

NENA

Recommended Formats & Protocols For ALI Data Exchange, ALI Response & GIS Mapping

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INTRODUCTION

1.1 Purpose

This document sets forth NENA standard formats for Automatic Location Identification (ALI) data exchange between Service Providers and Data Base Management System Providers, a GIS data model, a Data Dictionary, and formats for data exchange between the ALI Database and PSAP Controller equipment.

Movement of ALI data between Service Providers and/or Data Base Management System Providers is a necessary and common activity for the activation of E9-1-1 systems. Means of moving such data is varied and many. This document contains data exchange formats and data protocols recommended for creation and transporting of 9-1-1 data.

This recommendation advocates the use of one of two common protocols (KERMIT and NDM) for use in the near term and with a move toward one common protocol (TCP/IP) in the future. The recommendation unfolded in this manner with the recognition that as a goal NENA acknowledges the advantage of one protocol, but that existing systems are in place so an evolution plan must be put in place and that no single protocol can satisfy all applications.

1.2 Copyright and Responsibility

This practice was written by the NENA Data Technical Committee. The NENA Executive Board has recommended this practice for industry acceptance and use. For more information about this practice, contact:

National Emergency Number Association, 422 Beecher Road, Columbus, OH 43230
Phone: 800-332-3911, Fax: 614-933-0911

1.3 Disclaimer

This document has been prepared solely for the voluntary use of E9-1-1 Service Providers, E9-1-1 equipment vendors, and participating Service Providers. By using this practice, the user agrees that the National Emergency Number Association (NENA) will have no liability for any consequential, incidental, special, or punitive damages that may result.

1.4 Overview

The original **Version 1** Data Exchange format was created in June 1991 to provide established formats for exchange of 9-1-1 data between Service Providers and the Data Base Management System Providers. The format was created in a fixed format with 232 characters available within the record format for ALI data.

Version 2 and 2.1 Data Exchange Formats Version 2 originally created in June 1993 were updated in June 1998 to Version 2.1, to provide for exchange of additional data fields, expanding of specific fields to allow for increased characters and data fields for X,Y, Z coordinates. Version 2 has been changed to Version 2.1 to reflect new fields which reflect the "year 2000" date identification and definition of the "**Alt #**" field for the "ALT#" associated with Interim Number Portability, to identify the Function of Change indicators of "U"nlock and "M"igrate for Local Number Portability and to reflect current terminology in format description fields. This will be the last update to Version 2.1.

Version 3 Data Exchange Formats were added June 1998 due to the difficulty in modifying Version 2 standards. Version 3.0 has been created to reflect data formats utilizing a "Tag Data" concept, which creates a variable length record dependent upon the data fields being utilized between Service Providers and Data Base Management System Providers. Version 3.0 formats were changed to Version 3.1 with the coincidental with the introduction of Version 4.0, and the need to change existing labels and add new labels due to technology changes.

Version 4 Data Exchange Formats were added December 2001 to utilize an industry standard data format. Version 4.0 mirrors Version 3.1 tag definitions in XML (Extensible Markup Language) documents. XML is a standard document format that has been adapted from SGML (Standard Generalized Markup Language) by the World Wide Web Consortium.

1.5 Reason for Reissue

June 1998: NENA 02-001 standard has been reissued due to addition of a Version 3.0 Data Exchange Format, utilizing a "Tagged Data with field labels" concept and includes additional fields and has updated field names to better reflect industry trends. Version 1 has been changed to reflect current terminology in format description fields. Version 2 has been changed to Version 2.1 to reflect new fields which reflect the "year 2000" date identification and definition of the "**Alt #**" field for the "ALT#" associated with Interim Number Portability, to identify the Function of Change indicators of "U"nlock and "M"igrate for Local Number Portability and to reflect current terminology in format description fields. This will be the last update to Version 2.

May 1999: This standard has been created to merge and replace the original NENA 02-001 *NENA Recommended Formats For Data Exchange* and NENA 02-003 *NENA Recommended Protocols For Data Exchange* into a common document to facilitate ease of use based upon the user community. There has been no intentional change made to the existing standards. The original standards documents 02-001 and 02-003 will be removed from service.

December 2001: This standard has been updated with a Version 4.0 Data Exchange that is based on Version 3.1 tags with XML formatting. Version 3.1 and Version 4.0 tags are meant to be mirrors of each other with the only difference being the tag versus XML formatting. This document has also been updated with Version 1.0 of the GIS Data Model Format and Version 1.0 of the Format for Data Exchange Between ALI Database and PSAP Controller Equipment.

1.6 Year 2000 Compliance

All systems or any part of a system that are associated with the 9-1-1 process shall be designed and engineered to ensure that no detrimental or other noticeable impact of any kind, will occur as a result of the date change to the year 2000 or any date subsequent thereto. This shall include embedded application, computer based or any other type application. To ensure true compliance the manufacturer shall provide verifiable test results to an industry acceptable test plan such as BellCore GR-2945 or equivalent.

1.7 Acronyms/Terms

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

1.8 Types of Data Exchange Formats

All data exchange formats utilize ASCII characters. The NENA Data Technical Committee has established 4 versions of standard data formats for use by Service Providers and Data Base Management System Providers when exchanging E9-1-1 data base information. Four (4) versions of standard format have been defined for each of the following; ALI data exchange, MSAG data exchange, Header and trailer records, Wireless data formats are included in Versions 3.1 and 4.0.

A new standard format Version 1.0 has been defined for the ALI Request Response message sent to the PSAP screen.

Version 1 formats are the original NENA recommended formats utilizing the 240 character format for Data Exchange; 160 character format for MSAG Data Exchange and 160 character format for Header and Trailer records.

Version 2 formats recognize that the original formats needed to be expanded to accommodate additional data fields critical to some data providers and also recognizing that NENA must position the standard record for the future. Version 2 formats contain all data fields resident in Version 1 formats utilizing a 512 character format for Data Exchange; 200 character format for MSAG Data Exchange and 200 character formats for Header and Trailer records.

Version 3 formats recognize that the previous formats were limiting distribution of data as technology evolved and the Data Technical Committee, after much discussion, arrived at the present NENA Version 3 format, included in this document. This format takes a "Tag Data" approach to information exchange for both wireline and wireless data distribution. Benefits include flexibility, faster programming changes, more efficient data transmission and smaller file sizes.

Version 4 formats recognize that the tagging methodology introduced in Version 3 is not a standard format. Version 4 uses XML to encode data using the same tags as Version 3. Benefits include flexibility, faster programming changes, and the availability of 3rd party tools to create and view data.

The NENA Data Technical Committee requires that Service Providers maintain consistency by utilizing formats consistent to one version. i.e. Header and Trailer records must be the same version format as the Data or MSAG Exchange formats utilized.

1.9 Reasons to Implement

Industry adoption of the standard will:

- ? Minimize costs incurred in providing E9-1-1 data base services.
- ? Ensure timely activation of E9-1-1 data base systems.
- ? Ensure consistent provision of ALI data.
- ? Enable data compatibility for system integration of E9-1-1 products and services.
- ? Minimize set-up time
- ? Aid companies in future planning

1.10 When to Implement

Since many Service Providers, Data Base Management System Providers and equipment vendors are currently utilizing the original Version 1 and 2 data exchange formats defined herein, it is strongly recommended that Version 4.0 XML formats be implemented to provide for future data needs. Service Providers and the respective Data Base Management System Provider must jointly determine the data format most relevant to the system software being utilized.

A goal of January 1, 2000 was recommended as the date when Service Providers would be capable of sending data utilizing the revised Version 2.0 (now 2.1) format and Version 3.0 format to the Data Base Management System.

It was further understood that many in-service data flows were unable to conform to the NENA formats by the target date, but the Data Technical Committee strongly recommends that every effort be made to conform to at least one of the recommended data exchange formats preferably Version 4.0.

July 1, 1994 was established as the date when Service Providers and Data Base Management Service Providers should be capable of using the transmission protocol options. All future plans should include the ability to use these options. Version 4 Data Exchange Format should be implemented in conjunction with wireless phase II.

1.11 Data Content Considerations

Common Considerations:

- ?? All data exchange formats utilize ASCII characters.
- ?? Data Base Management System Providers should document how they utilize versions 1, 2, 3 and 4 and the fields that their software systems can utilize.
- ?? The "General Use" field may be used when exchange partners agree to exchange information not defined
- ? Header and Trailer records must be the same version format as the Data or MSAG Exchange formats utilized.
- ? A full update record must be provided for all data exchange versions and function-of-change updates.
- ? Data TYPE indicators are as follows: A= Alpha, N=Numeric, V=Variable, AN=Alpha Numeric, AV=Alpha Variable

Version 1 & 2 formats:

- ?? Standard field location.
- ?? Fixed record lengths.
- ?? Data exchange formats require that complete data records be exchanged.
- ?? All data fields are treated as "left-justified" with trailing spaces.
- ?? Unused fields are space-filled.

Version 3 data formats:

- ? A tag data record is a record of varying length, comprised of pre-defined tag labels and the associated data elements.
- ? There is no particular sequence of the tag/data combinations within a Tag Data Record.
- ? Each tag and its associated data is separated from all other tag/data combinations by a pre-defined field separator.
- ? Each Tag Data Record is followed by a pre-defined End of Record character.
- ? The receiving Data Base Management System Provider will specify the minimum set of tag/data elements required by that system to uniquely identify and process the record.
- ? If the field is not being used (I.E: "Street Suffix", "Post Directional", "Customer Code") then the label is not used.
- ? Data Technical Committee authorized new tags may be added to the record without changing the file format.

- ? Header records will employ cycle counting to ensure a cycle of updates is not missed.
- ? Trailer records will employ record counting to ensure a record within an update file is not missed.

Version 4 data formats:

- ? Tags are angled brackets and the data between them. An example of a start-tag and end-tag is <NAM></NAM>.
- ? Content is the data between the start-tag and end-tag.
- ? An Element is the combination of start-tag, data and end-tag. An example of an element is <NAM>John Doe</NAM>.
- ? Tags can have Attributes. An example is <RECORD Num="1"> which indicates that the elements for record number 1 follow this tag.
- ? Elements may contain other elements. A Phone Number element might be described as containing 3 sub-elements: NPA, NXX and Line. Calling Party Number is an example of this:
<CPN>
<NPA>783</NPA>
<NXX>555</NXX>
<LINE>1234</LINE>
</CPN>
- ? There is no particular sequence of the elements within an XML record.
- ? In XML, records are referred to as "documents".
- ? The receiving Data Base Management System provider will specify the minimum set of elements required by that system to uniquely identify and process the record.
- ? If the data is not being used (I.E: "Street Suffix", "Post Directional", "Customer Code") then the Element is omitted.
- ? If data is present as an XML Element but the receiving Data Base does not use the data, it should be ignored.
- ? Data Technical Committee authorized tags may be added without changing the existing tags.
- ? Header elements will employ cycle counting to ensure a cycle of updates is not missed.
- ? Trailer elements will employ record counting to ensure a record within an update file is not missed.
- ? This document does not contain a complete description of XML elements and features. More information on XML may be found at <http://www.w3.org/XML/>.

1.12 Security

Security is an inherent component of data transfer and is necessary to provide assurance of the integrity of the computer system. It could be considered a legal requirement, not only for privacy considerations, but also in addition, for accuracy of the information. Collection, creation, manipulation, storage, retrieval, display, and transmission of customer records expose that information to modification or destruction.

The reliability of hardware, software, communications, application and human factors are considerations in the selection, design, and implementation of any system for data transfer. Security controls such as segmentation, redundancy, and password levels are some features that may be necessary for neutralization of the possibility for data modification or destruction. Realistic methods of minimizing or eliminating risks are the responsibility of the receiving parties by mutual agreement. In support of the foregoing responsibilities of the ALI Service Provider, it is recommended that all requested security procedures for data transfer be honored.

1.13 Acknowledgments, Current Members

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EXHIBIT 1
VERSION 1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
Function Code	1	1	A	Type of activity the record is being submitted for. Valid entries: C Change D Delete I Insert
NPA	2-4	3	N	Three digit area code of the Calling Number
Calling Number	5-11	7	N	Seven digit telephone number of the Calling Number
House Number	12-21	10	AN	House Number. The field should be space filled if no house number is available. <i>NOTE: Although the House Number field is ten characters, it is understood that telephone companies may only support up to 8 characters.</i>
House Number Suffix	22-25	4	AN	House number extension (e.g. /2). The field should be spaced filled if no suffix applies.
Prefix Directional	26-27	2	A	Leading street direction prefix. The field should be space filled if no prefix applies. Valid entries: N S E W NE NW SE SW
Street Name	28-67	40	AN	Valid service address of the Calling Number.
Street Suffix	68-71	4	A	Valid street abbreviation, as defined by the U.S. Postal Service Publication 28. (e.g. AVE)
Post Directional	72-73	2	A	Trailing street direction suffix. The field should be space filled if no suffix applies. Valid entries: N S E W NE NW SE SW
Community Name	74-105	32	A	Valid service community of the street name/house number as designated by the MSAG.
State	106-107	2	A	Alpha state abbreviation (e.g. TX)
Location	108-127	20	AN	Additional address information (free formatted) describing the exact location of the Calling Number (e.g. Apt 718)
Customer Name	128-159	32	AN	Subscriber name associated with the Calling Number.
Class of Service	160	1	AN	Value of: 1=Residence 2=Business 3=Residence PBX 4=Business PBX 5=Centrex 6=Coin 1 Way out 7=Coin 2 Way 8=Mobile 9=Residence OPX 0=Business OPX
Type of Service	161	1	N	Value of: 0=Not FX nor Non-Published 1=FX in 911 serving area 2=FX outside 911 serving area 3=Non-Published 4=Non-Published FX in serving area 5=Non-Published FX outside 911 serving area
Exchange	162-165	4	AN	Local Exchange Carrier exchange identifier for the serving telephone office of the customer.

EXHIBIT 1
VERSION 1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
ESN	166-170	5	AN	Emergency Service Number associated with the House Number and Street Name. <i>NOTE: ESN field may be space filled when the Data Base Management System Provider is validating the address. The Service Provider providing the E9-1-1 Selective Routing will provide a list of ESN's available for assignment.</i>
Main NPA	171-173	3	N	Three-digit area code of the Main Number associated with the Calling Number.
Main Number	174-180	7	N	Seven Digit telephone number of the Main Number associated with the Calling Number.
Order Number	181-190	10	AN	Service order number for the activity establishing this record.
Extract Date	191-196	6	N	Date on which the record was created in the format. MMDDYY
County ID	197-200	4	AN	County Identification code (usually the FIPS code) <i>NOTE: County Identification field is used to identify the county of call origination . The Subcommittee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Company ID	201-205	5	AN	NENA registered Company Identification code.
Source ID	206	1	AN	Code which indicates whether data is part of the initial data base creation process or part of the daily update process. Daily = Space, Initial Load = C
Zip Code	207-211	5	AN	Postal Zip Code
Zip + 4	212-215	4	AN	Postal Zip Code Extension
General Use	216-226	11	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
Reserved	227-239	13	AN	This field is reserved for the Data Base Management Systems Provider's use.
End of Record	240	1	AN	Always an asterisk (*).

NOTE: All fields are left-justified, with trailing spaces.

The Service Provider providing E9-1-1 Selective Routing must provide the governmental entity with a list of ESN's available for assignment by MSAG development personnel.

EXHIBIT 2
VERSION 1 FORMAT FOR MSAG DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Prefix Directional	1-2	2	AN
Street Name	3-42	40	AN
Street Suffix	43-46	4	AN
Post Directional	47-48	2	AN
Low Range	49-58	10	AN
High Range	59-68	10	AN
Community Name	69-100	32	A
State	101-102	2	A
Odd/Even	103	1	O, E OR B
ESN	104-108	5	AN
Extract Date	109-114	6	MMDDYY
PSAP ID	115-118	4	AN
County ID	119-122	4	AN
Exchange	123-126	4	AN
General Use	127-146	20	AN
Reserved	147-159	13	AN
End of Record	160	1	Always “*”

NOTE: All fields are left-justified, with trailing spaces.

EXHIBIT 3
VERSION 1 HEADER FORMAT FOR DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Header Indicator	1-5	5	“UHL”
Extract Date	6-11	6	MMDDYY
Company Name	12-61	50	AN
Cycle Counter	62-67	6	N
County ID	68-71	4	AN
State	72-73	2	A
General Use	74-93	20	AN
Reserved	94-159	66	AN
End of Record	160	1	Always “*”

NOTE: All fields are left-justified, with trailing spaces, except the Cycle Counter, this field will be right-justified with leading spaces.

Header records will employ cycle counting to ensure a cycle of updates is not missed.

When used with an ALI data file, the Reserved field will be expanded to 146 bytes.

EXHIBIT 4
VERSION 1 TRAILER FORMAT FOR DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Trailer Indicator	1-5	5	"UTL"
Extract Date	6-11	6	MMDDYY
Company Name	12-61	50	AN
Record Count	62-70	9	N
Reserved	71-159	89	AN
End of Record	160	1	Always "**"

NOTE: All fields are left-justified, with trailing spaces, except for the Record Count, this field will be right-justified with leading spaces.

Trailer records will employ record counting to ensure a record within an update file is not missed. When used with an ALI data file, the Reserved field will be expanded to 169 bytes.

