

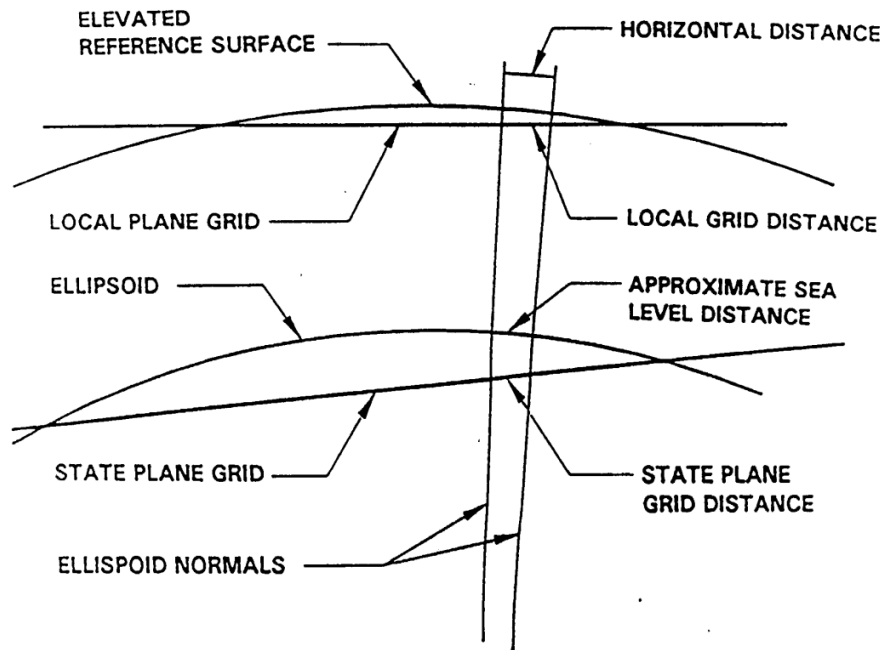
New Mexico State Board of Licensure for Professional Engineers and Surveyors

**Full Board Meeting November 14, 2014
Professional Surveying Committee – Nov 13th
Professional Engineering Committee – Nov. 13th**

**Guest - Earl F. Burkholder, PS, PE
Global COGO, Inc. – Las Cruces, NM 88003**

- I. Earl F. Burkholder was invited to attend the full Board meeting on November 14, 2014 as a follow-up to a letter sent to the BOLPEPS on 29 July 2014 calling the Board's attention to the impact of new technology with regard to Minimum Standards for Surveying in general and specifically to evolving practice concerning 2-D and 3-D applications and practice. The example cited was a recent paper presented at an ASCE conference titled, "Underground (Well) Surveying Revisited."
- II. Intended comments to the Board include:
 - A. Express appreciation for opportunity to speak to Board.
 - B. The intent is to bring issues to attention of BOLPEPS in a respectful manner.
 - C. Board has enormous challenge in monitoring/preserving level of professional service.
 1. Professional practice/service to society.
 2. Technical competency.
 - D. Acknowledge role of both formal and mandatory continuing education
- III. Handout A – Example of contrasting circumstances:
 - A. LiDAR – opportunity to participate in webinar "The XYZ's of LiDAR"
 - B. Cover of Trade Magazine titled "xyHt"
 - C. Both target surveyors and spatial data users
 - D. "Standard" environments (frame of references) are vastly different – one is true 3-D, the other highlights "flat earth" surveying
 - E. Is that difference of any concern to the NM BOLPEPS? I suggest that it should be.
- IV. Handout B - specific example – paper on "Underground (Well) Mapping Revisited"
 - A. There are thousands of existing wells in the U.S. whose positions are not "true 3-D."
 - B. Letter to U.S. Department of Interior asking about policy/practice.
 - C. Response citing:
 1. "Traditional" practice of BLM.
 2. Self-reporting of wellbore locations by operators.
 - D. Do the federal or industrial exemptions apply?
- V. Going a step or two beyond:
 - A. Surveying and engineering professions both deal extensively with spatial data.
 - B. With digital revolution, practice involves 3-D digital spatial data.
 - C. "The system" develops impressive technology for others to use.
 - D. Who shoulders responsibility for using technology competently?
- VI. Current status:
 - A. Impressive tools (GPS/GIS) have been applied to "traditional" 2-D/1-D assumptions.
 - B. Practice should and will evolve to competent 3-D practice.
 - C. Existing book is "The 3-D Global Spatial Data Model: Foundation of the Spatial Infrastructure" published by CRC Press in 2008.
 - D. The global spatial data model (GSDM) offers "path forward" for spatial data users.
 - E. Publisher has requested preparation of material for a Second Edition of the book.
 - F. The National Oceanic Atmospheric Administration (NOAA) is pursuing an initiative to extract commercial value from extensive data holdings – BIG DATA
 - G. The GSDM is recommended to be used as underlying standard www.globalcogo.com

Diagram showing limited range of a map projection for vertical dimensions.



**Map Projections as Strictly 2-Dimensional and Have
a “Shallow” Range of Vertical Validity**

Extreme example is drilling 8,000 to 10,000 down into the earth (well beyond sea level) and relying upon computational integrity of coordinate geometry. The definition of “horizontal” suffers depending upon choices by user.


The situation is compounded further if/when horizontal borings traverse thousands of feet (horizontally) from the wellhead and then relate borehole position with ground features – property lines for example.

