

NRIC VII

March 22, 2005

FOCUS GROUP 1A
Near Term Issues for
Emergency/E9-1-1 Services

Report #2 - Final

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1. Results in Brief

1.1 Executive Summary

The FCC has called upon NRIC VII to present recommendations that will lead to a consistent format for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information. This format must resolve any inconsistencies that would otherwise result from using vendor specific formats for transmitting information from MPCs/GMLCs to PSAPs.

NRIC VII Focus Group 1A (FG1A) was formed to study the issues and to reach consensus among the various stakeholders with regard to resolution. The stakeholders consisted of representatives from the wireless industry, the Public Safety community, and other participants in the wireless E911 industry.

The members of FG1A are pleased to provide these recommendations for the consideration of the NRIC and the FCC. The following sections provide greater detail and background for the above recommendations.

1.2 Key Findings/Recommendations

With the exception of the following four specific issues, Focus Group 1A has agreed that NENA 02-010 Data Exchange Standard ensures a consistent format for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information.¹

1. Standardization of Class of Service
2. Confidence and Uncertainty
3. Lat/Long display with Phase 1 calls
4. Cell Sector Identification and Orientation

The recommendations in this report are forward looking, and are not intended to require conversions of existing deployments. Rather, these recommendations should be incorporated into future wireless E9-1-1 Phase 1 & Phase 2 implementations when commercially reasonable. They should also be considered as system requirements for future changes associated with Phase 1 or Phase 2.

1.2.1 Standardization of Class of Service

Focus Group 1A recommends that the following wireless Classes of Service be used consistently going forward:

Pre-Phase 1	MOBL
Phase 1	WRLS
Phase 1 data from a Phase 2 capable wireless service area	WPH1
Phase 2	WPH2

¹ FG1A will address the placement of CBN in PSAP displays as a Best Practice in our EOY Report.

Further, Focus Group 1A recommends that the following actions should be taken to resolve inconsistencies in the use of Class of Service (CoS) for wireless calls:

1. The wireless industry should take action to verify that all carriers and vendors are aware of the standard CoS codes.
2. Older procedures should be updated to ensure compliance with this standard.
3. Within 12 months of the adoption of these recommendations, ESIF must establish clear interpretation rules for available data including POSSource leading to accurate Class of Service indication to PSAP call takers.

1.2.2 Confidence and Uncertainty

Focus Group 1A has agreed that the Uncertainty estimate, expressed in meters, is a more useful value to provide to the 9-1-1 call taker than the Confidence factor. The Uncertainty estimates should have comparable meaning from carrier to carrier.

Focus Group 1A recommends the following:

1. Uncertainty estimates should reflect the most meaningful² value to the PSAP and should be delivered in the ALI record on every Phase 2 call. Confidence factor is not useful on a call-by-call basis and should not be reported.
2. Within 12 months of the adoption of these recommendations, ESIF should complete the evaluation of the technical feasibility of standardizing the meaning of the Uncertainty estimates reported to the PSAP.
3. The wireless carriers shall provide through ESIF, any publicly available information regarding the methods by which the Confidence factor is generally defined and utilized for each deployed PDE technology, plus any publicly available analysis of the accuracy of the Uncertainty estimates.

1.2.3 LAT/LONG display on Phase 1 Calls

Focus Group 1A recommends suppression of lat/long on a Phase 1 call, where commercially reasonable. If the Phase 1 lat/long cannot be suppressed, it should be displayed to the call taker in a manner that makes it clear that it is not caller lat/long data (i.e. separate fields, distinct labels). Focus Group 1A requests ESIF to determine how lat/long should be suppressed on a Phase 1 call, and where the suppression, if necessary, should occur.

² The term “meaningful” is interpreted as the smallest possible Uncertainty estimate that has a high probability that the caller is located within that range.

1.2.4 Cell Sector Identification and Orientation

For consistent presentation of data, Focus Group 1A recommends that on a going forward basis, sector and orientation should be included in the ALI address field and the cell sector description should be included in the ALI location field.

Examples of sector and orientation are:

St Number and Street Name:	1401 Martin Dr – 3SW	1401 Martin – OMNI
Location:	5213A	Westfield Mall
Community:	Westchester	Westchester

(The “3” in -3SW in the example above is representative of a 3 sectored tower, and the “SW” is representative of the compass direction for the sector applicable to the current call.)

