Civil GPS Service Interface Committee (CGSIC)

UN International Committee on GNSS

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CGSIC Executive Secretariat
Beijing, China
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Civil GPS Service Interface Committee (CGSIC)

- Information portal for the Civil GPS Program
- Information exchange intended to be to and from the world's civil users of GPS
- CGSIC examines and promotes issues forwarded by users and governemnt interagency partners in the GPS Program
- Recently asked to help the U.S National Search and Rescue Committee secretariat begin an education process

- Standardization of position information during Catastrophic Incident Search and Rescue (CISAR) Operations

Regarding the:

Public Hearing in the Matter of the Issues on Emergency Medical Services Helicopter Operational Safety;

and

In support of the National Search and Rescue Committee's (NSARC) standardization of position information during Catastrophic Incident Search and Rescue (CISAR) Operations

Briefing Created on
25 October 2012


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NSARC adoption of the U.S. National Grid (USNG) for CISAR operations based on:

- Approved United States national standard (FGDC-STD-0911-2001).
- As stated by the Federal Geographic Data Committee:

  This standard defines the US National Grid. The U.S. National Grid is based on universally defined coordinate and grid systems and can, therefore, be easily extended for use world-wide as a universal grid reference system.
- Global Positioning System receivers are now being manufactured with the ability to transition between USNG and latitude/longitude, providing ease of transition between both coordinate systems.
- The Federal Emergency Management Agency (FEMA) has adopted USNG as their standard point reference system.
- Many United States Geological Survey (USGS) maps/charts of the United States land mass are routinely over-printed with USNG lines plus latitude and longitude tic marks in the margins

The USNG is intended to

- Create a more interoperable environment
- Increase the interoperability of location services appliances with printed map products
- Establish a preferred nationally-consistent grid reference system
- USNG can be extended for use worldwide as a universal grid reference system
- Can be easily plotted on USGS topographic maps by using a simple "read right, then up" method.
- Easily translated to distance, as USNG coordinates are actually in meters.

id Zone Designation
18S

"Read right, then up."

Read *right* then *up*.

- Grid lines are identified by Principal Digits. Ignore the small superscript numbers like those in the lower left corner of this map.

Reading USNG Grid Coordinates.

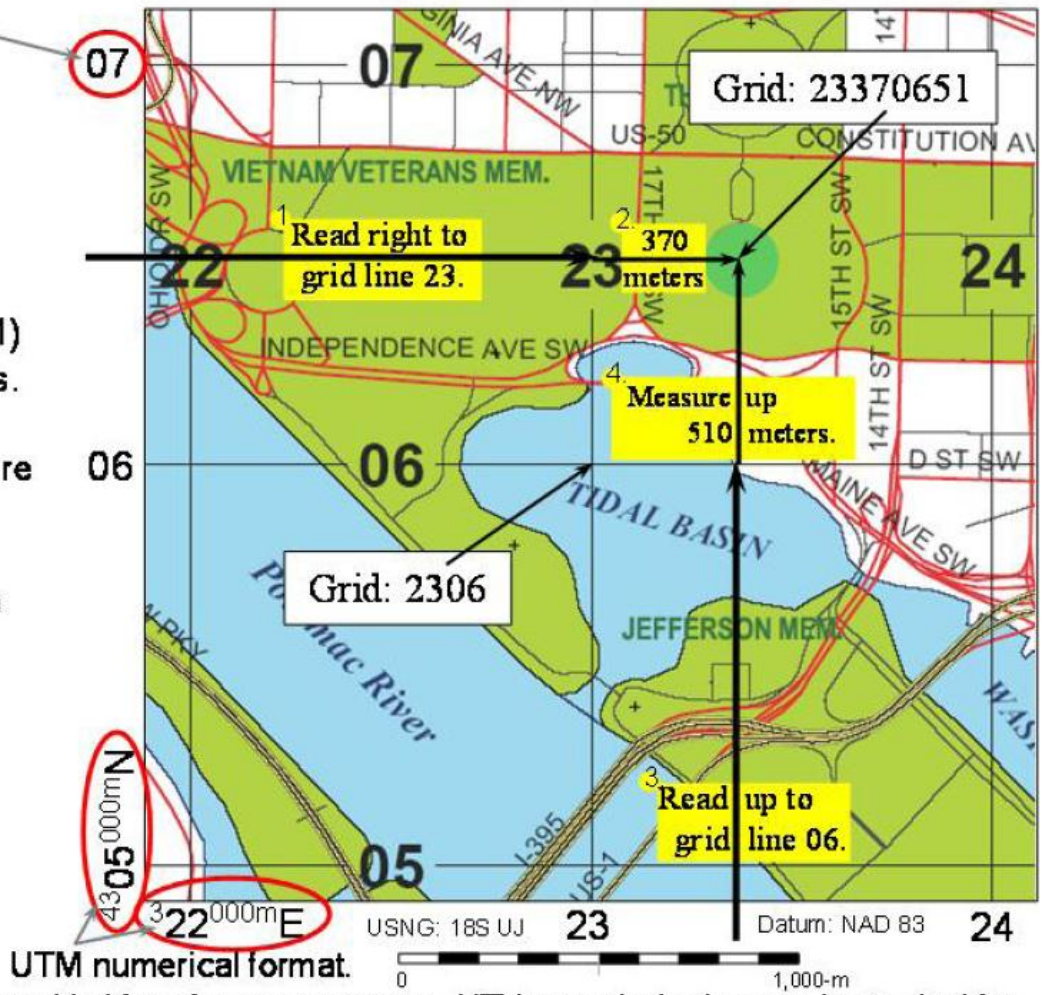
- Coordinates are always given as an even number of digits (i.e. 23370651).

