

**OREGON GNSS USERS GROUP
MEETING MINUTES**

Date: September 17, 2021

Location: Three Sisters Conference Center—Deschutes County Fair & Expo, Redmond, Oregon

Board Members Present: Randy Oberg, Chair
John Minor, Treasurer
Chris Munson, Secretary

Called to Order: 9:00 am

Adjourned: 3:35 pm

Contact Hours: 5.0 hours

Business Meeting (9:00-9:05)

- Introduction by Randy Oberg, Chair. Housekeeping items and call for Chair-Elect for 2022.
- Treasurer's Report by John Minor. Balance of \$11,834.16 in bank account.
- Secretary's Report by Chris Munson. 295 people on OGUG contact list, 84 paid members.
- Randy reviewed today's agenda.

Research to Operation - Using the ORGN to Establish Project Control, presented by Chase Simpson, M.S., EIT, LSIT - Instructor of Geomatics, Oregon State University (9:05-9:40)

- Purpose: To streamline project control establishment for ODOT (static GPS, total station network, levelling)
- Chase gave an overview of three previous studies built upon.
- Results say 3-4 repeat GPS observations good for project control, accuracy not improving after that, minimum of 2 hours between observations.
- Adding sets of angles to RTN observations increases horizontal accuracy by about 40%, vertical not so much.
- Adding levelling to RTN greatly increased vertical accuracy, by about 50%.
- A summary table was presented showing horizontal & vertical accuracies.
- A future project is to assist in determining healthy reference stations of the ORGN for ease of monitoring.
- Chase took questions from the audience.

Satellite Based Correction Services: The Next Utility – Continued, presented by Bob Green, PS – Geospatial Sales Representative, Frontier Precision (9:40-10:50)

- Introduction to Bob Green by Jim Lahm.
- Overview of GPS surveying: Static, RTK, RTN, GNSS.
- Current status of GPS systems:
 - New capabilities of Block III satellites: L1C, L5
 - Capabilities of older blocks

- Legacy receivers using L1/L2 only will eventually no longer be supported by the government, will need L2C.
- Public SBAS coverages and private SBAS systems overview.
- Overview of Trimble RTX (PPP technology):
 - Works well in open skies and good GNSS visibilities
 - Difficulty in canopy (satellite visibility), obstructions, tall buildings, canyons
 - Upgrades in 2020: CONUS coverage for “fast” fix (vs. 30 minute convergence time)
 - Field software uses real-time conversion from ITRF (from satellites) to NAD83 using HTDP NGS software
- Bob showed a comparison of technologies using his local test track. RTX, OPUS, RTN, and least squares adjustment positions all landed within a penny size horizontally.

Break (10:50-11:15)

Shake Alert Program – Earthquake Monitoring, presented by Rex Flake L.E.G., Scientific Programmer/Field Engineer, Central Washington University (11:15-12:05)

- Introduction to Rex Flake by Randy Oberg.
- Pacific Northwest Geodetic Array (PANGA):
 - Need to use PPP instead of RTK for earthquake monitoring due to earth movement
 - Can use GNSS to report earthquakes in 25 seconds (time, size, displacement)
 - Examples of past earth earthquakes
 - Modelling of recent Japan earthquake over Cascadia shows movement of up to 30 meters

Lunch (12:05-1:05 pm)

Understanding RTX Post Processing Services vs NGS OPUS Reports, presented by Bob Green, PS (1:05-2:10)

- Overview of OPUS, CORS, NGS NCAT & HTDP tools, Trimble Convert2Rinex.
- Trimble RTX post-processing.
- OPUS-S vs. OPUS-RS: Differences and similarities.
- Comparison of OPUS-RS and Trimble RTX solutions: 0.11’ horizontal difference in Bob’s 20 minute occupation.

Break (2:10-2:20)

Oregon Coordinate Reference System (OCRS) and NATRF 2022, presented by Brady Callahan, GISP, GIS Program Lead, UAS Coordinator, Oregon Imagery FIT Lead, Oregon State Parks (2:20-2:50)

- Introduction to Brady Callahan by Randy Oberg.
- There will be a new statewide single zone covering all of Oregon.
- Oregon-North and Oregon-South state plane zones update.
- OCRS LDP zones.
- NGS says to pick 2 out of 3 zones (statewide, OR-N & OR-S, OCRS), and one must be the statewide zone for the SPCS2022 update. Reasoning is that NGS wants OPUS to return only one

SPCS solution (although you can manually pick). Oregon tried to keep all three zones, but was denied, is going with statewide and OCRS zones, dropping state plane north and south.

- Final acceptance is estimated in mid-2022, official rollout is to be determined after NATRF2022.
- The plan is to update OAR's with the new NGS zones.
- Oregon Geographic Information Council (OGIC) will adopt single zone to replace Oregon Lambert single zone.
- NATRF2022 may not be adopted until 2025. SPCS2022 will follow after NATRF, along with OAR's.

Oregon Real-Time GNSS Network (ORGN), presented by Eric Zimmerman and Randy Oberg, Oregon Department of Transportation (2:50-3:35)

- Overview/history of the ORGN.
- ORGN will move to NATRF2022 within 6 months of transition.
- 132 stations in the ORGN (47 owned by ODOT).
- 103 stations are in the network, 29 stations are redundant.
- Five new stations currently planned. Adel is the newest station.
- ORGN is taking over several county base stations. Many of these stations are CORS stations.
- Moving away from Leica due to cost.
- Overview of NTRIP products:
 - Port 9879—Single base
 - Port 9881—Network/nearest base/GPS only
 - Port 9882—Network/nearest base/GPS+GLONASS (some GNSS—Galileo)
 - Detail on all mount points
- Overview of daily monitoring of ORGN.

Adjourned at 3:35 pm

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

Respectfully submitted,

Chris Munson, Secretary
Oregon GNSS Users Group