

Transcript of Briefing Comments Made During First FEMA Think Tank Conference Call

Subject: U.S. National Grid as the Response Language of Location

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Deputy, thank you this opportunity to talk about the U.S. National Grid. Along with the others who have commented, I'm very impressed FEMA has made this move toward engagement and transparency. Thank you.

There are four points that I would like to address with my comments today,

1. Origin of the idea
2. My background
3. Why the USNG?
4. What is needed from FEMA

Origin of the idea – USNG is not my idea – rather it is the idea of a much greater community of trained geospatial professionals and dedicated responders. It's the reason USNG sits on the top of the Idea Think Tank and has the greatest number of comments. In addition, during a recent DHS sponsored event held in the Twin Cities – an event that brought together an exceptional diverse group of 85 geospatial professionals, infrastructure owners, Emergency Services Sector personnel and senior decision makers such as the Minnesota State Chief Information Officer – a cabinet level position - the number one finding was the greatest bang for the preparedness dollar in the Twin Cities region would be the universal use of USNG as the response language of location. And coming from a bunch of tightwad Scandinavians, that's saying something...

Ok, on to item number two. So you and other listeners can put my comments into perspective, on to my favorite topic – me. Currently, I serve as a Chair of a state sponsored committee attached to one of the nation's leading state based geospatial entities - the Minnesota Geospatial Information Office. This committee, the [Emergency Preparedness Committee](#), is made up of 190 *volunteers* from the geospatial and Emergency Services Sector communities who have been working tirelessly on ways to leverage the [Geospatial Revolution](#) for the benefit of Emergency Services Sector. As for me...

Relevant to today's discussion: During hurricanes Katrina, Ophelia, Rita and Wilma (2005), I served as the senior Department of Defense (DoD) Emergency Preparedness Liaison Officer on the Pentagon staff that coordinated and directed DoD assistance along the Gulf Coast. I subsequently participated in the DoD/Department of Homeland Security-sponsored effort to create an emergency management Common Operating Picture that can be used by all levels of responders and decision makers.

With that, let's move on to point number three – Why the USNG?

For me, one word – Katrina. While watching from inside the beltway that the nation was unable to effectively respond to that hurricane and others of that fall, I became convinced one our great

failings was the inability to communicate “where”. I think one story more than any communicates that point.

As some on this call may be aware, in the basement of the Pentagon is the National Military Command Center where Crisis Action Teams work during events of national significance like Katrina. The main floor space and adjoining Joint Chiefs of Staff Briefing Room are absolutely filled with Top Secret and above intelligence systems. You can essentially peer into caves in Afghanistan. Yet, during the fall of 2005, the only way we had to geospatially understand what was taking place in the Katrina/Rita area of operations was by placing yellow sticky notes on a National Geographic wall map of the U.S. The nation can do better than that. Yet, despite spending \$100s of millions on [HIFLD](#), [HSIP](#), [ACAMS](#), [iCAV](#), [OneView](#), [Virtual USA](#), and a whole slew of other high tech geospatial products, I contend this country is no better off than it was in that fateful fall of 2005 because we refuse to acknowledge that all parts of the situational awareness equation need to speak the same language of location. Think of it this way:

I don't care how fancy the navigation and control systems are that you put in an airplane, if every airline in the world used whatever language and navigation system they wanted – planes would be running into one another and falling out of the skies. That doesn't happen because no matter where you go in the world, one language is used between aircrew and controllers: English. And one system of geospatial referencing is used: Latitude-Longitude. We need to take that example and do the same thing for the Emergency Services Sector. We need to have **standard** way of communicating and using location. That way is U.S. National Grid, and here's why:

There really are four basic options when it comes to communicating location in a standardized way.

1.) The current defacto standard is street address. But oddly, unrecognized by most, from the beginning of time this approach has often acknowledged the need for a grid. The original layouts of many towns were grid; Street A-Z, Avenue 1-200. Indeed, sections of Minneapolis use street names in alphabetical order. But, the deficiencies in using street address are numerous:

- Similarly sounding names: The entire state of Maine is preparing to do a review of street names because of a very tragic event this past summer where police officers failed to arrive at the scene of a murder suicide in time to stop it. They went to 4 Murray Lane, when they were needed at 4 Maire Lane. (Delayed 9-1-1 Response Leads to Street Name Review in Maine; August 2011. <http://psc.apointnl.org/2011/08/09/delayed-9-1-1-response-leads-to-street-name-review-in-maine/>)
- Near Chetek Wisconsin is this address: 23/24 and ½ street – try finding that with a GPS,
- Roads change names – there is a road near Chamberlain, Minnesota that changes names 4 times in 8 miles.
- How about one address for a 2200 acre park – how exactly does that yield the specificity required to facilitate a response?
- Then there is the reality that 35% of calls go to a location without a street address – one day I had to listen to the tragic details about a farmer working a remote field near Luck, Wisconsin who had his leg stuck in a power takeoff of a tractor. The response was greatly delayed because a response to a location without a street address had not been thought through in advance.

