter, how many telephone number record discrepancies have not been resolved.

**Responsibility:** ALI Service Provider

**Background Logic:** The discrepancy could be on the telephone subscriber record, or on the MSAG.

**Data Element Relationship:**
\[
\text{Total Unresolved Discrepancies} = \frac{\text{Percentage of Unresolved Discrepancies}}{\text{Total ALI Records in Database}}
\]

18.5a **MSAG Related Discrepancies** - A count of the telephone number records not accepted by the initial database load process or the service order update process in which the telephone number record address does not match the MSAG, as defined by the official addressing authority.

**Responsibility:** ALI Service Provider

**Background Logic:** Both the MSAG and the subscriber telephone records should contain addresses defined by the official addressing authority.

**Data Element Relationship:**
\[
\text{Total MSAG Related Discrepancies} = \frac{\text{Percentage of MSAG Related Discrepancies}}{\text{Total Telephone Number Records Processed}}
\]

18.5b **Non-MSAG Related Discrepancies** - A count of the telephone number records not accepted by the initial database load process or the service order update process in which the telephone number record does not match system edits.

**Responsibility:** ALI Service Provider

**Data Element Relationship:**
\[
\text{Total Non-MSAG Related Discrepancies} = \frac{\text{Percentage of Non-MSAG Related Discrepancies}}{\text{Total Telephone Number Records Processed}}
\]

18.6 **Call No Record Found** - An ALI record not found for the telephone number sent to the PSAP and not duplicated within a two (2) minute time frame.

**Responsibility:** PSAP and ALI Service Provider

**Background Logic:** (See ALI Call Retrievals)

**Data Element Relationship:**
18.7 Customer No Record Found - An ALI record not found for the telephone number sent to the PSAP and not duplicated within a twenty-four (24) hour time frame.

Responsibility: PSAP and ALI Service Provider

Background Logic: (The same logic that was used for ALI Call Retrievals and ALI Customer Retrievals was used.)

Data Element Relationship:
\[
\frac{\text{Total Customer NRF's}}{\text{Total ALI Customer Retrievals}} = \text{Percentage of Customer No Record Found}
\]

18.8 MSAG Related Discrepancy Resolution Days - The number of days that transpire from the date that the discrepancy occurs to the date that the discrepancy is resolved in the ALI and Selective Routing (SR) databases.

Responsibility: ALI Service Provider

Background Logic: If the fallout occurs today and is resolved tomorrow, it is counted as one day. Measurement for a partial day may be indicated in "tenths" of a day where the capability exists to measure in these increments.

Data Element Relationship:
\[
\frac{\text{Total MSAG Discrepancy Resolution Days}}{\text{Total MSAG Address Related Discrepancy to Resolve Discrepancy}} = \text{Average Days Required to Resolve Discrepancy}
\]

18.9 Service Order Update Completion Days - The number of days from the day the subscribers’ order is completed to the date the subscriber information appears in the ALI and SR databases.

Responsibility: ALI Service Provider and Local Exchange Carrier

Data Element Relationship:
\[
\frac{\text{Total Service Order Update Completion Days}}{\text{Total Subscriber Records Processed}} = \text{Average Days Required to Update ALI}
\]

18.10 NRF Resolution Days - The number of days from the date of the NRF to the date the NRF is resolved and the record is valid in the ALI and SR databases.

Responsibility: ALI Service Provider

Data Element Relationship:
\[
\frac{\text{Total NRF Resolution Days}}{\text{Total Number of resolved NRFs}} = \text{Average Time to Correct an NRF Condition}
\]

18.11 MSAG Update Completion Days - The number of days which pass from the date the MSAG change was initiated by the 9-1-1 PSAP to the date the service provider completes the change into the MSAG database, the MSAG data is available for query and the ALI and SR databases are updated if applicable.

Responsibility: ALI Service Provider and PSAP

Data Element Relationship:
\[
\frac{\text{Total MSAG Update Completion Days}}{\text{Total Number of resolved MSAG}} = \text{Average Days to Complete MSAG Changes}
\]
Total Number of MSAG Changes

18.12 **Total Response Days** - The number of days from the date the service provider initiates the request (e.g., MSAG change, mismatch or address discrepancy) to the date the service provider receives the information back from the PSAP and updates the MSAG and/or ALI and SR databases.

**Responsibility:** ALI Service Provider and PSAP

**Data Element Relationship:**

\[
\text{Total Number of Days to Resolution} = \frac{\text{Average Number of Days To Resolution}}{\text{Total Number of Resolutions}}
\]

18.12a **PSAP Response Days** - The number of days from the date the service provider initiates a request to the date the PSAP supplies the information to the service provider.

**Responsibility:** ALI Service Provider

**Data Element Relationship:**

\[
\text{Total Number of Days of Response} = \frac{\text{Average Number of Days To Response}}{\text{Total Requests}}
\]

18.12b **Service Provider Response Days** * - The number of days from the date the service provider receives the PSAP response to the date the service provider accurately updates the MSAG and/or ALI and SR databases.

**Responsibility:** ALI Service Provider

* Multiple participating data providers and other factors can affect the total number of response days. Where multiple service providers are involved, additional measurement intervals should be considered.

**Data Element Relationship:**

\[
\text{Total Number of Days of Response} = \frac{\text{Average Number of Days To Update}}{\text{Total Requests}}
\]

18.13 **Total Inquiry Completion Days** - The number of days from the date that an inquiry situation occurred to the date that the inquiry situation is resolved and the PSAP is notified of the resolution of the inquiry situation.

**Responsibility:** PSAP

**Data Element Relationship:**

\[
\text{Total Number of Days Elapsed} = \frac{\text{Average Number of Days Elapsed}}{\text{Total Number of Days}}
\]

18.13a **PSAP Notification Days** - The number of days from the date that an inquiry situation occurred (ALI failure, ANI failure, wrong display of information) until the date the service provider is notified.

