

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



NENA Data Standards for Local Exchange Carriers, ALI Service Providers & 9-1-1 Jurisdictions
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NENA STANDARDS

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NENA's Data Technical Committee has developed this document. Recommendations for change to this document may be submitted to:

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1. Executive Overview

1.1 Purpose and Scope of Document

This document sets forth NENA standards for all Service Providers (SPs) involved in providing dial tone to end users whether or not they are the 9-1-1 Database Management System Provider (DBMSP) or a SP in an Enhanced 9-1-1 area. It includes Database Maintenance, Quality measurements, INP, LNP and Number Pooling standards 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.

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 standards.

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 standards for the data transmission of E9-1-1 updates by all SPs providing dial tone within the boundaries of an Enhanced 9-1-1 Jurisdiction. Utilization of these standards 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 standards, the goal was to set standards that would allow the shortest amount of time a record shall 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.

1.2 Reason to Implement

How: Use of the standards will provide the basis for agreements between the 9-1-1 Jurisdictions, SPs and the 9-1-1 DBMSP.

When: Should be used at the time that arrangements are being made between the 9-1-1 Jurisdictions, SPs and the 9-1-1 DBMSP.

1.3 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 SPs 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.

1.4 Operational Impacts Summary

This document is written for DBMSPs, SPs (LECs, CLECs, Wireless Carriers, PS-911 customers, and any other future entity who may be required to provide address records for inclusion in an Enhanced 9-1-1 System), and Jurisdictions. It details standards for implementing and managing an Enhanced 9-1-1 database.

1.5 Document Terminology

The terms "shall", "must", and "required" are used throughout this document to indicate required parameters and to differentiate from those parameters that are recommendations. Recommendations are identified by the words "desirable" or "preferably".

1.6 Reason for Issue

This standards document is met to convey 9-1-1 database industry standards for all 9-1-1 DBMSPs, SPs and 9-1-1 jurisdictional entities to assist in ensuring the accuracy and integrity of the 9-1-1 database.

1.7 Reason for Reissue

NENA reserves the right to modify this document. 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 SP 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)

July 2002 Revisions - The following standard has been revised:

- Section 12 Standard Error Codes
- Section 18 Data Quality Measurements

March 2004 Revisions – There are numerous modifications to this standard with four new sections being added:

- Section 26 Global Changes to NENA ID
- Section 27 Unbundled Network Elements Platform (UNE-P)
- Section 28 Determining Ownership of a Telephone Number
- Section 29 Wireless No Record Found Reporting Process

Also, new process flow charts have been added to the Exhibits.

1.8 Date Compliance

All systems 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 a date/time change up to 30 years subsequent to the manufacture of the system. This shall include embedded application, computer based or any other type application. To ensure true compliance the manufacturer shall upon request provide verifiable test results to an industry acceptable test plan such as Telcordia GR-2945 or equivalent.

1.9 Anticipated Timeline

Deployment or implementation will take place as required.

1.10 Costs Factors

Some database management system and/or service order extract modifications may be required.

1.11 Cost Recovery Considerations

Normal business practices shall be assumed to be the cost recovery mechanism.

1.12 Acronyms/Abbreviations

This is not a glossary. See NENA 01-002 - NENA Master Glossary of 9-1-1 Terminology located on the NENA web site for a complete listing of terms used in NENA documents.

2. General Data Standards

- 2.1 9-1-1 data for Local Exchange Carriers (LECs) must be integrated into existing Automatic Location Identification / Selective Routing (ALI/SR) systems.
- 2.2 NENA-02-010, NENA Formats and Protocols for Data Exchange, must 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 Measurements for Data Quality.
- 2.4 New services and features must 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 SP.
- 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 SP for 9-1-1 call delivery.
- 2.8 The LEC's numbering plan follows the North American numbering standard.
- 2.9 Date Changes submitted by the LEC must be processed by the ALI SP's system following the Data Quality Measurements. "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, must 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 SP shall negotiate the provision of a listing of valid street address information to the LEC.
- 2.12 Addresses not recognized by the local addressing authority must be negotiated between the LEC and the addressing authority for MSAG inclusion.
- 2.13 The NENA ID fields in the NENA-02-010, NENA Formats for Data Exchange, shall be used to identify the dial tone provider and the data provider. Data in these fields shall be stored in the ALI database and be available for display at the PSAP. Display of this data shall be controlled by each 9-1-1 district with consideration given to the capability of the PSAP equipment to display the data.

- 2.14 All SPs providing dial tone or ALI record source information providers must have a NENA registered Dial Tone Provider NENA ID or Data Provider NENA ID. DBMSPs must maintain a table containing all NENA IDs and all incoming records shall be validated to ensure that a valid Dial Tone Provider NENA ID and/or Data Provider NENA ID NENA are contained on each incoming record before any service order processing begins into the DBMS. Records without a registered ID shall be returned to the originator with an error code.
- 2.15 LEC data must be transferred to the ALI SP electronically, following the NENA-02-010, NENA Protocols for Data Exchange, with attention paid to network security to ensure data reliability.
- 2.16 It is the responsibility of the LEC to notify the ALI SP of new or additional NPA NXX assignments prior to the establishment of 9-1-1 data exchange.
- 2.17 It is preferable that the ALI SP in the area affected by an NPA split lead and coordinate the 9-1-1 conversion effort. The capability of the ALI SP shall 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 SP shall notify the PSAPs as well as coordinate required changes within the E9-1-1 tandem switches.
- 2.18 It is required 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 SP's software and database where reverse lookups are permitted by regulatory entities.
- 2.19 9-1-1 data included for exchange or storage for ALI retrieval shall not include telephone numbers for non-generating dial tone classes of service.
- 2.20 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 SP. Various methods may be employed to update the ALI database and depend upon agreements between LECs and ALI DBMSPs, with attention paid to state legislative requirements.
- 2.21 Periodic reconciliation of the 9-1-1 database with the originator's database is required as specified in the Data Quality Measurements.

- 2.22 Confirmation of data transactions from the LEC to the ALI SP must be made available to the LEC. The confirmation must 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.
- 2.23 The ALI SP may provide database extracts containing LEC telephone number data to PSAPs for inclusion in on-premise ALI databases.
- 2.24 The ALI SP shall restrict the usage of LEC data to emergency purposes as mandated by legislation. SP data shall not be provided to other entities without the written permission of that SP, unless legislation permits.
- 2.25 DBMSPs shall return errors to the dial tone provider and/or the jurisdiction for resolution. For instructions on how to work these errors, refer to the DBMSPs web page or ask your contact for written documentation on how to interpret the errors. Errors are commonly referred to in three ways:
- Informational Error: This is an error that did not post and is waiting to reprocess for a specified period of time such as a "Failed migrate Retry."
 - Soft Error: This is an error that did post, but there is some minor discrepancy that needs to be investigated such as "SR/ESN Combo is Invalid" or "Loccom Flag is Set."
 - Hard Error: These are errors that did not post to ALI. SPs will see all errors with their Dial Tone Provider/Data Provider NENA ID, whichever is responsible for error correction. Addressing errors will be referred by the SP to the jurisdiction for resolution.
- 2.26 It is preferred that all of the 9-1-1 documentation listed below be transmitted electronically and retained for a minimum of three years unless state statute indicates otherwise.
- Addressing Authority Request to 9-1-1 Database Coordinator
 - MSAG Update Request (Paper or Electronic)
 - 911 Inquiry/ALI Discrepancy/NRF (Paper or Electronic)
 - Address Correction Request
 - Daily Error Corrections from Jurisdiction
 - Service Order Input Files
 - DBMS TN Record

- DBMS MSAG Record
- DBMS MSAGMail / 911NET / INFO911 Record

3. Electronic Maintenance Document (See Exhibit E for screen prints)

- 3.1 It is desirable 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 DBMSPs, SPs 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 These Electronic forms provide a consistent means to exchange 9-1-1 data between 9-1-1 DBMSPs, SPs, and Jurisdictions for the purpose of maintaining accurate customer records and MSAG entries.
- 3.4 These Electronic forms are a WINDOWS based application (Versions 3.1, 3.11, Win95', 2000, XP, or 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 These forms 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 are to be given to electronic files as with current paper records; i.e.; retention, security, backups, archiving.

4. 9-1-1 Data Base Management System Provider Responsibilities (Refer to Exhibit A)

- 4.1 All SPs providing dial tone or ALI record source information providers must have a NENA registered Dial Tone Provider NENA ID or Data Provider NENA ID. DBMSPs must maintain a table containing all NENA IDs and all incoming records shall be validated to ensure that a valid Dial Tone Provider NENA ID and/or Data Provider NENA ID NENA are contained on each incoming record before any service order processing begins into the DBMS. Records without a registered ID shall be returned to the originator with an error code.
- 4.2 9-1-1 DBMSPs must process each SP's update file(s) and provide positive electronic confirmation of the processing of 9-1-1 DBMS updates to all SPs within one (1) business day of receipt of the file from the SP. The confirmation shall include the entire TN record processed, date and time processed, number of records processed, number of records that erred, and the actual error records. This can be accomplished with any NENA data exchange format. As a long-term solution, SPs want confirmation of not only DBMS updates, but also confirmation of ALI and selective router updates being processed.
- 4.3 9-1-1 DBMSPs must not correct a SP's error records without that SPs written authorization.
- 4.4 9-1-1 DBMSPs must work Function of Change (FOC) errors with written authorization and return the remaining errors to the appropriate SP 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
- 4.5 9-1-1 DBMSPs shall be responsible for loading ALI systems. SPs shall not update ALI systems directly.
- 4.6 Where not restricted by law, it is desirable that 9-1-1 DBMSPs 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.
- 4.7 When a telephone subscriber disconnects their telephone service, the number must be deleted from the 9-1-1 ALI and DBMS except when the telephone number is a soft dial tone number (see Section 5.9).

- 4.8 DBMSPs shall provide restricted clerical access by NENA ID to all SPs. This will allow the SPs access to their TN and error records. Additionally, MSAG view only shall be allowed. It is desirable for SPs to correct errors and manage their TNs in the DBMS. This process does not circumvent the routine service order update process.
- 4.9 In order to maintain database accuracy and update timeliness, 9-1-1 DBMSPs must forward copies of all MSAG Update Requests, ANI/ALI Trouble Reports, Daily Error Files, No Record Found (NRF) reports within one (1) business day of receipt to all SPs. Additionally, all documents must be logged with date/time stamp.
- 4.10 The DBMSP shall first investigate the NRF to determine if the number is in the database. If the TN was in the DBMS at the time of the call, the DBMSP will investigate the reason that ALI was not displayed and report findings to the Jurisdiction.
- If the wireline number is not in the DBMS, the DBMSP will determine ownership of the telephone number and forward the NRF report to the SP within one business day of receipt from the jurisdiction.
- 4.11 All dial tone and data provider TN records must contain a unique NENA ID that is officially registered with NENA.
- 4.12 It is preferred that only MSAG valid records be updated to the ALI database. NRF conditions shall occur rather than the posting of non-MSAG valid data to the ALI database.
- 4.13 The DBMSP is required to treat all SPs records with parity according to FCC guidelines.
- 4.14 If the wireless callback number is delivered as ANI, the ALI query owner/routing provider needs to be able to distinguish whether the call is from a wireline or wireless phone, and shall indicate that in the class of service field on the display. If the pANI is sent as ANI, the display is not an issue, since only the information for the pANI will display.

5. Service Provider's Responsibilities (Refer to Exhibit A)

- 5.1 All SPs providing dial tone or ALI record source information providers must have a NENA registered Dial Tone Provider NENA ID or Data Provider NENA ID. DBMSPs must maintain a table containing all NENA IDs and all incoming records shall be validated to ensure that a valid Dial Tone Provider NENA ID and/or Data Provider NENA ID NENA are contained on each incoming record before any service order processing begins into the DBMS. Records without a registered ID shall be returned to the originator with an error code.
- 5.2 It is preferable that all SPs MSAG validate 9-1-1 daily updates.
- 5.3 If a SP is pre-scrubbing their records, they must work closely with the 9-1-1 DBMSP and the Jurisdiction in order to maintain a mirror image of the 9-1-1 DBMSP's MSAG.
- 5.4 If a SP 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 SPs responsibility to correct the spelling of the MSAG community name before sending the record to the 9-1-1 DBMSP. If SPs do not transmit MSAG valid data to DBMSPs, records will error and as such must be transmitted back to the SP for correction. This will cause a delay in updating the ALI database.
- 5.5 Exchange name validation is no longer valid with SP 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 SP must be advised by the Jurisdiction what the valid postal community name is for that particular MSAG range. NENA Versions 3, 4, and XML have two community name fields: MSAG community name and Postal community name.
- 5.6 If a SP is reselling services for another SP, the NENA 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 shall require the 24-hour trouble number for the dial tone provider.

Note: NENA V2.1, 3 and 4 allow for two NENA ID's: Dial Tone Provider NENA ID and Data Provider NENA ID.
- 5.7 All SP's TN records must contain at a minimum a unique Dial Tone Provider NENA ID. The NENA ID must also be included on any TN listings or white page listings that may be sent to a Jurisdiction for their use with readdressing.

- 5.8 Each SP 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.
- 5.9 Soft Dial Tone is a service provided at a wireline subscriber's location who has disconnected service and the SP chooses to leave the facilities in place to this location allowing service to be provisioned quickly for a new subscriber at that same location. This service provides dial tone with calling ability limited to the SP's business office and/or 9-1-1. When 9-1-1 is dialed from this type of soft dial tone service, the PSAP may not have the ability to call the subscriber back if the service does not allow incoming calls.