EXHIBIT 5
VERSION 2.0 FORMAT FOR DATA EXCHANGE
VERSION 2.0 FORMAT FOR MSAG DATA EXCHANGE
VERSION 2.0 HEADER FORMAT FOR DATA EXCHANGE
VERSION 2.0 TRAILER FORMAT FOR DATA EXCHANGE

Have Been Replaced by Version 2.1 Formats
See Exhibits 6 through 9

EXHIBIT 6
VERSION 2.1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
Function Code	1	1	A	Type of activity the record is being submitted for. Valid entries: C Change D Delete I Insert U Unlock M Migrate
NPA	2-4	3	N	Three digit area code of the Calling Number.
Calling Number	5-11	7	N	Seven digit telephone number of the Calling Number.
House Number	12-21	10	AN	House number. The field should be space filled is no house number is available. <i>NOTE: Although the House Number field is ten characters, it is understood that telephone companies may only support up to 8 characters.</i>
House Number Suffix	22-25	4	AN	House number extension (e.g. /2). The field should be space filled if no suffix applies.
Prefix Directional	26-27	2	A	Leading street direction prefix. The field should be space filled if no prefix applies. Valid entries: N S E W NE NW SE SW
Street Name	28-87	60	AN	Valid service address of the Calling Number.
Street Suffix	88-91	4	A	Valid street abbreviation, as defined by the U. S. Postal Service Publication 28. (e.g. AVE)
Post Directional	92-93	2	A	Trailing street direction suffix. The field should be space filled if no suffix applies. Valid entries: N S E W NE NW SE SW
Community Name	94-125	32	A	Valid service community of the street name/house number as designated by the MSAG.
State	126-127	2	A	Alpha state abbreviation (e.g. TX)
Location	128-187	60	AN	Additional address information (free formatted) describing the exact location of the Calling Number (e.g. Apt 718).
Customer Name	188-219	32	AN	Subscriber name associated with the Calling Number.
Class of Service	220	1	AN	Value of: 1=Residence 2=Business 3=Residence PBX 4=Business PBX 5=Centrex 6=Coin 1Way out 7=Coin 2 Way 8=Wireless 9=Residence OPX 0=Business OPX A=Customer Owned Coin Telephone (COCT)

EXHIBIT 6
VERSION 2.1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
Type of Service	221	1	N	Value of: 0=Not FX nor Non-Published 1=FX in 911 serving area 2=FX outside 911 serving area 3=Non-Published 4=Non-Published FX in 911 serving are 5=Non-Published outside 911 serving area 6=Local Ported Number (LNP) 7=Interim Ported Number
Exchange	222-225	4	AN	Local Exchange Carrier exchange identifier for the serving telephone office of the customer.
ESN	226-230	5	AN	Emergency Service Number associated with the House number and Street Name. <i>NOTE: ESN field may be space filled when the Data Base Management System Provider is validating the address. The Service Provider providing the E9-1-1 Selective Routing will provide a list of ESN's available for assignment.</i>
Main NPA	231-233	3	N	Three digit area code of the Main Number associated with the Calling Number.
Main Number	234-240	7	N	Seven Digit telephone number of the Main Number associated with the Calling Number.
Order Number	241-250	10	AN	Service order number for the activity establishing this record.
Extract Date	251-256	6	N	Date on which the record was created in the format MMDDYY
County ID	257-260	4	AN	County Identification Code (usually the FIPS code) <i>NOTE: County Identification field is used to identify the county of call origination. The Subcommittee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Company ID	261-265	5	AN	NENA registered Company Identification code
Source ID	266	1	AN	Code which indicates whether data is part of the initial data base creation process or part of the daily update process. Daily = Space, Initial Load = C
Zip Code	267-271	5	AN	Postal Zip Code
Zip + 4	272-275	4	AN	Postal Zip Code Extension
General Use	276-286	11	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
Customer Code	287-289	3	AN	Code used to uniquely identify a customer.
Comments	290-319	30	AN	Optional notes, may be displayed at PSAP
X Coordinate	320-328	9	AN	Longitude/ X coordinate
Y Coordinate	329-337	9	AN	Latitude/ Y coordinate
Z Coordinate	338-342	5	AN	Structure elevation
Cell ID	343-348	6	AN	Identification number indicating a geographic region of cellular coverage.
Sector ID	349	1	AN	Sub set/section of a cell.
TAR Code	350-355	6	AN	Taxing Area Rate Code

EXHIBIT 6
VERSION 2.1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
Reserved	356-376	21	AN	This field is reserved for the Data Base Management Systems Providers 's use.
ALT #	377-386	10	N	Customer Number being remote call forwarded in Interim Number Portability service.
Expanded Extract Date	387-394	8	N	Date on which the record was created in the format YYYYMMDD
NENA Reserved	395-480	86	AN	This field is reserved for NENA Data Technical Committee Assignment
Reserved	481-511	31	AN	This field is reserved for the Data Base Management Systems Providers 's use.
End of Record	512	1	AN	Always an asterisk (*).

*NOTE: All fields are left-justified, with trailing spaces.
The Service Provider providing E9-1-1 Selective Routing must provide the governmental entity with a list of ESN's available for assignment by MSAG development personnel.*

EXHIBIT 7
VERSION 2.1 FORMAT FOR MSAG DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Prefix Directional	1-2	2	AN
Street name	3-62	60	AN
Street Suffix	63-66	4	AN
Post Directional	67-68	2	AN
Low Range	69-78	10	AN
High Range	79-88	10	AN
Community Name	89-120	32	A
State	121-122	2	A
Odd/Even	123	1	O, E or B
ESN	124-128	5	AN
Extract Date	129-134	6	MMDDYY
PSAP ID	135-138	4	AN
County ID	139-142	4	AN
Exchange	143-146	4	AN
General Use	147-166	20	AN
TAR Code	167-172	6	AN
Reserved	173-191	19	AN
Expanded Extract Date	192-199	8	N
End of record	200	1	Always "*"

NOTE: All fields are left-justified, with trailing spaces.

EXHIBIT 8
VERSION 2.1 HEADER FORMAT FOR DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Header Indicator	1-5	5	“UHL”
Extract Date	6-11	6	MMDDYY
Company Name	12-61	50	AN
Cycle Counter	62-67	6	N
County ID	68-71	4	AN
State	72-73	2	A
General Use	74-93	20	AN
Release Number	94-96	3	N
Format Version	97	1	N
Expanded Extract Date	98-105	8	N
Reserved	106-199	94	AN
End of Record	200	1	Always “*”

NOTE: All fields are left-justified, with trailing spaces, except the Cycle Counter, this field will be right-justified with leading spaces.

Header records will employ cycle counting to ensure a cycle of updates is not missed.

When used with an ALI data file, the Reserved field will be expanded to 406 bytes (when used with an ALI data file).

EXHIBIT 9
VERSION 2.1 TRAILER FORMAT FOR DATA EXCHANGE

NAME	POSITION	BYTES	TYPE
Trailer Indicator	1-5	5	“UTL
Extract Date	6-11	6	MMDDYY
Company Name	12-61	50	AN
Record Count	62-70	9	N
Expanded Extract Date	71-78	8	N
Reserved	79-199	121	AN
End of Record	200	1	Always “*”

NOTE: All fields are left-justified, with trailing spaces, except for the Record Count, this field will be right-justified with leading spaces.

Trailer records will employ record counting to ensure a record within an update file is not missed.

When used with an ALI data file, the Reserved field will be expanded to 433 bytes.

EXHIBIT 10
VERSION 3.1 FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Record Type	DAT or RTN	0	A	Indicates start of data record (label only, no data follows). Valid labels: DAT = Data Record sent from the Service Provider to the Data Base Management System Provider RTN = Data record returned from the Data Base Management System Provider to the Service Provider
Status Indicator	STI	1	AN	Record status indicator. Valid entries: E = Error C = Completed P = Pending processing U = Unprocessed Gateway received but not sent to processing, (future date)
Function of Change	FOC	1	A	Type of activity the record is being submitted for. Valid "x" entries: C = Change D = Delete I = Insert U = Unlock M = Migrate E = Delete error record
Calling Party Number	CPN	10	N	Number of the Calling Party. Emergency Location Identification Number (ELIN) – A valid North American Numbering Plan format telephone number assigned to the Multi-Line Telephone Systems Operator by the appropriate authority that is used to call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number. <i>Footnote</i> ³
House Number	HNO	10	AN	House Number. <i>Footnote</i> ^{1,2,3}
House Number Suffix	HNS	4	AN	House number extension (e.g. ½). <i>Footnote</i> ^{1,2,3}
Prefix Directional	PRD	2	A	Leading street direction prefix. <i>Footnote</i> ^{1,2,3} Valid "x" Entries: N S E W NE NW SE SW
Street Name	STN	60	AN	Valid service address of the Calling Party Number. <i>Footnote</i> ^{1,2,3}
Street Suffix	STS	4	A	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE) <i>Footnote</i> ^{1,2,3}
Post Directional	POD	2	A	Trailing street direction suffix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW

¹ Where an MSAG exists, must fit the MSAG entry.

² Primary address associated with the Calling Party Number

³ Must include all TN USERS information on all Multi-Line Telephone Systems that will facilitate the implementation of enhanced 9-1-1 on all PBX, Key, Hybrid and Centrex Systems. Resellers must supply end user specific name and location information, not information pertaining to the name and location of the Reseller.

⁴ NA = not available – class of service for an ESCO failure

⁵ The Data Technical Committee strongly recommends that all processing edits be removed from this Label due to technological changes requiring improved data security measures.

EXHIBIT 10
VERSION 3.1 FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
MSAG Community Name	MCN	32	A	Valid service community name as identified by the MSAG. <i>Footnote</i> ^{1,2,3}
Postal Community Name	PCN	32	A	Valid service community name as identified by the U S Postal Service. <i>Footnote</i> ³
State/Province	STA	2	A	Alpha US state, Canadian province abbreviation e.g., TX (Texas), ON (Ontario) <i>Footnote</i> ^{1,2,3}
Location	LOC	60	AN	Additional location information (free formatted) describing the exact location of the Calling Party Number (e.g., Apt 718, or cell sector A) Emergency Response Location (ERL) – A Location to which a 9-1-1 emergency response team may be dispatched. The location should be specific enough to provide a reasonable opportunity for the emergency response team to quickly locate a caller anywhere within it. <i>Footnote</i> ^{2,3} This information may be displayed at the PSAP
Landmark Address	LMK	60	AN	Landmark or Vanity address such as “One Rockefeller Plaza”
Also Rings At Address	ARA	60	AN	Secondary address for the Calling Party Number that rings at 2 locations. Not validated against the MSAG. <i>Footnote</i> ³ Not applicable to dual service. <i>This information may be displayed at the PSAP</i>
Customer Name	NAM	32	AN	Subscriber name associated with the Calling Party Number. <i>Footnote</i> ³
Class of Service	CLS	1	AN	Valid “x” entries: 1 = Residence 2 = Business 3 = Residence PBX 4 = Business PBX 5 = Centrex 6 = Coin 1Way out 7 = Coin 2 Way 8 = Wireless Phase 0 9 = Residence OPX 0 = Business OPX A = Customer owned Coin Telephone B = Not Available <i>Footnote</i> ⁴ G = Wireless Phase I H = Wireless Phase II
Type of Service	TYS	1	AN	Valid entries: 0 = Not FX nor Non-Published 1 = FX in 911 serving area 2 = FX outside 911 serving area 3 = Non-Published 4 = Non-Published FX in 911 serving area 5 = Non-Published FX outside 911 serving area 8 = PSALI Published 9 = PSALI Non-Published
Exchange	EXC	4	AN	A defined area, served by one or more telephone Central Offices, within which a Local Exchange Carrier furnishes service. <i>Footnote</i> ⁵
Emergency Service Number (ESN)	ESN	5	AN	Emergency Service Number associated with the House Number and Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN’s.</i>
Main Telephone Number	MTN	10	N	Ten-digit telephone number of the Main Billing Number associated with the Calling Party Number. Format: NPANXXXXXX <i>Footnote</i> ³

EXHIBIT 10
VERSION 3.1 FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Call Back Number	CBN	10	AN	Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dialable number and used as a back up if the displayed number can not be reached. Used for both wireline and wireless calls. <i>Footnote³</i>
P-ANI	PNI	10	AN	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 9-1-1 call for routing purposes.
Order Number	ORD	10	AN	Service order number for the activity associated with this record.
Completion Date	CPD	10	N	Completion Date in format CCYY-MM-DD
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Company ID 1	CPF	5	AN	NENA registered Company Identification code for Service Provider providing wireline or wireless service to the customer.
Company ID 2	CPS	5	AN	NENA registered Company Identification code for Service Provider/Reseller/Private Switch supplying ALI record source information.
Postal/Zip Code	ZIP	10	AN	Postal or Zip code. Format: NNNNN-NNNN or ANANAN <i>Footnote³</i>
Customer Code	CUS	3	AN	Code used to uniquely identify a wireline customer
Comments	CMT	30	AN	Optional notes, may be displayed at PSAP TN USERS on MLTS can include any pertinent information that will assist in reducing response time such as – contact security department, contact front desk, etc. <i>Footnote³</i>
TAR Code	TAR	6	AN	Taxing Area Rate Code
Alternate Telephone Number	ALT	10	N	Remote Call Forwarding number used during Interim Number Portability- NPANXXXXXX
Return Code Number	RCN	3	N	Code indicating specific processing error code or processing completed successfully. (May be used as many times as necessary.) Valid "x" entries: Not present (or 000 if used) = processing completed successfully XXX = Valid NENA Standard Error Code
Special Attention Indicator	SAI	1	AN	Calls which require special attention. Valid entries: 1 = TTY call 2 = ACN = Automatic crash/collision notification
Common Language Location Indicator (CLI)	CLI	11	AN	CLLI code of the local loop central office for the 911 calling party.
General Use 1	GU1	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 2	GU2	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 3	GU3	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 4	GU4	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 5	GU5	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.

EXHIBIT 10
VERSION 3.1 FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
General Use 6	GU6	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 7	GU7	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 8	GU8	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
Longitude	LON	11	N	Longitude/X coordinate. Right Justified: pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received . (Can be used for wireline) Sample: +000.000000 <i>Footnote</i> ³
Latitude	LAT	10	N	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received . (Can be used for wireline) Sample: +00.##### <i>Footnote</i> ³
Elevation	ELV	5	N	Elevation/Altitude indicated as height above mean sea level, measured in meters. Blank record indicates data not available. (Can be used for wireline) Sample: ##### <i>Footnote</i> ³
Cell Site ID	CEL	6	AN	Identification number indicating a geographic region of cellular coverage. . When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received.
Sector ID	SEC	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information, i.e., the cell site or sector where the call is received should be reported.

The items below do not require a "Label" only the symbol shown

Field Separator		1	AN	A "pipe" is to be utilized for the field separator (ASCII HEX-7C)
End of record NL		1	AN	The NEW LINE character is a single character that identifies the end of record in all cases for all records.(ASCII HEX-0A)

Data Record Format Example:

DAT|FOC|CPN.....|HNO.....|PRD..|STN.....|STS....|MCN.....|STA..|LOC.....|NAM.....
|CLS.|TYS.|MTN.....|CPD.....|CPF.....|NL

NOTE: If the field is not being used (I.E: "Street Suffix", "Post Directional", "Customer Code") then the label is not used. It is also not necessary for the labels to be in any particular order. Fields may be added to the record without changing the file format.

The Service Provider, providing E9-1-1 Selective Routing must provide the governmental entity with a list of ESN's available for assignment by MSAG development personnel.

EXHIBIT 11
VERSION 3.1 FORMAT FOR MSAG DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Record Type	MSG	0		Indicates start of MSAG record (label only, no data follows)
Function of Change	FOC	1	A	Type of activity the record is being submitted for. Valid entries: C = Change S = Split D = Delete J = Join I = Insert X = Original (used with C, S, J updates)
Prefix Directional	PRD	2	AN	Leading street direction prefix - Valid "x" Entries: N S E W NE NW SE SW
Street Name	STN	60	AN	Valid service address of the Calling Party Number.
Street Suffix	STS	4	AN	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE)
Post Directional	POD	2	AN	Trailing street direction suffix. Valid "x" entries: N S E W NE NW SE SW
Low Range	LOR	10	AN	The lowest house number that is included in this ESN definition
High Range	HIR	10	AN	The highest house number that is included in this ESN definition
MSAG Community Name	MCN	32	A	Valid service community name as defined by the MSAG
Postal Community Name	PCN	32	A	Valid service community name as defined by the U S Postal Service
State/Province	STA	2	A	Alpha U.S. state, Canadian province abbreviation i.e., TX (Texas), ON (Ontario)
Odd/Even	OEN	1	A	Valid "x" entries: O = Odd numbering only E = Even numbering only B = both odd and even numbering
Emergency Service Number (ESN)	ESN	5	AN	Emergency Service Number associated with the House Number and Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>
Completion Date	CPD	10	N	Completion date in format CCYY-MM-DD
PSAP ID	PSI	4	AN	Code identifying the PSAP associated with the assigned ESN
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Exchange	EXC	4	AN	A defined area, served by one or more Telephone Central Offices, within which a Local Exchange Carrier furnishes service.

EXHIBIT 11
VERSION 3.1 FORMAT FOR MSAG DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
TAR Code	TAR	6	AN	Taxing Area Rate Code associated with this House Number range, Street Name and Community Name
E9-1-1 Control Office	SRT	11	AN	9-1-1 Control Office CLLI
General Use 1	GU1	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 2	GU2	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.

The items below do not require a "Label" only the symbol shown

Field Separator				A "pipe" is to be utilized for the field separator (ASCII HEX-7C)
End of record	NL			A NEW LINE character is a single character that identifies the end of record in all cases for all records. (ASCII HEX-0A)

MSAG Record Format Example:

MSG|FOC.|PRD..|STN.....|STS....|LOR.....|HIR.....|MCN.....|PCN.....|STA..|OEN.
 |ESN.....|CPD.....|EXC....|SRT.....|GU1.....|NL

NOTE: If the field is not being used (I.E: General Use) then the label is not used. It is also not necessary for the labels to be in any particular order. Fields may be added to the record without changing the file format.

EXHIBIT 12
VERSION 3.1 HEADER FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Record Type	HDR	0	A	Indicates start of header record (label only, no data follows)
Record Identifier	TST	3	AN	Test Records Only
Extract Date	EXD	10	N	Year, Month, Day the data was processed, Format: CCYY-MM-DD
Company Name	CON	50	AN	Name of Company forwarding file
Cycle Counter	CYC	9	N	Sequential number, 1-999,999,999
Record Count	REC	9	N	Number of records by record type in file, does not include Header and Trailer records
General Use	GEN	20	AN	Field to be utilized by sender/receiver company's to provide additional information

The items below do not require a "Label" only the symbol shown

Field Separator		1	AN	A "pipe" is to be utilized for the field separator (ASCII HEX-7C)
End of record NL		1	AN	The NEW LINE character is a single character that identifies the end of record In all cases for all records. (ASCII HEX-0A)

Header Record Format Example:

HDR|EXDCCYY-MM-DD|CON.....|CYC.....|REC.....|GEN.....|NL

NOTE: If the field is not being used (I.E: General Use) then the label is not used. It is also not necessary for the labels to be in any particular order, except for the Record Type indicator, which must be first. Fields may be added to the record without changing the file format.

Header records will employ cycle counting to ensure a cycle of updates is not missed.

EXHIBIT 13
VERSION 3.1 TRAILER FORMAT FOR DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Record Type	TLR	0	A	Indicates start of Trailer record (label only, no data follows)
Record Count	REC	9	N	Number of records by record type in file, does not include Header and Trailer records

The items below do not require a "Label" only the symbol shown

Field Separator		1	AN	A "pipe" is to be utilized for the field separator (ASCII HEX-7C)
End of record		1	AN	A NEW LINE character identifies the end of record value in all cases for all records. (ASCII HEX-0A)

Trailer Record Format Example:

TLR|REC.....|NL

NOTE: Fields may be added to the record without changing the file format, Because a record consists of the data found between one new line and the next, labels need not follow in sequence though checking for duplicate labels within a single record would be prudent.

Trailer records will employ record counting to ensure a record within an update file is not missed.

EXHIBIT 14
VERSION 3.1 FORMAT FOR WIRELESS DATA EXCHANGE

Dynamic Updates of the ALI Database

The Version 1 through 4 Formats for Data Exchange apply to record and file exchanges between Service Providers and Data Base Management System Providers. These exchanges are file oriented and may be exchanged using bulk electronic file transmissions, CD-ROM, diskette, magnetic tape, or similar medium. The need to provide dynamic ALI database updates during 9-1-1 calls was introduced with Wireless Phase I solutions. The traditional record/file format for data exchange does not apply to dynamic database updates, which are real-time transaction, oriented. Header and Trailer records are not utilized in a transaction message, which is designed to be a real-time update of one or more database records.

Wireless solutions require information to be provided to the PSAP at the time a 9-1-1 call is in progress from a wireless device. This information is dynamic since it cannot be determined or stored in the ALI database prior to the 9-1-1 call. Information such as the wireless caller's Call Back Number, Latitude, and Longitude information is only known at the time the 9-1-1 call is placed and must be dynamically populated in the ALI database. Wireless Service Providers must generate a real-time transaction to the ALI System that contains this dynamic information. The ALI database is updated with this information prior to the PSAP equipment issuing an ALI Request Message (bid) to the ALI database. When the ALI system receives the ALI Request Message from the PSAP, the dynamically updated database record is retrieved and used to format the ALI Response Message transmitted to the PSAP with the Call Back Number, Latitude, Longitude, and other dynamically updated information.

This dynamic update capability requires real-time interfaces to be developed between the data provider and the ALI Database Management System. Many of these interfaces are currently in place as Wireless Phase I solutions were deployed. These real-time interfaces may utilize proprietary software and data formats.