1.3 Future Reports

Per the NRIC VII Charter, future reports from Focus Group 1A will include the following:

A report recommending a consistent set of thresholds for the time required to complete database queries, and the metrics/thresholds for determining unacceptably high traffic concentration points.

A final report recommending ways and describing Best Practices to address near-term E911 issues. The report shall include issues from the earlier interim reports. Finally, the report shall recommend Best Practices addressing high E911 network concentration points.

2. Introduction

The Council shall address the following topics:

Focus Group 1A - Near Term Issues for Emergency/911 Services

The Council shall, by December 16, 2005 provide a report that contains near term emergency communications network Best Practices with supporting documentation.

In addition, the Council shall study specific issues that are identified below. The Council shall coordinate with other forums (e.g., Emergency Services Interconnection Forum (ESIF), National Emergency Number Association, etc.) so that each issue can be addressed as efficiently and completely as possible. The Council shall:

- Recommend accuracy requirements for location information particularly for rural, suburban, and urban areas and recommend ways to verify that accuracy

requirements are met. Investigate location technologies that could improve accuracy and/or reduce cost.

- Develop recommendations that will lead to a consistent format for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information. This format must resolve any inconsistencies that would otherwise result from using vendor specific formats for transmitting information from Mobile Positioning Centers to PSAPs.
- Develop a consistent, common set of timing thresholds for the database queries and for obtaining location information.
- Enumerate and evaluate the factors that should be considered in deciding whether redundant E9-1-1 tandems and alternate PSAPs should be provided to avoid a “fast busy” or a recorded message when one or more non-redundant network elements fail.
- Identify all major traffic concentration points in E9-1-1 architectures, such as E9-1-1 tandems, Selective Routing Databases (SRDB), Mobile Positioning Centers, and Automatic Location Identification (ALI) databases. The Council shall then define metrics and thresholds that should be used to determine where traffic concentrations are unacceptably high. The Council shall develop Best Practices to reduce traffic concentration wherever it has been determined to be too high. This includes developing Best Practices for the size and diversity of different databases. This may also include developing Best Practices aimed at improving the database process or reducing the number of database queries.

Interim Milestone #2

By March 30, the Council is to present a report recommending a consistent format for information that is to be passed to PSAPs for Phase 1 and 2 location information; and a consistent set of thresholds for the time required to complete database queries, and the metrics/thresholds for determining unacceptably high traffic concentration points.

In this report, Focus Group 1A is pleased to provide recommendations that will lead to a consistent format for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information.

Focus Group 1A respectfully requests a 90 day extension to continue its work efforts to develop recommendations for a consistent set of thresholds for the time required to complete database queries, and recommendations for the metrics/thresholds for determining unacceptably high traffic concentration points.

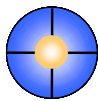
2.1 Structure of NRIC VII

The structure of the Network Reliability and Interoperability Council is as follows:

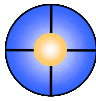
Network Reliability and Interoperability Council – VII
 (Chair: Tim Donahue)

NRIC Steering Committee (Chair: Nancy Carlsen)								
Chair Focus Group # 1A	Chair Focus Group # 1B	Co-Chairs Focus Group # 1C	Chair Focus Group # 1D	Focus Group # 2A	Chair Focus Group # 2B	Co-Chairs Focus Group # 3A	Co-Chairs Focus Group # 3B	Chair Focus Group # 4

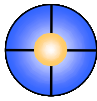
Focus Group #1A:
 Near Term Issues
 E911



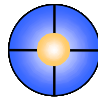
Focus Group #1B:
 Long Term Issues
 E911



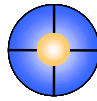
Focus Group #1C:
 Best practices
 E911 and
 Public Safety



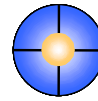
Focus Group #1D:
 Emergency Comms
 beyond
 E911



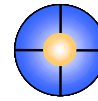
Focus Group #2A:
 Homeland Security –
 Infrastructure Best
 Practices



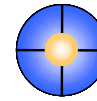
Focus Group #2B:
 Homeland Security –
 Cyber Security Best
 Practices



Focus Group #3A:
 Wireless Industry Best
 Practices



Focus Group #3B:
 Public Data Networks
 Best Practices



Focus Group #4:
 Broadband

2.2 Focus Group 1A Team Members

Focus Group 1A consists of 49 members. In order to accomplish the objectives of Report #2 the members identified four categories to review and make recommendations related to enabling consistency for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information.