It is desirable that if a SP provides soft dial tone, an ALI record also be provided until a "live" customer assumes the service. If call back is unavailable, this must also be indicated in the ALI response message. It is further preferable that in the XML field, Special Attention Indicator (SAI), a value of "3" shall indicate soft dial tone, callback available; and a value of "4" shall indicate soft dial tone, callback NOT available. The customer name field shall not reflect the previous customer name when the customer has disconnected service. A suggested example is shown below:

Example of Soft Dial Tone ALI record: SOFT DIAL TONE -- NO CALLBACK

It is desirable that if a wireline SP supports suspended services including but not limited to vacation service and temporary denial for non-payment, the ALI record not be removed from the 9-1-1 database unless the subscriber's account is permanently disconnected. At that time, the dial tone provider may choose to place soft dial tone at the location. If that occurs, Section 5.8, SP Responsibilities, standards apply. When 9-1-1 is dialed from a line with any type of suspended services, the PSAP may not have the ability to call the subscriber back if the service does not allow incoming calls. Should this occur, a live or recorded intercept message may be heard. As the ALI record has not been removed, the existing customer information must be provided to the PSAP.

- 5.10 Carriers who supply Type 1 interconnection telephone numbers to wireless carriers shall ensure that those TNs are **NOT** included in the 911 DBMS.
- 5.11 Wireline NRF reports must be investigated and resolved within one business day of receipt. The investigation results (e.g. record entered in DBMS, line disconnected) must be communicated to the Jurisdiction and/or the DBMSP (verify process with DBMSP).

Wireless NRF reports shall be investigated by the SP as soon as possible and results of the investigation returned to the Jurisdiction within 5 business days of receipt.

6. NEW ENHANCED 9-1-1 CONVERSION STANDARDS (Refer to Exhibits A and B)

- 6.1 At the time the 9-1-1 DBMSP enters into an E9-1-1 Contract or signs a Letter of Agreement with a Jurisdiction, the 9-1-1 DBMSP is responsible for notifying all SPs within that Jurisdiction's boundaries of the conversion to a new Enhanced 9-1-1 system. SPs include PS911 and wireless SPs. 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. The 9-1-1 DBMSP and all SPs must jointly agree upon all customer timelines and commitments. 9-1-1 DBMSPs may not make commitments for SPs.
- 6.2 Within 30 days of Contract or Letter of Agreement signing, the 9-1-1 DBMSP shall host a meeting and/or conference call with all SPs, the United States Postal Service/Canada Post, and the Jurisdiction's address coordinator and/or address vendor to discuss conversion requirements and procedures.
- 6.3 The 9-1-1 DBMSP and each SP must 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 shall not be used to create an MSAG in order that all records 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 DBMSP shall **NOT** occur until the final MSAG is approved by the Jurisdiction.
- 6.5 It is required that city style, {911 Dispatch Lane, 911911 Highway 11} United States Postal Service/Canada Post approved addressing be adhered to. United States Postal Service Publication 28 is the required thoroughfare abbreviation (street suffix) standard and is available through the National Address Information Center in Memphis, TN, at 1-800-238-3150 or may be downloaded at: <http://pe.usps.gov/cpim/ftp/pubs/Pub28/pub28.pdf>. The Canadian Addressing Guide may be downloaded from the Canada Post / Postes Canada web site at URL :
- English:
http://www.canadapost.ca/business/offerings/address_management/can/addressing_guide-e.asp
French:
http://www.postescanada.ca/business/offerings/address_management/can/addressing_guide-f.asp

- 6.6 It is required that the Jurisdiction coordinate addressing standards with the United States Postal Service/Canada Post to ensure accurate and common addressing.
- 6.7 It is desirable that Jurisdictions, DBMSPs, and SPs have a 98% database accuracy (MSAG valid ALI records) prior to taking 'LIVE' Enhanced 9-1-1 calls.
- 6.8 During conversion each SP must work directly with the Jurisdiction to obtain MSAG valid addresses for their telephone service records.
- 6.9 Fictitious addresses or "NO ADDRESS" shall not be used.
- 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 DBMSP or SP shall 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 preferable that the Jurisdiction work with the appropriate SP 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 the 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 SP to a Jurisdiction who is addressing must also contain the SP's NENA ID as a field in each record. This shall allow the Jurisdiction and/or their addressing vendor to return any address correction to the appropriate SP.

7. GOVERNMENT ENTITIES RESPONSIBILITIES (Refer to Exhibit A)

7.1 General

- 7.1.2 It is suggested 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 SPs and/or the DBMSP, whichever is applicable.
- 7.1.3 If a Jurisdiction has multiple PSAPs, cities, townships, etc who are responsible for their own addressing and error resolution, it is preferred 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.
- 7.1.4 It is a Jurisdiction's responsibility to notify all known SPs of the Jurisdiction's current contact name, telephone number, fax number, and mailing address. Refer to NENA 06-001, NENA Standards for Local SP Interconnection Information Sharing.
- 7.1.5 It is desirable that every attempt be made to return written inquiries from SPs 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 SPs. The jurisdiction may negotiate with their DBMSP to provide this advance notification. The DBMSP is then responsible for notifying all SPs 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 must supply the information to the appropriate SP(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. It is desirable that all readdressing be sorted by NENA ID, NPA/NXX, or some other locally determined method which shall allow the work to be sent to the correct SP. Refer to Section 2. General Data Standards in NENA 02-011 and NENA 06-001, NENA Standards for Local SP 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 SPs. 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 SPs receive a copy within one (1) business day. Refer to Exhibit D for complete flow. The jurisdiction may negotiate with their DBMSP to provide copies of the MSAG Update Requests to other SPs. If this agreement is reached, the DBMSP is then responsible for forwarding a copy of all MSAG Update Requests within one (1) business day to all SPs.
- 7.3.3 As NRFs, misroutes, or erroneous ALI displays are noted at the PSAP, it is required that a 9-1-1 Inquiry Form 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 DBMSP within one (1) business day. Refer to Exhibit C 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 dial tone (Service Provider) based on the Dial Tone Provider NENA ID displayed at the time of the call.

- 7.4 The Jurisdiction is responsible for obtaining as much information as possible on the NRF and reporting the information within one business day to the SP. It is desirable that the Jurisdiction locate the SP for a Wireless Call by using the various systems available (NPAC, NeuStar IVR – refer to Section 29). Wireline NRF reports may be forwarded directly to the DBMSP.

The ANI on the NRF is absolutely necessary. The date and time of the call are critical and must be provided for any investigation to occur. Any other information obtained from the caller is helpful for investigation of the NRF.

7.5 DBMSP ELT Tables to Jurisdiction's ESN Listing

It is desirable 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.

7.6 It is preferred 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 will be beneficial 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 shall create benefits by reducing daily errors, NRFs, misroutes, processing 9-1-1 inquiry forms, and liability

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.

Output Files/Reports: Reports that reflect any discrepancies in any of the compared fields. The DBMSP must obtain 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)

7.7 The County and/or Municipality officials shall be the entity responsible for addressing and numbering systems. However, it is required that a system be selected that best supports the following:

- Clear identification of addresses for specific physical locations, without duplication of house numbers and street names within jurisdiction or postal areas.
- Designed to handle future MSAG additions with minimal disruption to the addressing initially established.
- Addressing shall be coordinated between municipalities, emergency service providers, and the United States Post Office/Canada Post.
- The 9-1-1 jurisdiction determines the ALI displayed community name. If a postal community is not used, this must be closely coordinated with the DBMSP as there are several methods for accomplishing this:
 - Use the English Language Translation tables (ELT) which defines responders (police, fire, ambulance) and add a community name that applies to each specific ESN.
 - Use an AKA process that can be applied at the house number range and street name level.
 - Use an abbreviation process that can be applied at the street name and/or community name level.
 - Dedicated 9-1-1 address in their service order systems.
 - Service address field in service order system.
- Comply with United States Post Office Publication 28/Canadian Addressing Guide addressing guidelines especially the thoroughfare abbreviations (street suffix).

Additional information may be found in NENA Publications:

- Addressing Systems, A Training Guide for 9-1-1
- E9-1-1 Database Guide (for street abbreviations, refer to United States Post Office Publication 28/Canadian Addressing Guide)

8. STANDARDS FOR ERROR RESOLUTION PROCESS

8.1 9-1-1 DBMSPs shall work Function of Change (FOC) errors with written authorization and return the remaining errors to the appropriate SP 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 SP 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 must send an MSAG Update Form to their 9-1-1 DBMSP and ALL SPs.

NOTE: By using the NENA 9-1-1 Database Administration Forms software provided on the Internet, a Jurisdiction will be able to Email all SPs and the 9-1-1 DBMSP 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 DBMSP, the appropriate SP(s) shall 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 preferred that Jurisdictions resolve errors within one (1) business day of notification.

8.6 An error is defined as any telephone number record that does not pass all database management system edits including but not limited to invalid or missing fields, table edits, or MSAG validation as determined by the ALI provider's DBMS.

9. ANI/ALI TROUBLE REPORTING PROCESS (Refer to Exhibit C)

- 9.1 All ANI/ALI Trouble Reports must be sent to the 9-1-1 DBMSP.
- 9.2 The 9-1-1 DBMSP must determine if there are any database or selective routing problems on their end prior to forwarding the trouble report to the appropriate SP.
- 9.3 Within one (1) business day, the 9-1-1 DBMSP must forward all ANI/ALI Trouble Reports to the appropriate SP indicating whether or not trouble was found on their end or if the SP needs to also check their equipment and systems.
- 9.4 The SP shall have one (1) business day to resolve the ANI/ALI Trouble Report and return it to the 9-1-1 DBMSP. Upon receipt, the 9-1-1 DBMSP must return a completion notification to the originator.
- 9.5 Refer to Exhibit C for Process Flow.

10. MSAG MODIFICATION PROCESS FLOW (Refer to Exhibit D)

- 10.1 The Jurisdiction's authorized 9-1-1 Database Coordinator is the only entity allowed to approve changes to the MSAG. It is required that no 9-1-1 DBMSP or SP make MSAG changes without written authorization from the Jurisdiction except for internal telco type fields such as county code and exchange code.
- 10.2 All SPs must obtain an initial complete MSAG via the negotiated medium (CD-ROM, file transfer, diskette, Email, paper) from the 9-1-1 DBMSP per the negotiated contracts. As Jurisdictions request changes to their MSAG, they shall forward a copy to all SPs unless arrangements have been made for the 9-1-1 DBMSP to forward a copy of the request to all SPs within one (1) business day. This is necessary to ensure all subscriber records contain MSAG valid addresses. Each SP must ensure their service order records are updated with an MSAG valid address.
- 10.3 When MSAG changes are made at the authorization of the jurisdiction, all affected TNs are updated. It is not the DBMSP's responsibility to provide a listing of affected TNs back to the SP. SPs are required to use the MSAGs to validate and identify their TNs impacted by the MSAG changes.
- 10.4 If a Jurisdiction is requesting an MSAG range deleted and there are TN records attached to the MSAG, it is required that the DBMSP print the associated TN's and return to the Jurisdiction 9-1-1 Database Coordinator prior to making any MSAG changes.
- 10.5 Refer to Exhibit D for Process Flow.
- 10.6 Structure-based MSAGs are not a NENA standard.

A structure-based MSAG is an MSAG consisting of a listing of all individual or shortened contiguous house numbers within a 9-1-1 service area, rather than a range of house numbers. Example: Structures at 1, 2, 3, 4, and 8 would be listed on the structure-based MSAG as 1-1, 2-2, 3-3, 4-4, 8-8 or 1-4, 8-8; rather than a complete range of 1-8.

Due to geographic limitations (uninhabitable property, mountains, open spaces, lakes, etc.), it may be necessary to have range gaps. Example: 1-7, 100-499, 700-999 on the same street.

The streets and addresses are assigned selective routing codes or emergency service numbers (ESNs) to enable proper routing of 9-1-1 calls. This type of MSAG contains only house numbers for those locations with a physical structure and/or telephone instrument.

- 10.6.A Building a structure-based MSAG does not improve or degrade data quality. Structure-based MSAGs may delay ALI updates and will require extensive manual intervention by both jurisdictions and DBMSPs.

- 10.6.B GIS Mapping supports geo-coding and can be used to create a traditional range-based MSAG. However, a traditional range based MSAG cannot be used to create a spatially accurate GIS database needed for geo-coding and GIS Mapping.
- 10.6C A jurisdiction desiring to utilize an in-house structure-based MSAG does so of their own choice. It is the jurisdiction's responsibility to ensure that all structure addresses are included in the range-based MSAG. The jurisdiction's database manager shall routinely compare the in-house structure-based MSAG to the range-based MSAG to ensure that all low and high house numbers are included.
- 10.6D A jurisdiction utilizing an in-house structure-based MSAG may request a complete TN extract file and/or a daily service order update file from their DBMSP to compare with the jurisdiction's own in-house structure-based MSAG. It is desirable that the jurisdiction periodically request a copy of their MSAG from the DBMSP to ensure accuracy (NENA 02-011, Section 7.6, Government Entities Responsibilities).

11. NO RECORD FOUND REPORTS

- 11.1 The 9-1-1 DBMSP shall provide centralized/regional ALI systems' "No Record Found Reports" to the appropriate SP on a daily basis.
- 11.2 It is required that SPs generate a service order update back to the DBMSP within one (1) business day, if appropriate. SPs 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.
- 11.3 For specific details on the handling of No Record Found or ALI discrepancy conditions, refer to the current edition of NENA's E9-1-1 Database Guide or consult with your DBMSP.