Wireless Phase II introduced the need to retrieve updated lat/long information during 911 call processing. Data Base Management System Providers should refer to TIA/EIA/IS J-STD-036 and the soon to be published NENA Recommendation for the Implementation of the Wireless Emergency Service Protocol E2 Interface via TCP/IP. When implementing the E2 interface DBMS System Providers must ensure compatibility between the data elements defined in the E2 interface and the data elements defined in this NENA document. When inconsistencies exist between TIA/EIA/IS J-STD-036 and the NENAE2 Interface Document, the NENA recommendations must take precedence. Position data retrieved from the MPC may need to be translated to conform with the ALI database and ALI Response Message formats.

NENA recognizes that existing interfaces may utilize these proprietary interfaces, protocol, and data formats. This recommendation for Dynamic Updates of the ALI Database is shown in the XML format for illustrative purposes. Each interface provider should review the recommended data elements for dynamic updates for consideration in these proprietary interfaces. Adoption of XML data format for real-time interfaces may provide the same benefits recognized for record/file exchange. New data elements may need to be added to these real-time interfaces as new technology is introduced. New data elements can be easily added when using XML format.

The following are the recommended data elements for Dynamic Updates to the ALI Database. These same data elements should be defined in the ALI Response Message that will be transmitted to the PSAP.

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Call-Back Number	CBN	10	AN	Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dialable number and used as a back up if the displayed number cannot be reached
MOBILE ID (MIN)	MIN	10	AN	Mobile Identification number of the cellular wireless device.
Roamer Port	RPT	10	AN	Temporarily assigned "roamer" call back number.
Channel	RCC	3	AN	Channel signal received on.
Longitude	LON	11	N	Longitude/X coordinate. Right Justified; pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +000.#####

EXHIBIT 14
VERSION 3.1 FORMAT FOR WIRELESS DATA EXCHANGE

Dynamic Updates of the ALI Database

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Latitude	LAT	10	N	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received . (Can be used for wireline) Sample: +00.#####
Elevation	ELV	5	N	Elevation/Altitude indicated as height above mean sea level, measured in meters (Can be used for wireline) Sample: #####
P-ANI	PNI	10	AN	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 9-1-1 call for routing purposes.
Location Valid Flag	LVD	1	N	Valid data indicator (1=OK;0=Invalid).
Datum	NAD	2	AN	Specifies the map projection and coordinate system recommended for the display of the Longitude and Latitude coordinates. Two systems are commonly used for North America. The code 83 identifies North American Datum for 1983 (NAD83). Code 84 identifies the World Geodetic System for 1984 (WGS84). Other codes may be added as additional datum become available through authorized entities. Where x = 83 = NAD83 84 = WGS84
LDT Confidence	COF	7	N	Information that indicates the level of uncertainty inherent to the associated latitude/longitude information expressed in meters, ranging from one meter to 1800 Km expressed in meters.
LDT Confidence Percentage	COP	3	N	Information identifying the confidence by which it is known that the calling party lies within the associated shape description. It is expressed as a percentage ranging from 0 – 100.
LDT Provider ID	LDT	8	AN	LDT Provider Identification Code. Codes to be developed and held by NENA.
LDT Technology	LTY	2	AN	Defines how particular position information was obtained to help assess its credibility. Defined values include: <u>Single Character Value of x:</u> <u>Translation Value of yyy:</u> <u>Of x:</u> 0 =Unknown 1 =Network Unspecified 2 =Network AOA 3 =Network TOA 4 =Network TDOA 5 =Network RF Fingerprinting 6 =Network Cell Sector 16 =Handset Unspecified 17 =Handset GPS 18 =Handset AGPS 19 =Handset EOTD 20 =Handset AFLT
Time Stamp	TME	8	AN	Universal Time Coordinate (UTC) indicating milliseconds into UTC day.
Day Stamp	DAY	7	N	Year and Julian date. (UTC Date). Sample: 1996187 (CCYYDDD).
Speed (in KPH)	SPD	3	N	Speed of travel in kilometers per hour.

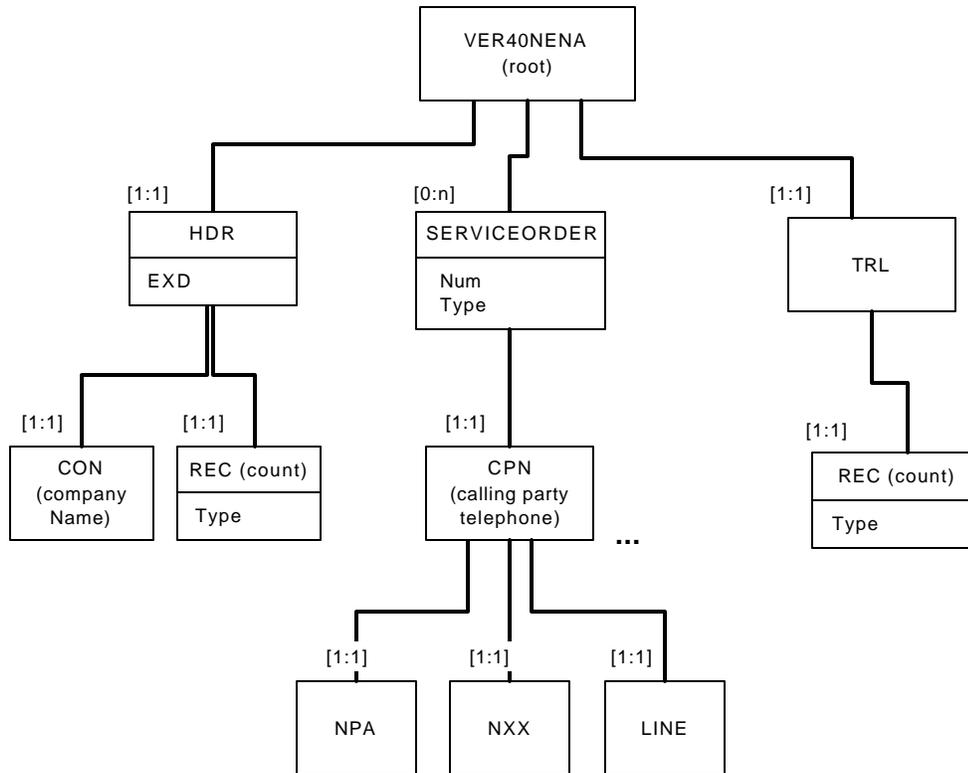
EXHIBIT 14
VERSION 3.1 FORMAT FOR WIRELESS DATA EXCHANGE

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
Heading (in degrees)	HDG	3	N	Direction of travel, decimal degrees from true north. Valid entries 0-359.
Cell Site ID	CEL	6	AN	Identification number indicating a geographic region of cellular coverage. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received .
Sector ID	SEC	2	AN	Sub set/section of a cell. . When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received .

Wireless Data Format Example:

CBN.....|MIN.....|RPT.....|RCC...|XCD.....|YCD.....|ZCD.....|PNI.....|LVD..|NDA..|COF...|COP..|LDT.....|LTY....|TME....
 ...|DAY.....|SPD...|HDG...|NL

EXHIBIT 15.1
VERSION 4.0 XML HIERARCHY FOR DATA EXCHANGE



This diagram shows the structure of a Version 4.0 NENA XML document (record). Each of the boxes shown is an Element (the combination of start-tag, data and end-tag). The data an Element contains can be a value, or it can be a collection of sub-elements. The sub-elements, which make up the data for an Element are usually referred to as “children”. In this diagram CPN is a child of SERVICEORDER; this also means that SERVICEORDER is the parent of CPN.

The numbers shown in brackets in the diagram (next to the children) tell us how many children the parent may have; [1:1] means that the parent *must* have 1 child of this type. [0:n] means that the parent may have 0 to n children of this type. In the diagram [0:n] next to the SERVICEORDER Element indicates that the root may have 0 to n SERVICEORDER children; [1:1] next to CPN means that a SERVICEORDER *must* have one (and only one) Calling Party Number.

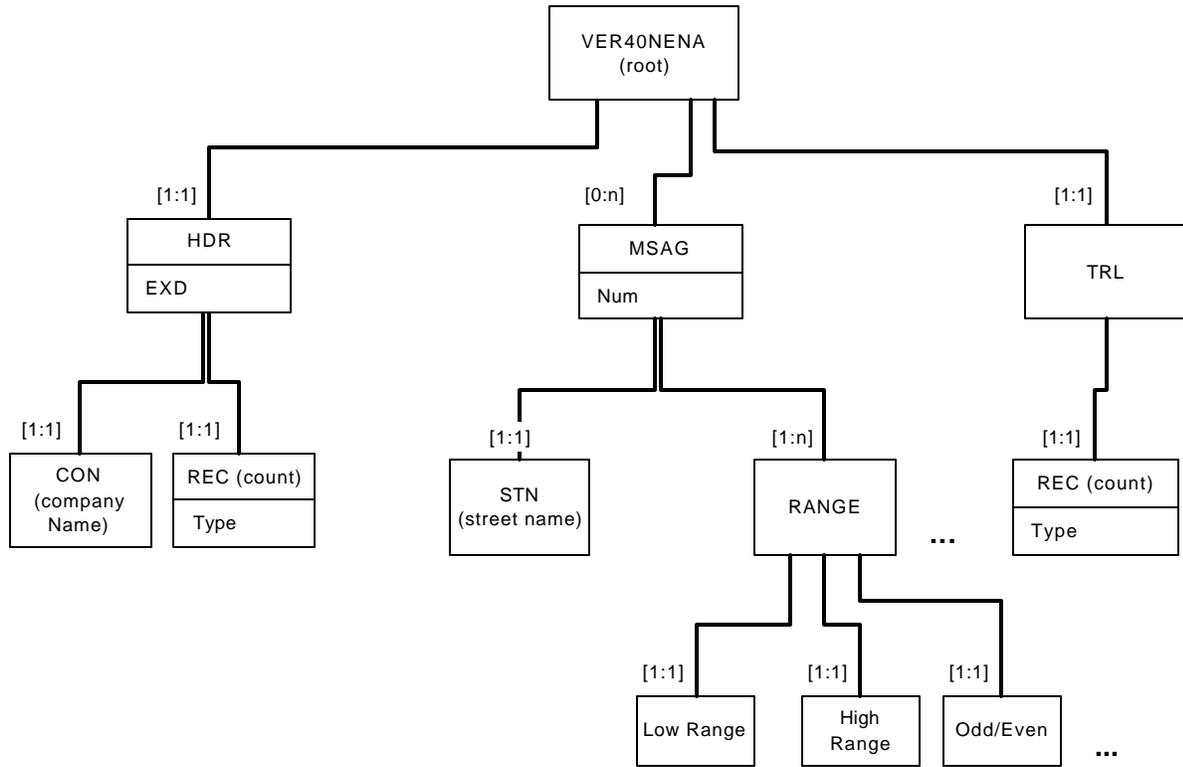
If a tag has required attributes they are shown below the line in the SERVICEORDER box above, i.e. SERVICEORDER has two required attributes: Num and Type.

The 3 periods indicate that there are more Elements at that level of the hierarchy; i.e. Service Order will also have elements for Function of Change, Street, Community, etc; at the same level as the CPN.

It is recommended that Service Order and MSAG updates not appear within the same file.

Service Order: This is the format to be used for all static service order updates, which includes wireline and wireless records.

EXHIBIT 15.2
VERSION 4.0 XML HIERARCHY FOR MSAG EXCHANGE



This diagram shows the structure of a Version 4.0 NENA XML document (record). Each of the boxes shown is an Element (the combination of start-tag, data and end-tag). The data an Element contains can be a value, or it can be a collection of sub-elements. The sub-elements, which make up the data for an Element are usually referred to as “children”. In this diagram, STN is a child of MSAG ; this also means that MSAG is the parent of STN.

The numbers shown in brackets in the diagram (next to the children) tell us how many children the parent may have; [1:1] means that the parent *must* have 1 child of this type. [0:n] means that the parent may have 0 to n children of this type. In the diagram [0:n] next to the MSAG Element indicates that the root may have 0 to n MSAG children; [1:1] next to STN means that a MSAG *must* have one (and only one) Street Name.

If a tag has required attributes they are shown below the line in the entity box.

The 3 periods indicate that there are more Elements at that level of the hierarchy; i.e. MSAG will also have elements for Function of Change, Street, Community, etc; at the same level as Range.

It is recommended that Service Order and MSAG updates not appear within the same file.

EXHIBIT 16.1
VERSION 4.0 DATA EXCHANGE FORMATS
XML STRUCTURE FOR DATA EXCHANGE

Example XML Service Order file (bold italic items are required elements):

SAMPLE XML for Service Order file	DESCRIPTION
<pre> <?xml version="1.0"encoding="UTF-8"?> <schema targetNamespace="http://www.nena.org/X MLSchema" xmlns=http://www.w3.org/2000/10/XMLSchema xmlns:ena4=http://www.nena.org/XMLSchema elementFormDefault="qualified"> <VER40NENA> <HDR EXD="2000-03-05"> <CON>Your Phone Company</CON> <CYC>12345</CYC> <REC Type="DAT">2</REC> </HDR> <SERVICEORDER Num="1" Type="DAT"> <FOC>C</FOC> <CPN> <NPA>555</NPA> <NXX>332</NXX> <LINE>9090</LINE> </CPN> <HNO>4321</HNO> <STN>ANYSTREET</STN> <MCN>ANYWHERE</MCN> <STA>CA</STA> <NAM>JOHN DOE</NAM> <CLS><TYP>1</TYP><DES>De scription</DES></CLS> <TYS><TYP>0</TYP><DES>De scription</DES></TYS> <ORD>54987845646</ORD> <CPD>2000-06-03</CPD> </SERVICEORDER> <SERVICEORDER Num="2" Type="DAT"> <FOC>I</FOC> <CPN> <NPA>555</NPA> <NXX>332</NXX> <LINE>8877</LINE> </CPN> <HNO>1234</HNO> <STN>ANYSTREET</STN> <MCN>ANYWHERE</MCN> <STA>CA</STA> <NAM>JOHN DOE</NAM> </pre>	<pre> Standard XML header Root Element start-tag for NENA Version 4.0? XML data Start-tag for the header (extract date) Company Name tag and data (file creator) Cycle tag and data Record Count tag and data (# data records in file) End-tag for the header Service Order start-tag (rec 1, type "Data Record") Function of Change tag and data (Change) Start-tag for Calling Party Number NPA tag and data for CPN NXX tag and data for CPN Line tag and data for CPN End-tag for Calling Party Number House Number tag and data Street Name tag and data Community Name tag and data State/Province tag and data Customer Name tag and data Class of Service tag and data Type of Service tag and data Service Order tag and data Completion date start tag Service Order end-tag Service Order start-tag (rec 2, type "Data Record") Function of Change tag and data (Insert) Start-tag for Calling Party Number NPA tag and data NXX tag and data Line tag and data End-tag for Calling Party Number House Number tag and data Street Name tag and data Community Name tag and data State/Province tag and data Customer Name tag and data </pre>

<pre> <CLS><TYP>1</TYP><DES>De scription</DES></CLS> <TYS><TYP>0</TYP><DES>De scription</DES></TYS> <ORD>54987845646</ORD> </pre>	<p>Class of Service tag and data</p> <p>Type of Service tag and data</p> <p>Service Order tag and data</p>
SAMPLE XML for Service Order file	DESCRIPTION
<pre> <CPD>2000-06-03</CPD> </SERVICEORDER> <TRL> <REC Type="DAT">2</REC> </TRL> </VER4ONENA> </pre>	<p>Completion date start tag</p> <p>Service Order record end-tag</p> <p>Trailer Record showing 2 records in file</p> <p>Record Count tag and data (# data records in file)</p> <p>End-tag for the trailer</p> <p>Root Element end-tag for NENA Version 4.0 XML data</p>

EXHIBIT 16.2
VERSION 4.0 DATA EXCHANGE FORMATS
XML STRUCTURE FOR DATA EXCHANGE

Example XML MSAG file (bold italic items are required elements):

SAMPLE XML for MSAG file	DESCRIPTION
<pre> <?xml version="1.0"encoding="UTF-8"?> <schema targetNamespace="http://www.nena.org/XMLSchema" xmlns=http://www.w3.org/2000/10/XMLSchema xmlns:ena4=http://www.nena.org/XMLSchema elementFormDefault="qualified"> <VER40NENA> <HDR EXD="2000-03-05"> <CON>YOUR TELEPHONE COMPANY</CON> <CYC>12345</CYC> <REC Type="DAT">1</REC> </HDR> <MSAG Num="1"> <FOC>I</FOC> <PRD>S</PRD> <STN>ANY STREET</STN> <STS>AVE</STS> <POD>N</POD> <MCN>ANY COMMUNITY</MCN> <PCN>ANY POSTAL COMMUNITY</PCN> <STA>NJ</STA> <COI>OCEAN</COI> <TAR>123456</TAR> <CPD>2000-05-01</CPD> <RCOUNT>2</RCOUNT> <RANGE> <LOR>100</LOR> <HIR>500</HIR> <OEN>B</OEN> <ESN>555</ESN> <PSI>ATPD</PSI> <EXC>BATL</EXC> <SRT>HNVINJUNDS0</SRT> </RANGE> <RANGE> <LOR>501</LOR> <HIR>700</HIR> <OEN>B</OEN> <ESN>556</ESN> <PSI>OCPD</PSI> <EXC>BATL</EXC> <SRT>HNVINJUNDS0</SRT> </RANGE> <GU1>ADDITIONAL INFO</GU1> </pre>	<pre> Standard XML header Root Element start-tag for NENA Version 4.0 XML data Start-tag for the header (extract date) Company Name tag and data (file creator) Cycle tag and data Record Count tag and data (# data records in file) End-tag for the header MSAG record start-tag (rec 1) Function of Change tag and data Prefix directional tag and data Street name tag and data Street suffix tag and data Post directional tag and data MSAG community tag and data Postal community tag and data State/Province abbreviation tag and data County ID tag and data Taxing area rate code tag and data Completion date tag and data Number of ranges tag and data Start-tag for ESN range definition Low house number range tag and data High house number range tag and data Odd/Even tag and data ESN tag and data PSAP ID tag and data Exchange tag and data E9-1-1 Control Office tag and data End-tag for ESN Range definition Start-tag for next ESN range definition Low house number range tag and data High house number range tag and data Odd/Even tag and data ESN tag and data PSAP ID tag and data Exchange tag and data E9-1-1 Control Office tag and data End-tag for ESN Range definition General Use 1 tag and data </pre>

</MSAG>	End-tag for MSAG record
<TRL>	Trailer Record showing 1 record in file
<REC Type="DAT">1</REC>	Record Count tag and data (# data records in file)
</TRL>	End-tag for the trailer
</VER40NENA>	Root element end-tag for NENA Version 4.0 XML data

**EXHIBIT 17
 VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE**

Notes:

- 1 Parent tags are shown in the tables with 0 as Max # Bytes.
- 2 Each Parent tag has an associated table that shows what children are valid for it.
- 3 Elements with no data (i.e.: General Use) should not be included in the data exchange record. It is also not necessary for Elements to be in any particular order.
- 4 Type defines the allowed data types: A = Alpha; N = Numeric; V = variable length.
- 5 The date format CCYY-MM-DD is a "Simple Type" (supported data type) in the XML Schema standard.