**Responsibility:** ALI Service Provider

**Data Element Relationship:**

\[
\text{Total Number of Days to Notify} = \frac{\text{Average Number of Days To Notify}}{\text{Total Notifications}}
\]

18.13b **Service Provider Inquiry Response Days** - The number of days from the date the service provider is notified of a request for inquiry resolution to the date the inquiry situation is resolved.
Responsibility: ALI Service Provider

Data Element Relationship:
Total Number of Days to Resolution = Average Number of Days To Resolution
Total Requests

18.14 Receive ALI Accuracy - A measure of the accuracy of the ALI information received at the PSAP.

Responsibility: PSAP

Data Element Relationship:
Total Incorrect ALI Retrievals = Percentage of Incorrect ALI Call Retrievals
Total ALI Call Retrievals

18.15 Percentage of Misrouted Calls - 9-1-1 calls that are incorrectly routed to a PSAP that are not due to alternate or default routing conditions.

Responsibility: ALI Service Provider or PSAP

Data Element Relationship:
Total Misrouted Calls = Percentage of Misrouted Calls
Total ALI Call Retrievals Received

18.16 Database Synchronization

A. Percentage synchronization between ALI and source databases. (Recommended time period between database comparisons is annually.)

Responsibility: ALI Service Provider and Local Exchange Carrier

B. Percentage synchronization between SR/Tandem and ALI databases. (Recommended time period between database comparisons is annually.)

Responsibility: ALI Service Provider and Local Exchange Carrier

19. DATA AUDITS / RECONCILIATIONS / COMPARES

This section will make recommendations for Service Providers and Database Management System Providers using electronic update processes pertinent to 9-1-1 database audits and the reconciliation processes to use to resolve any and all discrepancies. These processes require extensive coordination efforts relative to timing, data processing system resources, and sufficient work force to work the discrepancy reports. It is recommended that prior to reconciliation between service providers that conference calls be held to identify any and all special processes that are running on either side. Some examples of special processes are abbreviations, MSAG translations, moving directionalss, etc. This document only defines which systems and/or databases are to be reconciled. Each service provider must review their own internal processes to determine exact data flow and to ensure that all areas are audited appropriately. All extracts exchanged between Service Providers will be in one of the NENA Standard Data Exchange formats documented in NENA 02-010, Standards For Recommended Formats & Protocols For Data Exchange.

Service Providers will need to rethink their extract criteria, as the old processes of using NPA/NXX are no longer valid with Local Number Portability. Extracts will need to be pulled using exchange code, wire/rate center, state, county/tax district code, or some combination of these.

Prior to performing any audits or reconciliations, a complete review of the Service Providers’ 9-1-1 extract logic should be performed and the following questions should be answered. Is the extract doing everything it
should? Am I receiving all 9-1-1 affecting orders? When new USOC/ISOC/service and equipment codes are created for new product/service offerings has it been determined whether 9-1-1 requires that service order activity or not? Ensure that initial load and daily service order extract programs are in sync and pulling the same data.

System reloads are not recommended in lieu of an audit.

All audit outputs and reports should be retained as required by local and/or state regulations.

Audit Triggers:
1. Excessive NRFs
2. Excessive Misroutes
3. Excessive address discrepancies
4. Software/Hardware Failures which may cause database corruption
5. Scheduled

Databases and/or systems that should be audited to ensure the accuracy of Enhanced 9-1-1 are listed below:

19.1 Internal Customer Billing System to Central Office Switch Extract

Performing this type of audit will assist in ensuring that all lines, which are capable of dialing 9-1-1, are in the ALI database. Some SP’s provide all TN’s to the ALI database, while other SP’s only provide those TN’s that can actually dial out and connect with 9-1-1. For example, some SP’s update ALI with DID and Remote Call Forwarding numbers and some do not. The goal is to ensure that the billing system reflects exactly what the switch is doing. Does this service have inward or outward calling capabilities? This type of audit not only helps with 9-1-1 accuracy, but also ensures billing and revenue accuracy.

Recommended Minimum Set of Fields for Audit
- 10-Digit Telephone Number
- ‘Type of Service’ field in the switch compared to appropriate billing service and equipment codes which identify inward and outward calling capabilities
- ILECs may obtain Rate Center from switch and compare to exchange code in billing system if used for 9-1-1 trunk default routing.
- CLECs may manually review RAX (Rate Area Exchange) assignment on each TN to ensure proper trunk default routing.

Service Providers may choose to expand this audit to check for billing items. When requesting the extract files from the billing system and the switch, only working telephone numbers are to be extracted.

Recommended Output Files/Reports:
- TNs working in switch and not the billing system
- TNs in billing system and not in switch
- Discrepancies in ‘Type of Service’ in switch, Rate Center, or inward or outward calling capability (1-way vs. 2-way)

19.2 Service Provider to Database Management System Provider MSAG Compares

It is strongly recommended that prior to any ALI or TN reconciliations/audits being performed between service providers, an MSAG compare/audit should be completed. If the Database Management System Provider is reconciling their own records, there are several options available:
a. Request the Jurisdiction’s 9-1-1 Database Coordinator review the DBMSP MSAG for accuracy and completeness. The DBMSP may choose to use this review as an annual sign-off or approval of the Jurisdiction’s MSAG.

b. The DBMSP may also choose to use this review as a time to compare the DBMS MSAG to their internal SAG (Street Address Guide) system.

It is the Service Provider’s responsibility to ensure their SAG/MSAG agrees with the DBMSP MSAG and if it does not, it is the Jurisdiction’s responsibility to mitigate the discrepancy (especially if the SP has worked with the Jurisdiction directly).

Recommended Minimum Set of Fields for Audit: Prefix Directional, Street Name, Street Suffix, Post Directional, Low Range, High Range, MSAG Community Name, Postal Community Name, State, Odd/Even/Both, ESN, Exchange and PSAP ID/County ID/TAR Code.

Recommended Output Files/Reports: Reports that reflect any discrepancies in any of the audited fields. The SP or DBMSP will need concurrence from the Jurisdiction as to which entries are correct.

19.3 Reseller Audit

It is recommended that all Resellers perform a periodic audit of their billing records against the Network Providers records.

19.4 Customer Record Information Systems (Service Order & Billing Systems or internal 9-1-1 DBMS) to 9-1-1 Database Management System Provider (TN records)

It is recommended that all SP’s compare their customer data against the 9-1-1 DBMS. This audit should be performed using data housed in the system that directly feeds 9-1-1. The data could be extracted from a Service Order & Billing System, or ones own internal 9-1-1 DBMS. Should ones own internal DBMS be used, an internal audit should be performed against that company’s Service Order & Billing System and their internal DBMS system prior to performing any audits with the 9-1-1 Database Management System Provider’s DBMS.