12. STANDARD ERROR CODES

<u>Group</u>	<u>Error Code</u>	<u>Description</u>	<u>MSAG/NON-MSAG</u>
Data Errors			
	100	Illegal Class of Service	NON-MSAG
	101	Illegal Type of Service	NON-MSAG
	102	Illegal Function Code	NON-MSAG
	103	Not MSAG Valid	MSAG
	104	House Number Not Valid [if DMS capable]	MSAG
	105	Street Name Not Valid [if DMS capable]	MSAG
	106	Directional Not Valid [if DMS capable]	MSAG
	107	Community Name Not Valid [if DMS capable]	MSAG
	108	Exchange Matching Failed	MSAG
	109	Illegal NENA ID (Section 2.14, 4.1, 5.1)	NON-MSAG
Functional Errors			ALL NON-MSAG
	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			LNP ERRORS
	300	Unlock Attempted on an unlocked TN (different NENA 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	NENA ID's Do Not Match on a Change or Delete	
	306	NENA ID's Do Not Match on unlock	

13. STANDARD FUNCTION CODES

- 13.1 I - Insert telephone record.
- 13.2 C - Change telephone record requires NENA ID field to match.
- 13.3 D - Delete telephone record requires NENA 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 NENA ID.
- 13.5 M - Migration transaction sent by the Recipient Company. This transaction requires an “unlocked” record in the 9-1-1 database and shall replace the customer information and the NENA ID on the "unlocked" record. The “M” function code does not require a match of NENA ID. If there is not a “U” record with the same telephone number in the 9-1-1 ALI database the “M” transaction must be treated as an error with a unique error code or a unique process.

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

- 13.6 E – Delete all error records associated with the corresponding calling telephone number that are in the DBMSP’s error file. No updates are made to the TN/ALI database when Function of Change (FOC) = E. Provides method for SPs to clean up any errors if no subsequent activity will be issued for the Calling Telephone Number.

14. METHOD OF COMMUNICATING

- 14.1 It is required that SPs 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 DBMSP and SPs} must contain an entry in the NENA ID field that is officially registered with NENA.

15. NXX ADMINISTRATION

DBMSPs shall be responsible for verifying LERG and assigning new NPA/NXX/Exchange/Selective Router data to their respective DBMS.

16. NPA SPLIT NOTIFICATION

Most SPs have an internal procedure for working NPA splits. However, due to the critical nature of 9-1-1 service, it is required that each Local SP notify in writing the 9-1-1 DBMSP and the Jurisdiction when an NPA split is occurring. It is further requested 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 DBMSPs and all SPs. When the 9-1-1 DBMSP has been notified of an NPA split it is required that they assume coordination responsibilities for updating all affected 9-1-1 databases under their control.

17. RETRIEVAL CONDITIONS for ALI Database Records

9-1-1 jurisdictions 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 confidentiality 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. DATA QUALITY MEASUREMENTS

The following Data Quality Measurements are being issued with the knowledge that some SPs will require extensive development to their current data management platforms and possibly to their legacy service order and billing systems which may take several years to accomplish.

It is also understood these measurements will only be available to SPs and governmental agencies if all metrics can be captured electronically. This means that all SPs must be able to transmit daily updates, daily stats, daily errors, and daily MSAG entries via a mechanized transmission. Also, government agencies must input all E9-1-1 inquiries, MSAG modifications, or any other work request into an online system in order for all metrics to be captured. NENA does not support any SP being required to manually track the data quality measurements unless mutually agreed to by all parties (SP and PSAP).

Many NRFs may be caused by service order processing delays. Some SPs do not generate an update to E9-1-1 and other systems until a service order is completed and error free. The number of NRFs is increasing due to changing technologies (wireless, manual bids, VoIP, etc.). All NRF conditions shall be identified with a type code for the technology being used that produces the NRF telephone number.

At a minimum, all reports shall be available by the DBMSP at the following levels: ALI Provider NENA ID, Data SP NENA ID, State, County, and PSAP.

It is desirable that all supporting detail to the reports be retained for a minimum of a rolling three (3) month period.

NOTE: Currently, some DBMSPs return errors electronically to the originator and do not retain copies on their system. In order to generate the data quality measurements, DBMSPs must retain all errors for all SPs.

NOTE: Systems need to store additional times besides modification date; i.e., receipt in DBMS, date error cleared, in the following format:

YYYY:MM:DD

HH:MM:SS

2002:09:11

09:33:10

18.1 TOTAL # OF E9-1-1 INQUIRIES AS COMPARED TO TOTAL ALI QUERIES BY NENA ID.

SHORT-TERM SOLUTION: ALL E9-1-1 INQUIRIES / TOTAL ALI QUERIES.

Note: Total ALI queries currently include manual queries, wireless, transfers, screen refreshes, ANI failures, Incomplete ANI, ESCO Codes, Anonymous Calls.

LONG-TERM SOLUTION: ALL E9-1-1 INQUIRIES / TOTAL ALI QUERIES

EXCLUDING manual queries, wireless, transfers, screen refreshes, etc. The NENA CPE Committee has been asked to create a standard that all PSAP equipment generate a Query Type indicator.

Note: If a PSAP is served by an on-premise or stand-alone ALI database, it is the PSAP's responsibility to electronically input all requests in order for this measurement to be valuable. NRF statistics for PSAPs served by a centralized ALI system shall be mechanically retrieved from that system.

18.1.1 % NO RECORD FOUNDS (NRFs)

Number of NRFs as compared to number of ALI queries.

How used: A SP may use to determine if audit or reload is required. Determine if there is a pattern of certain NXXs or thousands groups missing. May also indicate delays in updating ALI. (Misroutes, MSAG Discrepancies, ALI Discrepancies are not counted.)

Formula:
$$\frac{\text{NRFs}}{\text{TOTAL ALI QUERIES}} = \% \text{ NRFs}$$

18.1.2 % MISROUTED CALLS

Number of Misrouted calls as reported as compared to ALI queries. (NRFs, MSAG Discrepancies, ALI Discrepancies are not counted.)

Formula:
$$\frac{\text{TOTAL MISROUTED CALLS}}{\text{TOTAL ALI QUERIES}} = \% \text{ MISROUTED CALLS}$$

18.1.3 % MSAG DISCREPANCIES

Number of MSAG Discrepancies as reported as compared to ALI Queries. (NRFs, Misroutes, ALI Discrepancies are not counted.)

Formula:
$$\frac{\text{MSAG DISCREPANCIES}}{\text{TOTAL ALI QUERIES}} = \% \text{ MSAG DISCREPANCIES}$$

18.1.4 % ALI DISCREPANCIES

Number of Incorrect Address inquiries as reported as compared to ALI queries (NRFs, Misroutes, MSAG Discrepancies are not counted.)

Formula:
$$\frac{\text{INCORRECT ADDRESSES}}{\text{TOTAL ALI QUERIES}} = \% \text{ ALI DISCREPANCIES}$$

18.2 % SUCCESSFUL ALI QUERIES

Total # of Successful ALI Queries as compared to Total ALI Queries.
(Overall picture as to total health of the E9-1-1 data base.)

SHORT-TERM SOLUTION: Total ALI queries SHALL include manual queries, wireless, transfers, screen refreshes, etc.

LONG-TERM SOLUTION: Total ALI queries SHALL NOT include manual queries, wireless, transfers, screen refreshes, etc.

Formula:
$$\frac{\text{TOTAL \# OF SUCCESSFUL ALI QUERIES}}{\text{TOTAL ALI QUERIES}} = \% \text{ SUCCESSFUL ALI QUERIES}$$

18.3 TOTAL POSTING TIMES (conception to grave -- Days/Hours/Minutes/Seconds)

It is recognized that some SPs may need to modify their systems to reflect: date, time, and user ID of ALL persons touching the request so that at any point in time a user will know where a request is or who delayed completion of the request. Suggested, but not inclusive, points of logging/status are: PSAP entry, Jurisdiction entry or approval, County Administrator entry or approval, Telco Receive and begin work, Referred, Withdrawn, Rejected, Completed.

It is required that all posting times be tracked so that delays in the process can be identified and that a particular individual entity can be made aware of the delay they are causing in the accuracy of the E9-1-1 database. It is therefore required that a layered approach be taken for these measurements.

For example: PSAP to County Coordinator
County Coordinator to DBMSP
DBMSP to SP
SP to DBMSP
DBMSP to County Coordinator
County Coordinator to PSAP

18.3.1 Individual Entity and total posting time for E9-1-1 inquiries (ANI/ALI) from receipt to completion, county to SP to SP to SP to county, etc.

18.3.2 Individual Entity and total posting time for MSAG updates from receipt to completion, telco initiated and jurisdiction initiated.

Comments: Current approved standards indicate telcos have 1 business day to complete request. Jurisdictions have 5 business days to complete request as they usually have to work with another department within the county or city who is responsible for addressing, unless state regulations or local contracts are in force.

18.4 MONTHLY SUMMARY OF DAILY ERRORS (DBMS/DMS/TSS)

18.4.1 % Service Order Accuracy (% SO Accuracy)

Total Number of Incoming Errors for the month from service order processing compared to total number of records processed for the month, per NENA ID, broken down by MSAG Errors, Non-MSAG Errors (includes table and format errors), and LNP Errors. NOTE: Informational only error codes are not to be included, but data shall include all records processed whether conversion or live.

Formula:

$$\frac{\text{Company's Total SO Records Processed} - \text{Company's Total SO Incoming Errors}}{\text{Company's Total SO Records Processed}} = \% \text{ SO Accuracy}$$

18.4.2 % Database Accuracy (% DB Accuracy)

Total Number of Unresolved Errors in the DBMS on the last day of the month as compared to total records in the DBMS on the last day of the month, per NENA ID. All error codes to be reported and broken down by MSAG Errors, Non-MSAG Errors, and LNP Errors. NOTE: This measurement is strictly a snapshot in time. Only count one error per individual telephone number. Data includes conversion activity.

Formula:

$$\frac{\text{Company's Total Records in DBMS}}{\text{Company's Total Records in DBMS} + \text{Company's Total Unresolved Errors}} = \% \text{ DB Accuracy}$$

18.4.3 Average Resolution Time

Average number of calendar days before error resolved, by MSAG Errors, Non-MSAG Errors, and LNP Errors, by specific error code, by NENA ID, by state -- including resellers. Report shall be run the 1st of the month and report the preceding month's statistics. This report measures average resolution time from the time the error is first detected until the time the error is resolved. NOTE: Data includes conversion activity.

SAMPLE:

NENA ID: ABCD		STATE: AK			(2 decimal places)
Error Code	Qty Recd.	Qty Resolved	Qty Pending	Avg. Resolution Time	
MSAG Errors	505	25	480	10.15 days	
103					
104					
105					
NON-MSAG Errors	250	10	240	5.10 days	
100					
101					
102					
109					
LNP Errors	1646	1305	341	60.00 days	
300					
301					
302					

18.4.4 Aging Report

Actual number of calendar days a record has been in error, by MSAG Errors, Non-MSAG Errors, and LNP Errors, by NENA ID, by state. . Report shall be run the 1st of the month and report the preceding month's statistics. NOTE: Data includes conversion activity.

SAMPLE:

NENA ID: ABCD		STATE: AK								
Error	Total Errors	0-3 days	4-7 days	8-14 days	15-30 days	31-60 days	61-90 days	91-120 days	121-364 days	+1year
MSAG Errors										
103										
104										
105										
NON-MSAG Errors										
100										
101										
102										
109										
LNP Errors										
300										
301										
302										

18.5 LNP MEASUREMENTS

18.5.1 How long does it take to get a number ported? The length of time between the time the TN was working in NPAC until the time the TN was updated to ALI.

18.5.1A Period of time TN working in NPAC to time unlock received in DBMS (tracks donor's responsiveness)

18.5.1B Period of time between TN being unlocked and migrate received in DBMS (tracks recipient's responsiveness)

18.5.2A Quantity of TNs unlocked with no migrates received - NPAC validated – Locked to new SP.

18.5.2B Quantity of migrates received not unlocked by old SP - NPAC validated – migrate processed.

18.5.3A Period of time between receipt of "U" to receipt of "M". This measures LNP processes and the "M" is counted whether it updates the TN DB or creates an error. The error shall be measured by other Quality Measurements.

18.5.3B Period of time between receipt of "M" to receipt of "U". This measures LNP processes and the "U" is counted whether it updates the TN DB or creates an error. The error shall be measured by other Quality Measurements.

18.5.4 % of "M" records that work the first time because the "U" was already available. (implies no NPAC validation was required by the DBMSP)

Formula:
$$\frac{\text{Total "M" Records} - \text{Total "M" Errors}}{\text{Total "M" Records}} = \% \text{ Successful Migrates}$$

19. DATA AUDITS / RECONCILIATIONS / COMPARES

This section will set standards for SPs and DBMSPs 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 essential that prior to reconciliation between SPs 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 directionals, etc. This document only defines which systems and/or databases are to be reconciled. Each SP must review their own internal processes to determine exact data flow and to ensure that all areas are audited appropriately. All extracts exchanged between SPs must be in one of the NENA Standard Data Exchange formats documented in NENA 02-010, Standards For Formats & Protocols For Data Exchange.

SPs must rethink their extract criteria, as the old processes of using NPA/NXX are no longer valid with Local Number Portability. Extracts must 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, it is required that a complete review of the SPs' 9-1-1 extract logic be performed and the following questions 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 be performed in lieu of an audit.

All audit outputs and reports must 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 must 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 shall 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.

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.

SPs 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.

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 SP to DBMSP MSAG Compares

It is required that prior to any ALI or TN reconciliations/audits being performed between SPs, an MSAG compare/audit be completed. If the DBMSP 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 SP'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).

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.