Standardization of Class of Service
Confidence and Uncertainty
Lat/Long display with Phase 1 calls
Cell Sector Identification and Orientation

2.2.1 Focus Group 1A Members (as of March 3, 2005)

NAME	COMPANY/AGENCY
Jackson A. Mobbs	Alltel
Wendy Wheeler	Alltel
Bill Cade	APCO
Joe Hanna	APCO
Marilyn Ward	APCO
Robert (Bob) Guss	APCO
Wanda McCarley	APCO
Greg Ballentine	APCO/MARC
Dale Morgenstern	AT&T
Tom Breen	BellSouth
Brian Fontes	Cingular
Mindy Whisman	Cingular
Steve Hardin	Cingular
Rob Searight	Cingular Wireless
Gary Hight	Cingular Wireless
Steve Marzolf	Commonwealth of Virginia & NASNA
Rick Kemper	CTIA
Paul Marrangoni (FCC Observer)	FCC OET Office
Darold Whitmer, (former FG1A Chair)	Intrado
Mary Boyd, (Current FG1A Chair)	Intrado
Amy Sanders	Lucent
Doug Rollender	Lucent
Brye Bonner	Motorola
Wayne Ballantyne	Motorola
Roger Hixson	NENA
John Howell	Nextel
John Rosnick	Nextel
Greg Arnold	Nokia
Scott Carlson	Nortel
Charlie Hoffman	NTIA
Bob Dressler	Polaris Wireless
Kamil Grajski	Qualcomm
Phil Linse	Qwest

NAME	COMPANY/AGENCY
Art Prest	Rural Cellular Assoc.
Anna Hastings	SBC
Charles McKee	Sprint
Greg A. Garrelts	Sprint
Fran Ryan	Sprint
Jim Propst	Sprint
Dick Dickinson	TCS
Brian McNiff	TechnoCom
Janice Partyka	TechnoCom
Jim Nixon, (FG1B Chair)	T-Mobile
Ryan Jensen	T-Mobile
Gustavo Pavon	True Position
Francis Malnati	Verizon Wireless
Lolita Forbes	Verizon Wireless
Susan Sherwood	Verizon Wireless
Nathan Glazier	Western Wireless

2.3 Consistent ALI Display Subcommittee

Anna Hastings Leader

2.3.1 Subcommittee Members:

Dick Dickinson
Janice Partyka
John Howell
John Rosnick
Mary Boyd
Roger Hixson
Steve Marzolf
Susan Sherwood
Wayne Ballentyne

3. Background (Interim Milestone #2)

Hundreds of ALI formats have evolved in response to individual PSAP preferences and LEC or CPE vendor options. The interfaces that feed data to the ALI, however, have been standardized into three primary formats: E2, PAM and NENA. In order to make the data fields display data in a manner suitable to the PSAPs, many contortions of data format and content have evolved. Therefore, Focus Group 1A has been tasked to identify situations subject to inconsistent display at the PSAP, and to develop recommendations that will lead to consistent formats for data to be passed to PSAPs for Phase 1 and Phase 2 call and location information. The recommendations in this report are forward looking, and are not intended to require conversions of existing deployments. Rather, these recommendations should be incorporated into future wireless E9-1-1 Phase 1 and Phase 2

implementations when commercially reasonable. They should also be considered as system requirements for future changes associated with Phase 1 or Phase 2.

With the exception of the following four specific issues, Focus Group 1A has agreed that NENA 02-010 Data Exchange Standard ensures a consistent format for information passed to Public Safety Answering Points (PSAPs) for Phase 1 and 2 call and location information.³

1. Standardization of Class of Service
2. Confidence and Uncertainty
3. Lat/Long display with Phase 1 calls
4. Cell Sector Identification and Orientation

4. Objective, Scope, and Methodology (Interim Milestone #2)

4.1 Objective

The NRIC VII Charter directs Focus Group 1A to make recommendations with respect to ways that will lead to a consistent format for information passed to Public Safety Answering Points (PSAPs) for wireless Phase 1 and 2 call and location information.

4.2 Scope

Focus Group 1A agrees and acknowledges that substantial investment in personnel, procedures and technology have been made by wireless carriers, the public safety answering points (PSAPs), local exchange carriers (LECs), E9-1-1 System Service Providers (E9-1-1SSP), and Customer Premises Equipment providers to support Phase 1 and Phase 2 location information delivery.