This type of audit requires extensive coordination efforts between the DBMSP and SP. The party responsible for performing this audit will be agreed upon by all involved. These types of audits should be performed at the Company ID 1 level. Both parties must agree as to whether or not daily updates must be held while the audit is being completed or if they can flow as usual. Both parties need to ensure that any special processes which are being run; i.e., abbreviations, moving directionals, AKA’s, PS-ALI tables, are discussed so that all parties are aware of these processes prior to the reconciliation being conducted.

Recommended Minimum Set of Fields for Audit: Customer Name, 10-digit Calling Telephone Number, 10-digit Main Telephone Number, House Number, House Number Suffix, Prefix Directional, Street Name, Street Suffix, Post Directional, Community Name, State, Location, Company ID, Class of Service, DBMS Lock/Unlock status, and Type of Service.

Note: Some companies may also compare the CRIS Tax Code to the DMS County ID (if available) to ensure accuracy of county identification.

Recommended Output Files/Reports:

- All TN’s that match in all audited fields should NOT be written to output. The following comparisons assume that files are extracted by Company ID 1.
- All TN’s on the billing file and not on the DBMS file should be written to output as ‘I’ insert records. Assuming the Company ID on the insert is for the Company ID being audited, the insert file may be mechanically worked. Each individual TN on this report must be reviewed to ensure accuracy.

- This report would be your ‘C’ change records in a locked status. If the TN record is present on both files, but the information contained with the record does not match, the discrepancy should be written to an output report that reflects one line with the billing system information and one line with the DBMS information. Each record on this report must be individually reviewed to ensure the correct information is updated to the 9-1-1 database.

- All TN’s on the DBMS file that are unlocked, but are on the billing file should be written to output as ‘M’ migrate records. When migrating these numbers within the DBMS, it is critical that the modification date be checked as well as NPAC to ensure the most current information is applied.

- All TN’s on the DBMS file in a locked status and not on the billing file should be written to output as ‘D’ delete records for investigation. When deleting these numbers from the DBMS, it is critical that the modification date be checked to ensure the most current information is applied. All deletes must be reviewed on an individual basis to ensure that working numbers are not being removed from the 9-1-1 database.

- All TN’s on the DBMS file in an unlocked status and not on the billing file should be written to output as ‘D’ delete records for investigation. NENA Standards recommend not removing ‘unlocked’ records. (See Section 22)

   NOTE: This report would point out records where ‘M’ was not received because the DBMSP has changed.

- Additionally, a statistical report should be provided by mutual agreement. Some of the items to be shown on the report should be, but are not limited to, date/time of extract, total number of records compared, date/time processed, number of errors, type of errors, and number of discrepancies by field audited.

19.5 Data Management System to one’s own ALI database.

   It is recommended that DBMSPs perform routine synchronization processes between DBMS and ALI databases. By doing this they are constantly ensuring the two databases are identical.

   ALI databases residing at the PSAP’s property require extensive coordination efforts. Coordination must occur with internal DBMSP staff and the PSAP to ensure all parties understand what happens during the audit period.

   Recommended Minimum Set of Fields for Audit: Customer Name, Calling Telephone Number, Main Telephone Number, House Number, House Number Suffix, Prefix Directional, Street Name, Street Suffix, Post Directional, Community Name, State, Location, ESN, Company ID, Class of Service and Type of Service.

   Recommended Output Files/Reports:

   - All TNs that match in all audited fields should NOT be written to output.

   - All TNs on the DBMS file and not on the ALI file should be written to output as ‘I’ insert records. Root cause analysis should be used to determine why these records were not in the ALI database.
- If the telephone number record is present on both files, but any of the information contained within the record does not match, the discrepancy should be written to an output report that reflects one line with the DBMS information and one line with the ALI information. This report would be your ‘C’ change records. This report must be reviewed manually to determine which database is correct and valid corrections must be applied through the DBMS.

- All TN’s on the ALI file and not on the DBMS file should be written to output as ‘D’ delete records. When deleting these numbers from the ALI database, it is critical that the modification date be checked to ensure the most current information is applied. This report should be manually reviewed to ensure that no active working numbers are deleted. Any ESCO failure or test records that are found in the ALI database(s) are to be entered into the DBMS database with the appropriate Company ID.

Additionally, a statistical report should be provided by mutual agreement. Some of the items to be shown on the report should be, but are not limited to, date/time of extract, total number of records compared, date/time processed, number of errors, type of errors, and number of discrepancies by field audited.

19.6 ALI Node to ALI Node, in redundant systems

This audit is basically the same as Section 19.4, DMS to ALI, if required. Some DBMSPs actually perform a three-way compare here. They audit the ALI Node to ALI Node and compare with the database management system. Several management systems that directly feed ALI databases and tandems have routine synchronization jobs within the application. Therefore, unless a specific problem is detected, it is usually not necessary to perform this type of audit. However, if problems are detected, immediate investigation should be conducted and the system and/or application support vendor should be contacted to resolve all discrepancies.

19.7 DBMS to Selective Router AND Selective Router to Selective Router

This type of audit requires that the Selective Router TNs and ESNs be in sync with the ALI databases. If the selective routing database is able to create an extract file, then an extract can be obtained from the DBMS and the two files compared to ensure that all TN/ESN information is correct. If no extract file can be obtained from the selective router and problems are detected, the router technicians will have to make the corrections in the Selective Router Database. Should major routing problems be detected, a complete reload of the router from DBMS may be necessary. When redundant selective routers are in place it is critical that the two routers are in sync.

20. STANDARDS FOR INTERIM NUMBER PORTABILITY

20.1 In a geographic area where Interim Number Portability (INP) is used, when a customer wants to change his local service provider and also wants to keep his telephone number, service is provided via a Remote Call Forwarding (RCF) arrangement. RCF allows the donor Local Exchange Carrier (LEC) to permanently forward the customer’s telephone number to the telephone number assigned by the recipient LEC. The customer can continue to use the telephone number he’s familiar with, when in reality another telephone number is actually giving him dial tone.
The recipient LEC will send an insert (I) function code transaction record to the Database Management System (DBMS) for the new telephone number they have assigned, because that is the telephone number that will now ANI. The recipient LEC will include in that transaction record the donor LEC telephone number that is being forwarded. That donor LEC number should be displayed at the PSAP with the label “ALT#”. The recipient LEC will populate that forwarded donor LEC number in the NENA 02-010 Recommended Formats and Protocols for Data Exchange reserved field positions:

- Version 1 positions 227-236
- Version 2 positions 356-365
- Version 2.1 positions 377-386
- Version 3 Label, ALT

The DBMS System Provider will attach the label “ALT#” for the ALI display.

