Trimble Geomatics Office (TGO) Data Processing

1. Create a project

❖ Start Trimble Geomatics Office

❖ Choose New Project and enter the project name. Choose Sample Data as the Template.

❖ Click Folder and specify your local disk. This is where you are going to store all of your data and the results.

❖ Verify Project Property; do the following:
  - ✓ In Project Details tag, put your name in Computer Operator.
  - ✓ In Coordinate System tag, change it to US SPSC 1983, Ohio South 3402, NAD 83, and GEOID 99. Put 100.0 m as default elevation.

2. Load GPS data

❖ Once you download data files (base: log0051u.09O and rover: log0051u00.09O together with the corresponding navigation files with extension 09N) from the web site http://geodesy.eng.ohio-state.edu/course/gs609/homework_09.html, save them to your local disk, and copy them to the Checkin directory created by TGO

❖ Back to Trimble Geomatics Office. Click File/Import/RINEX files

❖ Select the files you downloaded.

❖ Verify the station name, start time, end time, antenna height and antenna type. Click OK when the data are loaded (log0051u.09O is for base and log0051u00.09O is for rover)

	Receiver	Antenna	Antenna Height
BASE	Legacy	Topcon Geodetic 3 Rev. D	1.80 [m]
Rover	Legacy	Topcon Geodetic 3 Rev. D	1.41 [m]

  - ✓ Make sure the start time and end time should be overlapped in the dialog. For the double differencing procedure, data acquisition time of base should be same or longer.
  - ✓ Indicate base and rover in Feature code.

❖ Choose View/Point Labels, select label type. Zoom or Pan if needed.
   ✓ You can select any option. As we specified Feature code, select Feature code.

3. *Verify coordinates of the base station*

❖ The station "Base" is the designated base station whose coordinates (WGS84) are: $\varphi = 39°59'58''.2894$, $\lambda = 83°02'27''.2423$ and $h = 208.650 \cdot m$. Select "Base" and double-click it.

❖ Input the coordinates of "Base" and click the buttons on the right and pick control quality. By doing this, we are assuming that the coordinates of our base are precisely known.

❖ Close Properties window.

4. *Process Data*

❖ Click on the baseline you want to process

❖ Choose Survey/GPS Processing Styles. Click Edit button.

❖ Select the desired Solution Type: **Code** or **Fixed**

❖ Choose elevation mask 13 degrees and for ephemeris – broadcast
(You can choose 'precise' if you have precise orbit file which is available on IGS website.)
   ✓ 'Advanced' command button: The advanced option provides the detailed processing options.

Table 7.2   Advanced processing controls dialog

Use this tab ...	to ...
Static	control Static and FastStatic baseline processing.
Kinematic	control Kinematic baseline processing.
Global	control Static *and* Kinematic processing.
Quality	identify and remove marginal data and solutions while processing and before saving the processing results to the project.
	determine which solutions pass, are flagged, or fail.
Tropo	select and apply tropospheric models.
Iono	apply ionospheric modeling.
Events	interpolate and display events.
OTF Search	control on-the-fly initialization strategies.

(Trimble Geomatics Office User Guide, 2002)

❖ Click OK Twice

❖ Click on the baseline. Choose Survey/Process GPS baselines. Click Save when the process is done.

❖ Click on the baseline. Right-click it and select Properties. Click the button on the bottom and verify your observation statistics. Check you RMS.

5. *Project report*

❖ Select one baseline on the screen by clicking on it.

❖ Choose Reports/GPS baselines processing report.

❖ Interpret created processing report.

   ✓ The processing summary describes your input, processing method, and output.
   ✓ Baseline Components show the base station, your surveying point, and the baseline vector.
   ✓ Standard errors and a posteriori Covariance Matrix provide the statistics of your processing result.
   ✓ Occupations
   ✓ Tracking Summary shows the satellites observed during the data acquisition.
   ✓ Residuals are the plots of the solution residuals.
   ✓ Processing Style: elevation mask, ephemeris, solution type
   ✓ Following menus (static, kinematic, global, quality, Tropo, Iono, Events, OTF search) is the summary of the detail setting we checked at advanced tab in GPS Processing Styles.

6. *Export*

❖ You can export your solution to various formats for further processing or analysis.

❖ When you select File/Export, the export dialog appears. You can make a selection, and check the result in your Export folder under the project directory.

Table 2.4　Tabs in the Export dialog

Use this tab ...	if you are exporting ...
Survey	survey data to a file or controller.
CAD / ASCII	data to a variety of ASCII and CAD formats.
GIS	points and their associated attributes to GIS formats.
Custom	data in a custom ASCII format. For more information about creating custom import formats, refer to the Help. **Tip –** To add a new format by installing an external filter, in any tab of the *Export* dialog, click **External**.

(Trimble Geomatics Office User Guide, 2002)