Therefore, the recommendations in this report are forward looking, and are not intended to require conversions of existing deployments. Rather, these recommendations should be incorporated into future wireless E9-1-1 Phase 1 and Phase 2 implementations when commercially reasonable. They should also be considered as system requirements for future changes associated with Phase 1 or Phase 2.

4.3 Methodology

To develop the contents of this report, a subcommittee on “Consistent ALI Display” was formed to examine and report on existing standards and practices, public safety needs and new technologies. In an attempt to gain consensus and collaboration, conference calls and face to face meetings were held periodically to collaborate with the entire Focus Group. Final acceptance of the report was accomplished through conference calls and face to face meetings.

³ FG1A will address the placement of CBN in PSAP displays as a Best Practice in our EOY Report.

4.4 Meeting Schedule

(NOTE: Subcommittee's held conference calls that are not included here.)

Date	Activity
March 2004	3/20/2004 NRIC VII Kick Off Meeting
May 2004	5/20/2004 in person meeting at Intrado's Longmont, CO facility
July 2004	7/21/2004 conference call
August 2004	8/24&25 in person meeting at Nextel's Reston, VA facility
October 2004	10-14-2004 conference call
November 2004	11/9 & 10, in person meeting at AT&T's Bedminster, NJ facility
November 2004	11/12/2004 conference call
November 2004	11/14/2004 conference call
November 2004	11/15/2004 conference call
December 2004	12/13 & 14, in person meeting in Atlanta (hotel near airport)
January 2005	1/6 & 7, in person meeting in Washington, DC (Lucent Labs)
January 2005	1/13, conference call
January 2005	1/14 conference call
January 2005	1/21 conference call
February 2005	2/2/2005 conference call
February 2005	2/3/2005 conference call
February 2005	2/4/2005 conference call
March 2005	3/2 & 3, in person meeting in Arlington, VA
March 2005	3/8/2005 conference call
March 2005	3/10/2005 conference call

5. Key Definitions

Confidence Factor – The likelihood with which the caller lies within the associated geographic shape description (uncertainty shape). Expressed as a percentage, with 0% indicating 'no information'.

Standard Deviation - The standard deviation, often denoted as σ in statistics textbooks, is a measure of the spread of data in any scenario involving random data. It is computed as the square root of the variance σ^2 . For any random variable x , the variance is given as $\sigma^2 = E\{x^2\} - m_x^2$, where m_x is the mean or average value of x , and $E\{x^2\}$ is the "expected", or average value of x^2 . The measured Phase 2 location data has some random component due to noise, multipath, timing jitter, etc.

Reference: A. Papoulis, Probability, Random Variables, and Stochastic Processes, McGraw Hill, 1965

Uncertainty Estimate – A call-by-call indication of the quality of the associated location estimate. Expressed as a geographic shape (circle, ellipse, arc, polygon, etc). The uncertainty estimate (uncertainty shape) is delivered real-time along with the location estimate itself.

The E₂ interface to the Emergency Services Network is defined in J-STD-036. The following geometric shape descriptions for use with E911 Phase 2 are included (see also ANSI T1.628), as a minimum:

1. Ellipsoid Point. This represents a point on the surface of the earth, with no associated uncertainty estimate, i.e., a simple latitude/longitude.
2. Ellipsoid Point with Uncertainty (Circle). This represents a point on the surface of the earth (latitude/longitude) along with an uncertainty circle of radius *r*, in meters, where *r* ranges between 1 and 1,800,000.

6. Recommendations

The Focus Group wishes to emphasize that some of these recommendations defer to ESIF to perform the necessary work to ensure these recommendations can in fact be implemented in an effective and timely manner. The following recommendations are intended to lead to a consistent format for information passed to Public Safety Answering Points (PSAPs) for wireless Phase 1 and 2 call and location information.

The recommendations in this report are forward looking, and are not intended to require conversions of existing deployments. Rather, these recommendations should be incorporated into future wireless E9-1-1 Phase 1 and Phase 2 implementations when commercially reasonable. They should also be considered as system requirements for future changes associated with Phase 1 or Phase 2.

Focus Group 1A respectfully requests a 90 day extension to continue its work efforts to develop recommendations for a consistent set of thresholds for the time required to complete database queries, and recommendations for the metrics/thresholds for determining unacceptably high traffic concentration points.

