

A tragic 2009 case in northern New Mexico involved a minivan that left the road and crashed in an area of poor reception and nature obstructions. The 9-1-1 call from one of the accident victims was rebid multiple times. On one occasion, it came in as Phase II, but during the stress of the call, the dispatcher didn't

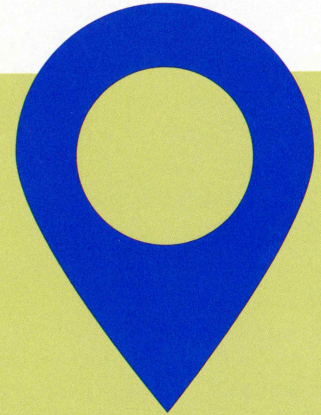
notice. The accident caused multiple deaths and might have been locatable earlier. Fortunately, mapping systems have improved since then and are more configurable, but 9-1-1 calls without good location data continue to abound.

With every rule or standard comes the necessity of assessing compliance. As

previously stated, the FCC rule states that 90 percent of handset solution Phase II calls must generate a coordinate location within 150 meters of true caller location, and two thirds must be within 50 meters.

Interpreting Automatic Location Identification

By Susan Cunningham



ALI, Automatic Location Identification, is data in text format that accompanies a 9-1-1 voice call in Enhanced 9-1-1 applications. The text can be parsed and interpreted by 9-1-1 call taking, CAD, mapping and even voice recording software. Included in the ALI is the caller's location, which may be the address of a home or business, the cell tower's address, or a coordinate location.

Every 9-1-1 database provider uses one or more ALI formats, or protocols, and these formats can be adjusted locally by technicians. Each specific type of information—date, telephone number components, physical address and more—is stored in a specific location in the ALI data, described by row number, character position in the row and maximum number of characters. There are hidden characters to indicate the start of transmission, end of transmission, and where line breaks or carriage returns occur.

Raw ALI will appear as a string of characters and spaces. Using parsing software, this long string of characters is broken into individual rows, defined by line breaks (LB) or carriage returns (CR). It is displayed in a variety of ways in software applications, but all dispatchers and call takers should learn to recognize key components of the ALI to better interpret the kind of call being handled and the potential accuracy of the location given.

One of the key components, and the first one of note for location, is the class of service (COS). The most common values are RESD and BUSN (or variants dependent on provider) for residential and business landline calls, WRLS or WPH1 for Phase I Wireless and WPH2 for Phase 2 Wireless. The class of service code will determine what physical address is displayed in the ALI. For landline calls, the physical address is the actual address where the telephone placing the call rings. For wireless calls, the physical address transmitted is the address of the

cell tower that processed the 9-1-1 call. Many carriers append tower sector information to the street name so that it appears, for example, as County Road 120 NE Sector. This information appears for Phase I and Phase II calls.

The best location available for a call with class of service RESD, BUSN or WRLS/WPH1 is the physical address of the structure or the tower. As tower locations are seldom helpful for locating emergencies, Phase I calls should be rebid for a more accurate location. For Phase II (WPH2) calls, the X/Y coordinates contain the longitude/latitude of the device that placed the call, expressed in decimal degrees. The accuracy of these coordinates is dependent on a variety of factors, including the location technology used (handset or network solution), the GPS signal available and the satellite constellation, and environmental and other factors. However, note that some mapping applications map true coordinates, while others interpolate the coordinates to an address by drawing an intersecting perpendicular line to the closest road, and still others select the closest address point to the reported coordinates.

Some mapping applications use mathematical formulas to create a circle or ellipse of differing size or color around a Phase II coordinate location by using two more values contained in the ALI uncertainty and confidence. Uncertainty and confidence must be considered in relation to each other and cannot be accurately interpreted without a mapped shape. Uncertainty is an estimate of the error in the estimated X/Y location of a Phase II call, and confidence can be viewed as the percentage of uncertainty. High confidence percentages are associated with bigger circles—if the uncertainty value is long, the confidence will be higher. Trying to interpret these numbers without the benefit of the actual shapes on the map is difficult if not impossible for most people.

All dispatchers and call takers should learn to recognize key components of the ALI to better interpret the kind of call being handled and the potential accuracy of the location given.