- Separate coordinates in half (2337 0651) into the easting and northing components.

- [1]Read right to grid line 23. [2]Then measure right another 370 meters. (Think 23.37)

- [3]Read up to grid line 06. [4]Then measure up another 510 meters. (Think 06.51)

Grid:	Point of Interest:
228058	FDR Memorial:
231054	George Mason Memorial:
2338 0710	Zero Milestone:
2275 0628	DC War Memorial:
222065	Lincoln Memorial:



UTM numerical format.

Ignore the small UTM superscript numbers that are provided for reference purposes. UTM numerical values are best suited for determining direction and distance as in surveying. USNG alpha-numeric values are best suited for position referencing because they can be given as only grid coordinates in a local area and with only the required precision for a particular task.

Aviation has a long-standing use of Lat/Long coordinates

NSARC adopted the use of Latitude and Longitude for CISAR operations based on the following rationale:

- The latitude/longitude coordinate system is universal, a de facto standard throughout the maritime and aeronautical communities, and is easy to use for any SAR responder with today's portable GPS receivers.
- Many SAR aircraft have avionics that can easily transition between latitude/longitude and USNG for interoperability between ground and airborne SAR responders.
- All aeronautical SAR responders do use latitude/longitude for navigation and can easily input area corner points for area reference and airspace deconfliction.
- Nautical charts, aeronautical sectionals, and USGS topographic maps have, at a minimum, latitude and longitude tic marks printed in the margins.

Standard Latitude/Longitude format for CISAR operations

- The standard Latitude/Longitude format for CISAR operations is Degrees, Decimal Minutes (DD° MM.mm').
- Latitude is always read and written first noting "North" since the U.S. is North of the Equator. Longitude is always read and written last noting "West" since the U.S. is West of the Prime Meridian.
- When speaking Latitude and Longitude coordinates for 39° 36.06'N by 76° 51.42'W. Latitude and longitude is stated as:
- *"Three nine degrees, three six decimal zero six minutes North by seven six degrees, five one decimal four two minutes West."*
- The words, "degrees," "minutes," and "decimal" must to be spoken.

