

OSU Basics of GNSS Workshop

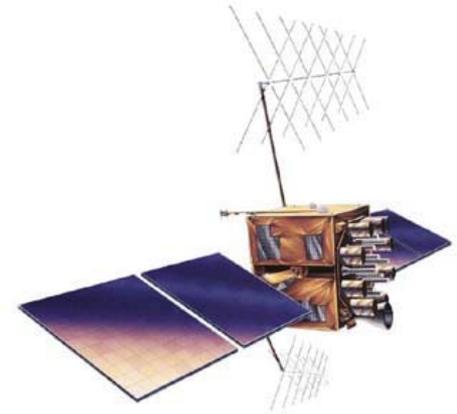
February 2, 2012

Part 6. Controlling Projects with OPUS

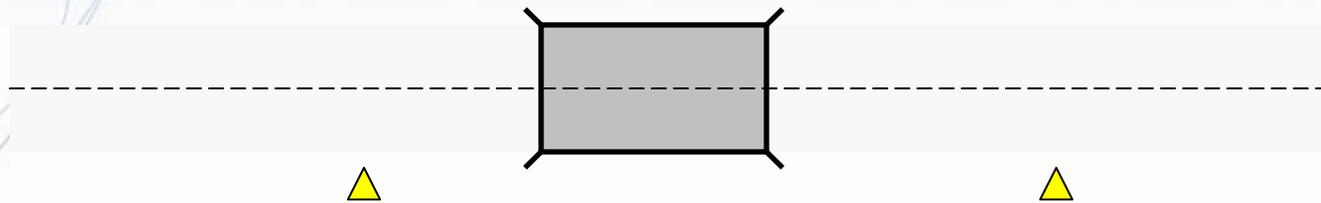
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11 Slides



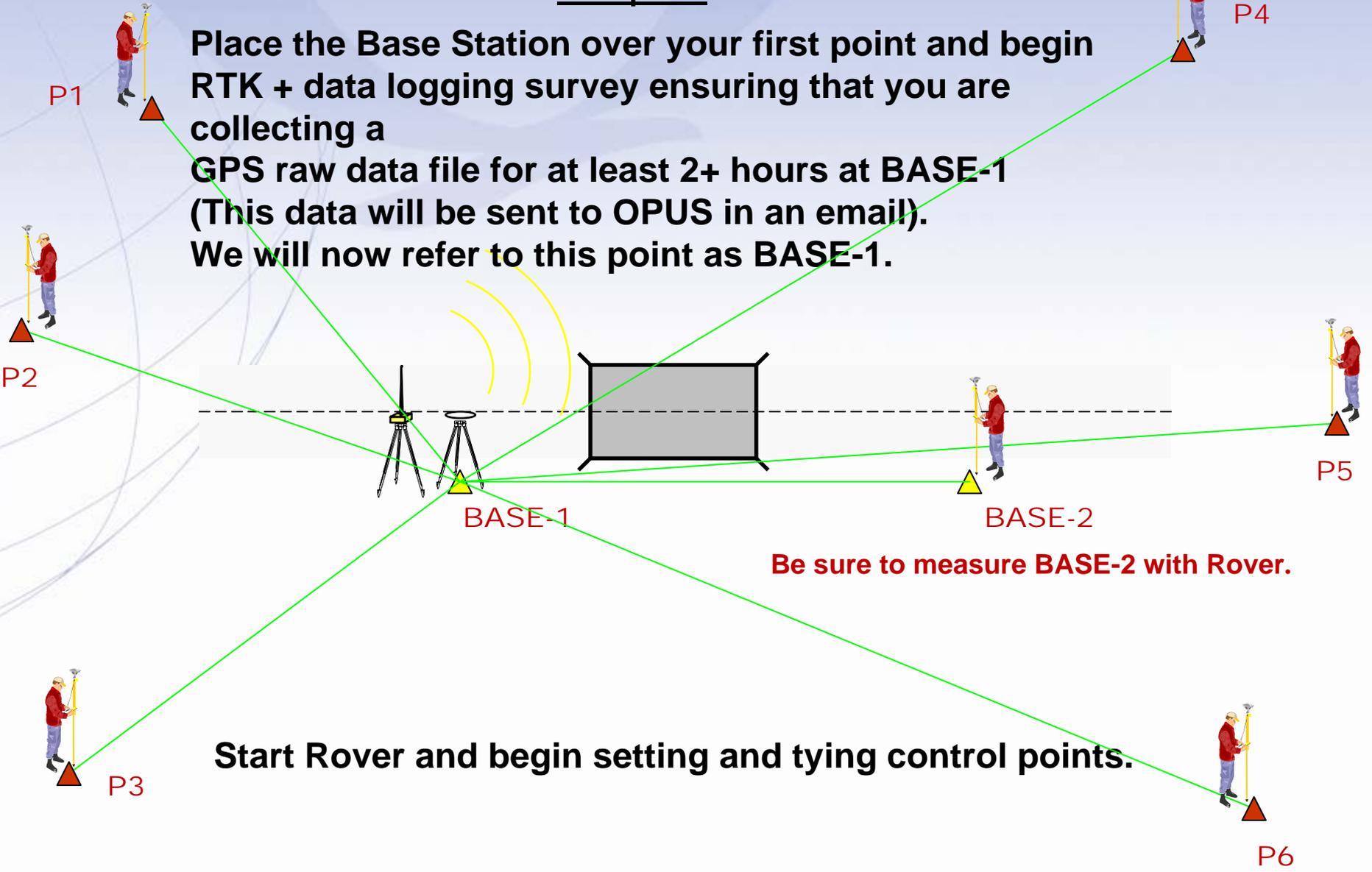
Using OPUS to Horizontally Control Small Stand-alone Projects.