From paper by Earl F. Burkholder, PS, PE - “Underground (Well) Mapping Revisited” that was presented at the ASCE Shale Energy Engineering Conference, July 2014, Pittsburgh, PA.

- Copy of reviewed paper – see <http://globalcogo.com/underground-mapping.pdf>
- Copy of power point presentation of paper – see <http://www.globalcogo.com/underground-mapping.pptx>

Earl F. Burkholder

From: LiDAR News <editor@lidarnews.com>
Sent: Monday, November 10, 2014 3:37 PM
To: eburk@globalcogo.com
Subject: [Webinar] The XYZ's of LiDAR: Lessons from 6 Point Cloud Wins

 Webinar


The XYZ's of LiDAR: Lessons from 6 Point Cloud Wins

Get a few helpful *points* to avoid coming in *LAS* t.

Join us as we explore **LiDAR lessons learned from user stories** on network maintenance, vegetation management, cityscape visualization, and more.


Register for the Webinar

Can't attend live? Sign up anyway to receive the recording.

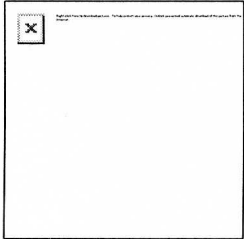



Thursday, November 13
11am EST, 4pm GMT

Blog: 14 Ways to Take Charge of LiDAR Data



Author:
Tiana Warner





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POSITIONING AND MEASUREMENT, ELEVATED.

NOVEMBER 2014

INSIDE:

GIS
UAVS
SURVEYING
GEODESIGN
PRECISION AG
CLOSE-RANGE
PHOTOGRAMMETRY

THE OPEN QUESTION

PROPRIETARY OR COLLABORATIVE? THE OPEN SOURCE MOVEMENT SEEKS TO CHANGE THE PACE OF GROWTH AND DEVELOPMENT FOR GEOSPATIAL SOFTWARE.

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FEATURE | UAVs in Latin America


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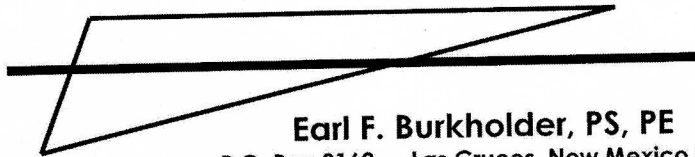
OVERVIEW | An Intro to Geodesign

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See page 16!

*The
New Way
to RTK!*

 **Intuicom**



Global COGO, Inc.
(3-D Coordinate Geometry)

Earl F. Burkholder, PS, PE

P.O. Box 3162 - Las Cruces, New Mexico 88003

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July 30, 2014

Mr. Mike Connor, Deputy Secretary
United State Department of the Interior
1849 C Street, N.W.
Washington, D.C. 20240

Dear Mr. Connor,

Imagine my pleasant surprise when looking up just the right person to contact, that I found an Aggie! What year did you graduate from NMSU? I taught in the Surveying Engineering program from 1998 until I retired in July 2010.

Anyway, if there is a better person to whom this inquiry should be directed, please forward.

Question – What is the policy/practice within the DOI in mapping the downhole location of thousands of wellbores in the US?

The reason I ask is that I recently had the privilege of presenting a paper at the American Society of Civil Engineers (ASCE) Shale Energy Engineering Conference in Pittsburgh, PA. The title of my paper is "Underground (Well) Mapping Revisited." There is a link to the paper at item #65 on my web site – www.globalcogo.com/refbyefb.html. The same item has a separate link to the power point presentation that I gave when presenting the paper. Feel free to user either or both.

The underlying thrust of the paper is that the proposed 3-D global spatial data model (GSDM) offers significant advantages in geo-referencing for well locations over using conventional "flat-earth" practices. In addition, even where map projections such as state plane coordinates or UTM are used, for geo-referencing, the vertical extent of drilled wells (the third dimension) goes far beyond reasonable limits of distance distortions arising from the fact that plumb lines are not parallel –earth is not flat.

I would welcome the opportunity to engage in discussion with appropriate persons regarding current practices in mapping wellbores throughout the United States.

Thank you for your interest and kind assistance.

GO AGGIES!

Regards always,

Earl F. Burkholder, PS, PE, F.ASCE



United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Washington, D.C. 20240
<http://www.blm.gov>



SEP 5 2014

Earl F. Burkholder, PS, PE
P.O. Box 3162
Las Cruces, New Mexico 88003

Dear Mr. Burkholder:

Thank you for your letter dated July 30, 2014, to Department of the Interior Deputy Secretary Mike Connor regarding the proposed 3-D global spatial data model (GSDM) and pointing to its significant advantages in geo-referencing for well locations. Deputy Secretary Connor asked the Bureau of Land Management (BLM) to respond to your letter.

As you are probably aware, the BLM manages oil and gas operations on Federal and Tribal lands. The BLM uses the legal land description and the distance from the section line to locate the wellbores. Generally, for all vertical wells, the bottom-hole location is considered the same as the surface location. For horizontal wells, the operators provide the bottom-hole location to the BLM. The BLM reviews the information and checks for accuracy based upon the wellbore data provided by the operators.

The GSDM system appears to be a good resource for mapping the downhole locations of wellbores but at this time the BLM does not have that specific need. We appreciate your interest in the BLM oil and gas program.

Sincerely,

Michael D. Nedd
Assistant Director
Energy, Minerals, and Realty Management