17.1 Required Fields for Service Provider Input to DBMS System

Required Fields Children for all Phone Numbers (CPN, MTN, ALT, CBN)

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
NPA	<NPA>	3	N	NPA
NXX	<NXX>	3	N	NXX
LINE	<LINE>	4	N	LINE

Required Fields Children for SERVICEORDER

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Record Type	<Typ="xxx">	0	NV	Number of records of the type specified in the Type Attribute <i>Required Attributes:</i> Type=Record Type; valid values are: DAT = Data sent from the Service Provider to the Data Base Management System Provider RTN = Data returned from the Data Base Management System Provider to the Service Provider
Function of Change	<FOC>	1	A	Type of activity the record is being submitted for. Valid "x" entries : C = Change D = Delete I = Insert U = Unlock M = Migrate E = Delete error record

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Calling Party Number	<CPN>	0		<p>Number of the Calling Party. Emergency Location Identification Number (ELIN) – A valid North American Numbering Plan format telephone number assigned to the Multi-Line Telephone Systems Operator by the appropriate authority that is used to call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number.</p> <p><i>Footnote</i>³</p>
Street Name	<STN>	60	ANV	<p>Valid service address of the Calling Party Number.</p> <p><i>Footnote</i>^{1,2,3}</p>

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
MSAG Community Name	<MCN>	32	AV	Valid service community name as identified by the MSAG. <i>Footnote</i> ^{1,2,3}
State/Province	<STA>	2	A	Alpha U.S. state, Canadian province abbreviation e.g. TX (Texas), ON (Ontario) <i>Footnote</i> ^{1,2,3}
Class of Service	<CLS><TYP>"x"</TYP> <DES>Description</DES> <CLS>	40	ANV	Type = "x", Valid "x" entries: 0 – 9, A,B,G or H 1 = Residence 9 = Residence OPX 2 = Business 0 = Business OPX 3 = Residence PBX A = Customer Owned 4 = Business PBX Coin Telephone 5 = Centrex B = Not Available, <i>Footnote</i> ⁴ 6 = Coin 1 Way out G = Wireless Phase I 7 = Coin 2 Way H = Wireless Phase II 8 = Wireless Phase 0
Type of Service	<TYS><TYP>"x"</TYP> <DES>Description</DES> </TYS>	45	ANV	Type = "x". Valid "x" entries 0 = Not FX nor Non-Published 1 = FX in 911 serving area 2 = FX outside 911 serving area 3 = Non-Published 4 = Non-Published FX in 911 serving area 5 = Non-Published FX outside 911 serving area 8 = PSALI Published 9 = PSALI Non-Published
Main Telephone Number	<MTN>	0		Ten-digit telephone number of the Main Billing Number associated with the Calling Party Number. <i>Footnote</i> ³
Company ID 1	<CPF>	5	ANV	NENA registered Company Identification code for Service Provider providing wireline or wireless service to the customer.
Company ID 2	<CPS>	5	ANV	NENA registered Company Identification code for Service Provider/Reseller/Private Switch supplying ALI record source information.

17.2 Root

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Root Element	<VER40NENA>	0		Required root element tag.

17.3 Children for VER40NENA

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Header	<HDR EXD="date"/>	0		Header information <i>Required Attributes:</i> EXD=Extract date formatted as CCYY-MM-DD
Trailer	<TRL>	0		Trailer information

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Service Order	<SERVICEORDER Num="x" Type="y"/>	0		Service Order data <i>Required Attributes:</i> Num=Record Number, must be unique Type=Record Type; valid values are: DAT = Data sent from the Service Provider to the Data Base Management System Provider RTN = Data returned from the Data Base Management System Provider to the Service Provider
MSAG	<MSAG Num="x"/>	0		Master Street Address Guide data <i>Required Attributes:</i> Num=Record Number, must be unique

17.4 Children for HDR

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Company Name	<CON>	50	ANV	Name of Company forwarding file
Cycle Counter	<CYC>	9	NV	Sequential number, 1-999999999
Extract Date	<EXD>	10	NV	Year, Month, Day the data was processed, Format: CCYY-MM-DD
Record Identifier	<TST>	3	AN	Test Records Only Format: TST
General Use	<GEN>	20	ANV	Field to be utilized by sender/receiver company's to provide additional information

17.5 Children for TRL

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Record Count	<REC="xxx">	9	NV	Number of records by record type in file, does not include Header and Trailer records.

17.6 Children for all Telephone Numbers (CPN, MTN, ALT, CBN)

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
NPA	<NPA>	3	N	NPA
NXX	<NXX>	3	N	NXX
LINE	<LINE>	4	N	LINE

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

17.7 Children for SERVICEORDER

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Status Indicator	<STI>	1	AN	Record status indicator. Valid "x" entries: E = Error C = Completed P = Pending processing U = Unprocessed Gateway received but not sent to processing, (future date)
Function of Change	<FOC>	1	A	Type of activity the record is being submitted for. Valid "x" entries : C = Change D = Delete I = Insert U = Unlock M = Migrate E = Delete error record
Calling Party Number	<CPN>	0		Number of the Calling Party. Emergency Location Identification Number (ELIN) – A valid North American Numbering Plan format telephone number assigned to the Multi-Line Telephone Systems Operator by the appropriate authority that is used to call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number. <i>Footnote</i> ³
House Number	<HNO>	10	ANV	House Number. <i>Footnote</i> ^{1,2,3}
House Number Suffix	<HNS>	4	ANV	House number extension (e.g. ½). <i>Footnote</i> ^{1,2,3}
Prefix Directional	<PRD>	2	AV	Leading street direction prefix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW
Street Name	<STN>	60	ANV	Valid service address of the Calling Party Number. <i>Footnote</i> ^{1,2,3}
Street Suffix	<STS>	4	AV	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE) <i>Footnote</i> ^{1,2,3}

¹ Where an MSAG exists, must fit the MSAG entry.

² Primary address associated with the Calling Party Number

³ Must include all TN USERS information on all Multi-Line Telephone Systems that will facilitate the implementation of enhanced 9-1-1 on all PBX, Key, Hybrid and Centrex Systems.

⁴ NA = not available – class of service for an ESCO failure

⁵ The Data Technical Committee strongly recommends that all processing edits be removed from this Label due to technological changes requiring improved data security measures.

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Post Directional	<POD>	2	AV	Trailing street direction suffix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW
MSAG Community Name	<MCN>	32	AV	Valid service community name as identified by the MSAG. <i>Footnote</i> ^{1,2,3}
Postal Community Name	<PCN>	32	AV	Valid service community name as identified by the U.S. Postal Service. <i>Footnote</i> ³
State/Province	<STA>	2	A	Alpha U.S.state, Canadian province abbreviation e.g. TX (Texas), ON (Ontario) <i>Footnote</i> ^{1,2,3}
Location	<LOC>	60	ANV	Additional location information (free formatted) describing the exact location of the Calling Party Number (e.g., Apt 718, or cell sector A) Emergency Response Location (ERL) – A Location to which a 9-1-1 emergency response team may be dispatched. The location should be specific enough to provide a reasonable opportunity for the emergency response team to quickly locate a caller anywhere within it. <i>Footnote</i> ^{2,3} This information may be displayed at the PSAP
Landmark Address	<LMK>	60	ANV	Landmark or Vanity address such as “One Rockefeller Plaza”.
Also Rings At Address	<ARA>	60	ANV	Secondary address for the Calling Party Number that rings at 2 locations. Not validated against the MSAG. <i>Footnote</i> ³ Not applicable to dual service. This information may be displayed at the PSAP
Customer Name	<NAM>	32	ANV	Subscriber name associated with the Calling Party Number. <i>Footnote</i> ³
Class of Service	<CLS><TYP>"x"</TYP> <DES>Description</DES> <CLS>	40	ANV	Type = ‘x’, Valid "x" entries: 0 – 9, A,B,G or H 1 = Residence 9 = Residence OPX 2 = Business 0 = Business OPX 3 = Residence PBX A = Customer Owned 4 = Business PBX Coin Telephone 5 = Centrex B = Not Available <i>Footnote</i> ⁴ 6 = Coin 1 Way out G = Wireless Phase I 7 = Coin 2 Way H = Wireless Phase II 8 = Wireless Phase 0

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Type of Service	<TYS><TYP>"x"</TYP> <DES>Description</DES> </TYS>	45	ANV	Type = "x". Valid "x" entries 0 = Not FX nor Non-Published 1 = FX in 911 serving area 2 = FX outside 911 serving area 3 = Non-Published 4 = Non-Published FX in 911 serving area 5 = Non-Published FX outside 911 serving area 8 = PSALI Published 9 = PSALI Non-Published
Exchange	<EXC>	4	ANV	A defined area served by one or more telephone Central Offices, within which a Local Exchange Carrier furnishes service. <i>Footnote</i> ⁵
Emergency Service Number (ESN)	<ESN>	5	ANV	Emergency Service Number associated with the House Number and Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>
Main Telephone Number	<MTN>	0		Ten-digit telephone number of the Main Billing Number associated with the Calling Party Number. Format: NPANXXXXXX <i>Footnote</i> ³
Call Back Number	<CBN>	0		Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dialable number and used as a back up if the displayed number can not be reached. <i>Footnote</i> ³
P-ANI	<PNI>	10	ANV	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 911 call for routing purposes.
Order Number	<ORD>	10	ANV	Service order number for the activity associated with this record.
Completion Date	<CPD>	10	N	Service Order Completion Date in format CCYY-MM-DD
County ID	<COI>	5	ANV	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Company ID 1	<CPF>	5	ANV	NENA registered Company Identification code for Service Provider providing wireline or wireless service to the customer.
Company ID 2	<CPS>	5	ANV	NENA registered Company Identification code for Service Provider/Reseller/Private Switch supplying ALI record source information.
Postal/ZipCode	<ZIP>	10	ANV	Postal or Zip code. Format: NNNNN-NNNN or ANANAN <i>Footnote</i> ³
Customer Code	<CUS>	3	ANV	Code used to uniquely identify a wireline customer
Comments	<CMT>	30	ANV	Optional notes, may be displayed at PSAP TN USERS on MLTS can include any pertinent information that will assist in reducing response time such as – contact security department, contact front desk, etc. <i>Footnote</i> ³
TAR Code	<TAR>	6	ANV	Taxing Area Rate Code

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Alternate Telephone Number	<ALT>	0		Remote Call Forwarding number used during Interim Number Portability. Format: NPANXXXXXX
Return Code Number	<RCN>"x"</RCN>	3	N	Code indicating specific processing error code or processing completed successfully. (May be used as many times as necessary.) Valid "x" entries: Not present (or 000 if used) = processing completed successfully XXX = Valid NENA Standard Error Code
Special Attention Indicator	<SAI>	1	N	Calls which require special attention. Valid entries: 1 = TTY call 2 = ACN = Automatic crash/collision notification
Special Message Indicator	<SMI type="x" value="yyy"> message</SMI>	160	AN	Special Message Indicator. Special text message sent by ALI/DBMS or system administrator identifying emergency type notification to PSAP. Example (for SMI type=6): "ALI going down in 10 minutes." Special Message Indicator <SMI> Value of "x" Translation Values "yyy" 1 = No Record Found 2 = ANI Failure, Central Office to Tandem (911-0XXX) 3 = ANI Failure, Tandem to PSAP (000-0000) 4 = Anonymous Call (911-0000) 5 = Broadcast Message – General 6 = Broadcast Message indicating host going out of service 7 = Manual Query denied 8 = Record unlocked, porting in progress 9 = Migrate attempt, not unlocked
Common Language Location Identifier (CLLI)	<CLI>	11	AN	CLLI code of the local loop central office for the 911 calling party.
General Use 1	<GU1>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 2	<GU2>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 3	<GU3>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
General Use 4	<GU4>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 5	<GU5>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 6	<GU6>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 7	<GU7>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 8	<GU8>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
Longitude	<LON>	11	NV	Longitude/X coordinate. Right Justified; pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +00.000000 <i>Footnote</i> ³
Latitude	<LAT>	10	NV	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +00.##### <i>Footnote</i> ³
Elevation	<ELV>	5	ANV	Elevation/Altitude indicated as height above mean sea level, measured in meters. Blank record indicates data not available. (Can be used for wireline) Sample: ##### <i>Footnote</i> ³
Cell Site ID	<CEL>	6	ANV	Identification number indicating a geographic region of cellular coverage. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received.
Sector ID	<SEC>	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received.

NOTE: *The Service Provider, providing E9-1-1 Selective Routing must provide the governmental entity with a list of ESN's available for assignment by MSAG development personnel.*

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

17.8 Children for MSAG

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Function of Change	<FOC>	1	A	Type of activity the record is being submitted for. Valid entries: C = Change S = Split D = Delete J = Join I = Insert X = Original (used with C,S,J)
Prefix Directional	<PRD>	2	ANV	Leading street direction prefix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW
Street Name	<STN>	60	ANV	Valid service address of the Calling Party Number. <i>Footnote</i> ^{1,2,3}
Street Suffix	<STS>	4	ANV	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE) <i>Footnote</i> ^{1,2,3}
Post Directional	<POD>	2	ANV	Trailing street direction suffix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW
MSAG Community Name	<MCN>	32	AV	Valid service community name as defined by the MSAG
Postal Community Name	<PCN>	32	AV	Valid service community name as defined by the U S Postal Service
State/Province	<STA>	2	A	Alpha U.S. state, Canadian province abbreviation i.e., TX (Texas) ON (Ontario) <i>Footnote</i> ^{1,2,3}
County ID	<COI>	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
TAR Code	<TAR>	6	ANV	Taxing Area Rate Code associated with this House Number range, Street Name and Community Name
Completion Date	<CPD>	10	AN	Completion Date in format CCYY-MM-DD
Number of Ranges	<RCOUNT>	4	NV	Number of ranges for this street (for validation purposes)
General Use 1	<GU1>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use 2	<GU2>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

17.9 Children for RANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Low Range	<LOR>	10	ANV	The lowest house number that is included in this ESN definition
High Range	<HIR>	10	ANV	The highest house number that is included in this ESN definition
Odd/Even	<OEN>	1	A	Valid "x" entries: O = Odd numbering only E = Even numbering only B = both odd and even numbering
Emergency Service Number (ESN)	<ESN>	5	ANV	Emergency Service Number associated with this House Number range, Street Name and Community Name.
PSAP ID	<PSI>	4	AN	Code identifying the PSAP associated with the assigned ESN
Exchange	<EXC>	4	ANV	Abbreviated name of the switching entity, which provides dial tone.
E9-1-1 Control Office	<SRT>	11	ANV	9-1-1 Control Office CLLI

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

17.10 Children for WIRELESS

Dynamic Updates of the ALI Database

The Version 1 through 4 Formats for Data Exchange apply to record and file exchanges between Service Providers and Data Base Management System Providers. These exchanges are file oriented and may be exchanged using bulk electronic file transmissions, CD-ROM, diskette, magnetic tape, or similar medium. The need to provide dynamic ALI database updates during 9-1-1 calls was introduced with Wireless Phase I solutions. The traditional record/file format for data exchange does not apply to dynamic database updates, which are real-time transaction, oriented. Header and Trailer records are not utilized in a transaction message, which is designed to be a real-time update of one or more database records.

Wireless solutions require information to be provided to the PSAP at the time a 9-1-1 call is in progress from a wireless device. This information is dynamic since it cannot be determined or stored in the ALI database prior to the 9-1-1 call. Information such as the wireless caller's Call Back Number, Latitude, and Longitude information is only known at the time the 9-1-1 call is placed and must be dynamically populated in the ALI database. Wireless Service Providers must generate a real-time transaction to the ALI System that contains this dynamic information. The ALI database is updated with this information prior to the PSAP equipment issuing an ALI Request Message (bid) to the ALI database. When the ALI system receives the ALI Request Message from the PSAP, the dynamically updated database record is retrieved and used to format the ALI Response Message transmitted to the PSAP with the Call Back Number, Latitude, Longitude, and other dynamically updated information.

This dynamic update capability requires real-time interfaces to be developed between the data provider and the ALI Database Management System. Many of these interfaces are currently in place as Wireless Phase I solutions were deployed. These real-time interfaces may utilize proprietary software and data formats.

Wireless Phase II introduced the need to retrieve updated lat/long information during 911 call processing. Data Base Management System Providers should refer to TIA/EIA/IS J-STD-036 and the soon to be published NENA Recommendation for the Implementation of the Wireless Emergency Service Protocol E2 Interface via TCP/IP. When implementing the E2 interface DBMS System Providers must ensure compatibility between the data elements defined in the E2 interface and the data elements defined in this NENA document. When inconsistencies exist between TIA/EIA/IS J-STD-036 and the NENA E2 Interface Document, the NENA recommendations must take precedence. Position data retrieved from the MPC may need to be translated to conform with the ALI database and ALI Response Message formats.

NENA recognizes that existing interfaces may utilize these proprietary interfaces, protocol, and data formats. This recommendation for Dynamic Updates of the ALI Database is shown in the XML format for illustrative purposes. Each interface provider should review the recommended data elements for dynamic updates for consideration in these proprietary interfaces. Adoption of XML data format for real-time interfaces may provide the same benefits recognized for record/file exchange. New data elements may need to be added to these real-time interfaces as new technology is introduced. New data elements can be easily added when using XML format.

The following are the recommended data elements for Dynamic Updates to the ALI Database. These same data elements should be defined in the ALI Response Message that will be transmitted to the PSAP.

Children for WIRELESS

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Call-Back Number	<CBN>	0		Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dialable number and used as a back up if the displayed number can not be reached.
MOBILE ID (MIN)	<MIN>	10	AN	Mobile Identification number of the cellular wireless device.
Roamer Port Channel	<RPT>	10	AN	Temporarily assigned "roamer" call back number.
	<RCC>	3	AN	Channel signal received on.

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
Longitude	<LON>	11	NV	Longitude/X coordinate. Right Justified; pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported. i.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +000.#####
Latitude	<LAT>	10	NV	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported. i.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +00.#####
Elevation	<ELV>	5	NV	Elevation/Altitude indicated as height above mean sea level, measured in meters. Blank record indicates data not available. (Can be used for wireline) Sample: #####
P-ANI	<PNI>	10	AN	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 9-1-1 call for routing purposes.
Location Valid Flag	<LVD>	1	N	Valid data indicator (1=OK; 0=Invalid).
Datum	<NAD>	2	ANV	Specifies the map projection and coordinate system recommended for the display of the Longitude and Latitude coordinates. Two systems are commonly used for North America. The code 83 identifies North American Datum for 1983 (NAD83). Code 84 identifies the World Geodetic System for 1984 (WGS84). Other codes may be added as additional datum become available through authorized entities. Where x = 83 = NAD83 84 = WGS84
LDT Confidence	<COF>	7	NV	Information that indicates the level of uncertainty inherent to the associated latitude/longitude information expressed in meters, ranging from one meter to 1800 Km expressed in meters.
LDT Confidence Percentage	<COP>	3	NV	Information identifying the confidence by which it is known that the calling party lies within the associated shape description. It is expressed as a percentage ranging from 0 – 100.
LDT Provider ID	<LDT>	8	ANV	LDT Provider Identification Code. Codes to be developed and held by NENA.

EXHIBIT 17
VERSION 4.0 ELEMENT TAGS FOR DATA EXCHANGE

NAME	LABEL	MAX # BYTES	TYPE	DESCRIPTION
LDT Technology	<LTY>	25	ANV	Defines how particular position information was obtained to help assess its credibility. Defined values include: <u>Single Character Value of x: Translation Value of yyy:</u> 0 =Unknown 1 =Network Unspecified 2 =Network AOA 3 =Network TOA 4 =Network TDOA 5 =Network RF Fingerprinting 6 =Network Cell Sector 16 =Handset Unspecified 17 =Handset GPS 18 =Handset AGPS 19 =Handset EOTD 20 =Handset AFLT
Time Stamp	<TME>	8	AN	The UTC (Coordinated Universal Time) time that reflects the time of position determination by the wireless carrier. Reflected in tenths of seconds. Format: HHMMSS.S
Day Stamp	<DAY>	7	N	Year and Julian date. (UTC Date). Sample: 1996187 (CCYYDDD).
Speed (in KPH)	<SPD>	3	NV	Speed of travel in kilometers per hour.
Heading (in degrees)	<HDG>	3	NV	Direction of travel, decimal degrees from true north. Valid entries 0-359.
Cell Site ID	<CEL>	6	ANV	Identification number indicating a geographic region of cellular coverage. When Phase II location cannot be provided, Phase I information i.e., the cell site or sector where the call is received, should be reported.
Sector ID	<SEC>	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information, i.e., the cell site or sector where the call is received should be reported.