20.2 The recipient LEC will send the actual ANI from their switch through the network, not the RCF number.

20.3 It is recommended that the donor LEC in an INP process send a disconnect (D) function code transaction record update to the DBMS System Provider upon completion of implementation of INP to the recipient LEC.

21. INTERIM NUMBER PORTABILITY (INP) TO LOCAL NUMBER PORTABILITY (LNP) CONVERSION STANDARDS

21.1 It is expected that cooperative efforts occur between Local Exchange Carriers (LEC's) to successfully manage the INP to LNP conversion process.

21.2 Each LEC providing portability must identify and maintain 9-1-1 LNP “points-of-contact” within their company. These contacts must be communicated to interconnecting carriers.

21.3 The recipient LEC would send an insert (I) function code transaction record to the Database Management System (DBMS) Provider on the donor LEC’s LNP ported number prior to the start of the INP to LNP conversion.

21.4 The recipient LEC would send a disconnect (D) function code transaction record to the DBMS Provider on the telephone number assigned by the recipient LEC after the INP to LNP conversion is completed. (Caution: If the subscriber chooses to retain the telephone number assigned by the recipient LEC as a stand alone number, the recipient LEC must work to maintain the integrity of the ALI database by deleting reference to the INP number in the ALI record through issuing a change (C) function code transaction record instead of a disconnect (D) function code transaction.)

22. STANDARDS FOR LOCAL NUMBER PORTABILITY

22A. GENERAL LNP STANDARDS

22A.1 Allow any certified company to send end user telephone number records to the appropriate Database Management System (DBMS) Provider for any valid NPA-NXX that has access to 9-1-1.

22A.2 Adopt the use of the Company ID on all transactions and include it on all embedded telephone number records in the 9-1-1 database. The telephone number and Company ID relationship will remain the same until the record is unlocked and migrated or completely disconnected. For these
standards to work a Service Provider providing both wireline and wireless services must have separate NENA Company IDs and SPIPs. For the purposes of this document fixed wireless service is recognized as wireline service.

22A.3 The DBMS Provider and Local Exchange Carrier (LEC) must work together to modify the embedded telephone numbers to include the 3-5 character Company ID as referenced in the document “NENA Company ID Registration Service” available through the NENA National office.

22A.4 The Service Provider identified by NPAC/LSMS/IVR validation, upon completion of porting, is responsible for accurate representation of each end user telephone number record in the 9-1-1 DBMS database. In some systems this may require additional record updates be sent to the DBMS system to correct end user records.

22A.5 In an LNP environment using the Location Routing Number (LRN) managed by a Number Portability Administration Center – Service Management System (NPAC-SMS), the recipient LEC upon request to port a telephone number, must notify the donor LEC using the industry recommended Local Service Request (LSR) form. This will allow the creation, by the donor LEC of an unlock (U) or delete (D) function code transaction record based upon the Firm Order Confirmation (FOC) provided by the donor Company.

22A.6 Create two (2) additional function codes for NENA-02-001, NENA Recommended Formats for Data Exchange to assure data integrity:

U -Unlock function transaction record sent by the donor LEC. This will make the telephone number available for the recipient LEC to overwrite the embedded telephone number record. The “U” function code requires a match of Company ID.

M-Inward (migration) function transaction record sent by the recipient LEC. This transaction requires an "unlocked" record in the 9-1-1 database and will replace the customer information and the Company ID on the "unlocked" record. The “M” function code does not require a match of Company ID.

22A.7 When the subscriber location and DBMS remain the same, the ported out telephone numbers should remain in the 9-1-1 database for ALI retrieval until the migration (M) function code transaction from the recipient LEC successfully updates the record. This supports the expectation of uninterrupted 9-1-1 service.

22A.8 The recipient LEC will send a complete telephone number transaction record to migrate the end user's service, not just the telephone number and Company ID.

22A.9 When a customer ports a telephone number and moves at the same time, the affected LEC’s will provide the following information:

a. The donor LEC will provide a delete (D) function code transaction record if the EUMI field on the LSR is “Yes”

b. The recipient LEC will provide a migrate (M) function code transaction record to the DBMS

c. The DBMS Provider will change the recipient LEC’s migrate (M) function code transaction record to an insert (I) function code transaction record and process the record.

22A.10 The following edits for the C and D function codes in the NENA-02-001, NENA Recommended Formats for Data Exchange for transactions are in addition to any existing edits:

C -create error conditions if Company ID does not match between the embedded telephone number record in the 9-1-1 database and an update transaction record.
D - create error conditions if Company ID does not match between the embedded telephone number record in the 9-1-1 database and the delete transaction record.

22A.11 The service orders should be completed on the date (completion date) the porting activities occur. It is recommended that upon order completion, the unlock (U) function code transaction record be sent by the donor LEC and the migrate (M) function code transaction record be sent by the recipient LEC to the DBMS Provider.

22A.12 It is expected that cooperative efforts occur between Service Providers to resolve all error conditions in a timely manner. Each LEC must assure that all internal LNP processes have been completed and the telephone number is actually ported, prior to calling the other LEC for assistance.

22A.13 Each LEC providing portability must identify and maintain 9-1-1 LNP “points-of-contact” within their company. These contacts must be communicated to interconnecting carriers and DBMS providers.

22A.14 Each LEC should investigate if the possibility of record movement between DBMS's exists within their service areas and make provisions for dealing with the situation should it arise.

22A.15 It is recommended that each affected LEC identify what causes missing or delayed unlock (U) or migrate (M) function code transaction records to occur and resolve the record conditions within their company.

22A.16 Any DBMS records associated with Direct Outward Dialing (DOD) numbers that cannot receive callbacks should include a clear reference to a valid inward number at the same location.

22A.17 If a donor LEC is porting out a portion of numbers on a customer's account, and that portion includes the Pilot telephone number on an account, the donor LEC must address the loss of the Pilot number and assure that all porting out telephone numbers are unlocked.

22A.18 It is recommended that Stand Alone Databases providing 9-1-1 ALI data to areas where LNP is operational, will utilize the Unlock and Migrate update functions of change and other ALI/LNP data standards to provide consistency across database platforms and LEC update processes.

