

The National Geodetic Survey's Presenters:

Mr. Curt Smith &
Dr. Richard Snay

- **Mr. Curt Smith** is the National Geodetic Advisor for Idaho and Montana and has 29 years of experience in geodetic surveying. Mr. Smith's expertise includes; 1st Order Leveling, Global Positioning Systems, conventional surveying, data processing adjustments and analysis, to name a few. Mr. Smith will be making the trip from Idaho to deliver this fine Workshop.
- **Dr. Richard Snay Ph D.** supervises the Spatial Reference System Division of NGS. He earned his Ph.D. in mathematics from Indiana University in 1972 and has served as a Geodesist with NGS since 1974. Dr. Snay served as Program Manager for the National CORS system from 1998 to 2007 and was instrumental in making it a household name. Dr. Snay also develops crustal motion models that support accurate time -dependent Positioning.

Who Will Benefit from This Workshop?

- How many times have you heard the question "How good is the vertical with GPS?"? Of course the real answer to that question is "Compared to what?" Compared to NGS 1st order Benchmarks, USGS 3rd Order Benchmarks, County, City, State Highway, and Great Lakes Datums, U.S. Army Corp of Engineers ... the list goes on and on. This Workshop is designed to illustrate to the participants the work flow, data flow and tactical operations of NGS sanctioned Height Modernization procedures. These procedures are not necessarily confined to just Height Modernization projects but can also be applied to all high precision surveys. The full integration of high precision 1st Order leveling and GPS to accurately define the geoidal separations in Michigan is key to the unification of all vertical datums and resolving datum conflicts.
- The afternoon portion of this fine Workshop, presented by Dr. Richard Snay focuses on Network RTK, Real Time Networks (RTN), and the newest and most robust RTK method available in the Great Lakes States. By utilizing multiple known base stations and having two-way communications between bases and rovers, true RTN solutions are readily available to the field surveyor. These RTN solutions, via the advanced processing algorithms, allow for much more RTN solutions by mitigating the effects of troposphere gradients. The "net" (no pun intended) benefit for the classic RTK surveyor is a much less "noisy" RTK solution with more precision and repeatability in all three dimensions.
- **On Thursday March 18th the Great Lakes Region States will have their meeting to discuss projects across the region and their common goals.** The meeting is mainly a discussion between the Great Lakes states and their partners. The meeting is open to all. But please R.S.V.P. Lunch provided for GLHMP member states and their guests.

Workshop Objectives:

So we can be prepared for the number of participants at the Sheraton, we kindly request that you send us your company's seating requirements and payment in a timely manner. This will ensure enough seats and meals, as space is limited. Please RSVP as soon as possible. Please fill out this form with your company seating requirements and return to the address below:

Name

Company

Address

City/State/Zip

Work Phone Number

of Seats Required

Email (Detailed agenda will be sent)

REGISTRATION DEADLINE IS **MARCH 6TH 2009**

- The cost for this fine Workshop is \$110.00 per person. Please make out checks to the "Burt & Mullett Chapter of ACSM" ONLY. The proceeds of the workshop will benefit the Ferris State University's Burt & Mullett Chapter of the ACSM.
- Please return form and remittance to:
Terry Campbell
President – Burt and Mullet Chapter ACSM
1101 Fuller Avenue / Apt. A304
Big Rapids, Michigan 49307
Telephone: (989) 390-1189 or (616) 914-2289
Email: TCampbell3381@Gmail.com

Other Information

- Please direct any questions to Terry Campbell, President, Burt & Mullett.
- A block of rooms have been reserved at the Sheraton for a rate of \$81/night. Please Call the Sheraton directly: (517) 323-7100

March 17, 2009

Sheraton Hotel - Lansing

925 South Creyts Road, Lansing, MI 48917

Tele: (517) 323-7100

<http://www.sheratonlansing.com/>

7:30 am – 5:00 pm

Workshop Outline:

March 17th, 2009 (“St. Patrick’s Day”)
Lansing, Michigan / Sheraton Hotel

7:30 am – 8:00 am

Registration

8:05 am – 8:10 am

Greetings and Welcome from
Mr. Andrew W. Semenchuk, P.S., HMOD
Principal Investigator, M.D.O.T.

NGS’s Blue Ribbon Presentations:

8:10 am – 11:50am

Geodetic Leveling and GPS Techniques
Mr. Curt Smith

11:50 am – 1:00 pm

Lunch (Provided)

1:00 pm – 5:30 pm

RTN (Real time Networks) including, GPS for
HMOD - Dr. Richard Snay

Workshop Objectives:

To provide the Workshop attendees with the theory, knowledge and practical application of Geodetic Leveling and High Order GPS Positioning and their applications to Height Modernization Operations as well as standard high precision survey work. In addition, we wish to give the attendees an excellent overview of Real Time Networks such as MSRN’s Network RTK from the National experts.

Workshop Summary:

This Workshop will demonstrate and instruct Great Lakes Surveyors on the concepts and principles of high precision leveling and GPS, and empower the participants with a working knowledge of what is involved in performing high precision surveys. Network RTK is becoming a commonality in the Great Lakes Region and knowledge of how it works, why it works and its abundance of benefits is now mission critical. It would truly be a shame to miss this opportunity to take advantage of these gentlemen’s expertise in these areas.

Front cover information: Shows marks recovered or set by MDOT’s HMOD program. This includes the initial pilot area around Detroit in 2006 and through this year’s current project in various areas around the Lower Peninsula.

<http://www.MDOTCORS.org>

<http://www.ngs.noaa.gov/heightmod/index.shtml>

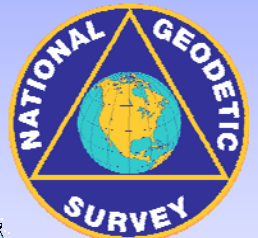
Created by Shawn Roy January 16, 2009 Revision 1

The Michigan Department of Transportation, in Conjunction with the National Geodetic Survey

**Cordially invites you to
To attend:**

Great Lakes Region Height Modernization Program: High Precision GPS, Geodetic Leveling & Real Time Network (RTN) Workshop

**Presented by the NGS Experts:
Mr. Curt Smith
&
Dr. Richard Snay**



**March 17, 2009
Lansing, MI
Sheraton Hotel**

**Logistics
Arranged by:
Burt &
Mullett
Chapter
ACSM
Ferris State
University**

