

**NOAA, National Geodetic Survey**  
**HEIGHT MODERNIZATION COORDINATION MEETING**  
**DRAFT - Meeting Notes – September 11, 2008**

**In attendance:**

- **call-ins from: ID (Rayce Ruiz), KY (Wolfgang Ziegler), NC (Gary Thompson), NM (Earl Burkholder, Garry Nielsen), WA(Dave Steele); WI (Dave Moyer). CA (John Canas),**
- **in Silver Spring and other NGS, Gilbert Mitchell, Ronnie Taylor, Lucy Hall, Bill Henning, Ajit Singh, Dru Smith, Valincia Walters, Mark Eckl, Dave Doyle, Corbin (Erika Wilson)**
- **Advisors/Coordinators: Marti Ikehara (CA), Curt Crow (MA/NH), Warren Payton (NJ), Dave Zenk (MN), Scott Lokken (NC),**

**Grants**

FY08 Grants have been awarded. FY09 federal funding opportunity (FFO) has closed. There were 20 applications. It will likely be a while before we know about the budget. We are developing a time table for reviewing grant applications. We will contact folks and in October for reviews. Nothing can be awarded until budget is set.

**Models and Tools**

- OPUS leveling is being tested in house and is making progress. We will let people know when we are looking for beta testers. This project is now named as LOCUS (Leveling online computing user service). We are trying to resolve a situation where the program could run without applying 'R-6' corrections, but with suitable foot-notes. This will expedite making the site available for online work. Further progress will be reported.
- PGM updates have been made its moving along. There were modifications to PGM software for another project from California. Information is available from the CSRC web site.

**GRAV-D**

- The GRAV-D Project has collected and preliminarily processed its first real airborne gravity survey which was based out of Anchorage, AK. A region 400km x 500km was surveyed in just under 100 flight hours on the NOAA Cessna Citation aircraft. The survey overlapped with the NOAA Hydropalooza Program in the Kachemak Bay region and airborne measurements were made simultaneously with the shipboard efforts. The data from this survey have been preliminarily processed. Intermediate-level processing efforts are continuing to generate products worthy of consideration by GRD researchers. Simultaneously, we are pushing ahead research efforts at optimizing the GPS and gravity

processing software. Research on best GPS methods for processing the kinematic data is being spearheaded by Gerry Mader in GRD with support from me and Theresa. Theresa and I are also about to tackle the gravity processing software. This effort will truly get underway after completion of the Absolute Gravity training Theresa and I are about to attend at Micro-g Solutions in Boulder, CO.

- A parallel effort to move the absolute gravity processing efforts ahead has been headed up by Mark Eckl. He is addressing the logjam in the absolute gravity processing effort that has caused a multi-year backup in processing absolute and relative measurements. He is bringing in additional personnel and arranging for them to be trained to assist with the processing backlog. In addition, we have proposals in to repair the facilities at TMGO and look to hire additional personnel to shore up the TMGO operation. These efforts pave the way for the ramp up of the long-term monitoring aspect of the GRAV-D program in the future.

### **Outreach, Education, Capacity Building**

- NGS would like to be more pro-active in outreach and education efforts this year. Renee would like to work with states to identify need and opportunities for forums and workshops, and then hold them earlier in FY09 (but next calendar year). Trying to fit them in at the end of the FY09 becomes difficult because of the impact of vacations on everyone's schedule and the attempt of NOAA to closeout the budget early.
- Renee is looking at the possibility of having a National HMP forum, perhaps at ACSM in February in Salt Lake City. If it's too late for that one, then definitely the following year at ACSM. There had also been the hope for a height mod/GRAV-D workshop of some kind and we never got that in the program.
- We will be trying to hold more regional events this year to reach more states without having to visit each state. If you know a location in your state that would be suitable, a city near the border of your state and others for example, let's work to put together a forum or workshop.
- Renee is working with Erika Wilson at Corbin to develop a height modernization workshop. It would be a modular kind of workshop, soup to nuts, and could include components of project planning, field surveys, data processing as well as the grants process.

### **Training on leveling:**

- State DOTs should be pro-active in this (to better enable them to manage contracts by private sector companies who do more and more of the work).
- States need to encourage participation in forums/training etc. when offered -- NGS does not have resources to do this on a state by state basis (unless HMP state startups are going to be stretched over 20 years so you can do a couple of states per year)

- Ronnie's point about in field training is critical, WisDOT has spent much time working with/training contractors in the field, because many contractors were NOT up to speed on this technology. Therefore, if certificate approach is used, need to include actual field work as part of certification.

### **Proposed Certificate program - Colorado**

- Workshops and on the job training - Colorado DOT (CDOT) would like to work with NGS to develop a certificate program where our survey crews would become certified by NGS to perform height modernization tasks (e.g. descriptions, project planning, data collection, processing, analysis, etc.) through formal workshops combined with on the job training. This would hold NGS more accountable for their training and it would hold CDOT more accountable for decisions made that affect the outcome of the project. We have already started to develop such process, but not officially into something NGS would be comfortable with.

### **Other Business**

#### **Real Time Networks**

- VRS - Someone spoke of using VRS to compare height modernization leveling data. CDOT is especially interested in receiving these types of comparisons from across the nation as here in Colorado GPS heights start at about one mile above sea level and are our biggest problem as we rise in elevation. We address the problem by forcing the differences in our measured ellipsoid heights and measured orthometric heights into the geoid model by applying a local site calibration. We do this even when using a VRS and even without the benefit of height modernization and it works very well. How are other states handling this when using VRS? How are other states handling this when using a VRS with construction machine control?

#### **RTN – Bill Henning**

- At least 35 states have planned, under construction or operating public sector RTN. these are mostly DOTs but also includes NC & SC geodetic surveys and the Spatial Reference Centers.
- Use of the RTN is growing to include machine control which is exploding in contract DOT work and also Agriculture - which uses it to produce what is essentially mini-GISes. Also the tractors can be operated robotically.
- There should be combined HT Mod and RTN forums to support the interaction in leveling, static and RT GPS. This can be at a national or regional venue. Our RTN team of advisors and partners would greatly be supported by this endeavor in their effort to produce RTN guidelines.
- Problem with Scope or project creep - Colorado DOT would like to work with NGS to address CDOT's project specific needs in order to develop and implement

best practices that will allow height modernization activities to be completed while remaining within the project limits, scope of work, and budget. This would allow CDOT to develop a more accurate cost estimate without budget over run and would give our program engineers a level of confidence that we will accomplish what we say we will accomplish without later having to add more time or money to the project. This has happened to us on a couple of our projects and has been killing our efforts to add height modernization to future projects.

Next meeting on October 9, 2008.