22A.19 Once a telephone number has been ported to a LEC, and as long as the telephone number is serviced by the LEC; any subsequent moves, changes or disconnects would be accomplished using the standard function codes of Change or Delete. The only time porting function codes of Unlock or Migrate are utilized is when porting is actually in progress.

22B. RESOLUTION OF FAILED MIGRATES (See Exhibits F, G and H)

22B.1 E911 Database Providers will compare “failed migrates” to the NPAC (or LSMS database) at a minimum of once each business day. (See Exhibit F)

a. If the NPAC Service Provider owner is the Recipient company, the current E911 DBMS record shall be unlocked without donor company participation and the (M) migrate record processed. Both the Donor Company and the Recipient Company are sent notification of the DBMS actions taken.

b. If the NPAC owner is the Donor company, the (M) migrate record shall be placed in an error status and/or in a waiting file. During the Migrate recyle period, the NPAC database shall be referenced daily to determine if the record has been Activated by the Recipient company. If so, the record shall be unlocked and the (M) migrate record processed. If, at the end of ten (10) days, the NPAC database shows ownership remains with the Donor Company, the (M) migrate record shall be deleted. Only the Company that sent the Migrate record is sent notification of the actions taken.

c. If the NPAC database shows the owner is neither the Recipient nor the Donor Company, the (M) migrate record shall be placed in an error status and/or in a waiting file. During the Migrate
recycle period, the NPAC database shall be referenced at a minimum once each business day to
determine if the record has been Activated by the Recipient company. If so, the (M) migrate
record shall be processed. If, at the end of the ten (10) days, the NPAC database shows
ownership remains with a Service Provider that is not the Recipient company, the (M) migrate
record shall be deleted. The company that sent the Migrate record and the NPAC identified
Service Provider are sent notification of this activity. The NPAC identified Service Provider is
responsible for assuring the update information is correct for the telephone number in question.
d. If the E911 DBMS record does not exist, the NPAC database shall be referenced to determine if
the record has been Activated by the Recipient company. If so, the (M) migrate record shall be
processed as an (I) insert record. If, at the end of the ten (10) days, the NPAC database shows
ownership remains with a Service Provider that is not the Recipient company, the (M) migrate
record shall be deleted. The Recipient company and the NPAC identified Service Provider are
sent notification of this activity. (See Exhibit G)

The reporting activities by the DBMS Provider detailed above should occur no less than weekly.

IMPORTANT NOTES:
When the NPAC is accessed and a condition of "Record Does Not Exist" is identified for the
telephone number being queried, the telephone number is not a ported or pooled number. The
Service Provider who owns the NPA/NXX-X is the provider of record.

The above actions shall in no way absolve the Donor Company of their responsibility for
following normal procedures for submitting (U) unlock or (D) delete records.
In Canada where the Company ID used by the 9-1-1 database systems is other then the SPID
used by the NPAC-SMS / LSMS, it is understood that the above recommendations cannot
apply.

22B.2 If an (I) insert record is received by the E911 DBMS and a record already exists in the DBMS
belonging to a different Service Provider, the NPAC database shall be referenced at a minimum once
each business day to determine if the record has been Activated by the Recipient company. If so, the
(I) insert record shall be processed as a (M) migrate record. If, at the end of the ten (10) days, the
NPAC database shows ownership remains with a Service Provider that is not the Recipient company, the
(I) insert record shall be deleted. The company who sent the Insert record and the NPAC
identified Service Provider are sent notification of this activity. (See Exhibit H)

22B.3 Until the DBMS Service Provider has implemented standards 22B.1 and 22B.2 the following
standards must be complied with:
  a. Create a unique informational message code if a migrate (M) function code transaction record is
     processed and the corresponding embedded database record remains locked.
  b. Create a unique informational message code if a migrate (M) function code transaction record is
     attempting to process and the corresponding embedded database record is locked with the
     recipient LEC Company ID.
  c. Create a unique error condition code identifying when a migrate (M) function code transaction
     record reprocessing fails in the attempt to update the 9-1-1 database.
  d. The DBMS Provider should make an exception report(s) available on a daily basis to the donor
     LEC if their embedded telephone number records are in an unlocked state.
  e. The DBMS Provider will reprocess all migrate (M) function code transaction records that did not
     successfully process because the record is still locked, a minimum of one additional time in one
     additional business day. Migrate (M) function code transaction records needing to be
     reprocessed by the DBMS will generate an informational error. If the final migrate (M) function
code transaction update attempt fails, the transaction will be treated as an error. Pursuant to local
regulations, it is recommended that the Company ID of the locked telephone number record in the DBMS be identified in the error record.

f. It is recommended that the DBMS Provider change a record with a migrate (M) function code to an insert (I) function code when there is no existing telephone number record in the DBMS database to be migrated for the telephone number being ported.

g. The donor LEC shall be responsible for identification and referral to the recipient LEC of all records unlocked (U) by their company that have not been migrated within 7 business days. Written notification should be sent to the recipient LEC with potential escalation to the appropriate regulatory authorities.

h. The recipient LEC shall be responsible for successful resolution of all migrated (M) function code transaction records produced by their company which have not processed due to the unlock (U) function code transaction record not being generated by the donor LEC. Written notification should be sent to the donor LEC with potential escalation to the appropriate regulatory authorities.

i. The DBMS administrator shall never re-lock a record previously unlocked by a donor LEC. The donor LEC can re-lock its own unlocked records, only if it is determined that the end-user is still a customer of the donor LEC. If the donor LEC relocks the embedded record the migrate (M) function code transaction record should be used.

22C. RESOLUTION OF STRANDED UNLOCK RECORDS (See Exhibit I)

22C.1 The DBMS Service Provider will compare stranded unlocked records to the NPAC (or LSMS database) on a weekly basis (at a minimum) for all unlocked records aged (7) days or older, with results as follows:

a. If the NPAC Service Provider owner is the Donor Company, the E911 DBMS record shall be relocked to the Company ID of the Donor Company. The Donor Company will be sent notification of the DBMS action taken.

b. If the NPAC Service Provider owner is a wireline company other than the Donor Company, the E911 DBMS record shall be locked to the Company ID of the NPAC identified company. Both the donor company and the NPAC identified company are notified of the DBMS actions taken. If the NPAC Service Provider is a wireless company other than the Donor Company, the unlock should be changed to a delete (D) function code transaction record and deleted.

c. If a Migrate (M) function code transaction record is received at any time prior to the relocking of the DBMS record, suspend the stranded unlock record process flow and process the Migrate record as normal.

