OREGON GNSS USERS GROUP
MEETING MINUTES

Date: January 24, 2020

Location: Salem Convention Center, Eugene, Oregon

Board Members Present: Casey Varnum, Chair (outgoing)
John Minor, Treasurer
Chris Munson, Secretary
Randy Oberg, Chair (incoming)

Called to Order: 1:30 pm
Adjourned: 4:30 pm
Contact Hours: 3.0 hours

Business Meeting (1:30-1:35)

- Opening address by Casey Varnum, outgoing Chair.
- Treasurer's Report by John Minor.
- Elections.
    - Randy Oberg, Chair-Elect, moves into Chair position automatically per bylaws.
    - John Minor and Chris Munson continue as Treasurer and Secretary.
    - Casey made an ongoing appeal for a member to stand for Chair-Elect.
- Casey reviewed today's agenda.

GNSS Technology Update, presented by Eric Gakstatter of Discovery Management Group (1:35-2:05)

- Four global constellations: GPS, GLONASS (both complete), Beidou and Galileo (almost complete). Taken together, one can see 26-36 satellites at any time (360 degree sky, 10 degree mask).
- Beidou uses 7 different frequencies.
- First GPS-III satellite launched & healthy. Uses L1C frequency.
- Four constellations will help in challenging environments, but will not work everyplace, e.g., Manhattan.
- Autonomous vehicles are driving cheaper RTK prices.

Resurrection of Legacy GPS Equipment "Dusting off the Trimble in the Closet", presented by Dave Wellman of D. Wellman Surveying (2:05-2:25)

- Dave owns Trimble 4700 equipment, last used in 2015. Brought it back out in August 2019 for a new project. Newly collected data would not process through Trimble Business Center (TBC) or NGS OPUS. Applied "FIXDATWEEK", a free program from Trimble, and was able to process the data.

GNSS Workflows and Current Remote Sensing Projects, presented by Chris Anderson of Quantum Spatial (2:25-2:50)

- Chris is part of the geodetic survey group of Quantum Spatial (22 staff members). Over 333 imagery and 191 lidar projects in 2018, in all 50 states.
    - Lidar control
    - FAA surveys
    - Some traditional total station & levelling work
    - Bathymetric control
    - Turbidity monitoring (in support of bathymetry)
    - Ortho control (photogrammetry)
    - Mobile mapper
    - Terrestrial scanning
    - Weather collection (in support of lidar)
    - Spherical data (like Google Street View)
    - Hyperspectral tree ID (georeferenced spectral ID)
    - Thermal control
    - Fusion Field Management—Custom QSI software to manage flight lines and ground control.
- DOGAMI lidar viewer is free.
- Washington DNR "The Bare Earth" website is a great overview of lidar technology.

Break (2:50-3:00)

Snowplow Guidance by GNSS, presented by Brett Murphy, Oregon Department of Transportation Engineering Automation (3:00-3:35)

- Costs $6,000-60,000 to pull a snowplow back onto the road, doesn't include medical expense or actual repair.
- Using "watered down" automated machine guidance, similar to motor graders, etc.
    - Tested several GNSS receivers.
    - Unconstrained mobile lidar data.
    - Test bed doesn't work in GPS-challenged environments.
- Use software to extract relevant features (lane striping, curb, etc.) from lidar data to keep plow on track.
- Simple moving map system, basically a staking program.

Update on the Oregon Real-Time GNSS Network (ORGN), presented by Randy Oberg of the Oregon Department of Transportation (3:35-4:30)

- Two newest stations: Crane School and Basque Maintenance.
- ORGN is taking over stations from several counties and cities.
- Verizon and AT&T supposedly ending 3G service by 2021, will obsolete some stations' cell modems.
- Received several Trimble NetR9's from Central Washington University. Fully GNSS capable. Had several problems due to improper NGS antenna model (vertical only).

- ORGN uses Master-Auxiliary (MAX)/Leica software.
- WSRN uses VRS (Virtual Reference Station)/Trimble software.
- FAQ's
    - MAX solution is a larger data set, all processed in receiver. IMAX is partially processed with Leica Spider software and is a smaller packet.
    - Can go up to 10-12 km outside network before correctors are lost.
    - Can be up to 40 km away from a master station for a network solution.
    - AG corrector will keep the same base station throughout the survey and is still survey-grade.
    - Poor cell reception: RTK bridge will use radio.
    - ORGN is not the same as OCRS.
- 5-second RINEX data is self-serve on ORGN website. Other sampling rates and formats available upon request.
- ORGN will move to NATRF2022 withing 6 months after NGS makes the change. ODOT will recompute coordinates and will give plenty of notice.
- NGS wants to know if Oregon wants OCRS zones added to OPUS, but they will only do it if the zones do not overlap.
- NGS is still looking for GPS on benchmarks data to improve the 2022 transformation tool.

Adjourn at 4:30

Minutes **APPROVED** by unanimous consent of the Board on January 20, 2022.

Respectfully submitted,

Chris Munson, Secretary
Oregon GNSS Users Group