6.1 *Standardization of Class of Service for Wireless E9-1-1 Calls*

Class of Service (CoS) is a traditional indicator for E9-1-1 calls that allows the PSAP call taker to determine both the type of origination point, and certain considerations in responding to the 9-1-1 call. For instance, if a call is indicated as residential, the call taker can ascertain that the source is a single line, with typically a limited number of people involved, and likely in a low traffic level location (depending on address indicated). On the other hand, if the CoS indicates a PBX, the call taker can be alerted that the call is from a multi-line business or large scale residential complex. Depending on how much information the caller can provide, the CoS may be meaningful in decisions about how to appropriately respond, in terms of victim search needs and resources to be dispatched, for instance.

In the wireless E9-1-1 arena, where users are by definition mobile or capable of being mobile, Class of Service is used to indicate level of service, such as pre-Phase 1 (MOBL), Phase 1 (WRLS), Phase 1 data from a Phase 2 capable wireless service area (WPH1), and Phase 2 (WPH2). Both NENA and ESIF have validated that these codes should be the standard indicators for wireless CoS.

Focus Group 1A recommends that the following Wireless CoS be used consistently going forward:

Pre-Phase 1	MOBL
Phase 1	WRLS
Phase 1 data from a Phase 2 capable wireless service area	WPH1
Phase 2	WPH2

However, not all carriers and carrier vendors trigger or use these standard codes consistently across all wireless 9-1-1 calls.

Reasons for this inconsistency may fall into four categories:

- lack of knowledge of the standard terms
- failure to revise procedures established prior to defining CoS standards
- inability to drive the proper indicator for specific calls
- differences in interpreting the factors that drive the indicators

Lack of knowledge can be treated through industry educational processes, as can pre-existing procedure compliance cases. In at least one wireless location technology type, the Position Source code is not generated in a way that can be used to clearly identify the type of wireless call as above. In this and other cases, the available factors from the Position Determining Entity (PDE) can be interpreted in differing ways, typically affecting whether the call location data is interpreted as Phase 1, Phase 1 data in a Phase 2 service area, or Phase 2. In these cases, there may also be issues around initial general location 'fix' data, as compared to generation of location data later in the call and systems sequence, either because of PDE operations or re-bid activity.

Unresolved, these conditions leave the call taker with potential questions of how much they can trust the CoS indicator, and therefore the interpretation of the displayed location data during the often stressful conditions of handling an emergency situation. In this environment, PSAPs are often forced to establish manual guides ('cheat sheets') by carrier or vendor to assist in interpreting screen display data. This can generate undesirable delays in processing a call.

A related factor in the issue of CoS has to do with which service provider is best situated to determine and trigger the appropriate code into the data stream that is passed through the E9-1-1 system data process to the PSAP. Where the E2 interface is utilized, the ALI server operator controls the CoS interpretation. In the PAM interface, either the MPC provider or the ALI server can perform this step⁴. Coordination of operations might be simpler if one party to the service process always managed the CoS interpretation. One solution might be if the MPC could actually set the POSSOURCE to a value that specifies a true CoS instead of the ALI system interpreting the Position Method used. As it stands now, every time a new type or variation of PDE location technology is developed, a new POSSOURCE code may be established in standards. ALI providers then have to add the new code and CoS information in order to keep in step.

The parties agree that at least three actions should be taken to resolve the above issues.

1. The wireless industry should take action to verify that all carriers and vendors are aware of the standard CoS codes.
2. Older procedures should be updated to ensure compliance with this standard.
3. Focus Group 1A recommends that ESIF establish clear interpretation rules for available data leading to accurate Class of Service indication to PSAP call takers. Focus Group 1A recognizes that ESIF is currently working on defining what actions need to be taken to make Position Source or alternative identification methods available for all location technologies, in a way that can clearly indicate level of service provided. Within 12 months of the adoption of this recommendation, ESIF should define methodologies to assure common application of CoS codes across technologies, carriers, and service providers.

6.2 *Confidence and Uncertainty*

To appropriately respond to calls to 9-1-1, the public safety answering point (PSAP) would benefit from a measure of the reliability of the location provided on a call-by-call basis. Many factors impact the accuracy of the determined location. To the extent that these can be used to predict the probable accuracy of the longitude and latitude, a meaningful prediction should be provided to the PSAP. Simply stated, the Confidence factor is a value that defines the statistical probability that a caller lies within the area defined by the associated Uncertainty estimate. The Confidence factor is expressed in terms of a percentage, while the Uncertainty estimate is expressed in meters.