22C.2 Until the DBMS Service Provider has implemented standard 22C.1 the following standards must be complied with:

E911 Database Service Providers will compare “stranded unlock records” in their respective E911 databases to the NPAC (or LSMS) database. The SPID found in the NPAC database for each stranded unlock record will be translated to the appropriate NENA COMPANY ID. The compare would be completed weekly for all stranded unlocked records aged seven (7) days or older, with results as follows:

a. The NPAC database shows a different Service Provider from the E911 database. A TN file is created of these records and sorted by the NENA Company ID. This file will be sent to the recipient Company identified as the Service Provider for the stranded unlock records for resolution within five (5) business days.
b. The NPAC database shows the same Service Provider as the E911 database. A TN file of these records is created and sorted by the NENA Company ID. This file will be sent to the Company identified as the Service Provider for the stranded unlock records for resolution within five (5) business days.

c. The TN of the stranded unlock record is not found in the NPAC database. A TN file of these records is created and sorted by the NENA Company ID. Notification will be made to the Company identified on the stranded unlock record to resolve the (U)unlock within five (5) business days. A note of explanation should accompany the files stating that these records are unlocked in the E911 database BUT the NPAC has no record of any porting activity.

d. It is important that each of these discrepancies are investigated by the responsible company, and not simply re-locked. For example it is possible that these stranded unlock records are the result of a Recipient Company failing to migrate the DID lines behind an ISDN-PRI. It is also possible that the Recipient Company ported the customer’s dial tone but never updated the E911 database. In all cases, investigation is required.

e. The E911 Database Provider should create a statistical report identifying by NENA Company ID the number of stranded unlocked records aged more than 30 calendar days. This file should be sent as notification to the appropriate emergency governing authorities.

22D. WIRELINE/WIRELESS PORTING

22D.1 Wireline to Wireless porting: The Donor Wireline Service Provider will send delete (D) function code transaction records to the DBMS Service Provider to remove the wireline database record

22D.2 Wireless to Wireline porting: The Recipient Wireline Service Provider may send either migrate (M) function code transaction records or insert (I) function code transaction records or to the DBMS Service Provider to establish the E911 database record. If the migrate (M) function code is used, it is recommended that the DBMS Provider change a record with a migrate (M) function code to an insert (I) function code when there is no existing unlocked (U) telephone number record in the DBMS database to be migrated for the telephone number being ported.
23. **STANDARDS FOR CONTAMINATED NUMBER POOLING**

23.1 If a decision is made to return an NPA/NXX number block to the number pool administrator, steps should be taken to insure that the integrity of the 9-1-1 DBMS database is upheld.

23.2 The internal company service order to port the number back to its own switch does not need to, and should not, generate any update to the DBMS database. The Telephone Number record in the DBMS database should remain exactly the same since the customer name, address, telephone number remains the same and the same Company ID remains on the record. Therefore, LEC’s must be cautious to ensure that no update is sent to the DBMS unless otherwise advised.

24. **STANDARDS FOR INCLUDING THE 24 X 7 TELEPHONE COMPANY CONTACT NUMBER WITH THE ALI RESPONSE MESSAGE**

A 24x7 contact telephone number for the facility based Service Provider should be included in the ALI Response Message sent to the PSAP. The PSAP will call this 24x7 contact number for assistance with facility-based requests such as call interrupts and trap/traces. This recommendation provides a standard for including the 24x7 contact telephone number under multiple conditions.

24.1 24 x 7 with ANI and ALI – Mechanized Version

It is recommended that the ALI database provider include the Telephone Company 24x7 contact number within the ALI Response Message sent to the PSAP.

The data will be included in the ALI Response Message using the label SPN, for Service Provider Number. The label will be immediately followed by a 10-character alphanumeric data field with one of three values:

- 10 digit Telephone Company 24x7 contact number
- NOT_FOUND_  where_ represents a space
- UNAVAILABL

A field separator character must follow the 10-character data field. Refer to the ALI Response Message format for details of the tag data format.

A value of NOT FOUND would be used to indicate that the Company Identifier within the ALI database record was not found in the Company Identifier table/database. It is recommended that PSAP complete a PSAP inquiry to alert the ALI database provider that a Company Identifier entry is missing from the Company Identifier table/database and should be investigated. The ALI database provider should verify the Company Identifier value against the latest NENA Company Identifier information found on the NENA web site. If the Company identifier is found on the NENA web site with a 24x7 contact number, the ALI database provider would refresh their internal table/database with the latest information from NENA. If the Company Identifier is not found on the NENA web site, the ALI Database provider will identify and contact the appropriate person with that telephone company and request they obtain an official NENA Company identifier and provide their 24x7 contact number.

In both cases, the ALI database provider should provide the PSAP with the appropriate action taken to close out the PSAP Inquiry.

A value of UNAVAILABL would be used to indicate a system problem accessing the Company Identifier table/database and the 24x7 contact number could not be determined. A PSAP Inquiry should NOT be completed in this case. If UNAVAILABL repeatedly appears in the ALI Response Messages, the PSAP should call the ALI database provider to report the problem.
Values of NOT FOUND and UNAVAILABLE are recommended as a positive response and alert the PSAP of the reason the 24x7 contact information was not available. This is preferred over excluding the label SPN within the ALI Response Message, which would not alert the PSAP of possible data or system problems.

**Data Source:**
The ALI database provider will use the NENA Company Identifier table as their data source for the 24x7-telephone company contact number.

Changes will be made to the NENA web site to make the table available for downloading. File and record format specifications will be included on the NENA web site. (Notification of updates to the NENA Company ID table will be available via e-mail, contact the NENA Company ID Program Coordinator to be put on an e-mail distribution list.)

Each row of the NENA Company Identifier table will include a date stamp to indicate when a specific table entry was last updated. There will also be a date stamp for the entire table. ALI database providers should download the most current information from the NENA web site periodically as updates are made to the table.