National SAR Committee
CISAR Geo-referencing Matrix

Georeference System User	United States National Grid (USNG)	Latitude/Longitude DD-MM.mm[1]	GARS[2]
Land SAR Responder[3]	Primary	Secondary	N/A
Aeronautical SAR Responders[4]	Secondary	Primary	Tertiary
Air Space Deconfliction[5]	N/A	Primary	N/A
Land SAR Responder/ Aeronautical SAR Responder Interface.[6]	Primary	Secondary	N/A
Incident Command: Air SAR Coordination Land SAR Coordination	 Secondary Primary	 Primary Secondary	 N/A N/A
Area organization and accountability[7]	Secondary	Tertiary	Primary

CONCLUSIONS

- Emergency Responder confusion with respect to the interpretation and communication of positional data is a potentially life-threatening problem for the victim of a transportation-related accident.
- Report was provided to identify the problems and a simple solution to communicating position.
- NSARC created the geo-referencing matrix to be used for a Federal, interagency SAR response to Catastrophic Incidents, but can be used for any emergency response operations.
- Combined with identifying a standardized way to communicate latitude and longitude, the confusion that often occurs due to inappropriate communication of position, or unfamiliarity with local landmarks can be mitigated.

RECOMMENDATIONS

- 1. The NTSB should routinely include at least a cursory examination of the emergency response in its investigations of transportation-related incidents; a more detailed investigation of the response may be appropriate when it appears the NTSB could make recommendations that could significantly improve response policies and procedures.
- 2. Emergency service providers, both public and private, should be:
  - Familiar with the USNG and latitude, longitude reference systems and their respective position data formats;
  - Capable of translating positions from one reference system to the other; and
  - Capable of accurately communicating position information from either reference system to other providers
- 3. Maps at appropriate scales and using appropriate projections, and/or electronic geographic information systems (GIS) with, as appropriate, either USNG grid lines or a latitude, longitude graticule overlaid on the map image, with other reference system denoted by tic marks in margins, should be made available to all emergency responders. Digital map display systems should display cursor location readout in both coordinate formats simultaneously.

RECOMMENDATIONS (cont.)

- 4. Methods for converting positional information provided in other forms, ranging from street addresses to well-known landmarks and “points of interest” to range and bearing information from radar or aeronautical navigation aids, etc., into standard latitude, longitude and/or USNG coordinates should be provided at some level accessible to emergency responders 24/7.
- 5. Continue outreach and marketing in the use of the NSARC geo-referencing matrix for use by SAR emergency response personnel.
- 6. The NTSB explore the issues concerning the use of Earth coordinate reference systems use by emergency responders identified in this paper.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FIRE DEPT.
RESCUE SQUA


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U S COAST GUARD

CSSIC U.S. States and Local Government Subcommittee

- Chaired by Federal Highways Administration
- Provide an open forum for civil user information exchange concerning the use of GPS by state and local governments organizations
- recommending appropriate action on those issues
- Identify common needs of state and local governments for GPS information,
- Identify information requirements and methods to distribute this information to state and local government users of GPS
- Meets twice a year in different States around the U.S. and again at the CGSIC full Plenary Session conducted in conjunction with ION GNSS each year

http://www.gps.gov/cgsic/states/2012/seattle/

GPS.GOV

Official U.S. Government information about the Global Positioning System (GPS) and related topics

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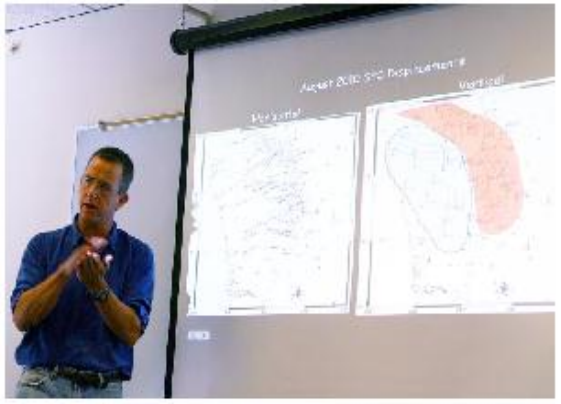
Civil GPS Service Interface Committee
U.S. States & Local Government Subcommittee

Regional Meeting Seattle 2012



A meeting of the Civil GPS Service Interface Committee (CGSIC) States and Local Government Subcommittee was held at the Seattle Municipal Tower on August 14, 2012.

Meeting Info

- Agenda & Presentations

NAVCEN Contact Information

- **Navigation Information Service**

- **http://www.navcen.uscg.gov**
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