**EXHIBIT 18
 DATA DICTIONARY**

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
DAT HDR MSG RTN TLR	Record Type	0	A	Indicates the start of a data record (Label only, No Data follows): Valid Labels: DAT = Data Record sent from the Service Provider to the Data Base Management System Provider HDR = Indicates start of Header Record MSG = Indicates start of MSAG Record RTN = Data Record returned from the Data Base Management System Provider to the Service Provider TLR = Indicates start of Trailer Record
AAD	Agency Address	25	A	Street Address of Agency Facility
ACO	Agency Contact	25	A	Agency Contact Person
ADS	ALI Retrieval Date Stamp	10	AN	The UTC (Coordinated Universal Time) date when the request was received by the ALI database or when broadcast is generated by ALI database. Format: CCYY-MM-DD
AID	Agency ID	9	N	Emergency Service Agency ID defined with the first 5 digits as the County Code and the last 4 digits as the locally assigned agency code
AL1	ALI ID 1	15	AN	Identifier of the ALI Host Computer transmitting the ALI response to the PSAP (or through a node if applicable)
AL2	ALI ID 2	15	AN	Identifier of the ALI Host Computer that is the source of the ALI response message.
ALT	Alternate Telephone Number	10	N	Remote Call Forwarding number used during Interim Number Portability – Format: NPANXXXXXX
ANA	Agency Name	35	A	Name of Agency
ANT	Antennae Orientation	3	N	Center of antennae orientation for this face
AOR	Antennae Orientations	20	A	List of antennae orientation, separated by spaces or commas.
ARA	Also Rings At Address	60	AN	Secondary address for the Calling Party Number that rings at 2 locations. Not validated against the MSAG. Not applicable to dual service. <i>This information may be displayed at the PSAP.</i> <i>Footnote</i> ³
ATS	ALI Retrieval Time Stamp	6	N	The UTC (Coordinated Universal Time) time when the request was received by the ALI database or when broadcast is generated by ALI database. Represented in Military time format. Format: HHMMSS
ATY	Agency Type	1	A	Valid “x” entries: L = Law F = Fire E = Emergency Medical Service
AUD	ALI Update Date	10	AN	The UTC (Coordinated Universal Time) date when the ALI record associated with the ANI of the caller was last updated. Format: CCYY-MM-DD

¹ Where an MSAG exists, must fit the MSAG entry.

² Primary address associated with the Calling Party Number

³ Must include all TN USERS information on all Multi-Line Telephone Systems that will facilitate the implementation of enhanced 9-1-1 on all PBX, Key, Hybrid and Centrex Systems.

⁴ NA = not available – class of service for an ESCO failure

⁵ The Data Technical Committee strongly recommends that all processing edits be removed from this Label due to technological changes requiring improved data security measures.

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
AUT	ALI Update Time	6	N	The UTC (Coordinated Universal Time) time when the ALI record associated with the ANI of the caller was last updated. Represented in Military time format. Format: HHMMSS
CAG	Coverage Angle	3	N	Maximum angle of coverage for this face
CBN	Call-Back Number	0		Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dial-able number and used as a back up if the displayed number can not be reached.
CCM	Comment	60	A	Comment
CEL	Cell Site ID	6	ANV	Identification number indicating a geographic region of wireless coverage. When Phase II location cannot be provided, Phase I information should be reported. i.e., the cell site or sector where the call is received.
CID	Community ID	10	N	Unique Community ID Number, i.e. FIPS, GEOCODES, etc.
CLI	Common Language Location Identifier (CLLI)	11	AN	The CLLI code of the local loop host/remote Central Office for the 911 calling party.
CLS	Class of Service	40	ANV	<p>Class of Service Definitions</p> <p>Valid entries: “x”</p> <p>1 = Residence</p> <p>2 = Business</p> <p>3 = Residence PBX</p> <p>4 = Business PBX</p> <p>5 = Centrex</p> <p>6 = Coin 1 Way out</p> <p>7 = Coin 2 Way</p> <p>8 = Wireless Phase 0</p> <p>9 = Residence OPX</p> <p>0 = Business OPX</p> <p>A = Customer owned Coin Telephone</p> <p>B = Not Available <i>Footnote 4</i></p> <p>G = Wireless Phase I</p> <p>H = Wireless Phase II</p>
CMT	Comments	30	AN	Optional notes; may be displayed at PSAP. TN USERS on MLTS can include any pertinent information that will assist in reducing response time such as – contact security department, contact front desk, etc. <i>Footnote 3</i>
CNA	County Name	35	A	Name of County
COF	LDT Confidence	7	N	Information that indicates the level of uncertainty inherent to the associated latitude/longitude information expressed in meters, ranging from one meter to 1800 Km expressed in meters.
COI	County ID	5	AN	County Identification Code – (Usually FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The committee recommends use of the FIPS code assigned to each county by the U.S.Census Bureau.</i>
COL	County ID Left	5	AN	County Identification code (usually the FIPS code) on the left side of the street in ascending order. <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau.</i>

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<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
CON	Company Name	50	AN	Name of Company forwarding file.
COP	LDT Confidence Percentage	3	N	Information identifying the confidence by which it is known that the calling party lies within the associated shape description. It is expressed as a percentage ranging from 0 – 100.
COR	County ID Right	5	AN	County Identification code (usually the FIPS code) on the right side of the street in ascending order. <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau.</i>
CPD	Completion Date	10	N	Completion Date in format CCYY-MM-DD
CPF	Company ID 1	5	AN	NENA Registered Company Identification code for Service Provider providing wireline or wireless service to the customer.
CPN	Calling Party Number	0	N	Number of the Calling Party. Emergency Location Identification Number (ELIN) – A valid North American Numbering Plan format telephone number assigned to the Multi-Line Telephone Systems Operator by the appropriate authority that is used to call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number.
CPS	Company ID 2	5	AN	NENA Registered Company Identification Code for Service Provider/Reseller/Private Switch supplying ALI record source information.
CTP	Cell Type	1	A	A = Analog (900MHz) P = Digital (PCS) T = TDMA (Digital AMPs) Could be expanded depending on need.
CUS	Customer Code	3	ANV	Code used to uniquely identify a wireline customer
CYC	Cycle Counter	9	N	Sequential Number, 1-999,999,999
DAY	Day Stamp	7	N	Year and Julian date that reflects the date of position determination. (UTC Date). Sample: 1996187 (CCYYDDDD).
DLU	Date Updated	10	N	Date of last update Format: CCYY-MM-DD
ELV	Elevation	5	ANV	Elevation/Altitude indicated as height above mean sea level, measured in meters. (Can be used for wireline) Sample: nnnnn. <i>Footnote</i> ³
EMS	Emergency Medical Service Responder	25	AN	Name of Emergency Medical Service responder associated with the ESN of the caller.
ESD	ESRD	10	N	ESRD (P-ANI) assigned to this cell/sector
ESN	Emergency Service Number (ESN)	5	AN	Emergency Service Number associated with the House Number, Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>
EXC	Exchange	4	ANV	A defined area served by one or more telephone Central Offices, within which a Local Exchange Carrier furnishes service. <i>Footnote</i> ⁵
EXD	Extract Date	10	NV	Year, Month, Day the data was processed, Format: CCYY-MM-DD

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
FIR	Fire Department Service Responder	25	AN	Name of the Fire Department Service responder associated with the ESN of the caller.
FLS	Flash ANI			Indication to flash ANI display. Where x= Y = Display flashing N = Display steady (Used for historical tracking of presence of flash ANI)
FOC	Function of Change	1	A	Type of activity the record is being submitted for. Valid "x" entries: C = Change S = Split D = Delete J = Join I = Insert X = Original (used with C,S,J) U = Unlock M = Migrate E = Delete error record
GEL	Ground Elevation	8	N	Ground Elevation, Format: nnnnn.nn
GEN	General Use	20	AN	Field to be utilized by sender/receiver companies to provide additional data
GU1	General Use 2	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU2	General Use 2	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU3	General Use 3	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU4	General Use 4	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU5	General Use 5	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU6	General Use 6	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU7	General Use 7	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
GU8	General Use 8	60	AN	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
HAN	Handle			Optional tag that may be generated by PSAP CPE. If present in a query (<QTY>), it will be returned by the ALI database node with the matching response. May be used by the PSAP CPE as a sequence counter to match queries with responses. Attribute type "x" may consist of up to 5 alphanumeric characters.
HDG	Heading (in degrees)	3	N	Direction of travel, decimal degrees from true north. Valid entries: 0-359.
HIR	High Range	10	AN	The highest house number that is included in this ESN definition.
HNO	House Number	10	ANV	House Number. <i>Footnote</i> ^{1,2,3}
HNS	House Number Suffix	4	ANV	House number extension (e.g. ½). <i>Footnote</i> ^{1,2,3}

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
KEY	Key	10	N	Index for retrieving ALI from database. 10 digits in a 10 digit ANI 1 st set of 10 digits in a 20 digit ANI “Key” is derived from the ANI and may be one of the following: Calling Party Telephone Number ESRK (PSAP)
LAT	Latitude	10	NV	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. . When Phase II location cannot be provided, Phase I information should be reported. I.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +00.#####, <i>Footnote</i> ³
LAW	Law Enforcement Service Provider	25	AN	Name of Law Enforcement Service Responder associated with the ESN of the caller.
LDT	LDT Provider ID	8	AN	LDT Provider Identification Code. Codes to be developed and held by NENA.
LHI	Left Add High	10	N	Highest address on left side of street in ascending order
LIN	Line	4	A	Railroad Line Owner (Code of Association of American Railroads)
LKS	Link Status			Status of ALI links at database node. Value of “x” Link Status Definition 1 = Only 1 link available to ALI 2 = Both links available to ALI
LLO	Left Add Low	10	N	Lowest address on left side of street in ascending order
LMK	Landmark Address	60	ANV	Landmark or Vanity address. Example: “One Rockefeller Plaza”
LNA	Line Name	30	A	Railroad Line Name
LOC	Location	60	ANV	Additional location information (free formatted) describing the exact location of the Calling Party Number (e.g., Apt 718, or cell sector A) Emergency Response Location (ERL) – A Location to which a 9-1-1 emergency response team may be dispatched. The location should be specific enough to provide a reasonable opportunity for the emergency response team to quickly locate a caller anywhere within it. <i>Footnote</i> ^{2,3} <i>This information may be displayed at the PSAP.</i>
LON	Longitude	11	NV	Longitude/X coordinate. Right Justified; pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported. I.e., the cell site or sector where the call is received. (Can be used for wireline) Sample: +000.##### <i>Footnote</i> ³
LOR	Low Range	10	AN	The lowest house number that is included in this ESN definition.
LRS	LR	1	A	Left/Right side of road.

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<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>																												
LTY	LDT Technology	25	AN	<p>Defines how particular position information was obtained to help assess its credibility.</p> <p>LDT Technology <LTY></p> <table> <tr> <td>Valid entries</td> <td>Valid entries</td> </tr> <tr> <td>“x”</td> <td>“yyy”</td> </tr> <tr> <td>0</td> <td>= Unknown</td> </tr> <tr> <td>1</td> <td>= Network Unspecified</td> </tr> <tr> <td>2</td> <td>= Network AOA</td> </tr> <tr> <td>3</td> <td>= Network TOA</td> </tr> <tr> <td>4</td> <td>= Network TDOA</td> </tr> <tr> <td>5</td> <td>= Network RF Fingerprinting</td> </tr> <tr> <td>6</td> <td>= Network Cell Sector</td> </tr> <tr> <td>16</td> <td>= Handset Unspecified</td> </tr> <tr> <td>17</td> <td>= Handset GPS</td> </tr> <tr> <td>18</td> <td>= Handset AGPS</td> </tr> <tr> <td>19</td> <td>= Handset EOTD</td> </tr> <tr> <td>20</td> <td>= Handset AFLT</td> </tr> </table>	Valid entries	Valid entries	“x”	“yyy”	0	= Unknown	1	= Network Unspecified	2	= Network AOA	3	= Network TOA	4	= Network TDOA	5	= Network RF Fingerprinting	6	= Network Cell Sector	16	= Handset Unspecified	17	= Handset GPS	18	= Handset AGPS	19	= Handset EOTD	20	= Handset AFLT
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MCL	MSAG Community Name Left	35	A	Valid service community name as identified by the MSAG on the left side of the street																												
MCN	MSAG Community Name	32	AV	Valid service community name as identified by the MSAG.																												
MCR	MSAG Community Name Right	35	A	Valid service community name as identified by the MSAG on the right side of the street																												
MIN	Mobile Identification Number	10	AN	Mobile Identification Number of the cellular wireless device.																												
MMT	Mile Marker Type	2	A	Type of mile marker RR = Railroad Name HW = Road Name																												
MPH	Mile Post High	5	AN	Ending Linear Reference																												
MPI	Mile Post ID	10	N	Mile Post Identification Number																												
MPL	Mile Post Low	5	AN	Beginning Linear Reference																												

EXHIBIT 18
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<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
MTN	Main Telephone Number	0	N	Ten-digit telephone number of the Main Billing Number associated with the Calling Party Number. <i>Footnote</i> ³
NAD	Datum	2	N	Specifies the map projection and coordinate system recommended for the display of the Longitude and Latitude coordinates. Two systems are commonly used for North America. The code 83 identifies North American Datum for 1983 (NAD83). Code 84 identifies the World Geodetic System for 1984 (WGS84). Other codes may be added as additional datum become available through authorized entities. Where x = 83 = NAD83 84 = WGS84
NAM	Customer Name	32	ANV	Subscriber name associated with the Calling Party Number. <i>Footnote</i> ³
NID	Node ID Sending Response	2	AN	Identifier of multiplexer or distribution device physically connected to the PSAP (if applicable).
OEN	Odd/Even	1	A	Valid "x" entries: O = odd numbering only E = even numbering only B = both odd and even numbering
OHT	Observed Height	8	N	Amount to add to each point visible from tower
ONW	One-way	1	A	One way road classification Blank = No X = Opposite direction of arc Y = In direction of arc
ORD	Order Number	10	ANV	Service order number for the activity associated with this record.
PCN	Postal Community Name	32	AV	Valid service community name as identified by the U S Postal Service. <i>Footnote</i> ³
PLS	PSAP Link Status			Status of ALI data links as determined by CPE equipment. Value of "x" PSAP Link Status Definition 0 = Primary and Secondary Links OK 1 = Primary link disabled 2 = Secondary link disabled 3 = Both links disabled
PNI	P-ANI	10	N	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 9-1-1 call for routing purposes.
POD	Post Directional	2	A	Trailing street direction suffix. <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW
POS	Call Taker Position	3	N	The Call taker position number. <i>Please note that there are no reserved numbers for special purposes.</i>
PRD	Prefix Directional	2	A	Leading street direction prefix. _ Valid "x" Entries: <i>Footnote</i> ^{1,2,3} Valid "x" entries: N S E W NE NW SE SW

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<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
PSI	PSAP ID	4	AN	4-character identifier of the PSAP identified by the caller's ESN, relating to the PSAP, which responds to calls from the caller's location.
QYT	Query Type		AN	The XML "Root Element" for all transmissions from the PSAP CPE to the Database Node. All other elements are included within the top-level element. The Query Type is specified by "x" in the table below and "version" specifies the version of the NENA XML element definition, i.e. "NENA4.0" Value of "x" Query Type Definition H = Heartbeat I = Initial Call M = Manual Query R = Repeat ALI (re-query) T = Test ALI Request U = Update Current Location (wireless call)
RA1 – RA9	Additional Responding Agency 1-9	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined. Example: RA1=Poison Control
RCC	Channel	3	AN	Channel signal received on
RCN	Return Code Number	3	N	Code indicating specific processing error code or processing completed successfully. (May be used as many times as necessary.) Valid "x" entries: Not present (or 000 if used) = processing completed successfully XXX = Valid NENA Standard Error Code
RD1	Inside Radius	8	N	Starting radius (if any – Maximum range is outside radius)
REC	Record Count	9	N	Number of records by record type in file, does not include Header and Trailer records
RHI	Right Add High	10	N	Highest address on right side of street in ascending order
RID	Router ID	4	AN	Selective Router Identifier (E9-1-1 Tandem)
RLO	Right Add Low	10	N	Lowest address on right side of street in ascending order
RNG	Range	6	N	Default range of tower based on power settings of tower. Units: miles. Format: nnn.nn (two decimal places)
ROC	Road Class	3	N	Road Class as defined by the USGS National Mapping Product Standard for 1:24,000-scale and 1:25,000-scale Quadrangle Map Products. http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/qmaps/5PSYM499.PDF
RPT	Roamer Port	10	AN	A terminating directory number supporting call delivery to mobile stations.

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
RSP	Response Type	1	AN	<p>The XML “Root Element” for all transmissions from the Database Node to the PSAP CPE. All other elements are included within this top-level element. The Response Type is specified by “x” in the table below and “version” specifies the version of the NENA XML element definition, i.e. “NENA4.0”</p> <p>Value of “x” Response Type Definition</p> <p>A = Acknowledgement (Positive response to receipt of valid ALI request or heartbeat) Indicates that Query was valid and well-formed.</p> <p>B = Broadcast</p> <p>H = Heartbeat</p> <p>I = Initial Call</p> <p>M = Manual Query</p> <p>N = Negative Acknowledgement (Negative response to receipt of ALI request or heartbeat.) Indicates XML formatting violations or problems with content.</p> <p>R = Repeat ALI (re-query)</p> <p>T = Test ALI Response</p> <p>U = Update Current Location (wireless calls only)</p>
SAI	Special Attention Indicator			<p>Identifier for calls that may require special attention. Defined Values <SAI></p> <p>Value of “x” Definition</p> <p>1 = TTY call</p> <p>2 = ACN – Automatic crash/collision notification</p>
SAN	Site Address Number	10	N	Site Address Number
SEC	Sector ID	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information, <i>i.e.</i> , the cell site or sector where the call is received should be reported.
SID	Segment ID	8	N	Unique Road Segment ID number

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STI	Status Indicator	1	AN	Record status indicator. Valid "x" entries: E = Error C = Completed P = Pending processing U = Unprocessed Gateway received but not sent to processing, (future date)
STN	Street Name	60	ANV	Valid service address of the Calling Party Number. <i>Footnote</i> ^{1,2,3}
STS	Street Suffix	4	AV	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE). <i>Footnote</i> ^{1,2,3}
STY	Site Type	2	A	Type of structure – Classification Field
SV1	Vertical Angle Above	3	N	Possible angle above the horizon
SV2	Vertical Angle Below	3	N	Possible angle below horizon
SWL	Surface Water Line	1	A	Type of Surface Water Line (stream, edge of lake, etc.) (Need examples of 1 character type)
SWN	Surface Water Name	30	A	Name of Stream, Lake etc.
TAD	Tower Address	35	A	Tower street address
TAR	TAR Code	6	ANV	Taxing Area Rate Code
TEL	Telephone Number	12	A	Telephone Number of Agency
THT	Tower Height	4	N	Height of Tower, Format: nnnnn.n
TID	Trunk ID	3	N	PSAP trunk identifier. <i>Please note that there are no reserved numbers for special purposes.</i>
TIN	Tower ID	10	A	Tower Identification Number
TME	Time Stamp	8	AN	The UTC (Coordinated Universal Time) time that reflects the time of position determination by the wireless carrier. Reflected in tenths of seconds. Format: HHMMSS.S
TNO	Number of Sectors	1	N	Number of sector faces (1 = 360 deg.)
TSA	Tower State	2	A	Tower state
TST	Record Identifier	3	AN	Test Records Only
TWN	Tower Community	25	A	Tower Community
TYS	Type of Service	45	AN	Characteristics of Service Value of "x" Translation Values "yyy" 0 = Not FX nor Non-Published 1 = FX in 9-1-1 serving area 2 = FX outside 9-1-1 serving area 3 = Non-Published 4 = Non-Published FX in 9-1-1 serving area 5 = Non-Published FX outside 9-1-1 serving area 8 = PS/ALI Published 9 = PS/ALI Non-Published
ZIP	Postal/Zip Code	10	AN	Postal or Zip code. Format: NNNNN-NNNN or ANANAN <i>Footnote</i> ³

EXHIBIT 18
DATA DICTIONARY

<u>LABEL</u>	<u>NAME</u>	<u>MAX# BYTES</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
ZUN	Height/Elev. Units	1	A	Ground Elevation and Tower Height, Valid "x" entries F = Feet M = Meters
 'pipe"	Field Separator	1	AN	A "pipe" is to be utilized for the field separator (ASCII HEX-7C). (Version 3.1 only)
(nl) new line	End of record	1	AN	A NEW LINE character identifies the end of record value in all cases for all records. (ASCII HEX-0A) (Version 3.1 only)

EXHIBIT 19 KERMIT PROTOCOL

19 A. Protocol Description

This protocol is for transmitting data between Data Service Providers and not necessarily for providing the ALI Response message to the PSAP.