As ALI Request Messages are processed by the ALI database provider, the Company Identifier within the ALI database record should be used to search the Company Identifier table for a match. If a match is found the corresponding 24x7 contact number should be inserted in the ALI Response Message with the label SPN. If no match is found, label SPN will be followed by NOT_FOUND_. If the search cannot be performed, label SPN will be followed by UNAVAILABLE. It is recommended that either of these two conditions be logged by the ALI database provider and appear on a report for internal investigation.

The NENA Company Identifier table must be a reliable data source for the 24x7 contact telephone number. NENA will validate the 24x7 contact information when a telephone company registers for a NENA Company Identifier and during the annual re-registration process.

It is recommended that the NENA Data Sharing Study Group also periodically audits and validates this information during the year. Telephone Companies will be contacted if the 24x7 contact number is no longer valid. Appropriate updates will be made to the Company Identifier table on the NENA web site.

### 24.2 24x7 with ANI – No ALI – Mechanized Version

Handling E911 calls when the PSAP receives ANI but there is no record in the ALI database for the number.

When the PSAP CPE does the ALI Bid and there is not an ALI record in the DBMS, the ALI host computer would then do a dip/query to a copy of the database file that supports Call Set Up, which exists today because of LNP. It is the database each central office has to query before it can connect a call if the dialed number is from a NPA/NXX code that has any ported numbers. (Most Central Offices use a copy of the Call Set-Up database, updating as needed. Some Central offices use real time access to the Call Set-Up database. Negotiations with the DBMS will be needed when implementing this process.)

The two possible responses that would come back would be:

- The number is NOT ported – in which case a lookup would then be done on a list of all NPA/NXX codes that are valid in the DBMS. Number Pooling will require that the lookup be done at the 1K block level. This file would contain the Service Provider name and their 24x7 contact number, which could be returned to the PSAP instead of the traditional “Record Not Found” message.
The number IS ported – The LRN (local routing number) would be obtained from the Call Set Up Database – the LRN is unique to a specific switch of a specific Service Provider. A query would be done on the LRN with the Service Provider and appropriate 24x7 contact number being returned. This information would be displayed at the PSAP instead of the traditional “Record Not Found” message.

It would be the responsibility of the Service Providers to know what numbers were being used as LRNs for their switches, and to create & update an ALI record for each LRN that would contain the appropriate information.

The DBMS system administrator should maintain a table of valid NPA/NXX codes. The table should be defined at the thousands block level due to the impact of Telephone Number Pooling. Each table entry should include the block owner’s Company Name and 24x7 contact number.

24.3 24x7 – ESCO (ANI Failure) – Mechanized Version

The PSAP receives an ESCO ANI (ANI Failure in lieu of ANI). The last three digits of the ESCO ANI are the unique ESCO code for the trunk group connecting the service provider’s switch to the Selective Routing tandem.

- Each Service Provider would be required to create and maintain an ALI record in the database for the ESCO ANI number combinations for all of the ESCO codes associated with the trunk groups for their switches to the SR tandem. These ESCO ALI records would identify the Service Provider and the appropriate 24x7 number(s) for each of their switches.
- When the PSAP receives a call where an ANI failure occurred, the ALI dip would be done using the ESCO ANI that is unique for the ESCO code assigned to the dedicated trunk group connecting that switch to the SR tandem. The query would result in displaying the ESCO ALI record containing the Service Provider name and 24x7 contact number.
- It would be the responsibility of the Service Providers to establish and maintain the ESCO ALI records for all of the ESCO ANI numbers for their ESCO codes and to assure current/accurate company ID and 24x7 contact number information is contained within these ESCO ALI records.

24.4 24x7 with ANI/ALI; and ANI with No ALI - Manual Versions

Due to the cost structure for implementing the 24x7 with ANI/ALI and ANI with No ALI – a manual version is also recommended to obtain the 24x7 number for each Service Provider who is implementing LNP.

Calls with ANI/ALI - Using the NENA web page obtain the 24x7 number and Company ID for each of the Service Providers that are present in your PSAP territory and for any surrounding areas that you may be the default PSAP. When you receive a 911 call with ANI/ALI you will have the Company ID on your ALI screen, reference the NENA list for the appropriate 24x7 contact number for the Service Provider.

Calls with no ALI – use the NeuStar IVR (formally known as Lockheed Martin IVR) – (to register with NeuStar for IVR access go to: www.numberpool.com, follow the law enforcement choices through the menus). Once you are registered you may access the IVR and enter the 10 digit phone number, if the number has been ported, the IVR identifies which local service provider to call and also gives their 24x7 phone number.

If the number has not been ported refer to the above list you have created off of the NENA web site for the appropriate Incumbent Service Provider for the area to assist in determining the appropriate carrier for the ANI.

(The above two processes (22.4) are excellent backups to the mechanized versions if there would be data link trouble and you would not be able to access the mechanized information.)
25. **SERVICE PROVIDER GOING OUT-OF-BUSINESS**

25.1 The E911 DBMS Service Provider will require written confirmation of the exact date the Service Provider is going out of business.

25.2 The Service Provider going out of business will continue to submit transactions to the E911 DBMS Service Provider for transferring and keeping up-to-date customers information as long as the Service Provider remains in service.

25.3 The Service Provider going out of business will unlock all remaining 9-1-1 records effective with its termination of service to enable any new Service Provider to migrate the existing 9-1-1 record should the customer port a TN after wind-down of business.

25.4 In the event the Service Provider going out of business does not unlock all remaining records effective with its termination date the E911 DBMS Service Provider will be authorized to unlock all current Service Provider going out of business records, on the effective date of going out of business. The E911 Data Provider will send written confirmation to the Service Provider going out of business contact that all records were unlocked on the effective date of going out of business.
EXHIBIT A -- ANI/ALI TROUBLE REPORTING PROCESS FLOW

PSAP

9 - 1 - 1

Jurisdiction 9-1-1 Database Coordinator
Creates an ANI/ALI Trouble Report form

9-1-1 Database Management System Provider verify ALI/Selective Router accuracy & DMS

9-1-1 Database Management System Provider transmit copy to Service Provider within 1 business day.

Service Provider issue correcting Service Order and verify internal data management system and/or selective router.

Service Provider transmit completion notification back to 9-1-1 Database Management System Provider within one (1) business day.

9-1-1 Database Management System Provider transmit final completion Notification back to Jurisdiction 9-1-1 Database Coordinator.