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

19.3 Reseller Audit

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

19.4 Customer Record Information Systems (CRIS) (Service Order & Billing Systems or internal 9-1-1 DBMS) to 9-1-1 DBMSP (TN records)

It is required that all SP's compare their customer data against the 9-1-1 DBMS. This audit shall 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. If ones own internal DBMS is used, an internal audit must 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 DBMSP's DBMS.

This type of audit requires extensive coordination efforts between the DBMSP and SP. The party responsible for performing this audit must be agreed upon by all involved. These types of audits must be performed at the Dial Tone Provider NENA ID 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.

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, NENA ID, Class of Service, DBMS Lock/Unlock Status, and Type of Service.

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

Output Files/Reports:

- All TN's that match in all audited fields shall NOT be written to output. The following comparisons assume that files are extracted by Dial Tone Provider NENA ID.
- All TN's on the billing file and not on the DBMS file shall be written to output as 'I' insert records. Assuming the NENA ID on the insert is for the NENA ID being audited, the insert file may be mechanically worked. Each individual TN on this report must be reviewed to ensure accuracy.
- This report will be the '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 shall 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 shall 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 shall 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 shall be written to output as 'D' delete records for investigation. NENA Standards suggest not removing 'unlocked' records. (See Section 22)

NOTE: This report will point out records where 'M' was not received because the DBMSP has changed.

- Additionally, a statistical report shall be provided by mutual agreement. Some of the items to be shown on the report shall 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 required that DBMSPs perform routine synchronization processes between DBMS and ALI databases. By doing this they are constantly ensuring the two databases are identical. This pertains only to wireline records.

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.

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, NENA ID, Class of Service and Type of Service.

Output Files/Reports:

- All TNs that match in all audited fields shall NOT be written to output.
- All TNs on the DBMS file and not on the ALI file shall be written to output as 'I' insert records. Root cause analysis shall 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 shall be written to an output report that reflects one line with the DBMS information and one line with the ALI information. This report will 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 shall 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 shall 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 Dial Tone Provider NENA ID.

Additionally, a statistical report shall be provided by mutual agreement. Some of the items to be shown on the report shall 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 DBMS. 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 shall be conducted and the system and/or application support vendor shall 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 must make the corrections in the Selective Router Database. If major routing problems are 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 SP and also wants to keep his telephone number, service is provided via a Remote Call Forwarding (RCF) arrangement. RCF allows the donor 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 must send an insert (I) function code transaction record to the DBMS for the new telephone number they have assigned, because that is the telephone number that will now ANI. The recipient LEC must include in that transaction record the donor LEC telephone number that is being forwarded. That donor LEC number must be displayed at the PSAP with the label "ALT#". The recipient LEC must populate that forwarded donor LEC number in the NENA 02-010 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 DBMSP must attach the label "ALT#" for the ALI display.

- 20.2 The recipient LEC must send the actual ANI from their switch through the network, not the RCF number.
- 20.3 It is required that the donor LEC in an INP process send a disconnect (D) function code transaction record update to the DBMSP 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 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 must send an insert (I) function code transaction record to the DBMSP on the donor LEC’s LNP ported number prior to the start of the INP to LNP conversion.
- 21.4 The recipient LEC must send a disconnect (D) function code transaction record to the DBMSP 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 DBMSP for any valid NPA-NXX that has access to 9-1-1.
- 22A.2 Adopt the use of the NENA ID on all transactions and include it on all embedded telephone number records in the 9-1-1 database. The telephone number and NENA ID relationship must remain the same until the record is unlocked and migrated or completely disconnected. For these standards to work a SP providing both wireline and wireless services must have separate NENA IDs and SPIDs. For the purposes of this document fixed wireless service is recognized as wireline service.
- 22A.3 The DBMSP and LEC must work together to modify the embedded telephone numbers to include the 3-5 character NENA ID as referenced in the document “*NENA ID Registration Service*” available through the NENA National office.
- 22A.4 Where SP and data provider are the same, the SP identified by NPAC/LSMS/IVR validation, upon completion of porting, is responsible for accurate representation of their end user telephone number record in the 9-1-1 DBMS database. Where they differ; i.e.; PS911 records, the data provider is responsible for the accuracy of the records. 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 standard Local Service Request (LSR) form. This shall 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 Created two (2) additional function codes for *NENA-02-010, NENA Formats for Data Exchange* to assure data integrity:

U -Unlock function transaction record sent by the donor LEC. This shall make the telephone number available for the recipient LEC to overwrite the embedded telephone number record. The “U” function code requires a match of NENA 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 shall replace the customer information and the NENA ID on the "unlocked" record. The “M” function code does not require a match of NENA ID.

- 22A.7 When the subscriber location and DBMS remain the same, the ported out telephone numbers must 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 must send a complete telephone number transaction record to migrate the end user's service, not just the telephone number and NENA ID.
- 22A.9 When a customer ports a telephone number and moves at the same time, the affected LEC's must provide the following information:
- The donor LEC must provide a delete (D) function code transaction record if the EUMI field on the LSR is "Yes"
 - The recipient LEC must provide a migrate (M) function code transaction record to the DBMS
 - The DBMSP must change the recipient LEC's migrate (M) function code transaction record to an insert (I) function code transaction record and process the record when there is no existing telephone number record in the ALI database.
- 22A.10 The following edits for the C and D function codes in the NENA-02-010, *NENA Formats for Data Exchange* for transactions are in addition to any existing edits:
- C - Create error conditions if NENA 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 NENA ID does not match between the embedded telephone number record in the 9-1-1 database and the delete transaction record.
- 22A.11 It is required that the service orders be completed on the date (completion date) the porting activities occur. It is required 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 DBMSP.
- 22A.12 It is expected that cooperative efforts occur between SPs 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.13 During porting, it is the responsibility of the recipient company to care for the final disposition of all the TN records being ported. If there are numbers that have been ported that will no longer ANI, then the recipient company must generate the migrate and the delete.
- 22A.14 Each LEC must 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 suggested 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 must 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 required that Stand Alone Databases providing 9-1-1 ALI data to areas where LNP is operational, must 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 shall 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 shall compare "failed migrates" to the NPAC (or LSMS database) at a minimum of once each business day. (See Exhibit F)
- a. If the NPAC SP 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 recycle 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 SP that is not the Recipient company, the (M) migrate record shall be deleted. The company that sent the migrate record and the NPAC identified SP are sent notification of this activity. The NPAC identified SP 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 SP that is not the Recipient company, the (M) migrate record shall be deleted. The Recipient company and the NPAC identified SP are sent notification of this activity. (See Exhibit G)

It is desirable that the reporting activities by the DBMSP detailed above 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 SP 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 NENA ID used by the 9-1-1 database systems is other than the SPID used by the NPAC-SMS / LSMS, it is understood that the above standards 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 SP, 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 SP that is not the Recipient company, the (I) insert record shall be deleted. The company who sent the insert record and the NPAC identified SP are sent notification of this activity. (See Exhibit H)

- 22B.3 Until the DBMS SP 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 NENA 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 DBMSP shall 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 DBMSP shall 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 shall generate an informational error. If the final migrate (M) function code transaction update attempt fails, the transaction must be treated as an error. Pursuant to local regulations, it is desirable that the NENA ID of the locked telephone number record in the DBMS be identified in the error record.
 - f. It is preferable that the DBMSP 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 shall 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. It is desirable that written notification 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 shall be used.

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

22C.1 The DBMS SP must 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 SP owner is the Donor Company, the E911 DBMS record shall be relocked to the NENA ID of the Donor Company. The Donor Company must be sent notification of the DBMS action taken.
- b. If the NPAC SP owner is a wireline company other than the Donor Company, the E911 DBMS record shall be locked to the NENA 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 SP is a wireless company other than the Donor Company, the unlock shall 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 DBMSP has implemented standard 22C.1 the following standards must be complied with:

E911 Database SPs must 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 must be translated to the appropriate NENA ID. The compare shall 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 SP from the E911 database. A TN file is created of these records and sorted by the NENA ID. This file will be sent to the recipient company identified as the SP for the stranded unlock records for resolution within five (5) business days.
- b. The NPAC database shows the same SP as the E911 database. A TN file of these records is created and sorted by the NENA ID. This file must be sent to the company identified as the SP 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 ID. Notification must 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 shall 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 shall create a statistical report identifying by NENA ID the number of stranded unlocked records aged more than 30 calendar days. This file shall be sent as notification to the appropriate emergency governing authorities.

22D. WIRELINE/WIRELESS PORTING

22D.1 Wireline to Wireless porting: The Donor Wireline SP must send delete (D) function code transaction records to the DBMSP to remove the wireline database record.

22D.2 Wireless to Wireline porting: The Recipient Wireline SP may send either migrate (M) function code transaction records or insert (I) function code transaction records or to the DBMSP to establish the E911 database record. If the migrate (M) function code is used, it is preferable that the DBMSP 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.

22D.3 NPDI Standard

In the interest of Public Safety, the National Emergency Number Association (NENA) standard requires that the Number Portability Direction Indicator (NPDI) field on the Local Service Request (LSR) be populated with one of the following OBF-sanctioned values:

- A = wireless to wireless port translates to no record update to the 911 database
- B = wireless to wireline port translates to "Insert" Function Code adding wireline TN record to 911 database
- C = wireline to wireless port translates to "Delete" Function Code eliminating wireline TN record from 911 database
- D = wireline to wireline port translates to an "unlock" & "migrate" Function Code to identify the new SP's NENA ID in the 911 database

It is preferred that all SPs include this requirement in their Interconnection Agreements with other SPs.

22D.4 If the wireless callback number is delivered as ANI, the ALI query owner/routing provider needs to be able to distinguish whether the call is from a wireline or wireless phone, and shall indicate that in the class of service field on the display. If the pANI is sent as ANI, the display is not an issue, since only the information for the pANI will display.

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, it is required that steps be taken to insure that the integrity of the 9-1-1 DBMS database is upheld.
- 23.2 It is required that the internal company service order to port the number back to its own switch does not generate any update to the DBMS database. The Telephone Number record in the DBMS database is required to remain exactly the same since the customer name, address, telephone number remains the same and the same NENA ID remains on the record. Therefore, it is required that LEC's be cautious to ensure that no update is sent to the DBMS unless otherwise advised.

24. 24 X 7 CONTACT NUMBER WITH THE ALI RESPONSE MESSAGE

It is desirable that a 24x7 contact telephone number for the facility based SP be included in the ALI Response Message sent to the PSAP. The PSAP must call this 24x7 contact number for assistance with facility-based requests such as call interrupts and trap/traces. This section 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 preferable that the ALI database provider include the Telephone Company 24x7 contact number within the ALI Response Message sent to the PSAP.

The data must be included in the ALI Response Message using the label SPN, for SP Number. The label must 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
- UNAVAILABLE

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 shall be used to indicate that the NENA ID within the ALI database record was not found in the NENA ID table/database. It is desirable that the PSAP complete a PSAP inquiry to alert the ALI database provider that a NENA ID entry is missing from the NENA ID table/database and must be investigated. The ALI database provider is required to verify the NENA ID value against the latest NENA ID information found on the NENA web site. If the NENA ID is found on the NENA web site with a 24x7 contact number, the ALI database provider must refresh their internal table/database with the latest information from NENA. If the NENA ID is not found on the NENA web site, the ALI Database provider must identify and contact the appropriate person with that telephone company and request they obtain an official NENA ID and provide their 24x7 contact number.

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

A value of UNAVAILABLE shall be used to indicate a system problem accessing the NENA ID table/database and the 24x7 contact number could not be determined. A PSAP Inquiry must NOT be completed in this case. If UNAVAILABLE repeatedly appears in the ALI Response Messages, the PSAP must call the ALI database provider to report the problem.

Values of NOT FOUND and UNAVAILABLE are preferable 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 must use the NENA ID table as their data source for the 24x7-telephone company contact number.

The NENA ID table may be downloaded from the NENA web site. File and record format specifications are included on the NENA web site.

Each row of the NENA ID table shall include a date stamp to indicate when a specific table entry was last updated. There shall also be a date stamp for the entire table. ALI database providers shall 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 NENA ID within the ALI database record must be used to search the NENA ID table for a match. If a match is found the corresponding 24x7 contact number shall be inserted in the ALI Response Message with the label SPN. If no match is found, label SPN shall be followed by NOT_FOUND_. If the search cannot be performed, label SPN shall be followed by UNAVAILABLE. It is preferable that either of these two conditions be logged by the ALI database provider and appear on a report for internal investigation.

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

It is desirable that the NENA Data Sharing Study Group also periodically audits and validates this information during the year. Telephone Companies shall be contacted if the 24x7 contact number is no longer valid. Appropriate updates shall be made to the NENA ID 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 shall 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 shall then be done on a list of all NPA/NXX codes that are valid in the DBMS. Number Pooling shall require that the lookup be done at the 1K block level. This file shall contain the SP 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) shall be obtained from the Call Set Up Database – the LRN is unique to a specific switch of a specific SP. A query shall be done on the LRN with the SP and appropriate 24x7 contact number being returned. This information shall be displayed at the PSAP instead of the traditional “Record Not Found” message.

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

The DBMS system administrator shall maintain a table of valid NPA/NXX codes. The table shall be defined at the thousands block level due to the impact of Telephone Number Pooling. Each table entry shall 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 SP’s switch to the Selective Routing tandem.

- Each SP is 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 shall identify the SP 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 shall 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 shall result in displaying the ESCO ALI record containing the SP name and 24x7 contact number.

- It shall be the responsibility of the SPs to establish and maintain the ESCO ALI records for all of the ESCO ANI numbers for their ESCO codes and to assure current/accurate NENA 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 suggested to obtain the 24x7 number for each SP who is implementing LNP.