- And then there is - what are you going to do when all street markings are gone like during a hurricane, and/or responders come from out of town?

2.) Let's jump over to option number two: [Public Land Survey System](#) (PLSS) and give that a try:

- Anybody on this call want to respond to an incident taking place at: A tract of land being part of the Southeast Quarter of the Northwest Quarter and part of the Southwest Quarter of Section 18, Township 47 North, Range East, St. Charles County, Missouri?
- Besides, not all states have PLSS.

3.) Now the biggie - Latitude-Longitude

By and large the folks I run into that think latitude longitude is the answer to standardization are either academics or think GPS means you must use latitude longitude. Beyond the fact that last thought is totally false, the reality is latitude longitude brings with it all the weaknesses inherent in a system that was developed centuries ago by *cartographers* (think academics) to support worldwide navigation by sea going vessels. It has base 60 math at its core. One degree of longitude at the equator is 60 nautical miles wide (69.172 statute miles). And there are 60 seconds in a minute and consequently 60 minutes in a degree. I don't know many people who are good at doing base 60 math.

In addition, as we have moved into the digital age, that base 60 math of Degrees, Minutes, Seconds (DD° MM' SS'') has been joined by two other forms of latitude longitude:

- Degrees, Decimal Degrees (DD.DDDD°); and
- Degrees, Minutes, Decimal Minutes (DD° MM.mm')

Mixing any two of those forms of latitude longitude together will typically produce disastrous results. One needs look no further than the September 2008 [rescue efforts for the crash of the Maryland State Police helicopter Trooper Two](#). Because two forms of latitude longitude were mixed together – the response went to a location 30 miles away.

A point that leaves us with the fourth option, the UTM/Military Grid Reference/U.S. National Grid family.

4.) As noted in my Think Tank post - Shortly after World War II, the leadership of the U.S. Armed Forces came to the conclusion that it had lost too many lives due to geospatial miscommunication. After reviewing every available option, these seasoned “responders” opted to create what we now know as the [Military Grid Reference System](#) (MGRS). Based on a world-wide projection known as UTM, this base 10 system has the capability of defining a location through grids, or squares that can range in size from millimeters to expansive areas covering 100's of miles. Consequently, MGRS has since been adopted by NATO and a variety of other countries for their land based world-wide military operations as well.

[U.S National Grid](#)? Well, it is really nothing more than a refinement of the Military Grid Reference System for use inside the United States. It's a topic I could talk about for hours, but here are highlights:

- It is a nonproprietary mapping standard recognized by the [U.S. Federal Geographic Data Committee](#) – nobody owns it,
- Simple – because the military was involved from the get-go, it was designed to be taught at the 5th grade level, understandable in 15 minutes,
- The new series of maps for the nation being produced by [U.S. Geological Survey already incorporates the USNG](#),
- Use would put the first responder and last responder (military) on same system thereby greatly facilitating interoperability,
- Because it's based on 10, it inherently creates a cartographic standard that yields maps that are interchangeable from one jurisdiction to the next,
- It means the end to responders using Kings Atlases and the like with bingo grids that are not referenced to anything,
- Precision – within a 62 square mile area, an 8 digit USNG coordinate gets you to within 33 feet, and
- Finally, it merges seamlessly [with GPS functionality, including the drive to coordinate feature](#).

4.) What is Needed From FEMA?

Bottom line: Sir, I don't want FEMA's checkbook. Respectfully sir, what I want is leadership. I am down here in the trenches with the rest of those who get this issue and on a grass roots level we are fighting entrenched bureaucracy. Case in point:

NIMS and ICS talk about the importance of [COP](#) (Common Operating Picture; see NRF page 50-56; NIMS page 23-26) and then leave it to the imagination as to what that means. I know what that means to nearly every single responder I talk to – radio. It would take absolutely nothing to ensure directives such as these would prominently mention U.S. National Grid as a best practice. Bingo – now volunteer efforts such as the one in Minnesota, engaged Emergency Management types and others have an unambiguous touch point that can be used to build grass roots efforts toward putting the entire nation on the same sheet of music.