For some carriers, the Uncertainty estimate relates to an estimate of the average error of the location reported, as compared to the actual location of the caller (i.e. “standard

⁴ Some ALI systems have the ability to create the CoS that the MPC provider specifies for each POSSOURCE. For instance the infamous POSSOURCE 7 could be WPH2 for one MPC provider and WPH1 for another when the ALI has this ability. Another ALI system may always display WPH1.

PAM has two CoS fields. One allows the PAM host to send the actual CoS text description and the other field carries the CoS value. The CoS value field carries the character indicator such as G, H, etc. Most ALI systems simply pass the resulting CoS standard text description on to the PSAP. However, there are implementations that use the CoS value to create custom CoS text.

deviation⁵). For a given location solution, a larger Uncertainty estimate should indicate the emergency response team may have to search a larger area to locate the caller. For location solutions such as, but not limited to GPS or U-TDOA, the Uncertainty estimate is a function of a number of factors such as Signal to Noise ratio, satellite or base station geometry, and the number of satellites or base stations participating in the location solution.

There are several problems with the way the Confidence factor and Uncertainty estimate are currently being reported that impacts the consistency of the data displayed to the call taker. First and most importantly, not all wireless carriers and 9-1-1 system service providers are generating or forwarding these data to the PSAP. It is either not produced or is not forwarded, at least in part because there is no FCC requirement to provide the data. Though many carriers fix their Confidence factor at a specific value, this value may differ from carrier to carrier. This leaves the call taker to assess whether a 30% Confidence factor with a 20 meter Uncertainty estimate is better or worse than an 80% Confidence with a 50 meter Uncertainty estimate. The Confidence factor is a statistical measure that is very difficult for the call taker to assess on a call-by-call basis. The Uncertainty estimate, however, is expressed in meters and provides a much more useful value for the call taker to assess.

Each wireless carrier may employ different mathematical algorithms to calculate the Confidence factor and Uncertainty estimate. One wireless carrier may calculate the Uncertainty estimate using a Confidence factor of X, while another wireless carrier may calculate the Uncertainty estimate using a Confidence factor of Y, but the resultant Uncertainty estimates may be equally accurate.

As a result, the parties agree to the following:

- The Uncertainty estimate, expressed in meters, is a more useful value to provide to the 9-1-1 call taker than the Confidence factor. The Uncertainty estimate should reflect the most meaningful⁶ value to the PSAP and should be delivered in the ALI record on every Phase 2 call. The Confidence factor is not useful on a call-by-call basis and should not be reported.
- Uncertainty estimates should have comparable meaning from carrier to carrier. Focus Group 1A recommends that ESIF evaluate the technical feasibility of standardizing the meaning of the Uncertainty estimates reported to the PSAP.
- The wireless carriers shall provide through ESIF, any publicly available information regarding the methods by which Confidence factor is generally defined and utilized for each deployed PDE technology, plus any publicly available analysis of the accuracy of the Uncertainty estimates.

⁵ The standard deviation, often denoted as σ in statistics textbooks, is a measure of the spread of data in any scenario involving random data. It is computed as the square root of the variance σ^2 .

⁶ The term “meaningful” is interpreted as the smallest possible Uncertainty estimate that has a high probability that the caller is located within that range.

- All parties acknowledge that the Uncertainty estimate is not a measure of location accuracy. It is a prediction based on average performance and therefore cannot be evaluated to determine accuracy or overall performance of the location technology.

6.3 Lat/Long Display with Phase 1 Calls

This issue relates to whether cell tower lat/long data should be displayed to the PSAP call taker on a Phase 1 call. By definition of Phase 1, there is no caller lat/long data, but PSAPs will often have ALI display formats that provide caller lat/long fields due to display upgrades in preparation for Phase 2 (or in use for Phase 2 data for already implemented carriers at that PSAP). Some carriers or vendors have, sometimes at the request of PSAPs, inserted Phase 1 cell tower lat/long in the display fields provided and labeled for caller location data. Or, a PSAP may have an ALI display format that provides no separate fields for caller lat/long, and this data is inserted in available fields for Phase 2 calls, but cell tower lat/long is inserted when Phase 1 calls occur.