Calls with ANI/ALI - Using the NENA web page obtain the 24x7 number and NENA ID for each of the SPs 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 shall have the NENA ID on your ALI screen, reference the NENA list for the appropriate 24x7 contact number for the SP.

Calls with no ALI – use the NeuStar IVR (formally known as Lockheed Martin IVR) – (to register with NeuStar for IVR access go to: www.nationalpooling.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 SP 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 SP 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 SP shall require written confirmation of the exact date the SP is going out of business.
- 25.2 The SP going out of business must continue to submit transactions to the E911 DBMS SP for transferring and keeping up-to-date customers information as long as the SP remains in service.
- 25.3 The SP going out of business must unlock all remaining 9-1-1 records effective with its termination of service to enable any new SP to migrate the existing 9-1-1 record if the customer ports a TN after wind-down of business.
- 25.4 In the event the SP going out of business does not unlock all remaining records effective with its termination date the E911 DBMS SP shall be authorized to unlock all current SP going out of business records, on the effective date of going out of business. The E911 Data Provider must send written confirmation to the SP going out of business contact that all records were unlocked on the effective date of going out of business.

26. GLOBAL CHANGES TO NENA ID

A global change to the Dial Tone Provider or Data Provider NENA ID shall be made in the ALI DBMS when one of the following conditions **is** met:

- Non-contaminated NPA/NXX code migration from one carrier to another by NANPA, and as verified in the LERG (all 10,000 TNs) **OR**
- Non-contaminated NPA/NXX/X pooled block migration from one carrier to another by NANPA, and as verified in the LERG (all 1000 TNs) **OR**
- Entire NENA ID change (from xxxxx to yyyyy), as specifically agreed to by all parties.

Note: The recipient company is responsible for the accuracy of the data, including aged errors and stranded unlocks, after the NENA ID is changed.

In addition it **is required** that:

- The new NENA ID must be a registered NENA ID.
- The new NPA/NXX/X must also be transferred to the new owner's SPID in NPAC. If there are multiple NENA IDs assigned to the same SPID, the automated code migration process must be negotiated between the new SP and the ALI DBMSP.
- The request must be sent electronically to the ALI DBMSP. The ALI DBMSP shall convert the records in the database based on the following elements of information:
 - Old NENA ID
 - Authorization of old NENA ID owner, if available
 - New NENA ID
 - Name of Company requesting change
 - Name of person requesting change
 - Title of person requesting change
 - Address
 - Phone Number
 - Email address
 - Reason for change
 - Description of work being requested
 - Negotiated date change shall be executed

Note: For more information on NENA ID, please see NENA ID standard.
It is required that the request be retained based on the NENA Data Retention Guidelines

27. Unbundled Network Elements Platform (UNE-P) – Refer to Exhibit J

Unbundled Basic Service Platform is a combination of unbundled port, unbundled shared transport, and unbundled loops. These platforms shall provide CLEC's with residential and business local exchange service capability. With these platforms, CLEC's shall be able to provide Residence, Business, Centranet, ISDN BRI/PRI, DID/DOD, and Coin services. In addition, by purchasing UNE-P, the CLEC has access to all of the vertical features and functions of the switch, such as caller ID and call waiting.

Unbundled Network Elements (also known as UNE) are a requirement mandated by the Telecommunications Act of 1996. They are the parts of the network that the ILECs are required to offer on an unbundled basis. Together, these parts make up a loop that connects to a DSLAM or a voice switch (or both). The loop allows non-facilities-based telecommunications providers to deliver service without laying network infrastructure (copper/fiber).

DSLAM(Digital Subscriber Line Access Module):
 Networking, hardware: (DSLAM, or Digital Subscriber Line Access Multiplexer) The generic term for the Central Office (CO) equipment where xDSL lines are terminated. The multiple DSL signals may be multiplexed onto a wideband channel such as ATM.

ATM (Asynchronous Transfer Mode) used for both LAN and WAN is a means of digital communications that is capable of very High speeds; suitable for transmission of images or voice or video as well as data;

The matrix below reflects which entity shall be providing daily updates to the 9-1-1 DBMSP:

UNE TYPE	Port Provider (Dial-tone)	Loop Provider	Provide ALI Update to DBMSP
UNE-Platform	ILEC	ILEC	ILEC
UNE-Local Loop	CLEC	ILEC	CLEC
UNE-Port	ILEC	CLEC	ILEC

UNE-Platform: ILEC provides central office and outside plant facilities (loop).

UNE-Local Loop: Dial tone is provided by the CLEC and outside plant facilities (loop) are provided by the ILEC.

UNE-Port: Dial tone is provided by the ILEC and outside plant facilities are provided by the CLEC. On UNE Port, contracts shall say ILEC is required to update 9-1-1 database, BUT CLEC is responsible for advising ILEC of any changes to the TN record within one business day. CLEC shall be liable/responsible for all data, including address provided. ILEC shall be responsible for transmitting the information provided by the CLEC. CLEC shall be responsible for accuracy.

The NENA ID and 800 trouble number used shall be the dial tone provider's NENA ID. The dial tone provider shall use their own NENA ID or create a new unique one. It is understood that only the NENA ID owner can view the TN record in the 9-1-1 database.

28. DETERMINING OWNERSHIP OF A TELEPHONE NUMBER

INSTRUCTIONS FOR DETERMINING OWNERSHIP OF A PORTED TELEPHONE NUMBER AND TO OBTAINING A LOGIN ID TO NEUSTAR IVR:

- Go to: <http://www.nationalpooling.com/>
- At bottom of page click on "Law Registration"
- Click on "Law/911 IVR Registration" and complete the form.
- You will receive an email with your PIN, access number, and instructions.

Directions on how to use the IVR can be found at:
http://www.nationalpooling.com/law_911_registration/index.htm

TO DETERMINE OWNERSHIP OF NON-PORTED TNS

- Go to: <http://www.nationalpooling.com>
- Select Reports
- Select Pool by State Reports
- Select Blocks Report
- Select a State
- Select an NPA

You will receive a list of thousand group's owners. The "X" represents the 1000 block and there is also a column to indicate if the group is contaminated (not all same carrier TNs).

29. WIRELESS NO RECORD FOUND REPORTING PROCESS

Introduction

Members of the 9-1-1 jurisdiction, wireless SPs, LECs and third party database providers recognize that Wireless NRF conditions impact the quality of service for wireless 911 calls. Because of this, it is important that a standard process for reporting and resolving Wireless NRFs be implemented in order to maintain the level of Enhanced 9-1-1 service required by the FCC. A couple of assumptions have been made in the drafting of this Wireless NRF Reporting Process. They are:

- 29.1 It is incumbent on the Wireless SPs to deliver the Wireless 9-1-1 calls with the accuracy outlined in FCC Docket No. 94-102 Third Report and Order. Therefore it is necessary for Wireless SPs and 9-1-1 jurisdictions to work together to resolve Wireless NRFs.
- 29.2
 - a. 9-1-1 jurisdictions that use separate trunks for wireless 9-1-1 calls shall access to NPAC (Neustar IVR) to determine the ownership of a ported TN that may have generated the NRF. The PSAP can also use NANPA or Fone Finder (Primeris.com) to determine the ownership of the NPA-NXX. (It is understood that this access may prove more complicated now that WNP has been implemented)
 - b. 9-1-1 jurisdictions that use the same trunks for both wireline and wireless 9-1-1 calls, shall use the DBMSP to determine ownership of the TN that generated the wireless NRF by having the PSAP complete a 9-1-1 Inquiry form to report the wireless NRF and send to the 9-1-1 Database coordinator within (1) one business day. Then the 9-1-1 Database Coordinator shall review, research, and forward the 9-1-1 inquiry form to the DBMSP within (1) one business day. The DBMSP shall determine ownership of the Wireless NRFs and shall return the wireless No Record Found report to the 9-1-1 jurisdiction within one business day of receipt.

Wireless No Record Found Reports

- 29.3 9-1-1 jurisdictions shall provide “No Record Found Reports” to the appropriate Wireless SP 24 X 7 contact e-mail address or facsimile number.
- 29.4 In an HCAS environment, if the ESRD is provided with the NRF condition then the 9-1-1 jurisdiction shall provide the “No Record Found Report” to the selective routing provider which will determine the wireless SP that generated the wireless NRF condition. The selective routing provider shall then forward it onto the Wireless SP 24 x 7 contact.

29.5 The format for the “No Record Found Reports” shall include the following information:

- PSAP Name:** PSAP name as listed in FCC Master Registry
<http://www.fcc.gov/911/enhanced/reports/FilingExamplePSAPRegistry.xls#MasterPSAPRegistry!A1>
- PSAP ID Code:** Identification number associated with the PSAP as Listed in
<http://www.fcc.gov/911/enhanced/reports/FilingExamplePSAPRegistry.xls#MasterPSAPRegistry!A1>
- PSAP Contact Name:** Contact Name or Name of Agency Responsible for the PSAP
- PSAP Contact Telephone #:** PSAP Point of Contact telephone number
- Date/Time:** Date and Time of the Wireless ALI bid from the 9-1-1 Database. Time of call shall include whether it is a.m. or p.m. and whether it is EST, CST, MST or PST.
- ESRK/ESRD/CBN:** ANI provided with No Record Found condition
- Wireless SP:** Name of Wireless SP that owns the ESRK/CBN of ANI provided with No Record Found condition
- PSAP ALI Screen Print:** a digital or hard copy printout of screen with NRF condition information, when available

29.6 “No Record Found Reports” must be reported to the Wireless SP within two calendar days of the Wireless ALI bid so the wireless SP can trace the wireless call within its own network. It is recognized that call information is retained by the switch for only 48 hours.

29.7 Wireless SPs shall generate a report back to the 9-1-1 jurisdiction within (5) five business days of receipt of the “No Record Found Report”. Wireless SPs must include in their status report the original error information from the 9-1-1 jurisdiction and add for each NRF error the error code and the repair code.

29.8 Recommended Standard Error Codes for Wireless NRF

These codes are not meant to be all encompassing and additional codes may be added to suit the needs of the 9-1-1 jurisdiction.

Group	<u>Error Code</u>	<u>Description</u>
NRF with CBN Failure	1501	Wireless calling to non-emergency and/or administrative hunt group numbers.
	1502	Wireless CBN being passed in the ANI spill.
	1503	CBN only delivery may be arranged as the fall back for the MSC-MPC ISUP communication failures

	1504	CBN transferred from another PSAP. (Note- if call was received over PSTN, hunt group of PSAP may be passed instead of CBN)
NRF with ESRK Failures	1601	Steering not yet activated and no shell record exists
	1602	Steering not yet activated for ESRK range and no shell record exists
	1603	Steering links to 3 rd party are interrupted and no shell record exists
	1604	3 rd party received query, but had no record generated during call set up and 3 rd party returned message with response type 3 and with the ESRK populated in the CBN field (MSC>MPC>3 rd party db)
ANI Failures	1605	NRF transferred from another PSAP
	1701	No ESRK passed to the tandem because MSC to MPC ISUP communication breakdown
	1702	No ESRK passed to the tandem because of Signaling incompatibilities between the MSC and the Tandem
	1703	No ESRK passed to the tandem because of Multi-frequency tone distortions (hot or noisy transmission levels) to the tandem
	1704	(CBN) passed with an NPA that is undefined in the tandem
	1705	MSC default routed call where the cell/sector is undefined in the MPC data base e.g.; new cell towers or COWs
	1706	Failed ANI call transferred to another PSAP, which generated another ANI failure
	1707	Other (Provide description of error condition)

29.9 Recommended Standard Repair Codes for Wireless NRF

<u>Repair Code</u>	<u>Description</u>
2001	Updated translations to send wireless call over correct 9-1-1 trunks
2002	Updated translations to wireless phase status for 9-1-1 jurisdiction
2003	Updated steering and shell record for ESRK
2004	Updated steering and shell records for ESRK range
2005	Steering links repaired and tested
2006	Link between MSC and MPC ISUP repaired and tested
2007	Link between MSC and Tandem repaired and tested
2008	MSC corrected with cell tower/sector information
2009	MPC corrected with cell tower/sector information
2010	Wireless 9-1-1 call did not access Wireless SP Network
2011	Other (Provide description of repair condition)

99. References

See related standards documents:

- NENA 02-010, NENA Formats and Protocols for Data Exchange
- NENA 06-001, NENA Standards for Local SP Interconnection Information Sharing.
- United States Postal Service, Postal Addressing Standards, Publication 28 may be downloaded from: <http://pe.usps.gov/cpim/ftp/pubs/Pub28/pub28.pdf>.
Canadian Addressing Guide. This information for Canada can be downloaded from the Canada Post / Postes Canada web site at URL:
English:
http://www.canadapost.ca/business/offerings/address_management/can/addressing_guide-e.asp
French:
http://www.postescanada.ca/business/offerings/address_management/can/addressing_guide-f.asp
- NENA E9-1-1 Database Guide
- NENA Address Systems, A Training Guide for 9-1-1

EXHIBIT A – E911 DATA FLOW

E911 Data Sources: Double headed arrows represent 2-way flow of information such as daily updates, errors, and reports.