The KERMIT protocol was developed by the University of Columbia in 1981 in order to transfer files reliably to/from the university mainframe computer from/to the newly emerging IBM-PCs and from there onto their floppy disks. Using KERMIT file transfer protocol a file can be sent from one computer to a second by running a KERMIT program on each system. The two KERMIT programs on the two systems send messages (packets) back and forth to each other. The KERMIT protocol breaks the data file into small pieces called packets and reliably sends each packet to the KERMIT program residing on the other system. Each packet consists of a header, a certain piece of the data file to be sent, and a trailer indicating the end of the packet. All three components of the KERMIT packet are printable characters, making for simple protocol analyzing and de-bugging. KERMIT transfers the data (packets) as discrete characters; this makes it a character-oriented protocol.

Sending an ALI file data file always follows a strict procedure for both KERMIT programs. For each packet transmitted by the sending system the receiving system sends an appropriate response packet back in acknowledgment, in other words the sending system gets a positive response for each packet sent. If a packet does not arrive correctly or fails to arrive at all, the sending KERMIT system does not receive the appropriate acknowledgment packet and resends the same packet again. This insures that the data transferred is complete, correct, and reliable.

The sending KERMIT system initiates the KERMIT conversation by sending an initiation packet which the receiving KERMIT system responds to with an acknowledgment packet. Next the sending KERMIT system sends a packet containing the file name, to which the receiving system responds with an acknowledgment packet. After the acknowledgment packet is received the sending program sends data packets until the entire file is transferred. Following the last data packet the KERMIT protocol sends an "End of File" packet, to which the receiving system sends and acknowledgment packet. Finally, the sending system transmits a completion packet to request an end of session, to which the receiving system responds and the file transfer process ends.

19 B. Benefits

The KERMIT protocol is a popular file transfer process, especially among PC users. The KERMIT protocol is very simple because it was designed for older vintage PCs that did not have much computing power or much memory. This simplicity has its good and bad points. A benefit of simplicity is that it is well adapted to many platforms - PCs with memory restrictions to mainframe computing systems. The simplicity means that unsophisticated computer users should have an easy and short learning curve. But, support is limited for the KERMIT software because it is free with the purchase of a manual.

A bad point to its simplicity is that it is slow in transferring files, when compared to the other file transfer protocols described within this recommendation. Also, KERMIT was designed to be a manually controlled process. Manual control means that a human operator is expected to initiate the process and observe the outcome. The other file transfer protocols were designed to be automated.

19 C. Compatibility

The KERMIT file transfer process has been implemented on a large number of systems. Below is a partial list of hardware platforms, operating systems, and languages that have successfully implemented:

- MS-DOS and PC-DOS on various IBM compatible PC systems
- UNIX on VAX, SUN and many others running V7, 4.xBSD, System II&V operating systems written in C language
- Turbo Pascal on MS-DOS, Apple II DOS
- Cray-1 written in FORTRAN-77 language
- DEC VAX-11 with VMS operating system written in C and FORTRAN language
- HP 1000 and 3000 written in FORTRAN language
- IBM with VMS operating system written in C language
- Tandem with Guardian operating system written in TAL
- Atari Home computer running DOS written in Action!

As can be seen by the list which was compiled in 1987, KERMIT can be used in a large variety of environments. The KERMIT protocol was intended to be used over dedicated point to point links connected via modems, but KERMIT can be used in network environments.

EXHIBIT 20
NETWORK DATAMOVER PROTOCOL (NDM)

20 A. Protocol Description

This protocol is for transmitting data between Data Service Providers and not necessarily for providing the ALI Response message to the PSAP.

Network DataMover (NDM) is a family of data transfer products produced by System Center, Inc. The software automates data transfer and systems integration functions among multiple mainframes, minicomputer, and personal computers in diverse operating system environments. NDM supports direct transmission of most major file types, media, and record formats. This software is used primarily for bulk data interchange among large data centers running the same or different types of software systems on different hardware platforms.

20 B. Benefits

NDM has included within its package a number of beneficial features:

- It has a scheduler which allows file transfer to be run in an automated fashion. Ancillary functions such as tape mount requests can also be automated with NDM.
- NDM supports a large number of file types, eliminating the need to reformat data before and after file transfers.
- NDM maintains statistics and audit trails for data security to assist in identifying any attempted violations.

20 C. Compatibility

NDM software provides standard file transfer services for the following operating systems:

- IBM Systems Network Architecture (SNA) environment:
- MVS, VM, VSE, and OS/400.
- VAX/VMS
- Tandem Guardian
- PC-DOS
- OS/2
- UNIX:
 - DECRI SC - ULTRIX 4.2
 - HP 9000 - HP-UX 8.07
 - IBM RS/6000 - AIX 3.2
 - NCR 3000 - UNIX SVR4.0
 - SUN Sparcstation - SunOS4.1.2

NDM also provides multiple connections between platforms (SNA(LU0,LU1,LU2,LU6.2,SNAX,SNA-over-X.25), NETEX,X.25,TCP/IP). NDM allows various file types, source code, object code, and load libraries to be transmitted among participating NDM system (SAM, VSAM, PDS, ISAM, BDAM, GDG, FDR volumes, DFDSS volumes, CMS (MACLIB), CMS set of files, and PC-DOS). NDM also supports multiple records formats including fixed, undefined, spanned, and variable.

EXHIBIT 21 TCP/IP PROTOCOL

21 A. Protocol Description

This protocol is for transmitting data between Data Service Providers and not necessarily for providing the ALI Response message to the PSAP.

Transmission Control Protocol/INTERNET Protocol, or commonly known as TCP/IP, is a layered set of protocols used to connect dissimilar computers together. The protocol layers consist of:

1. Application Protocol:
Provides services used by the application client, e.g. computer operator. An example of an application protocol is File Transfer Protocol (FTP), which provides such services as writing a file to a distant computer.
2. Transmission Control Protocol (TCP):
Provides the transport service required by the application layer. TCP layers in the two host computers that are sending files will communicate to each other to insure reliable data packet transport.
3. INTERNET Protocol (IP):
Provides the service used to deliver the datagram (similar to a packet) to its destination. This layer provides the routing through the network and the error messages should the datagram be undeliverable.
4. The physical medium protocol:
Defines the physical connection used by the TCP/IP system. Such as x.25, Ethernet, and point-to-point protocol (PPP) (i.e. serial links using RS-232 interfaces).

TCP/IP is designed to route messages through an INTERNET network which is used to connect a large number of independent networks together. Each computer on an INTERNET network registers for an assigned unique 32-bit address. To gain access to another company's computer, the sender only requires the other's IP address.

On top of the TCP/IP layers resides several possible services of interest to the application client. The services of interest to NENA clients are:

- File Transport Protocol (FTP):
The file transfer protocol is used to send and receive files between dissimilar computer systems. FTP requires the client to log on to the host system in which they plan to get or send a file. The log on security is the responsibility of the host computer. The protocol assumes that both host systems are connected to an INTERNET network and each host has knowledge (i.e. IP address) of the other.

There are other services available through TCP/IP, however for the purpose of the recommendation the discussion has been limited to the above protocols.

21 B. Benefits

TCP/IP has been used in government and academic communities since the early 1970's. The protocol is gaining wide acceptance in commercial use. For example, Windows NT will use TCP/IP as a standard part of its communication functionality. TCP/IP is a standard with UNIX, BSD UNIX, SunOS, Solaris, and all of the other UNIX like operating systems.

TCP/IP is available from most computer manufacturers and a large number of third party vendors, so ongoing support is a big benefit for this protocol.

The application services are simple in design and for PC users some packages make use of Windows for ease of use.

21 C. Compatibility

TCP/IP was developed by the Defense Advanced Research Projects Agency (DARP). The University of Southern California's Information Science Institute is responsible for ongoing documentation and support of the TCP/IP protocol suite. Any TCP/IP package that adheres to these standards will be able to communicate with any other TCP/IP package that adheres to the same standard.

EXHIBIT 22
VERSION 1.0 GIS DATA MODEL FORMAT

22.1 Preface

The *Geographic Information System (GIS) Data Model* identifies a geospatial data standard, but it outlines data layers for GIS data to be exchanged between neighboring public safety agencies or jurisdictions. This standard is for spatial datasets in a GIS environment. GIS utilizes linear style addressing technique for purposes of geocoding. Should an organization use non-linear style addressing such as an alphanumeric grid style system, this standard would not be effective. The primary purpose of this standard is for organizations that utilize a Geographic Information System.

This Standard will identify minimal attributes required in a spatial dataset, and define the structure of said attributes. This standard will help facilitate the development of new map products for use in Public Safety specifically as it pertains to implementing wireless locational technologies Longitude, Latitude and elevation are part of the spatial layers that are sent along with the data layers. Data specifies the map projections and coordinate system recommended for the display of the Longitude and Latitude coordinates. The standard format for Longitude, Latitude, Elevation and Datum is the following:

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Longitude	LON	11	AN	Longitude/X coordinate. Right Justified: pad field with zeros to left of decimal degrees. +Long: east of Greenwich; -long: west of Greenwich. . When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received. Sample: +000.000000
Latitude	LAT	10	AN	Latitude/Y coordinate. Right Justified: pad field with zeros to left of decimal degrees. +Lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received. Sample: +00.#####
Elevation	ELV	5	AN	Elevation/Altitude indicated as height above mean sea level, measured in meters. Blank record indicates data not available. Sample: #####
Datum	NAD	2	N	Specifies the map projection and coordinate system recommended for the display of the Longitude and Latitude coordinates. Two systems are commonly used for North America. The code 83 identifies North American Datum for 1983 (NAD83). Code 84 identifies the World Geodetic System for 1984 (WGS84). Other codes may be added as additional datum becomes available through authorized entities. Where x = 83 = NAD83 84 = WGS84

EXHIBIT 22
VERSION 1.0 GIS DATA MODEL FORMAT

22.2 METADATA

Metadata is information about the content, quality, condition, and other characteristics of data being sent. The basic elements to be included in the metadata file are taken from the *1998 NSDI – Federal Geographic Data Committee Digital Geospatial Metadata Standards*. The following are the basic elements that need to be included in the metadata file:

Identification Information – basic information about the data set

- Citation
- Description
- Time Period of Content
- Status
- Spatial Domain
- Keywords
- Access Constraints
- Use Constraints
- Point of Contact
- Browse Graphic
- Data Set Credit
- Security Information
- Native Data Set Environment
- Cross Reference

Description – a characterization of the data set, including its intended use and limitations

Data Quality Information – a general assessment of the quality of the data set

- Attribute Accuracy
- Logical Consistency Report
- Completeness Report
- Positional Accuracy
- Lineage
- Cloud Cover

Spatial Data Organization Information – the description of the reference frame for, and the means to encode coordinates in the data set

- Indirect Spatial Reference
- Direct Spatial Reference Method
- Point and Vector Object Information
- Raster Object Information

Spatial Reference Information – the description of the reference frame for, and the means to encode, coordinates in the data set.

- Horizontal Coordinate System Definition
- Vertical Coordinate System Definition

Distribution Information – information about the distributor of and options for obtaining the data set.

- Distributor
- Resource Description
- Distribution Liability
- Standard Order Process
- Custom Order Process
- Technical Prerequisites
- Available Time Period

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Metadata Reference Information – information on the currentness of the metadata information, and the responsible party.

Metadata Date
Metadata Review Date
Metadata Future Review Date
Metadata Contact
Metadata Standard Name
Metadata Standard Version
Metadata Time Conversion
Metadata Access Constraints
Metadata Use Constraints
Metadata Security Information
Metadata Extensions

Citation Information – the recommended reference to be used for the data set

Originator
Publication Date
Publication Time
Title
Edition
Geospatial Data Presentation Form
Series Information
Publication Information
Other Citation Details
Online Linkage
Larger Work Citation

EXHIBIT 22
VERSION 1.0 GIS DATA MODEL FORMAT

22.3 LINE DATA

22.3A. Centerline Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Left Add Low	LLO	10	N	Lowest address on left side of street in ascending order
Left Add High	LHI	10	N	Highest address on left side of street in ascending order
Right Add Low	RLO	10	N	Lowest address on right side of street in ascending order
Right Add High	RHI	10	N	Highest address on right side of street in ascending order
Prefix Directional	PRD	2	AN	Leading street direction prefix. Valid Entries: N S E W NE NW SE SW
Street Name	STN	60	AN	Valid service address of the Calling Party Number
Street Suffix	STS	4	AN	Valid Street abbreviation, as defined by the US Postal Service Publication 28. (e.g. AVE)
Post Directional	POD	2	AN	Trailing street direction suffix. Valid Entries: N S E W NE NW SE SW
Road Class	ROC	3	AN	Road Class as defined by the USGS National Mapping Product Standard for 1:24,000-scale and 1:25,000- scale Quadrangle Map Products. http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/qmaps/5PSYM499.PDF
One-way	ONW	1	A	One way road classification. Blank = No X = Opposite Direction of arc Y = In direction of arc
MSAG Community Name Left	MCL	35	A	Valid service community name as identified by the MSAG on the left side of the street
MSAG Community Name Right	MCR	35	A	Valid service community name as identified by the MSAG on the right side of the street
Segment ID	SID	8	N	Unique Road Segment ID number
County ID Left	COL	5	AN	County Identification code (usually the FIPS code) on the left side of the street in ascending order. <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
County ID Right	COR	5	AN	County Identification code (usually the FIPS code) on the right side of the street in ascending order. <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

¹ Where an MSAG exists, must fit the MSAG entry.

² Primary address associated with the Calling Party Number

³ Must include all TN USERS information on all Multi-Line Telephone Systems that will facilitate the implementation of enhanced 9-1-1 on all PBX, Key, Hybrid and Centrex Systems.

⁴ NA = not available – class of service for an ESCO failure

⁵ The Data Technical Committee strongly recommends that all processing edits be removed from this Label due to technological changes requiring improved data security measures.

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VERSION 1.0 GIS DATA MODEL FORMAT

22.3B. Railroad Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Line	LIN	4	A	Railroad Line Owner (Code of Association of American Railroads)
Line Name	LNA	30	A	Railroad Line Name
Segment ID	SID	8	N	Unique Railroad Segment ID
Mile Post Low	MPL	5	AN	Beginning Linear Reference
Mile Post High	MPH	5	AN	Ending Linear Reference
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.3C. Hydrology Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Surface Water Line	SWL	1	A	Type of Surface Water (river, stream, etc.)
Surface Water Name	SWN	30	A	Name of river, stream etc.
Segment ID	SID	8	N	Unique Hydrology Segment ID
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.4. POINT DATA

22.4A Emergency Service Agency Location Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Agency Type	ATY	1	A	Law = L Fire = F Emergency Medical Service = E
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
Community ID	CID	10	N	Unique Community ID Number i.e. FIPS, GEOCODES, etc.
Agency ID	AID	9	N	Emergency Service Agency ID defined with the first 5 digits as the County ID code and the last 4 digits as the locally assigned agency code
Agency Name	ANA	35	A	Name of Agency
Agency Contact	ACO	25	A	Agency Contact Person
Agency Address	AAD	25	A	Street Address of Agency Facility
MSAG Community Name	MCN	35	A	Valid service community name as identified by the MSAG
State/Province	STA	2	A	Alpa U.S. State or Canadian province abbreviation i.e. TX (Texas), ON (Ontario)
Telephone Number	TEL	12	A	Telephone Number of Agency Format: NPA-NXX-XXXX
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

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22.4B. Cell Site Location Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
LDT Provider ID	LDT	8	AN	LDT Provider Identification Code. Codes to be developed and held by NENA
Tower ID	TIN	10	A	Tower Identification Number
Tower Address	TAD	35	A	Tower street address
Tower Community	TWN	25	A	Tower community
Tower State	TSA	2	A	Tower state
Number of sectors	TNO	1	N	Number of sector faces (1=360 deg)
Ground elevation	GEL	8	N	Ground Elevation (nnnnn.nn)
Tower height	THT	4	N	Height of tower
Height/elev. units	ZUN	1	A	F=feet, M=meters of Ground Elevation and Tower Height
Range	RNG	6	N	Default range of tower based on power settings of tower. Units: miles. Format: nnn.nn (two decimal places)
Antenna Orientations	AOR	20	A	List of antenna orientations, separated by spaces or commas (i.e. compass degrees or compass directional)
Cell Type	CTP	1	A	A=Analog (900MHz), P=Digital (PCS), T=TDMA (Digital AMPs) – could expand depending on needs
Comment	CCM	60	A	Comment
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.4C. Mile Marker Location Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Mile Post ID	MPI	10	N	Mile Post Identification Number
Mile Marker Type	MMT	2	A	Type of mile marker RR = Railroad name HW = Road name
Segment ID	SID	8	N	Unique Road or Railroad Segment ID number
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.4D. Site/Structure Location Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Community ID	CID	10	N	Unique Community ID Number i.e. FIPS, GEOCODES, etc.
Site ID	SIN	6	N	Unique Site ID Number
Site Address Number	SAN	10	N	Site Address Number
Prefix Directional	PRD	2	AN	Leading street direction prefix. Valid Entries: N S E W NE NW SE SW
Street Name	STN	60	AN	Valid service address of the Calling Party Number.
Street Suffix	STS	4	AN	Valid Street abbreviation, as defined by the US Postal Service Publication 28. (e.g. AVE)
Post Directional	POD	2	AN	Trailing street direction suffix. Valid Entries: N S E W NE NW SE SW
ESN	ESN	5	N	Emergency Service Number associated with this House Number, Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>

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VERSION 1.0 GIS DATA MODEL FORMAT

22.4D. Site/Structure Location Layer (cont.)

