

GPS Data Collection Best Practices in TerraSync™ software

August 21, 2013

Purpose: As accuracy requirements and expectations increase, it is important to practice good data collection techniques in order to best take advantage of Trimble®'s "High Accuracy" hardware and software. Trimble recommends the following techniques when collecting data in TerraSync software.

Data Collection Best Practices:

Receiver "Warm Up":

It is recommended to allow the receiver to "warm up" for a couple of minutes after connecting to the receiver and prior to collecting data. This warm up period gives the receiver time to generate good quality data and helps the post-processing engine smooth out any spikes in the data. Instead of exiting a vehicle and collecting data immediately, give the receiver a few minutes to warm up before collecting a feature.

Antenna Placement and Orientation:

It is recommended to use an external antenna on a pole when collecting high accuracy data. This setup allows you to:

- Maintain a consistent antenna height necessary for accurate elevation data collection
- Elevate the antenna above your body to prevent blocking satellite signals
- Provide a consistent location to measure the antenna height to that will offset to the Antenna Phase Center

It is important to keep the GPS antenna correctly oriented to the sky even between feature collection. If the antenna is pointed towards the ground or put in a pocket or backpack when moving from one feature to the next, it can pick up multipath or other bad signals and decrease the accuracy of your post-processed data. You should consider disconnecting from GPS rather than walk with the antenna pointing toward the ground.



Collecting Between Feature Measurements:

Trimble recommends collecting good, quality GPS measurements both before and after collecting difficult features. Collect good measurements out in the open while walking to the tough feature, collect the feature, then collect more good measurements while walking back in the open.

The good measurements can help to smooth out poor quality measurements at the feature. The post processing, engine applies both forward and backward corrections, so good measurements both before and after the feature are important. Ideally you should aim for 30 to 60 seconds of good measurements between more difficult locations.



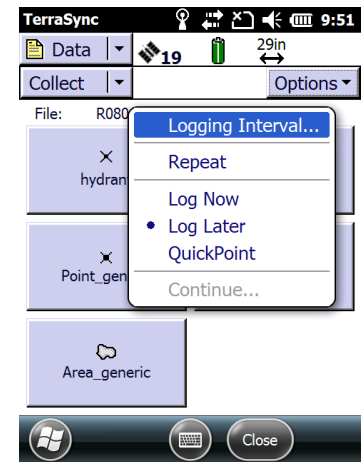
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Log Now & Log Later:

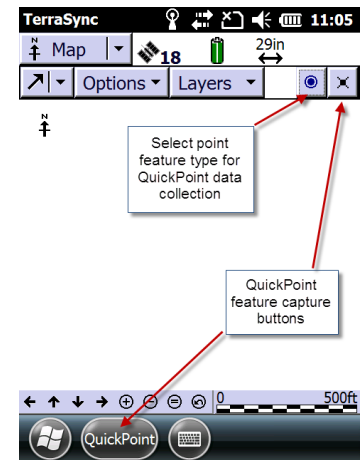
If you select the *Log Now* option, the TerraSync software begins logging positions for a new feature as soon as you select the feature type and tap **Create**. This can sometimes lead to position logging prior to having the antenna properly placed for the feature you are mapping. You can enter attribute values while positions are being recorded. Log Now is the default logging option.

If you select the Log Later option, the TerraSync software begins logging positions for a new feature only after you tap Log in the attribute entry form. Until you begin logging, the pause icon flashes in the Status bar. Use the Pause function to pause and resume logging when appropriate. It is useful to control GNSS logging to prevent unwanted positions being logged to the feature. For example, you can pause to go around an obstacle when logging a line, then resume once you are back on track. Pausing when stationary - at traffic lights for example - will prevent a small drift from being recorded as part of the feature.



QuickPoint: (only available in TerraSync version 5.20 or later)

QuickPoint data collection allows you to create a point feature and log one GNSS position quickly by pressing a single key or firing a laser rangefinder. When in QuickPoint mode, the QuickPoint button and the QuickPoint Feature Capture button can be used to capture QuickPoints while in the Map screen. When you tap the QuickPoint button, a drop-down list appears, showing each point feature type that is defined in the data dictionary of the open file. Select a point feature type from this list to enable you to quickly log features of this type. To log each feature, tap the QuickPoint Feature Capture button or fire the Trimble LaserAce™ 1000. QuickPoint can be a valuable tool for collecting multiple point features rapidly. When used in conjunction with the Trimble LaserAce 1000, laser rangefinder offsets can be combined with QuickPoint data collection to improve efficiency.



How many positions to log when capturing a point feature?

Log a point feature for 5 seconds in good conditions. This is enough data when the accuracy estimate is sufficient, as indicated by the CEA (Current Estimated Accuracy) or PPA (Predicted Postprocessed Accuracy) values. This assumes you have collected good data before the feature. It is also an efficient workflow - there is no point taking longer to log a feature when the accuracy does not improve. In difficult conditions, or if the accuracy is less than desirable, log for 15 or 30 seconds, or even longer if necessary, until the estimated accuracy is good enough. Or you could cancel the existing feature, and try walking into the open and carefully back to recollect the GNSS measurements for the feature.

Avoiding data corruption:

It is highly recommended that you close a data file and exit TerraSync any time the data is not in use. Many data files have become corrupt by being left open during lunch or other breaks in field sessions. Closing a data file and TerraSync software only takes a couple of seconds to complete and can prevent the loss of data and the time invested in the data collection. There are a few tools that can be used to a tempt to salvage corrupted data but they are not always successful in recovering the data.