

# Trimble Business Center Tips & Tricks

Learning How to Get the Most out of TBC

# Presented By:

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# About Me

- Western Kentucky native
- Over 15 years of experience in the Land Surveying profession
- Licensed in KY (4024)
- Worked all over the United States
- Previous experience implementing and training many Trimble-focused training course for a ENR 500 company
- Currently run the survey division of GRW's Lexington, KY headquarters

# Objectives

- Outline the processes and train others on how to use TBC
- Show how “I” recommend you use the software to QC your data and ensure deliverables are accurate and complete
- Go over basic workflows
- Show a few tricks I have learned along the way
- Answer specific questions from attendees
- Have each of you leave with a better understanding of why you should be using TBC as part of your workflow

# Topics

- Data management
- Creating a project
  - Project settings
- Importing survey data
  - Static
  - OPUS
  - VRS (RTN)
  - RTK
  - Conventional
  - Site calibrations
- Editing data
- QA/QC of data
- Reports
- Exports
- Best practices
  
- A lot of demo time
- Not a lot of Power Point time

# What Does TBC Do?

- TBC is an advanced geospatial software used to process field data and ensure collected data is accurate
- Many modules exist
  - You can buy what you need and expand from there
  - Contact your local Trimble dealer to see how proud they are of each module
  - At GRW we use:
    - Survey Base
    - Survey Advanced
    - Survey Intermediate
    - Survey GIS

# Helpful Links

- <https://geospatial.trimble.com/products-and-solutions/trimble-business-center>
- <https://community.trimble.com/groups/trimble-business-center-group>
- <https://community.trimble.com/groups/trimble-business-center-group/blog/2018/08/07/tbc-power-hour-vault>
- <https://community.trimble.com/groups/trimble-business-center-group/blog/2018/10/08/tbc-tips-of-the-week-vault>

Let's get to it!





**GRW Aerial Surveys, Inc.**  
**TBC RTK Processing Cheat Sheet**

This is a guide to walk you through the steps to QA/QC RTK data and export an ASCII file.

**Best Practices:**

- Always process data with the field notes in hand
- Have the field crew:
  - Book any rod height changes
  - Book any offsets
  - Create a new JOB (Data Collector or DC) file every day. Use the data and initial format. i.e.: 2014-03-05 TAT
  - Use the same point ID for multiple observations on the same point. The field crew needs to use the "Store Another" or "Store as a Check" options after each consecutive observation. Point 1 is always point 1...
- Set all null elevations to "?" instead of "0". All Trimble programs will be able to handle this better. This should also be done for exported CAD files.

**Processing With Known Coordinates:**

1. Set up a new TBC Project with the correct SPC zone & geoid model. You will use the same TBC project for all data collected on this project. This will allow you to:
  - a. Detect multiple points for the same point
  - b. Ensure point numbering is correct
  - c. Correct any coordinate differences
2. Import known positions for control
  - a. Select > Home
  - b. Select > Import
  - c. Browse to the control file
  - d. Select the file
  - e. Tap > Import
  - f. Ensure the file import editor is set correctly
    - i. Control Quality for the N,E,Z
    - ii. File type is Correct
  - g. Select > Import
3. Import field data
  - a. Select > Home
  - b. Select > Import
  - c. Browse to the JOB file
  - d. Select the file
  - e. Tap > Import
  - f. Correct any discrepancies between the DC file and the TBC project. Most of the time you will hold the TBC project settings. Your settings will hold over the field file.