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
MSAG Community Name	MCN	35	A	Valid service community name as identified by the MSAG
Site Type	STY	2	A	Type of Structure – Classification Field
LR	LRS	1	A	Left/Right side of the road
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLC	8	N	Date of last update Format: CCYYMMDD

22.5. POLYGON LAYER

22.5A. County Polygon Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
County Name	CNA	35	A	Name of County
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.5B. Emergency Service Zone Boundary Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Community ID	CID	10	N	Unique Community ID Number i.e. FIPS, GEOCODES, etc.
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
PSAP ID	PSI	4	AN	Code identifying the PSAP associated with the assigned ESN
Agency ID	AID	9	N	Emergency Service Agency ID
ESN	ESN	5	N	Emergency Service Number associated with this House Number, Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.5.C Municipal Boundary Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Community ID	CID	10	N	Unique Community ID Number i.e. FIPS, GEOCODES, etc.
MSAG Community Name	MCN	35	A	Valid service community name as identified by the MSAG
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

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22.5.D Emergency Service Agency Boundary Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
PSAP ID	PSI	4	AN	Code identifying the PSAP associated with the assigned ESN
County ID	COI	5	AN	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U.S. Census Bureau</i>
Agency ID	AID	9	N	Emergency Service Agency ID
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

22.5.E Cell Site Coverage Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
LDT Provider ID	LDT	8	AN	LDT Provider Identification Code. Codes to be developed and held by NENA
Cell Site ID	CEL	6	AN	Identification number indicating a geographic region of wireless coverage. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received.
Sector number	SNO	1	N	Number of this sector (face) 1-9
Sector ID	SEC	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information should be reported, i.e., the cell site or sector where the call is received.
ESRD	ESD	10	N	ESRD (P-ANI) assigned to this cell/sector
Sector Antenna Orientation	ANT	3	N	Center of antenna orientation for this face (i.e. Compass degrees or compass directional)
Coverage angle	CAG	3	N	Maximum angle of coverage for this face in miles or kilometers.
Maximum Range	SRG	6	N	Maximum range for this face
Comment	COM	60	A	
Coverage source	SSR	1	A	C=Company Map, D=Digital data from Company, P=GIS Propagation Study, L=Line of Site analysis, R=Range Def
Ground elevation	GEL	8	N	Ground (surface) elevation (nnnnn.nn)
Tower height	THT	8	N	Height of tower (nnnnn.nn)
Observed height	OHT	8	N	Amount to add to each point visible from tower
Height/elev. units	ZUN	1	A	F=feet, M=meters of Ground Elevation, Tower Height, and Observed Height
Spot Elevation	SPO	8	N	Spot elevation for the tower
Vertical angle above	SV1	3	N	Possible angle above the horizon compass degrees or compass directional.
Vertical angle below	SV2	3	N	Possible angle below the horizon compass degrees or compass directional.
Inside radius	RD1	8	N	Starting radius (if any – Maximum range is outside radius) in feet or meters.
Source of Data	SOD	5	A	Agency that last updated the record
Date updated	DLU	10	A	Date of last update Format: CCYY-MM-DD

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22.5F. Hydrology Layer

<u>NAME</u>	<u>LABEL</u>	<u>MAX # BYTES</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Surface Water Line	SWL	1	A	Type of Surface Water (pond, lake, large waterway, reservoir, etc.)
Surface Water Name	SWN	30	A	Name of Pond, lake, waterway, reservoir, etc.
Segment ID	SID	8	N	Unique Hydrology Segment ID
Source of Data	SOD	5	A	Agency that last updated the record
Date Updated	DLU	10	N	Date of last update Format: CCYY-MM-DD

EXHIBIT 23
VERSION 1.0 FORMAT FOR DATA EXCHANGE
BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

23.1. Introduction

The formats in this section describe the messages sent between the PSAP and the ALI Database. Refer to NENA 04-001 for the format and protocol.

23.2 Design Guidelines

The following notes apply to the “XML element” format for data exchange between the ALI Database and the PSAP equipment:

1. ALI Request and Response Messages are variable length.
2. If non-blank data is available in the ALI database, the data should be sent to the PSAP equipment in the ALI Response Message. The PSAP equipment will determine how the data will appear on the PSAP screen.
3. If a data field is not available in the ALI database, no label or value for that data field should be sent to the PSAP in the ALI Response Message.
4. PSAP equipment should be prepared to handle an element that is not defined. How this is done will be left up to the equipment manufacturer. The XML element data format allows new labels and data fields to be added to the ALI Response Message.
5. The elements and data fields within the ALI message text may appear in any sequence, except for XML Root and Version Elements. All ALI Request and Response messages should start with this XML declaration: `<?xml version="1.0" standalone="yes"?>`
6. The PSAP POSITION and MESSAGE TYPE data in previous ALI response formats have been included within the ALI message text using the labels POS, SMI, and LKS.
7. The maximum number of bytes is defined below for each data field. There is no need to space fill the data value to the maximum number of bytes. Data fields are therefore variable lengths.
8. PSAP equipment may receive unsolicited broadcast messages from the ALI host. PSAP equipment should alert the PSAP call taker of the waiting message without overlaying the current ALI display. PSAP call taker should be able to display the waiting message at their convenience.
9. Unsolicited ALI broadcast messages shall not overwrite any user data pertaining to an ongoing call, nor be considered as a regular call for MIS use (i.e.: no impact on call counts and other statistics pertaining to PSAP traffic). This is applicable to Special Message Indicator values of: 5 = Broadcast Message – General 6 = Broadcast Message indicating Host going out of service
10. TID & POS – The reader is invited to investigate if any legacy functionality would be affected by the use of this ALI data format. As “trunk number” and “position number” special values are no longer reserved for identification of the type of ALI lookup action, false triggering of legacy systems logic may occur. Example: let’s consider an MIS system, which is counting the number of manual ALI lookup actions by trapping special TID value “95” on the ALI link. Once the XML ALI lookup format is introduced, the MIS system may then falsely identify lookups made for trunk 095 as being manual ALI lookups.
11. CMT – comments field, Data providers should not be including customer sensitive or billing information in this field.
12. At the time wireless is introduced within your jurisdiction, determine/investigate what type of Technical Solution is used as this may affect the XML elements you will receive.

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23.3 Standard ALI Response Element Usage Table

Standard ALI Response Element Usage Table (Sorted by Element Tag)		Element Usage Key										
		O = Optional. Data may be omitted or may be unavailable. R = Required. Valid data should be available and transmitted. E = Echo required if received from PSAP.						1 = Required in Phase 1 2 = Required in Phase 2				
Element Name	Element Tag	Query Documents and Types			Response Documents and Types							
		ALI Request	Location Update	Heartbeat	Acknowledgment	Wireline ALI Response	Wireless ALI Response	(No Data) ALI Response	Location Update Response	(No NEW Data) Location Update Response	Heartbeat Response	Broadcast
<QYT> and <RSP> types ->		ITMR	U	H	AN	ITMR	ITMR	ITMR	U	U	AN	B
ALI Retrieval Date Stamp	<ADS>					R	R	R	R	R	R	R
ALI ID1	<AL1>					O	O		O			
ALI ID2	<AL2>					O	O		O			
Alternate Telephone Number	<ALT>					O						
Also Rings At Address	<ARA>					O						
ALI Retrieval Time Stamp	<ATS>					R	R	R	R	R	R	R
ALI Update Date	<AUD>					O	O		O	O		
ALI Update Time	<AUT>					O	O		O	O		
Call Back Number	<CBN>					O	R					
Cell Site ID	<CEL>						1 2		1 2			
CLLI	<CLI>					O						
Class of Service	<CLS>					R	R		R			
Comments	<CMT>					O	O	O	O	O		
LDT Confidence	<COF>						2		2			
County ID	<COI>					O	O		O			
LDT Confidence Percent	<COP>						2		2			
Completion Date	<CPD>					O	O					
Company ID 1	<CPF>					R	R					
Calling Party Number	<CPN>					R						
Company ID 2	<CPS>					R	R					
Customer Code	<CUS>					O						
Day Stamp	<DAY>						2		2			
Elevation	<ELV>					O	O		O			
Emergency Medical Service Responder	<EMS>					O	O		O			
ESRD	<ESD>	O	O		E		E	E	E	E		
Emergency Service Number	<ESN>					R	R		R			
Exchange	<EXC>					O						
Fire Department Service Responder	<FIR>					O	O		O			
Flash ANI	<FLS>	O				E	E	E				
General Use (1-8)	<GU1>					O	O	O	O	O		
Handle	<HAN>	O	O	O	E	E	E	E	E	E	E	
Heading	<HDG>						O		O			
House Number	<HNO>					O	O		O			
House Number Suffix	<HNS>					O	O		O			
Key	<KEY>	R	R		E	E	E	E	E	E		
Latitude	<LAT>					O	2		2			
Law Enforcement Service Responder	<LAW>					O	O		O			
Link Status	<LKS>					R	R	R	R	R	R	O
Landmark Address	<LMK>					O	O		O			
Location	<LOC>					O	O					
Longitude	<LON>					O	2		2			
LDT Technology	<LTY>						2		2			
MSAG Community Name	<MCN>					R	O		O			
Main Telephone Number	<MTN>					R						
Datum	<NAD>						O		O			

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Standard ALI Response Element Usage Table (Sorted by Element Tag)		Element Usage Key										
		O = Optional. Data may be omitted or may be unavailable. R = Required. Valid data should be available and transmitted. E = Echo required if received from PSAP.						1 = Required in Phase 1 2 = Required in Phase 2				
Element Name	Element Tag	Query Documents and Types			Response Documents and Types							
		ALI Request	Location Update	Heartbeat	Acknowledgment	Wireline ALI Response	Wireless ALIResponse	(No Data) ALI Response	Location Update Response	(No NEW Data) Location Update Response	Heartbeat Response	Broadcast
<QYT> and <RSP> types ->		ITMR	U	H	AN	ITMR	ITMR	ITMR	U	U	AN	B
Customer Name	<NAM>					O	O					
Node ID sending response	<NID>					O	O	O	O			
Order Number	<ORD>					O						
Postal Community Name	<PCN>					O	O		O			
PSAP Link Status	<PLS>	O	O	R								
P-ANI	<PNI>						O		O			
Post directional	<POD>					O	O		O			
Call Taker Position	<POS>	O	O		E	E	E	E	E	E		
Prefix Directional	<PRD>					O	O		O			

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BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

Standard ALI Response Element Usage Table (Sorted by Element Tag)		Element Usage Key											
		O = Optional. Data may be omitted or may be unavailable. R = Required. Valid data should be available and transmitted. E = Echo required if received from PSAP.						1 = Required in Phase 1 2 = Required in Phase 2					
Element Name	Element Tag	Query Documents and Types			Response Documents and Types								
		ALI Request	Location Update	Heartbeat	Acknowledgment	Wireline ALI Response	Wireless ALIResponse	(No Data) ALI Response	Location Update Response	(No NEW Data) Location Update Response	Heartbeat Response	Broadcast	
<QYT> and <RSP> types ->		ITMR	U	H	AN	ITMR	ITMR	ITMR	U	U	AN	B	
PSAP ID	<PSI>					R	R		R				
Query Type	<QYT>	R	R	R									
Additional Responding Agency 1-9	<RA1>					O	O		O				
Router ID	<RID>					R	R		R				
Roamer Port	<RPT>						O		O				
Response Type	<RSP>				R	R	R	R	R	R	R	R	
Special Attention Indicator	<SAI>					O	O		O				
Sector ID	<SEC>						1 2		1 2				
Special Message Indicator	<SMI>					O	O	R	O			R	
Speed (in KPH)	<SPD>						O		O				
Service Provider Number	<SPN>					O	O		O				
State/Province	<STA>					R	O		O				
Street Name	<STN>					R	O		O				
Street Suffix	<STS>					O	O		O				
TAR Code	<TAR>					O							
Trunk ID	<TID>	R	R		E	E	E	E	E	E			
Time Stamp	<TME>						2		2				
Type of Service	<TYS>					R							
Postal/Zip Code	<ZIP>					O	O		O				

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23.4 PSAP / ALI Database XML Element Definitions (Sorted by name)

Name	Element Table	Max. Chars.	Type	Description
Additional Responding Agency 1	<RA1>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 2	<RA2>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 3	<RA3>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 4	<RA4>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 5	<RA5>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 6	<RA6>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 7	<RA7>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
Additional Responding Agency 8	<RA8>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control

¹ Where an MSAG exists, must fit the MSAG entry.

² Primary address associated with the Calling Party Number

³ Must include all TN USERS information on all Multi-Line Telephone Systems that will facilitate the implementation of enhanced 9-1-1 on all PBX, Key, Hybrid and Centrex Systems.

⁴ NA = not available – class of service for an ESCO failure

⁵ The Data Technical Committee strongly recommends that all processing edits be removed from this Label due to technological changes requiring improved data security measures.

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Name	Element Table	Max. Chars.	Type	Description
Additional Responding Agency 9	<RA9>	25	AN	Name of additional Service Responder associated with the ESN of the caller as utilized for the PSAP. There is the maximum of 9 additional responders for a PSAP. With actual values being locally determined Example : RA1 = Poison Control
ALI ID1	<ALI>	15	AN	Identifier of the ALI Host computer transmitting the ALI response to the PSAP (or through a node if applicable).
ALI ID2	<AL2>	15	AN	Identifier of the ALI Host computer that is the source of the ALI response message.
ALI Retrieval Date Stamp	<ADS>	10	AN	The UTC (Coordinated Universal Time) date when the request was received by the ALI database or when broadcast is generated by ALI database. Format: CCYY-MM-DD
ALI Retrieval Time Stamp	<ATS>	6	N	The UTC (Coordinated Universal Time) time when the request was received by the ALI database or when broadcast is generated by ALI database. Represented in Military time format. Format: HHMMSS
ALI Update Date	<AUD>	10	AN	The UTC (Coordinated Universal Time) date when the ALI record associated with the ANI of the caller was last updated. Format: CCYY-MM-DD
ALI Update Time	<AUT>	6	N	The UTC (Coordinated Universal Time) time when the ALI record associated with the ANI of the caller was last updated. Represented in Military time format. Format: HHMMSS
Also Rings At Address	<ARA>	60	ANV	Secondary address for the Calling Party Number that rings at 2 locations. Not validated against the MSAG. Not applicable to dual service. <i>This information may be displayed at the PSAP Footnote³</i>
Alternate Telephone Number	<ALT>			Remote Call Forwarding number used during Interim Number Portability.
Call Back Number	<CBN>			Telephone Number that can be dialed to reach a specific calling party. The call back number must be a dialable number and used as a back up if the displayed number cannot be reached. <i>Footnote³</i>
Call Taker Position	<POS>	3	N	The Call taker position number. <i>Please note that there are no reserved numbers for special purposes.</i>
Calling Party Number	<CPN>			Number of the Calling Party Emergency Location Identification Number (ELIN) – A valid North American Numbering Plan format telephone number assigned to the Multi-Line Telephone systems Operator by the appropriate authority that is used to call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number. <i>Footnote³</i>

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Name	Element Table	Max. Chars.	Type	Description
Cell Site ID	<CEL>	6	ANV	Identification number indicating a geographic region of wireless coverage When Phase II location cannot be provided, Phase I information should be reported, <i>i.e.</i> , the cell site or sector where the call is received.
Class of Service	<CLS type="x">yyy</CLS>	40	ANV	<p align="center">Class of Service Definitions</p> <p>Valid entries: Valid entries: "X" "yyy"</p> <p>1 = Residence 2 = Business 3 = Residence PBX 4 = Business PBX 5 = Centrex 6 = Coin 1 Way out 7 = Coin 2 Way 8 = Wireless Phase 0 9 = Residence OPX 0 = Business OPX A = Customer owned Coin Telephone B = Not Available Footnote ⁴ G = Wireless Phase I H = Wireless Phase II</p>
CLLI	<CLI>	11	AN	The CLLI Code of the local loop host / remote Central Office for the 9-1-1 calling party.
Comments	<CMT>	30	ANV	Optional notes, may be displayed at PSAP. TN users on MLTS can include any pertinent information that will assist in reducing response time such as – contact security department, contact front desk, etc. Footnote ³
Company ID 1	<CPF>	5	ANV	NENA registered Company Identification code for Service Provider providing wireline or wireless service to the customer.
Company ID 2	<CPS>	5	ANV	NENA registered Company Identification code for Service Provider/Reseller/Private Switch supplying ALI record source information.
Completion Date	<CPD>	10	AN	Completion Date in format CCYY-MM-DD
County ID	<COI>	5	ANV	County Identification code (usually the FIPS code). <i>Note: County Identification field is used to identify the county of call origination. The Committee recommends use of the FIPS code assigned to each county by the U S Census Bureau.</i>
Customer Code	<CUS>	3	ANV	Code used to uniquely identify a wireline customer.
Customer Name	<NAM>	32	ANV	Subscriber name associated with the Calling Party Number. Footnote ³

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Name	Element Table	Max. Chars.	Type	Description
Datum	<NAD type="x"/>	2	N	Specifies the map projection and coordinate system recommended for the display of the Longitude and Latitude coordinates. Two systems are commonly used for North America. The code 83 identifies North American Datum for 1983 (NAD83). Code 84 identifies the World Geodetic System for 1984 (WGS84). Other codes may be added as additional datum become available through authorized entities. Where x = 83 = NAD83 84 = WGS84
Day Stamp	<DAY>	7	N	Year and Julian date that reflects the date of position determination. (UTC Date). Sample: 1996187 (CCYYDDD).
Elevation	<ELV>	5	ANV	Elevation/Altitude indicated as height above mean sea level, measured in meters. Format: nnnnn <i>Footnote</i> ³
Emergency Medical Service Responder	<EMS>	25	AN	Name of Emergency Medical Service Responder associated with the ESN of the caller.
Emergency Service Number (ESN)	<ESN>	5	ANV	Emergency Service Number associated with the House Number and Street Name and Community Name. <i>Note: The Service Provider, providing the E9-1-1 Selective Routing will assign ESN's.</i>
ESRD	<ESD>	10	N	Emergency Services Routing Digits – a digit string that uniquely identifies a base station cell site or sector that maybe used to route emergency calls through the network. To be used in conjunction with KEY on the receipt of a 20 digit ANI at the CPE. ESRD is the 2 nd set of digits in a 20 digit ANI. This will always be part of the ALI Request on a 20 digit ANI call.
Exchange	<EXC>	4	ANV	A defined area, served by one or more Telephone Central Offices, within which a Local Exchange Carrier furnishes service. <i>Footnote</i> ⁵
Fire Department Service Responder	<FIR>	25	AN	Name of Fire Department Service Responder associated with the ESN of the caller.
Flash ANI	<FLS type="x"/>			Indication to flash ANI display. Where x= Y = Display flashing N = Display steady (Used for historical tracking of presence of flash ANI)
General Use	<GU1>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU2>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.

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Name	Element Table	Max. Chars.	Type	Description
General Use	<GU3>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU4>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU5>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU6>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU7>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
General Use	<GU8>	60	ANV	This field will be mutually used by data exchange partners to pass information not defined in previous fields.
Handle	<HAN type="x"/>			Optional tag that may be generated by PSAP CPE. If present in a query (<QYT>), it will be returned by the ALI database node with the matching response. May be used by the PSAP CPE as a sequence counter to match queries with responses. Attribute type "x" may consist of up to 5 alphanumeric characters.
Heading (in degrees)	<HDG>	3	N	Direction of travel, decimal degrees from true north. Valid entries: 0-359.
House Number	<HNO>	10	ANV	House Number <i>Footnote</i> ^{1,2,3}
House Number Suffix	<HNS>	4	ANV	House number extension (e.g. ½) <i>Footnote</i> ^{1,2,3}
Key	<KEY>	10	N	Index for retrieving ALI from database. 10 digits in a 10 digit ANI 1 st set of 10 digits in a 20 digit ANI "Key" is derived from the ANI and may be one of the following: Calling Party Telephone Number ESRK (PSAP)
Landmark Address	<LMK>	60	ANV	Landmark or Vanity address. Example: "One Rockefeller Plaza".

