NWCG Data Standard
POINT OF ORIGIN ACCURACY
Discussion Paper
December 20, 2007

The fire report must specify the location of the incident's point of origin. There are two general factors that collectively determine the quality of the location data: 1) certainty and 2) precision.

The certainty of location coordinate values can be indicated by reporting whether the location selected is the incident's true point of origin, probable point of origin, or a lower-confidence guess.

The precision of location coordinates can be indicated by reporting the Location Method and the actual coordinate values. The Location Method reported implies that a certain level of precision can be expected. For example, location coordinates that you derive from a map probably are less precise than those determined using a GPS unit. In addition, it is assumed that the coordinate values entered into the fire report have been adjusted to reflect the appropriate level of precision, given the method by which they are derived. For example, it would not be appropriate to specify a location in Decimal Degrees to five decimal places unless that coordinate value was derived from corrected GPS data. Also, the concept of significant digits applies, so trailing zeros should not be added indiscriminately, lest they falsely imply precision (43° 34' is obviously precise to only the nearest minute, but 43° 34' 00" is assumed to be precise to the nearest second).

Origin Accuracy is a qualitative assessment of accuracy that essentially answers the question: How certain are we that the incident's exact point of origin has been located? Occasionally, the exact point of origin cannot be determined with certainty or even isolated to a high-probability site within a general area, so it is relatively uncertain whether the location coordinates correspond to the actual point of origin. More commonly, the origin usually can be traced back to at least a general area, and coordinates selected to identify a point that was the probable origin within that area. Ideally, the exact point of origin has been determined, and its location coordinates are therefore considered accurate.

Location Method is a descriptor that indicates the mapping method by which the location coordinates were determined. Because each mapping method is associated with a corresponding level of precision, this field provides another qualitative assessment of the location coordinates. While the location methods correspond to the most common sources from which location data is derived, the location method descriptions explain that these choices are broader than their literal labels. For example, when the location of a fire's point of origin is determined from a map display in GIS, the proper method descriptor is Quad Map if the base GIS data layers were derived from scanned or digitized quad maps.

Location coordinates with the least precision includes those derived from small-scale area maps, such as the USGS land use and land cover maps (1:100,000 and 1:250,000 scale),

BLM surface management status maps (1:100,000 scale), USGS state maps (typically, 1:500,000 scale), USFS Forest maps (typically 1:126,720 scale), and state highway maps (scale varies, but usually much smaller than 1:100,000). More precision is expected for coordinates derived from the larger-scale quad maps, such as the USGS 7.5 minute topographic maps, orthophoto quads, and orthophoto maps (all 1:24,000 scale), plus any GIS layers that used these products for their source data. Nowadays, most location coordinates are determined on-site using GPS technology. When collected under favorable conditions, a single raw GPS coordinate is typically precise to within about 30 feet (10 meters). The best precision is obtained from corrected GPS, which includes coordinates determined by a WAAS-enabled unit, derived by averaging a large number of raw coordinates, or differentially corrected using base station data, yielding a refined coordinate that is precise to less than 3 feet (sub-meter).

Taken as a pair, Origin Accuracy and Location Method serve as an indicator of the quality of the point of origin location coordinates.