4. Delete any keyed in points. This is vital. Any coordinate or antenna height discrepancies in the base or rover will be held with the data collector's (incorrect) settings. Any offsets should be noted in the field notes and applied in CAD.
  - a. Select > Home
  - b. Select > Selection Explorer
  - c. Select the JOB file for the day you are processing
  - d. Search for any red and white circles (bench mark symbols) that denote keyed in points.
  - e. Select the points.
    - i. Note: When using a RTN for a base; DO NOT delete the base position from the DC file. TBC must have this position for vectors to flow from. This is the only exception to the rule.
  - f. Right click on the points in the selection explorer. Select > Delete (or hit CTL + DEL)
  - g. Re-compute
5. Remove as Staked Points. Any As-Staked points will have a red flag next to them in the selection explorer. These need to be converted to normal observations.
  - a. Select all of the As-Staked points from the Selection Explorer. Right click then select > Convert As-Staked points.
  - b. Re-compute
  - c. Re-Select the flagged As-Staked points and delete. The converted observations will still be in the project.
  - d. Re-Compute
6. Search for any duplicate points
  - a. Select > Data
  - b. Select the arrow underneath Select All
  - c. Select > Select Duplicate Points
  - d. Set the tolerances to an acceptable level. Keep in mind that pin cushion corners will have multiple positions relatively close to one another.
  - e. Select > OK
7. Correct duplicate points
  - a. Any possible duplicate points will be highlighted on the screen within the Plan View window.
  - b. Zoom to each point and compare point ID's & point numbers
    - i. Tip = Use the filter settings to display the point codes
  - c. Merge duplicate points
    - i. Select each point that needs to be merged into 1 point
    - ii. Select > CAD
    - iii. Select > Merge Points
    - iv. Tap the + under the Selected Points field
    - v. Select each point to be merged by tapping the "Include" field
    - vi. Select the final point ID number by selecting the "Final" field
    - vii. Tap > OK
    - viii. Re-compute



- d. QC the merged data by selecting the final point and running a Point Derivation Report (PDR). This will show you the deviation from the mean.
8. QC base position
  - a. Ensure that the base position is still correct. To do this – run a PDR
9. QC check shots
  - a. Run a PDR on the point that was checked into. Using the same point ID will clarify any uncertainties in which position, is the correct (known) position. It will also keep your CAD file clean. TBC will hold the imported (step 2) positions and show you the difference between the observed data and the known point positions.
10. QC observations
  - a. Re-Select the DC file from within the Selection Explorer
  - b. Select the arrow underneath > Points
  - c. Select > Vector
    - i. A new tab will appear showing the QC1 & QC2 data for each observation (Vector). This data will allow you to detect any bad observations or measurements. You can also correct antenna errors in this sheet as well
      1. Tip = You can customize what appears this from within the Project Settings. The recommended fields are:
        - a. Vector ID
        - b. From Point ID
        - c. To Point ID
        - d. Solution Type
        - e. Status
        - f. PDOP
        - g. H. Precision 95% (@2 Sigma)
        - h. V. Precision 95% (@2 Sigma)
        - i. Satellites
        - j. Epochs
        - k. Vector Length
        - l. Field Method
        - m. From Height
        - n. From Method
        - o. From Type
        - p. To Height
        - q. To Method
        - r. To Type
        - s. Start Time
        - t. Duration
        - u. Tilt Distance
        - v. Tilt Compensation
        - w. Tilt Direction
  - d. Ensure the base and the rover has the correct antenna types, heights & methods
    - i. Correct any errors.



- e. Re-compute
- 11. QC multiple observations to the same point
  - a. Select the point to be examined
  - b. Right click on the screen. Select > Point Derivation Report
  - c. Compare the individual observations and eliminate any outliers
  - d. Merge any newly discovered duplicate points
- 12. Export positions
  - a. Select > Home
  - b. Select > Export
  - c. Select > Custom
  - d. Select > P,N,E,elev,Code
  - e. Set the file name
  - f. Browse to the file destination path
  - g. Tap > Export

#### **Processing with OPUS Solutions:**

- 1. Set up a new TBC Project with the correct SPC zone & geoid model. You will use the same TBC project for all data collected on this project. This will allow you to:
  - a. Detect multiple points for the same point
  - b. Ensure point numbering is correct
  - c. Correct any coordinate differences
- 2. Send files to OPUS
  - a. Covert T01 or DAT files to RINEX
    - i. Be sure to only log GPS observations (GNSS data bogs OPUS down)
    - ii. Suppress kinematic records
  - b. Upload files to OPUS <http://www.ngs.noaa.gov/OPUS/>
    - i. Set the ARP height
    - ii. Set the antenna type
    - iii. Select the XML output
    - iv. Submit
- 3. Import OPUS Solution
  - a. Once you have received the OPUS solution email
  - b. Save a copy of the solution email in TXT format
  - c. Save the attached xml file
  - d. From TBC
    - i. Select > Home
    - ii. Select > Import
    - iii. Browse to the XML solution file
    - iv. Select the file
    - v. Tap > Import
- 4. Import field data
  - a. Select > Home
  - b. Select > Import



- c. Browse to the JOB file
- d. Select the file
- e. Tap > Import
- f. Correct any discrepancies between the DC file and the TBC project. Most of the time you will hold the TBC project settings. Your settings will hold over the field file.
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