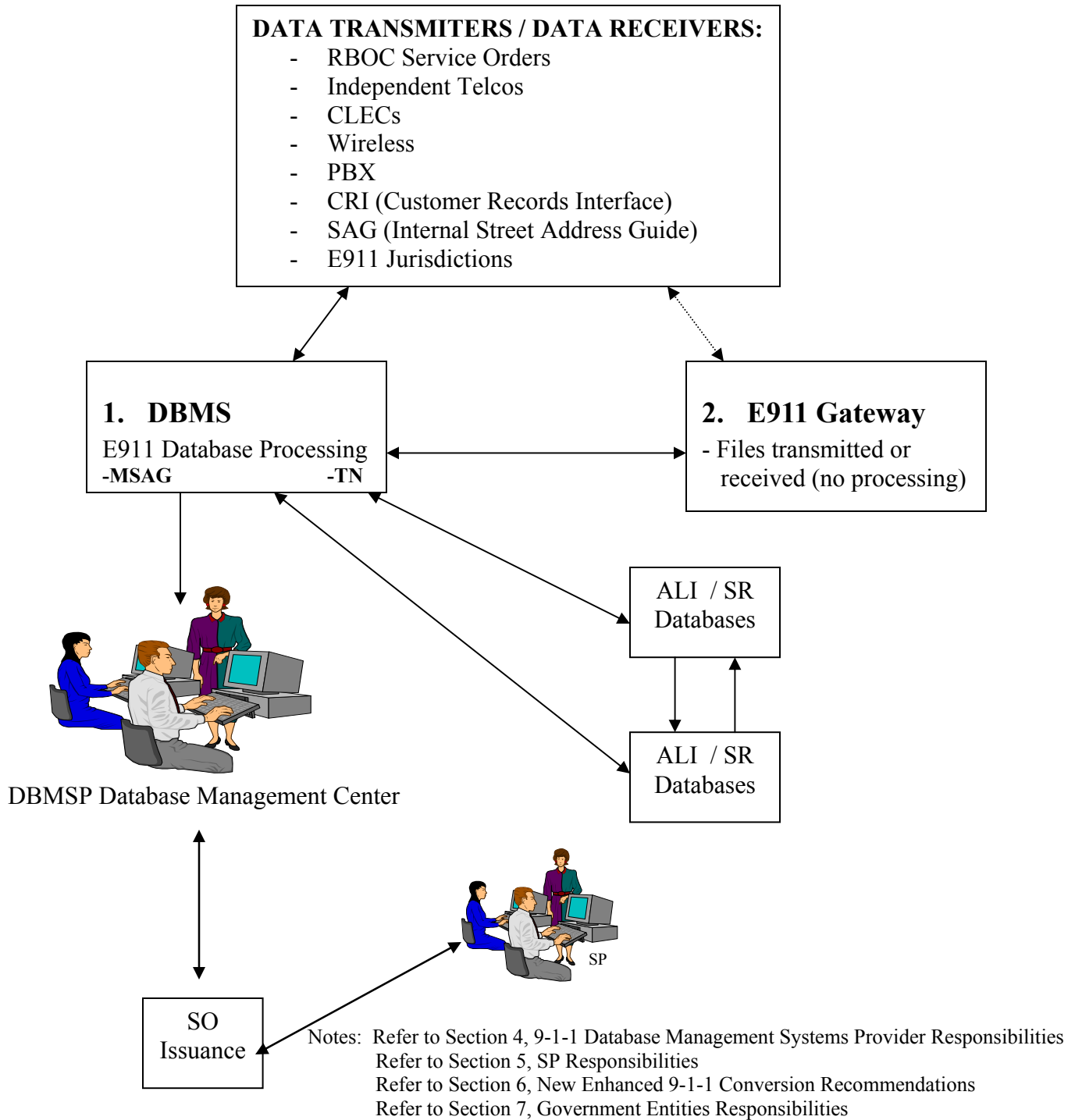


EXHIBIT B – CONVERSION TO E911

Sample of generic conversion flow – finalize process with all involved parties.

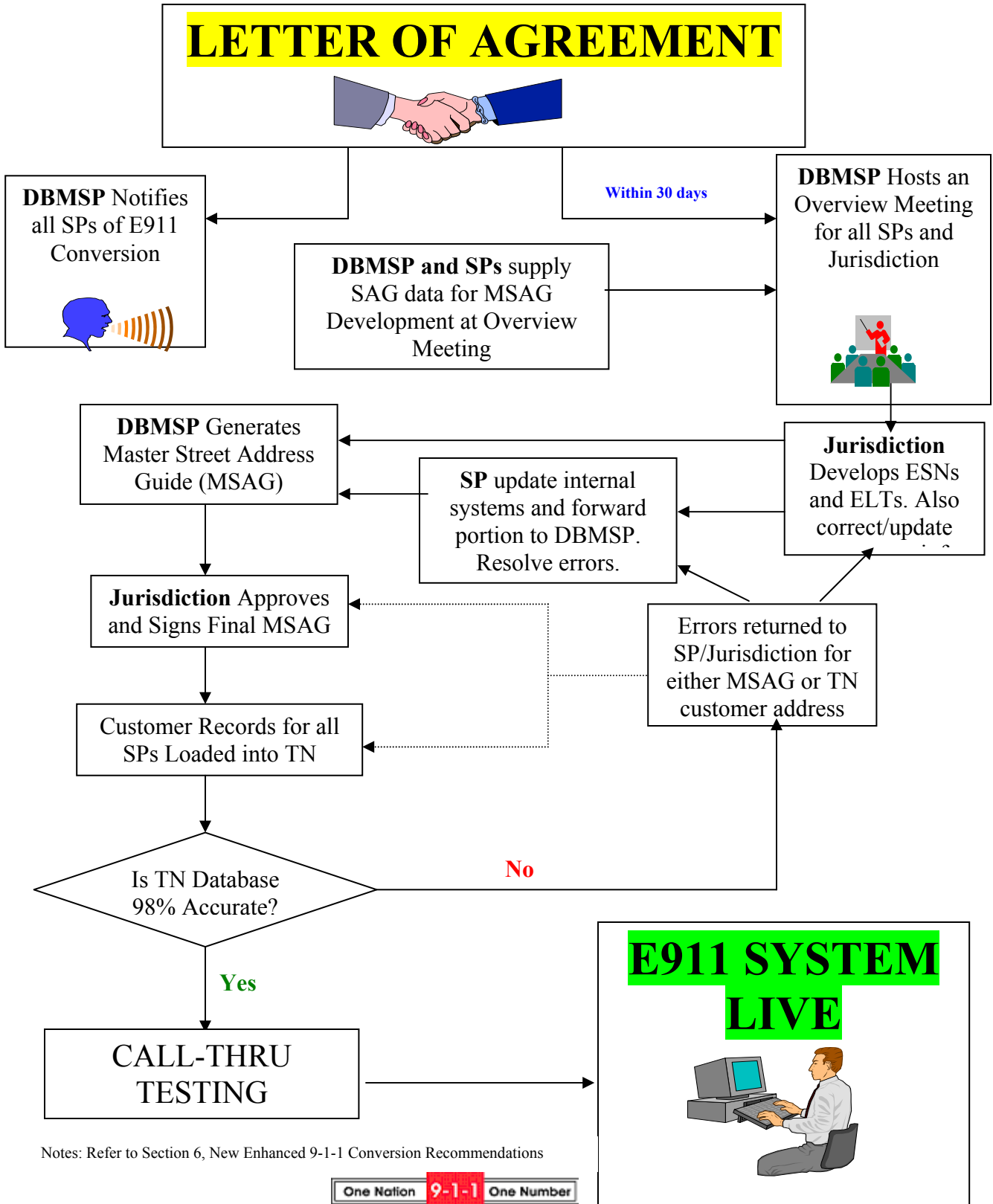
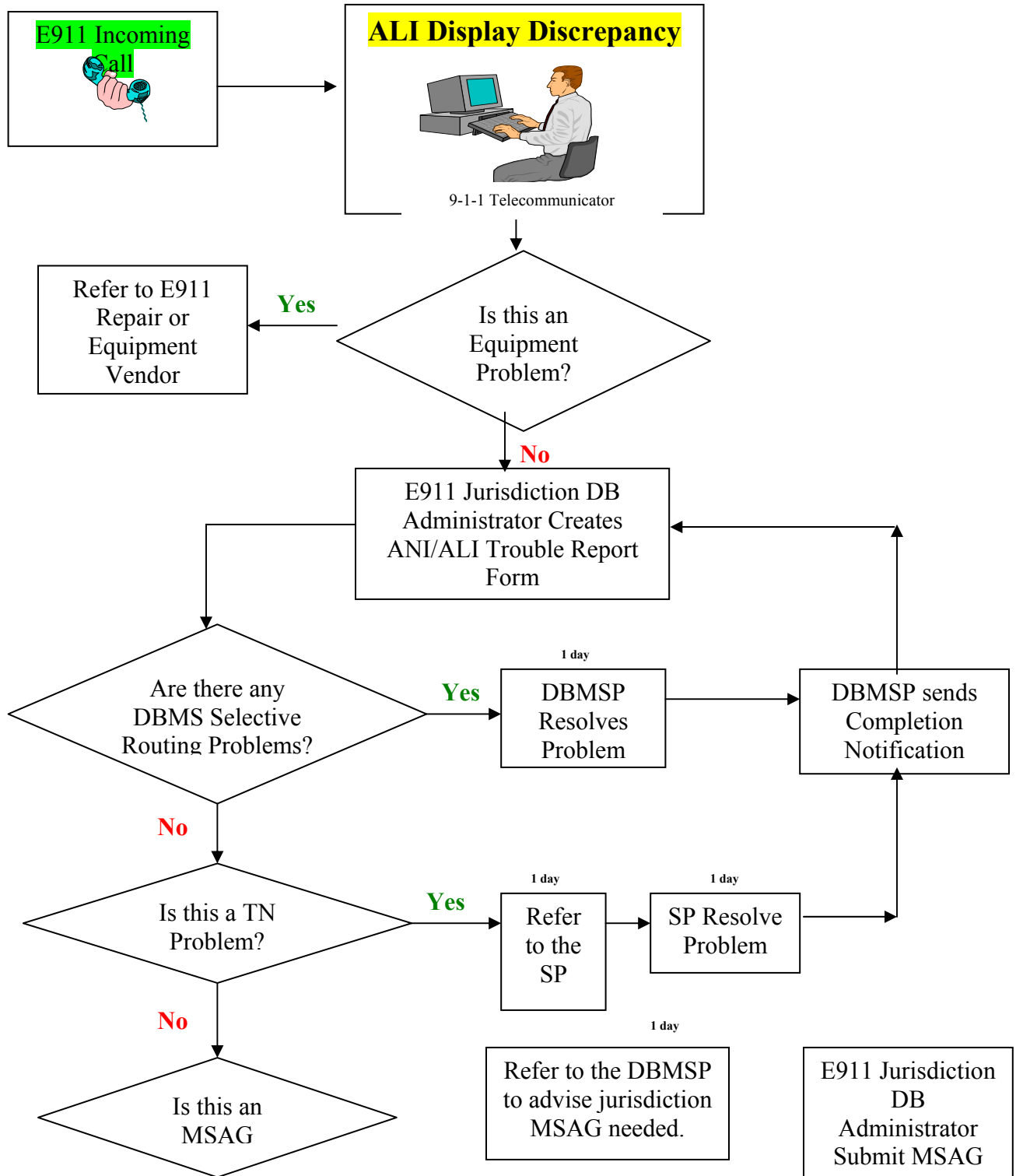
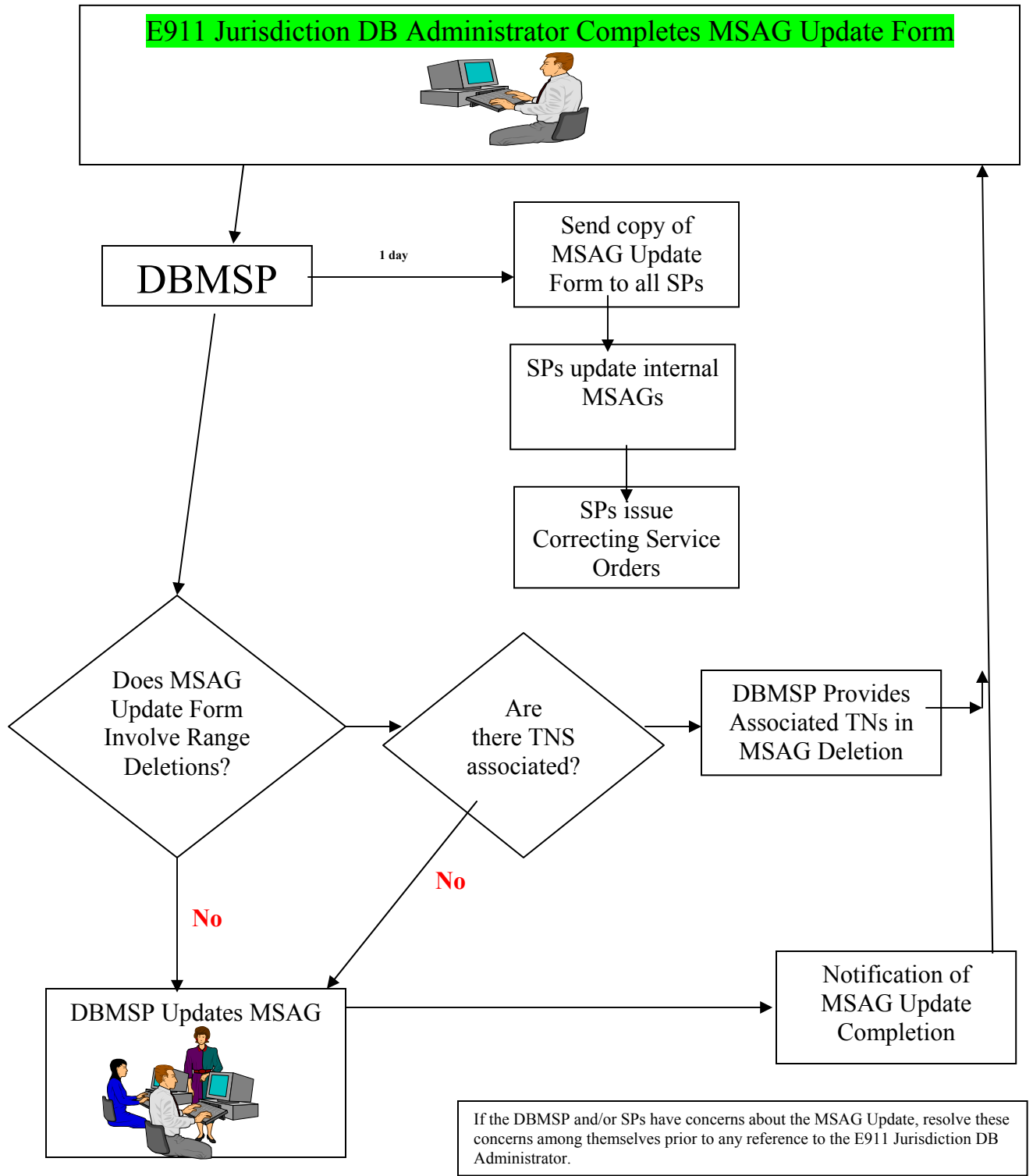