- On a typical project set a basis of bearing point pair and have approximately 6-7 additional project control points. The following is an example of how to effectively control this site with 2 receivers.

Step 1.

Place the Base Station over your first point and begin RTK + data logging survey ensuring that you are collecting a GPS raw data file for at least 2+ hours at BASE-1 (This data will be sent to OPUS in an email). We will now refer to this point as BASE-1.

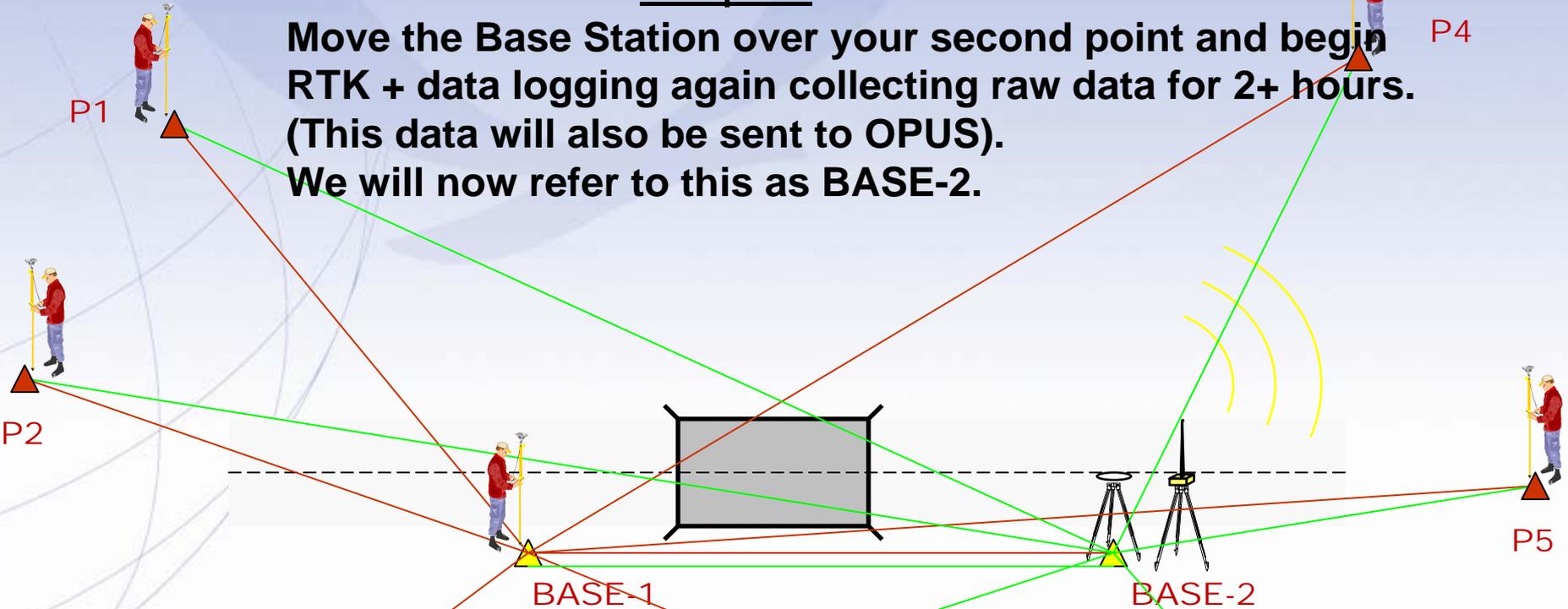


Be sure to measure BASE-2 with Rover.

Start Rover and begin setting and tying control points.

Step 2.

Move the Base Station over your second point and begin RTK + data logging again collecting raw data for 2+ hours. (This data will also be sent to OPUS). We will now refer to this as BASE-2.



Again, Be sure to measure to BASE-1 with Rover.

Start Rover and re-occupy the control points. Now you will have closure to each point.

Field work is now complete.

- The following steps need to be taken to finish the process.

Office Process

- Download raw data and RTK dc file.
- Convert both blocks of raw data to rinex format using utility (dat2rin.exe or other).
- Go to <http://www.ngs.noaa.gov/OPUS/> to upload files.
- Results should be back via email from OPUS in minutes.

Continued...

- Import dc file into Trimble Geomatics office. Pick the appropriate project coordinate system when you set up the job.
- Update the initial base position for the first base to the lat. Long and N,E,E coordinates provided by OPUS for BASE-1.
- After a recompute everything in the dc file should be corrected relative to the first base OPUS position location for BASE-1.

Continued ...

- The OPUS position for BASE-2 is only used for comparison to what was derived from BASE-1. Check closures and statistical data.
- Coordinates can now be utilized as needed.

NOTE: The coordinate values from OPUS may be requested in State Plane, but will be NAD83(CORS96)EPOCH 2002 datum, and may need to be localized (brought to ground).

OPUS FACTS

- OPUS positional accuracy?
- Improving your results by:
 - Submitting 4 or more hours of data (**may publish to OPUS database**)
 - Eliminating systematic errors
 - Antenna type
 - Antenna height
 - Antenna measure to point
 - Using a ground plane
 - Wait a minimum of 24 hours to submit your data

Be Productive GPS Surveyors

In this survey we made use of :

- RTK GPS techniques
- Simultaneous static GPS data logging
- OPUS

To derive horizontal and vertical positions of project control points relative to a known datum, projection, and coordinate system.