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Name	Element Table	Max. Chars.	Type	Description
Latitude	<LAT>	10	NV	Latitude/Y coordinate. Right Justified; pad field with zeros to left of decimal degrees. +lat: north of equator; -lat: south of equator. When Phase II location cannot be provided, Phase I information should be reported, <i>i.e.</i> , the cell site or sector where the call is received. Can be used for wireline. Sample: +00.#####. <i>Footnote</i> ³
Law Enforcement Service Responder	<LAW>	25	AN	Name of Law Enforcement Service Responder associated with the ESN of the caller.
LDT Confidence	<COF>	7	N	Information that indicates the level of uncertainty inherent to the associated latitude/longitude information expressed in meters, ranging from one meter to 1800 Km expressed in meters.
LDT Confidence Percent	<COP>	3	N	Information identifying the confidence by which it is known that the calling party lies within the associated shape description. It is expressed as a percentage ranging from 0 – 100.
LDT Technology	<LTY type="x">yyy</LTY>	25	AN	Defines how particular position information was obtained to help assess its credibility. LDT Technology <LTY> Valid entries Valid entries "x" "yyy" 0 = Unknown 1 = Network Unspecified 2 = Network AOA 3 = Network TOA 4 = Network TDOA 5 = Network RF Fingerprinting 6 = Network Cell Sector 16 = Handset Unspecified 17 = Handset GPS 18 = Handset AGPS 19 = Handset EOTD 20 = Handset AFLT
Link Status	<LKS type="x"/>			Status of ALI links at database node. Value of "x" Link Status Definition 1 = Only 1 link available to ALI. 2 = Both links available to ALI.

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Name	Element Table	Max. Chars.	Type	Description
Location	<LOC>	60	ANV	Additional location information (free formatted) describing the exact location of the Calling Party Number. (e.g., "Apt 718" or "cell sector A") Emergency Response Location (ERL) – A Location to which a 9-1-1 emergency response team may be dispatched. The location should be specific enough to provide a reasonable opportunity for the emergency response team to quickly locate a caller anywhere within it. <i>This information may be displayed at the PSAP Footnote</i> ^{2,3}
Longitude	<LON>	11	NV	Longitude/X coordinate. Right Justified: pad field with zeros to left of decimal degrees. +long: east of Greenwich; -long: west of Greenwich. When Phase II location cannot be provided, Phase I information should be reported, <i>i.e.</i> , the cell site or sector where the call is received. Can be used for wireline. Sample: +000.000000 <i>Footnote</i> ³
Main Telephone Number	<MTN>			Ten-digit telephone number of the Main Billing Number associated with the Calling Party Number. <i>Footnote</i> ³
MSAG Community Name	<MCN>	32	AV	Valid service community name as identified by the MSAG <i>Footnote</i> ^{1,2,3}
Node ID sending response	<NID>	2	AN	Identifier of Multiplexer or Distribution Device physically connected to the PSAP (if applicable).
Order Number	<ORD>	10	ANV	Service order number for the activity associated with this record.
P-ANI	<PNI>	10	N	Pseudo ANI or locally specific code identifying the receiving antenna for the wireless 9-1-1 call for routing purposes.
Post directional	<POD>	2	AV	Trailing street direction suffix. Valid x entries: N S E W NE NW SE SW <i>Footnote</i> ^{1,2,3}
Postal Community Name	<PCN>	32	AV	Valid service community name as identified by the U S Postal Service. <i>Footnote</i> ³
Postal/Zip Code	<ZIP>	10	ANV	Postal or Zip code. Format: NNNNN-NNNN or ANANAN <i>Footnote</i> ³
Prefix Directional	<PRD>	2	AV	Leading street direction prefix. <i>Footnote</i> ^{1,2,3} Valid x Entries: N S E W NE NW SE SW
PSAP ID	<PSI>	4	AN	4-character identifier of the PSAP identified by the caller's ESN, relating to the PSAP, which responds to calls from the caller's location.

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Name	Element Table	Max. Chars.	Type	Description
PSAP Link Status	<PLS type="x"/>			Status of ALI data links as determined by CPE equipment. Value of "x" PSAP Link Status Definition 0 = Primary and Secondary Links OK 1 = Primary link disabled 2 = Secondary link disabled 3 = Both Links disabled
Query Type	<QYT type="x" version="v">		AN	The XML "Root Element" for all transmissions from the PSAP CPE to the Database Node. All other elements are included within this top-level element. The Query Type is specified by "x" in the table below and "version" specifies the version of the NENA XML element definition, i.e. "NENA4.0" Value of "x" Query Type Definition H = Heartbeat I = Initial Call M = Manual Query R = Repeat ALI (re-query) T = Test ALI Request U = Update Current Location (wireless call)
Response Type	<RSP type="x" version="v">		AN	The XML "Root Element" for all transmissions from the Database Node to the PSAP CPE. All other elements are included within this top-level element. The Response Type is specified by "x" in the table below and "version" specifies the version of the NENA XML element definition, i.e. "NENA4.0" Value of "x" Response Type Definition A = Acknowledgement (Positive response to receipt of valid ALI request or heartbeat) Indicates that Query was well-formed. B = Broadcast I = Initial Call M = Manual Query N = Negative Acknowledgement (Negative response to receipt of ALI request or heartbeat.) Indicates XML formatting violations or problems with content. R = Repeat ALI (re-query) T = Test ALI Response U = Update Current Location (wireless calls only)

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Name	Element Table	Max. Chars.	Type	Description								
Roamer Port	<RPT>	10	AN	A terminating directory number supporting call delivery to mobile stations.								
Router ID	<RID>	4	AN	Selective Router Identifier (E9-1-1 Tandem)								
Sector ID	<SEC>	2	AN	Sub set/section of a cell. When Phase II location cannot be provided, Phase I information, <i>i.e.</i> , the cell site or sector where the call is received should be reported.								
Service Provider Number	<SPN>	10	AN	<p>24 x 7 telephone number for the caller's facility based service provider. To be used for Trap/Trace, emergency line interrupts. (Obtained from the ALI database.) Possible values of <SPN></p> <table border="0"> <tr> <td>Contents</td> <td>Definition</td> </tr> <tr> <td>" 10 digit number"</td> <td>Service Provider's 24x7 telephone number.</td> </tr> <tr> <td>"NOT FOUND"</td> <td>Number not found.</td> </tr> <tr> <td>"UNAVAILABL"</td> <td>Data link not available – system problem</td> </tr> </table>	Contents	Definition	" 10 digit number"	Service Provider's 24x7 telephone number.	"NOT FOUND"	Number not found.	"UNAVAILABL"	Data link not available – system problem
Contents	Definition											
" 10 digit number"	Service Provider's 24x7 telephone number.											
"NOT FOUND"	Number not found.											
"UNAVAILABL"	Data link not available – system problem											
Special Attention Indicator	<SAI type="x"/>			<p>Identifier for calls that may require special attention. Defined Values <SAI></p> <table border="0"> <tr> <td>Value of "x"</td> <td>Definition</td> </tr> <tr> <td>1 =</td> <td>TTY call</td> </tr> <tr> <td>2 =</td> <td>ACN – Automatic crash/collision notification</td> </tr> </table>	Value of "x"	Definition	1 =	TTY call	2 =	ACN – Automatic crash/collision notification		
Value of "x"	Definition											
1 =	TTY call											
2 =	ACN – Automatic crash/collision notification											

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Name	Element Table	Max. Chars.	Type	Description
Special Message Indicator	<SMI type="x" value="yyy">message</SMI>	160	AN	<p>Special Message Indicator. Special text message sent by ALI/DBMS or system administrator identifying emergency type notification to PSAP. Example (for SMI type=6): "ALI going down in 10 minutes."</p> <p>Special Message Indicator <SMI> Value of "x" Translation Values "yyy"</p> <p>1 = No Record Found 2 = ANI Failure, Central Office to Tandem (911-0XXX) 3 = ANI Failure, Tandem to PSAP (000-0000) 4 = Anonymous Call (911-0000) 5 = Broadcast Message – General 6 = Broadcast Message indicating host going out of service 7 = Manual Query denied 8 = Record unlocked, porting in progress 9 = Migrate Attempt, not unlocked</p>
Speed (in KPH)	<SPD>	3	N	Speed of travel in kilometers per hour.
State/Province	<STA>	2	A	Alpha U.S. state or Canadian province abbreviation, i.e. TX (Texas), ON (Ontario) <i>Footnote</i> ^{1,2,3}
Street Name	<STN>	60	ANV	Valid service address of the Calling Party Number <i>Footnote</i> ^{1,2,3}
Street Suffix	<STS>	4	AV	Valid street abbreviation, as defined by the U S Postal Service Publication 28. (e.g. AVE) <i>Footnote</i> ^{1,2,3}
TAR Code	<TAR>	6	ANV	Taxing Area Rate Code
Time Stamp	<TME>	8	AN	The UTC (Coordinated Universal Time) time that reflects the time of position determination by the wireless carrier. Reflected in tenths of seconds. Format: HHMMSS.S
Trunk ID	<TID>	3	N	PSAP trunk identifier. <i>Please note that there are no reserved numbers for special purposes.</i>

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Name	Element Table	Max. Chars.	Type	Description
Type of Service	<TYS type="x">yyy</TYS>	45	AN	Characteristics of Service Value of "x" Translation Values "yyy" 0 = Not FX nor Non-Published 1 = FX in 9-1-1 serving area 2 = FX outside 9-1-1 serving area 3 = Non-Published 4 = Non-Published FX in 9-1-1 serving area 5 = Non-Published FX outside 9-1-1 serving area 8 = PS/ALI Published 9 = PS/ALI Non-Published

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23.5 Application Layer Protocol

This section describes the 4 possible sequences of transmissions on the PSAP to ALI Database node links:

- ? ALI Request / Response (Wireless & Wireline)
- ? Heartbeat / Response
- ? Location Update / Response
- ? Broadcast

To see all of the elements that would be included in each transmitted XML “document” please refer to the “Standard ALI Response Element Usage Table”

23.5a ALI Request/Response

ALI Request/Response	
PSAP CPE to Database Node ↗	Database Node to PSAP CPE ↘
<p align="center">ALI Request Sequence</p> <p>Sent to both database nodes on separate data links to request ALI. The sequence may be triggered by the receipt of an ANI with an incoming call, or as a result of receiving negative acknowledgements from both ALI Database nodes from a previous ALI request.</p> <p align="center">For Wireline and Wireless Calls</p> <p>Query ↗ Type I (Initial) Type M (Manual) Type R (Repeat ALI) Type T (Test ALI Request)</p>	
	<p align="center">Request Received Acknowledgement</p> <p>Both database nodes respond with elements that indicate whether the ALI Request was received correctly; that the XML tags were well-formed and any data content restrictions were satisfied.</p> <p>↗ Response Type A (Positive Acknowledgement) Type N (Negative Acknowledgement)</p>
	<p align="center">ALI Response Tags</p> <p>One of the database nodes responds with all of the available XML ALI response tags.</p> <p>↗ Response Type I (Initial) Type M (Manual) Type R (Repeat ALI) Type T (Test ALI Response)</p>

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ALI Request/Response Wireline Example	
PSAP CPE to Database Node ↗	↘ Database Node to PSAP CPE
Initial ALI wireline request: <?xml version="1.0" standalone="yes" ?> <QYT type="T" version="NENA4.0"> <KEY>5615551212</KEY> <POS>2</POS> <TID>5</TID> <FLS type="N"/> <HAN type="23456"/> </QYT>	
	Request Received (returned on both ALI links from each database node. <?xml version="1.0" standalone="yes" ?> <RSP type="A" version="NENA4.0"> <KEY>5615551212</KEY> <POS>2</POS> <TID>5</TID> <HAN type="23456"/> </RSP>

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BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

ALI Request/Response Wireline Example	
PSAP CPE to Database Node ↗	↘ Database Node to PSAP CPE
	<p>ALI Response (returned on one of the ALI Links.) Complete example would show elements for all available fields.</p> <pre> <?xml version="1.0" standalone="yes" ?> <RSP type="I" version="NENA4.0"> <KEY>1234567890</KEY> <CPN>5552720054</CPN> <POS>2</POS> <TID>5</TID> <FLS type="N"/> <TYS type="0">Not FX or Non-Published</TYS> <CLS type="2">Business</CLS> <MTN>5552720054</MTN> <ATS>101247</ATS> <ADS>19991220</ADS> <NAM>JOHN DOE</NAM> <HNO>2184</HNO> <STN>PECAN</STN> <STS>ST</STS> <MCN>ANYWHERE</MCN> <STA>TX</STA> <ESN>00320</ESN> <LAW>ANY CO SHERIFF</LAW> <FIR>ANY FIRE</FIR> <EMS>ANY EMS</EMS> <LKS type="2" /> <CPF>ICI</CPF> <CPS>ABC</CPS> <HAN type="23456"/> <SPN>1234567890</SPN> <NID>A1</NID> <PSI>AB12</PSI> <RID>A123</RID> </RSP> </pre>

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ALI Request/Response Wireless Phase II Example	
PSAP CPE to Database Node ↗	↘ Database Node to PSAP CPE
Initial ALI wireless request: <?xml version="1.0" standalone="yes" ?> <QYT type="I" version="NENA4.0"> <ESD>5615551212</ESD> <KEY>1234567890</KEY> <POS>2</POS> <TID>5</TID> <FLS type="N"/> </QYT>	
	Request Received (returned on both ALI links from each database node. <?xml version="1.0" standalone="yes" ?> <RSP type="A" version="NENA4.0"> <KEY>1234567890</KEY> <ESD>5615551212</ESD> <POS>2</POS> <TID>5</TID> </RSP>

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ALI Request/Response Wireless Phase II Example	
PSAP CPE to Database Node ↗	↘ Database Node to PSAP CPE
	<p>ALI Response (returned on one of the ALI Links.) Complete example would show elements for all available fields.</p> <pre> <?xml version="1.0" standalone="yes" ?> <RSP type="I" version="NENA4.0"> <KEY>1234567890</KEY> <CBN>5552720054</CBN> <ESD>5615551212</ESD> <LON>+080.234567</LON> <LAT>+26.123456</LAT> <ELV>23</ELV> <CEL>AB1234</CEL> <POS>2</POS> <TID>5</TID> <FLS type="N"/> <TYS type="0">Not FX or Non-Published</TYS> <CLS type="H">Wireless Phase II</CLS> <ATS>101247</ATS> <ADS>19991220</ADS> <NAM>XYZ Wireless Co</NAM> <MCN>ANYWHERE</MCN> <STA>TX</STA> <ESN>00320</ESN> <LAW>ANY CO SHERIFF</LAW> <FIR>ANY FIRE</FIR> <EMS>ANY EMS</EMS> <LKS type="2" /> <CPF>ICI</CPF> <DAY>2001155</DAY> <COF>600</COF> <COP>95</COP> <CPS>ABC</CPS> <LTY type="17">Handset GPS</LTY> <NID>A1</NID> <PSI>AB12</PSI> <RID>A123</RID> <SEC>A</SEC> <SPN>1234567890</SPN> <TME>123456.7</TME> </RSP> </pre>

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BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

23.5b Heartbeat/Response

Heartbeat / Response	
CPE to Database Node ↗	Database Node to CPE ↘
<p align="center">Heartbeat Sequence</p> <p>Send to database node to test status of ALI circuits.</p> <p>Query -> Type H</p>	
	<p align="center">Heartbeat Response Tags</p> <p>Both database nodes respond with elements that indicate whether the heartbeat was received correctly.</p> <p>↗ Response Type A (Positive Acknowledgement) Type N Negative Acknowledgement)</p>

Heartbeat / Response Example	
CPE to Database Node ↗	Database Node to CPE ↘
<pre><?xml version="1.0" standalone="yes" ?> <QYT type="H" version="NENA4.0"> <PLS type="0" /> <HAN type="23456"/> </QYT></pre>	
	<pre><?xml version="1.0" standalone="yes" ?> <RSP type="A" version="NENA4.0"> <LKS type="2" /> <ATS>074521</ATS> <ADS>20001225</ADS> <HAN type="23456"/> </RSP></pre>

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BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

23.5c Location Update Request/Response

Location Update Request/Response Wireless Phase II Example

This sequence is used to update location information for a moving caller. Responses should include updated location data. Other static data that is available in the database should be suppressed to reduce response time. Response time may be a significant factor in situations where frequent, multiple Location Update Requests are sent to the database. This is an exception to the normal ALI response guideline of sending all non-blank database fields in an ALI Response message.

There are four primary differences between the Location Update Request/Response sequence and the standard Wireline or Wireless ALI Request/Response sequence:

1. The Location Update sequence should include an acknowledgement by both database nodes to the Update Request.
2. The Location Update Response may not include all available elements.
3. Location Update Responses always follow an initial wireless ALI Request or subsequent Location Update Requests.
4. Location Update Response sequences occur on the same ALI link as the original wireless ALI Response.

CPE to Database Node ↗	↖ Database Node to CPE
<p align="center">Location Request Sequence</p> <p>Sent to database node to request updated location information. The generation of the Location Request Sequence may be initiated manually by a call taker or automatically by various PSAP CPE systems, including CAD.</p> <p>Query -> Type U</p>	
	<p align="center"><-----ALI Response Tags</p> <p>One of the database nodes responds with location information. Static optional elements should not be sent.</p> <p>↗ Response Type U</p>

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Location Update Request/Response Wireless Phase II Example	
CPE to Database Node ↗	↘ Database Node to CPE
<pre> <?xml version="1.0" standalone="yes" ?> <QYT type="U" version="NENA4.0"> <POS>02</POS> <TID>03</TID> <KEY>2212365496</KEY> <HAN type="23456"/> </QYT> </pre>	<pre> <?xml version="1.0" standalone="yes" ?> <RSP type="U" version="NENA4.0"> <PNI>5615551212</PNI> <KEY>2212365496</KEY> <LON>+080.234567</LON> <LAT>+26.123456</LAT> <ELV>23</ELV> <CEL>AB1234</CEL> <POS>2</POS> <TID>5</TID> <CLS type="H">Wireless Phase II</CLS> <ATS>101247</ATS> <ADS>19991220</ADS> <STA>TX</STA> <ESN>00320</ESN> <LAW>ANY CO SHERIFF</LAW> <FIR>ANY FIRE</FIR> <EMS>ANY EMS</EMS> <LKS type="2" /> <DAY>2001155</DAY> <COF>600</COF> <COP>95</COP> <LTY type="17">Handset GPS</LTY> <NID>A1</NID> <PSI>AB12</PSI> <RID>A123</RID> <SEC>A</SEC> <TME>122136.6</TME> </RSP> </pre>

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BETWEEN ALI DATABASE AND PSAP CONTROLLER EQUIPMENT

23.5d Broadcast

Broadcast	
CPE to Database Node ↗	Database Node to CPE ↗
The CPE does not initiate or respond to broadcasts from the database node.	
	Broadcast Tags ↗ Response Type B

Broadcast Example	
CPE to Database Node ↗	Database Node to CPE ↗
	<pre><?xml version="1.0" standalone="yes" ?> <RSP type="B" version="NENA4.0"> <SMI type="5" value="Broadcast Message - General">There's trouble in River City</SMI> <ATS>074521</ATS> <ADS>20001225</ADS> </RSP></pre>