In either case, the net effect for the call taker is potential confusion on what the displayed lat/long data represents, and a need to further depend on the Class of Service to indicate how the lat/long data in the common fields should be interpreted.

Focus Group 1A recommends suppression of lat/long on a Phase 1 call, where commercially reasonable. But if the Phase 1 lat/long cannot be suppressed, it should be displayed to the call taker in a manner that makes it clear that it is not caller lat/long data (i.e. separate fields, distinct labels). ESIF will be asked to determine how it should be suppressed, and who should suppress it.

6.4 Cell Sector Identification and Orientation

The cell sector description and the number of sectors & their orientation are provided as part of the Phase 1 data. Unfortunately, no unique data fields currently exist in the most commonly used ALI data formats to send this data to the PSAP. As a result, the data must be included in one or more other fields. Among different carriers and PSAPs, this data may be included in the street name, community or location fields of the wireline ALI record. As a result, the 9-1-1 call taker must search the screen to find this information.

The data elements are the literal street address and community name of the cell tower, the total number of sectors and the orientation of the sector processing the call expressed as a compass direction. The cell sector description is expressed in terms of an ID number or name such as “5213A” or “Mountain Tower”.

For consistent presentation of data, the parties agree that on a going forward basis that sector and orientation should be included in the ALI address field and the cell sector description should be included in the ALI location field.

Examples of sector and orientation are:

St Number and Street Name: 1401 Martin Dr – 3SW 1401 Martin – OMNI

Location: 5213A Westfield Mall
Community: Westchester Westchester

(The “3” in -3SW in the example above is representative of a 3 sector tower, and the “SW” is representative of the compass direction for the sector applicable to the current call.)

NOTE: If a carrier is delivering Phase 1 street location description with a Phase 2 latitude/longitude, it should be presented according to the above recommendation.

7. Next Steps

NRIC VII Focus Group 1A will continue to work on the milestones assigned to us in the Charter (see Section 1.3 for details of each milestone)

8. Appendix 1 – Sources and Documentation

NENA 02-010 NENA Standard Formats & Protocols For ALI Data Exchange, ALI Response & GIS Mapping: A copy of NENA 02-010 may be accessed at http://www.nena9-1-1.org/9-1-1TechStandards/vena_standards.htm

9. Appendix 2 – Abbreviations and Acronyms

Acronym	Meaning
ALI	Automatic Location Identification
ALI-DB	Automatic Location Identification Data Base
A-GPS	Assisted-Global Positioning System
APCO	Association of Public-Safety Communications Officials, International
ATIS	Alliance for Telecommunications Industry Solutions
CMOS	Complementary Metal Oxide Semiconductor
CoS	Class of Service
CPE	Customer Premises Equipment
dB	Decibel
DTx	Discontinuous Transmission
E9-1-1SSP	E9-1-1 System Service Provider
E-OTD	Enhanced Observed Time Difference of Arrival
ESIF	Emergency Services Interconnection Forum
FCC	Federal Communication Commission
GMLC	Gateway Mobile Location Center
GPS	Global Positioning System
HDTV	High Definition Television
IC	Integrated Circuit
L1/L2/L5	Various channels within the GPS signal
LMU	Location Measurement Unit
MHz	Megahertz

MPC	Mobile Positioning Center
MS	Mobile Subscriber
MSAG	Master Street Address Guide
MTA	Metropolitan Trading Area
NASNA	National Association of State Nine-One-One Administrators
NENA	National Emergency Number Association
NPRM	Notice of Proposed Rule Making
OET-71	FCC Office of Engineering and Technology Bulletin No. 71
PDE	Position Determining Entity
Phase 1	FCC mandate that wireless E9-1-1 calls be delivered with call back number and cell site identification
Phase 2	FCC mandate that wireless E9-1-1 calls be delivered with Phase 1 data plus latitude/longitude estimate of where the caller was when they dialed 911
PSAP	Public Safety Answering Point
RF	Radio Frequency
SatNav	Satellite Navigation
S/N	Signal to Noise ratio
SRDB	Selective Routing Databases
TDOA	Time Difference of Arrival
U-TDOA	Uplink TDOA
WAAS	Wide Area Augmentation System
WiFi	Wireless Fidelity
WLAN	Wireless Local Area Network
WLS	Wireless Location Signatures
Z-height	Location coordinate indicating altitude