Any discrepancies in ALI display and caller’s information are to be reported to 9-1-1 Database Management System Provider.
EXHIBIT B -- MSAG MODIFICATION PROCESS FLOW

Jurisdiction 9-1-1 Database Coordinator Completes MSAG Update Form

Jurisdiction 9-1-1 Database Coordinator forwards to 9-1-1 Database Management Provider and all Service Providers via:
1) NENA Database Administration Forms
2) 9-1-1 Database Management System Providers Electronic Interface
3) 9-1-1 Database Management System Providers Paper Forms

9-1-1 Database Management System Provider Updates MSAG within one (1) business day and notifies Jurisdiction 9-1-1 Database Coordinator and all Service Providers of completion.

Service Providers Update their internal MSAG within one (1) business day if requested modification is within their Serving Area and notify Jurisdiction 9-1-1 Database Coordinator of completion.

Jurisdiction 9-1-1 Database Coordinator receives completion notices and files with original request.

NOTE: Should either the 9-1-1 Database Management System Provider or any Service Provider have any concerns about the request, they will attempt to resolve the concern among themselves before going to the Jurisdiction 9-1-1 Database Coordinator.
This program is intended to facilitate the secure exchange of E911 MSAG and ANI/ALI information between all local exchange carriers and county personnel. There are no fees connected with this application. Use of this application shall be at your own risk.
<table>
<thead>
<tr>
<th>ANI / ALI Form</th>
<th>MSG Update Form</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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Reason for Discrepancy

1 Record
Control Number: DA, GTE, AA-001-01
08/09/1998 16:19

02/01/2003.
### E911 Database Administration Forms

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<tr>
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</tr>
</tbody>
</table>

- **Street Name Change**
- **Exchange or TAR Code Change**
- **Range Change**
- **ESN Change**
- **Odd / Even / Both**
- **See Additional Information**

### Existing Address Range

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<th>Function</th>
<th>Prefix Directional</th>
<th>Street Name</th>
<th>Street Suffix</th>
<th>Post Directional</th>
<th>Low Range</th>
<th>High Range</th>
<th>Odd/Even/Both</th>
<th>TAR Code</th>
<th>MSAG Community</th>
<th>Postal Community</th>
<th>ESN Number</th>
<th>State</th>
</tr>
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</table>

### New Address Range

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<th>Prefix Directional</th>
<th>Street Name</th>
<th>Street Suffix</th>
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<th>MSAG Community</th>
<th>Postal Community</th>
<th>ESN Number</th>
<th>State</th>
</tr>
</thead>
</table>

1 Record | Control Number: DA GTE MS.001 01 | 06/09/1998 15:20 |
NENA LNP Proposal - Exhibit F
Resolution of Failed Migrate Records

**Initial Action:**

**Migrate SOI Received from NSP**

*DBMS Record Locked to OSP*

- Migrate SOI goes to LNP-E911 Error

- DBMS Provider Verifies SP Ownership in NPAC or LSMS Database

  - Does NPAC Match Migrate SOI NSP?
    - Yes
      - DBMS Record Changed to Unlock (U) Status
        - Process the Received Migrate SOI
        - Report the NPAC Related Process/Delete Transaction to the Affected SPs
    - No
      - DBMS Provider Holds the Migrate SOI in LNP E911 Error Status

  - Does NPAC Match Migrate SOI NSP?
    - Yes
      - DBMS Provider References NPAC (LSMS) Daily during Recycle Period
    - No
      - Delete the Migrate SOI Record after ten (10) Days

*Note: If the DBMS record is unlocked by the OSP CLEC at any time prior to the deletion of the Migrate SOI, suspend the flow and process the received Migrate SOI as normal.*
NENA LNP Proposal - Exhibit G
Resolution of Migrate Received - DBMS Record Does Not Exist

Initial Action:

Migrate SOI Received from NSP
DBMS Record Does Not Exist in DBMS

- Migrate SOI goes to Error status (No Existing Record)
- DBMS Provider Verifies NSP Ownership in NPAC Database

   - Does NPAC Match Migrate SOI NSP?
     - No: Delete the Migrate SOI Record
     - Yes: Migrate Record Changed to Insert (I) FOC

2. Does NPAC Match Migrate SOI NSP?
   - Yes: Process the Received Insert SOI
   - No: Does NNX Owner Match Insert SOI NSP?
     - Yes: Report the NPAC Related Process/Delete Transaction to the Affected SPs
     - No: Delete the Migrate SOI Record

Note: If an Insert record is received at any time prior to the deletion of the Migrate SOI, suspend this flow and revert to the process described in Exhibit F (Resolution of Failed Migrate Records).
NENA LNP Proposal - Exhibit H
Resolution of Insert Received - DBMS Record Exists (Different CO ID)

Initial Action:

Insert SOI Received from NSP

**DBMS Record Exists in DBMS w/Different CO ID**

- Insert SOI goes to Error status (DBMS Record Exists - Different CO ID)
- DBMS Provider Verifies NSP Ownership in NPAC Database

**Hold the Insert SOI in Error Status. Check NPAC Database Daily for Ten (10) Days.**

**Does NPAC ID Match Insert SOI NSP?**
- Yes: Insert Record Changed to Migrate (M) FOC
- No: Delete the Insert SOI Record

**Does NPAC ID Match Insert SOI NSP?**
- Yes: Begin the Process referenced in Exhibit F (Resolution of Failed Migrate Records)
- No: Delete the Insert SOI Record

**Does NNX Owner Match Insert SOI NSP?**
- Yes: Report the NPAC Related Delete Transaction to the Affected SPs
- No: Delete the Insert SOI Record
Resolution of Stranded Unlock Records (Action)

Initial Action:

**DBMS Record Unlocked by OSP**

*Migrate SOI Not Received from NSP*

- DBMS Record is Placed in "U" Status
- DBMS Verifies no Migrate SOI is Pending or in Any Error Status
- DBMS Verifies NSP Ownership in NPAC or LSMS Database

1. **Yes**: Relock the DBMS record to an "L" Status
2. **No**: Does NPAC Match DBMS Record?
   - **Yes**: DBMS Record Changed to Match NPAC NSP NENA ID
   - **No**: Lock the DBMS record to an "L" status

Report the NPAC Related Change/Relock Transaction to the Affected SPs

**Note:** If a Migrate SOI is received at any time prior to the relocking of the DBMS record to the OSP, suspend the flow and process the received Migrate SOI as normal.