EXHIBIT C – ANI/ALI TROUBLE INQUIRY



Notes: Refer to Section 7.3.3, Government Entities Responsibilities, Maintenance
 Refer to Section 9, ANI/ALI Trouble Reporting Process

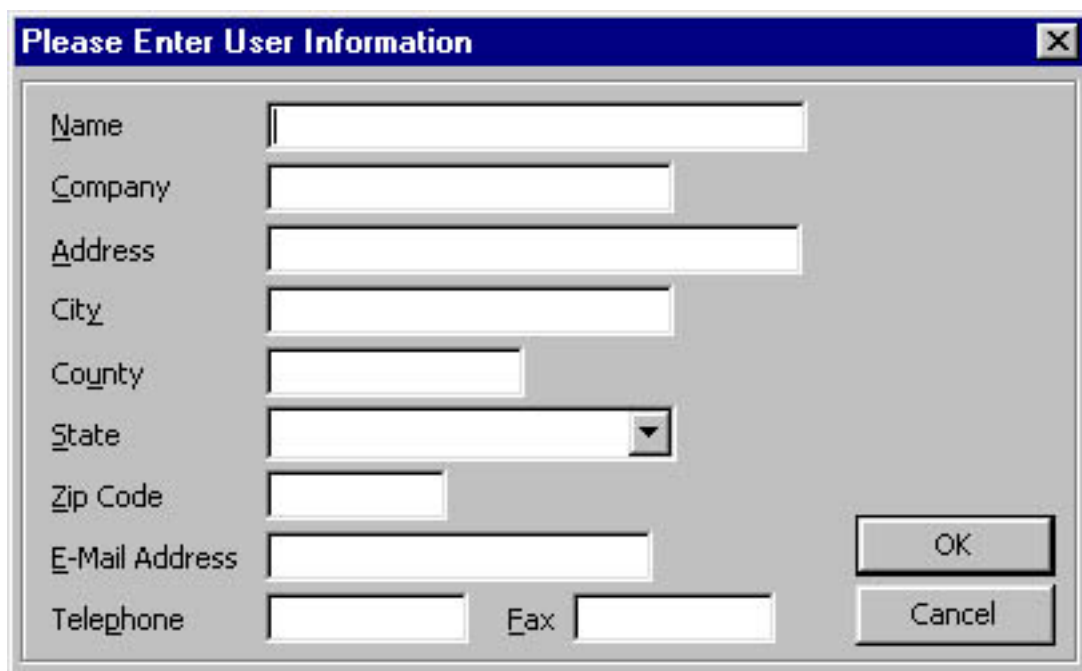
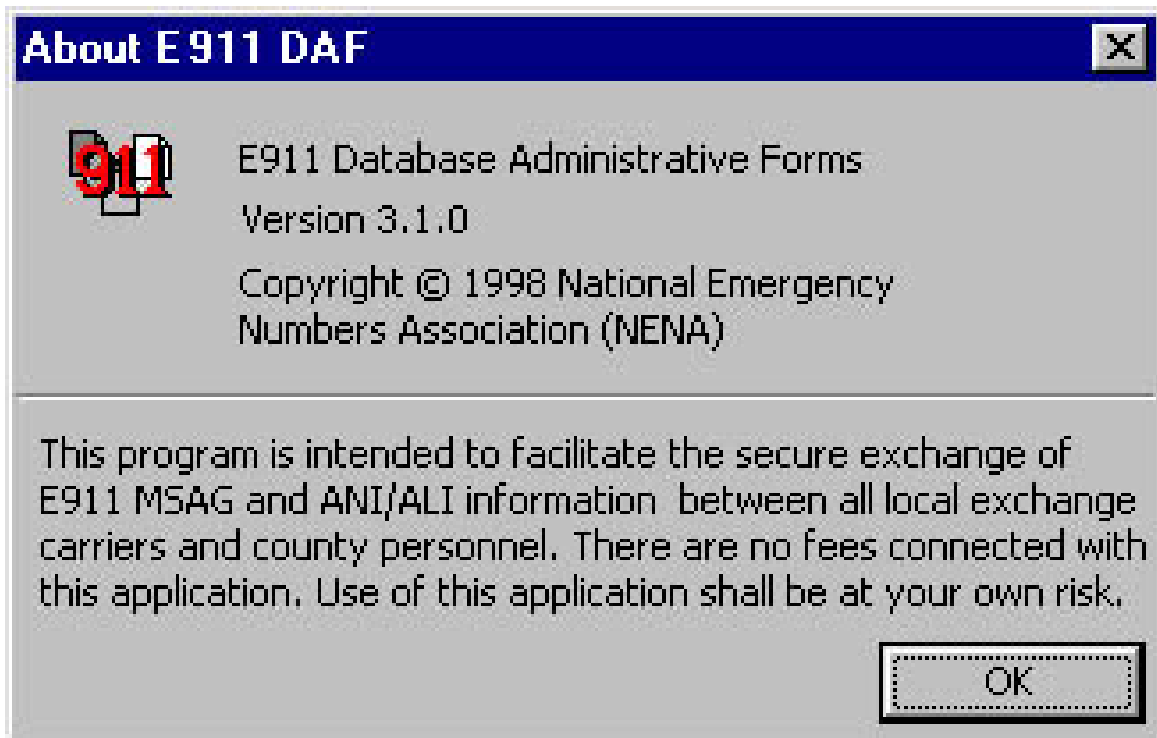
EXHIBIT D – MSAG MODIFICATION PROCESS FLOW

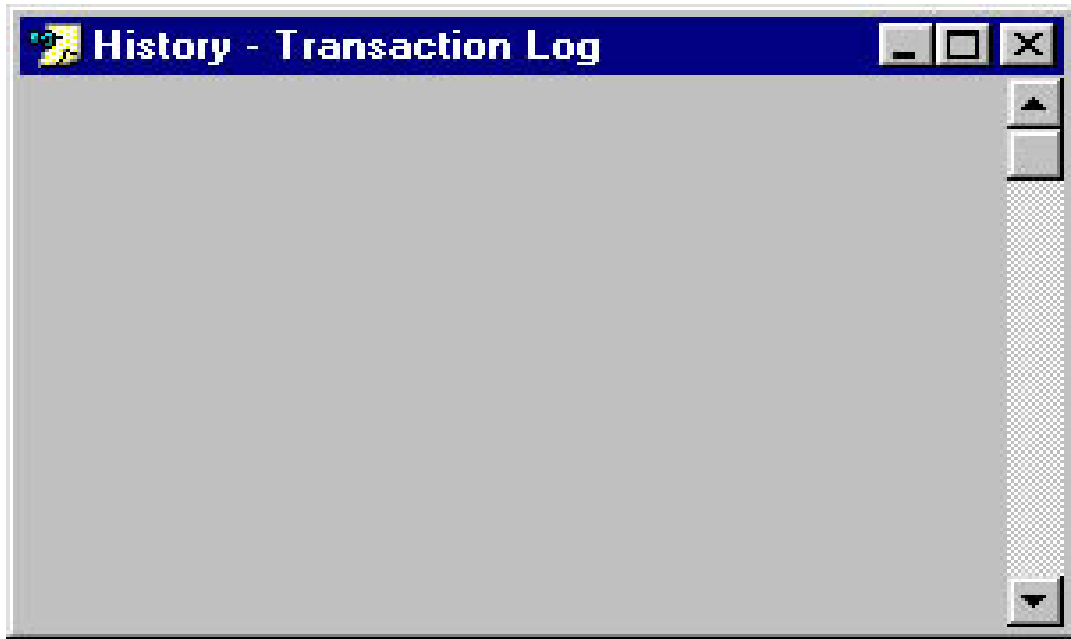


Notes: Refer to Section 7.3.2, Government Entities Responsibilities, Maintenance
 Refer to Section 10, MSAG Modification Process Flow

EXHIBIT E – 911 DATABASE ADMINISTRATION SOFTWARE







Untitled - E911 Database Administration Forms

File Edit Tools Help

01

ANI / ALI Form MSAG Update Form Additional Information

Created 06/09/1998 16:19

Received

Corrected

Forwarded

Customer Name
 House Number
 Address
 Location Info.

ESN Number
 County ID
 See Additional Info.
 ANI Failure

Company ID Missing
 No Record Found
 Mis Route

Initial Call Company ID Answer PSAP True PSAP

ALI Screen Display

Telephone #

Customer Name

House Number

Address

MSAG Comm

Location Info.

ESN Number County ID State

Correct Customer Data

Telephone #

Customer Name

House Number

Address

MSAG Comm

Location Info.

ESN Number County ID State

Reason for Discrepancy

1 Record Control Number: DA.GTE.AA.001.01 06/09/1998 16:19

Untitled - E911 Database Administration Forms

File Edit Tools Help

ANI / ALI Form MSAG Update Form Additional Information

Created: 06/09/1998 16:20
 Received:
 Corrected:
 Forwarded:

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

EXCH: PSAP ID: County ID:

Existing Address Range				New Address Range			
Function	<input type="checkbox"/>	Prefix Directional	<input type="checkbox"/>	Function	<input type="checkbox"/>	Prefix Directional	<input type="checkbox"/>
Street Name	<input type="text"/>			Street Name	<input type="text"/>		
Street Suffix	<input type="text"/>	Post Directional	<input type="checkbox"/>	Street Suffix	<input type="text"/>	Post Directional	<input type="checkbox"/>
Low Range	<input type="text"/>	High Range	<input type="text"/>	Low Range	<input type="text"/>	High Range	<input type="text"/>
Odd/Even/Both	<input type="text"/>	TAR Code	<input type="text"/>	Odd/Even/Both	<input type="text"/>	TAR Code	<input type="text"/>
MSAG Community	<input type="text"/>			MSAG Community	<input type="text"/>		
Postal Community	<input type="text"/>			Postal Community	<input type="text"/>		
ESN Number	<input type="text"/>	State	<input type="text"/>	ESN Number	<input type="text"/>	State	<input type="text"/>

1 Record Control Number: DA.GTE.MS.001.01 06/09/1998 16:20

Untitled - E911 Database Administration Forms

File Edit Tools Help

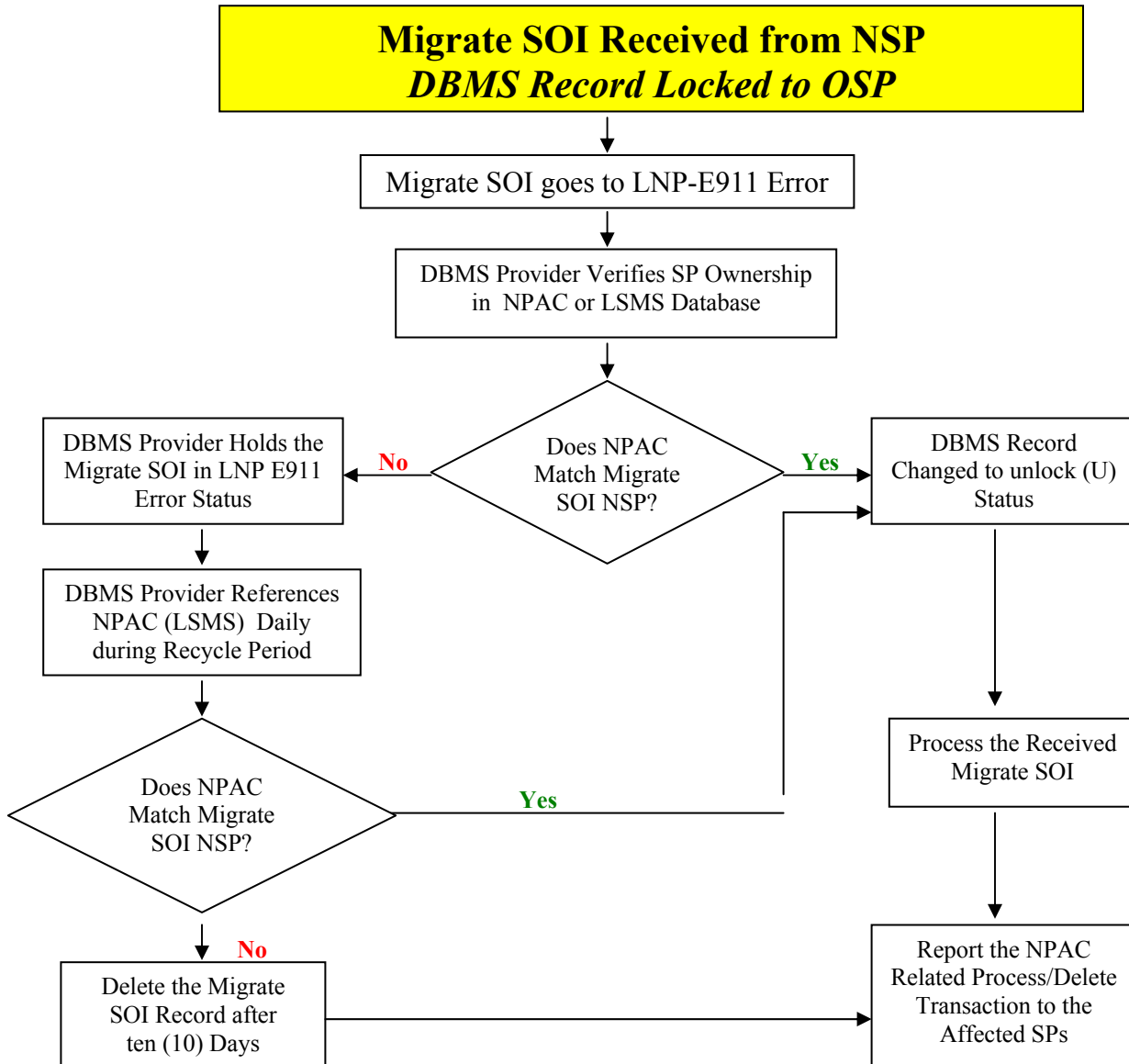
ANI / ALI Form MSAG Update Form Additional Information

Enter additional information or remarks below to be communicated to either the Service Provider or to the PSAP

1 Record 06/09/1998 16:21

EXHIBIT F – RESOLUTION OF FAILED MIGRATE RECORDS – Section 22B

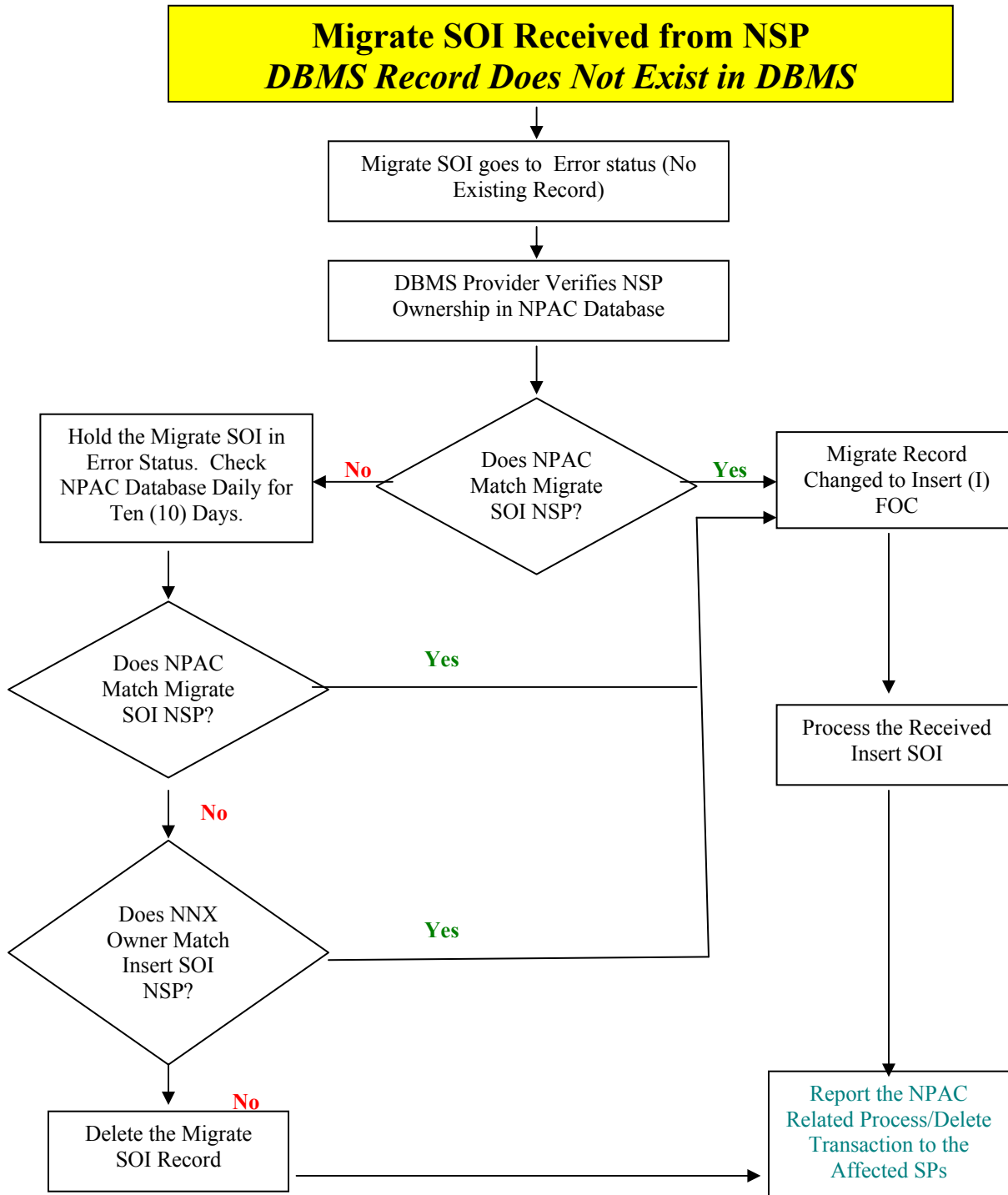
Initial Action:



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.

EXHIBIT G – RESOLUTION OF MIGRATE RECEIVED – DBMS RECORD DOES NOT EXIT – Section 22B

Initial Action:



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).

**EXHIBIT H – RESOLUTION OF INSERT RECEIVED – DBMS RECORD EXISTS
 (DIFFERENT CO ID) – Section 22B**

Initial Action:

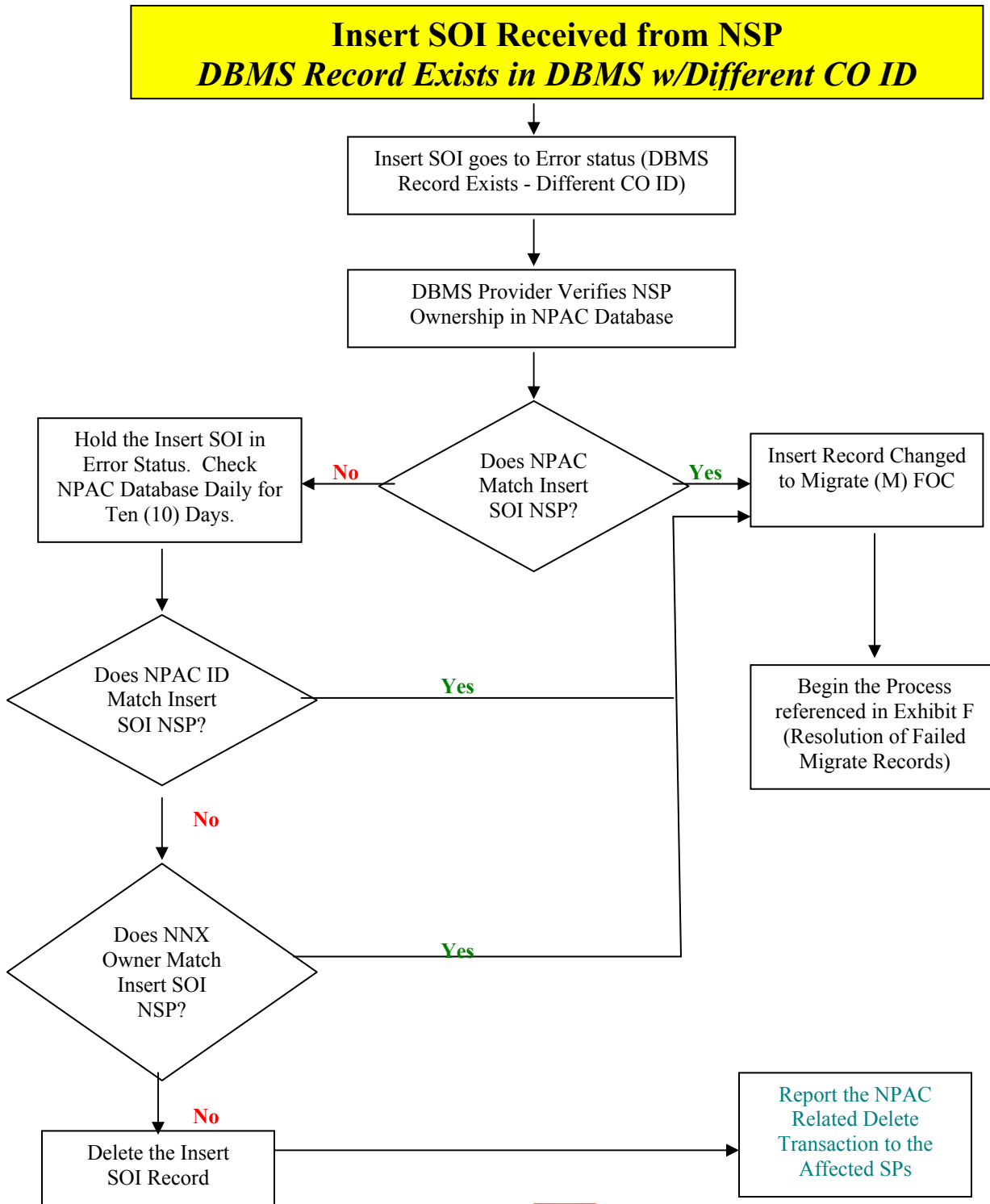
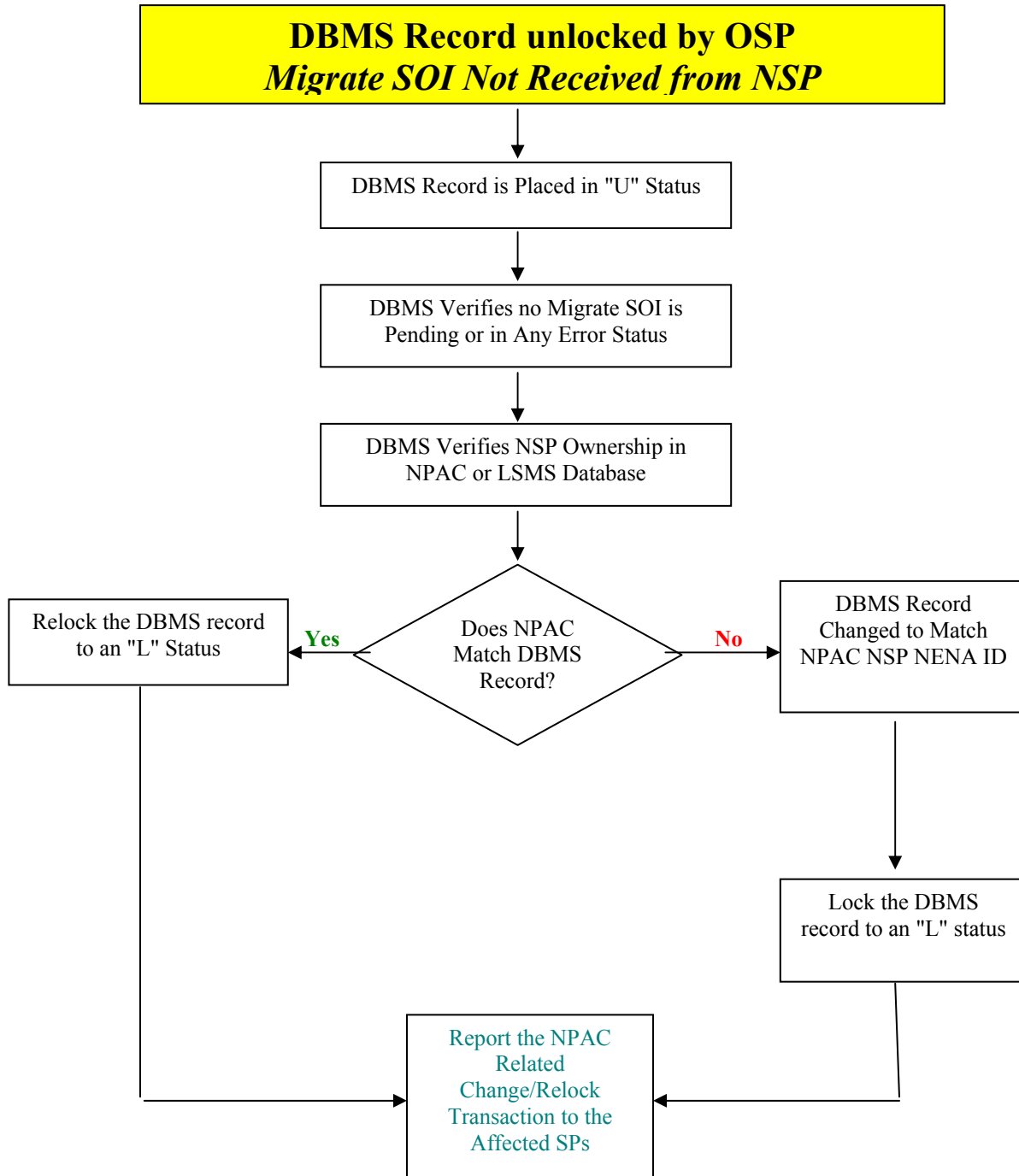


EXHIBIT I – RESOLUTION OF STRANDED UNLOCK RECORDS (ACTION)
 – Section 22C

Initial Action:



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.

EXHIBIT J – CENTRAL OFFICE WITH CO-LOCATION

