Module 8E: GNSS Post-Processing

After completion of this lesson, the student should be familiar with the main functions related to GNSS post-processing including verifying occupation information, updating ephemeris, processing, importing control, and adjusting.

Introduction

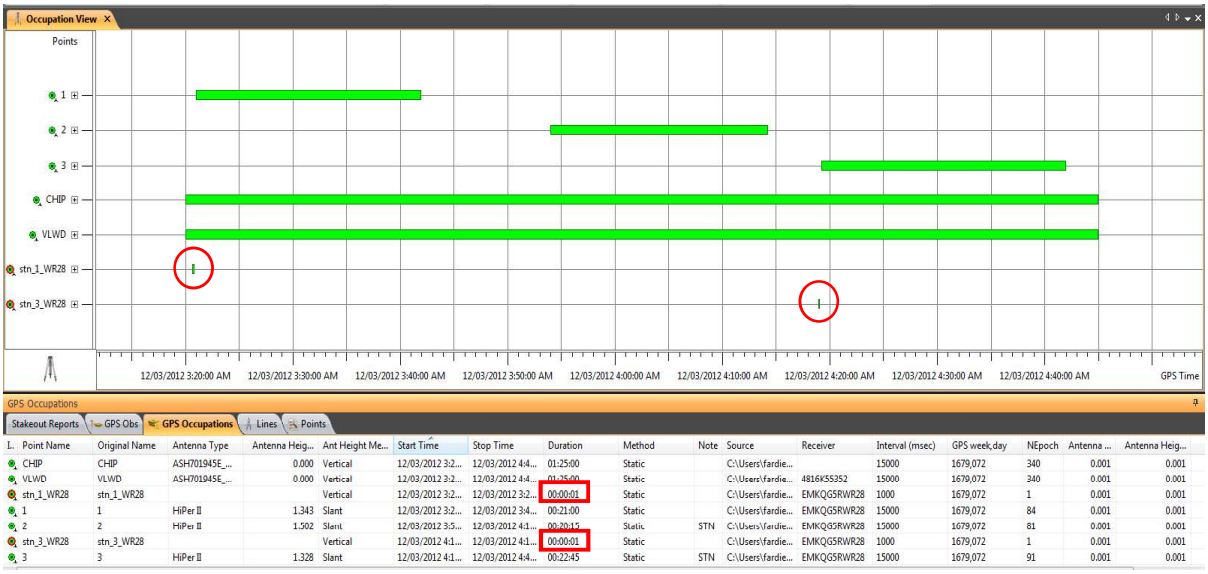
Now that you are familiar with the MAGNET Tools interface, software configurations, and data exchange, we can now look at completing a post-processing job using static occupations collected by a GNSS receiver.

In this course, we will look at the procedure for using MAGNET Tools to complete GNSS post-processing. Correspondingly, as part of the course we will make available the "**Standards and Practices for Control Surveys (SP1)**" document published by the Inter-governmental Committee on Surveying and Mapping.

Import GNSS Raw Files

As discussed in the previous lesson, there are several methods on how to import GNSS raw files on your job. If you're using Topcon receivers, the data format you are likely to be working with is a **.tps** file. If you have obtained files from a third-party receiver or from a government or private network, you will probably be working with **RINEX** files.

It is useful to have **Occupation View** open while importing GNSS raw files (see p.19-20 Occupation). The Occupation View makes it easy to see occupation times. Very short occupations that may have been accidentally collected, can be easily identified, and removed.



L..	Point Name	Original Name	Antenna Type	Antenna Heig...	Ant Height Me...	Start Time	Stop Time	Duration	Method	Note	Source	Receiver	Interval (msec)	GPS week,day	NEpoch	Antenna ...	Antenna Heig...
	CHIP	CHIP	ASH701945E_...	0.000	Vertical	12/03/2012 3:2...	12/03/2012 4:4...	01:25:00	Static		C:\Users\fardie...		15000	1679,072	340	0.001	0.001
	VLWD	VLWD	ASH701945E_...	0.000	Vertical	12/03/2012 3:2...	12/03/2012 4:4...	01:25:00	Static		C:\Users\fardie...	4816K55352	15000	1679,072	340	0.001	0.001
	stn_1_WR28	stn_1_WR28			Vertical	12/03/2012 3:2...	12/03/2012 3:2...	00:00:01	Static		C:\Users\fardie...	EMKQG5RWR28	1000	1679,072	1	0.001	0.001
	1	1	HiPer II	1.343	Slant	12/03/2012 3:2...	12/03/2012 3:4...	00:21:00	Static		C:\Users\fardie...	EMKQG5RWR28	15000	1679,072	84	0.001	0.001
	2	2	HiPer II	1.502	Slant	12/03/2012 3:5...	12/03/2012 4:1...	00:20:15	Static	STN	C:\Users\fardie...	EMKQG5RWR28	15000	1679,072	81	0.001	0.001
	stn_3_WR28	stn_3_WR28			Vertical	12/03/2012 4:1...	12/03/2012 4:1...	00:00:01	Static		C:\Users\fardie...	EMKQG5RWR28	1000	1679,072	1	0.001	0.001
	3	3	HiPer II	1.328	Slant	12/03/2012 4:1...	12/03/2012 4:4...	00:22:45	Static	STN	C:\Users\fardie...	EMKQG5RWR28	15000	1679,072	91	0.001	0.001

As shown in the image above, there are two unwanted occupations due to its very short observation time. You can delete these kinds of data by selecting them, then right click and choose **Delete**. This will permanently remove the short occupations on your current job.

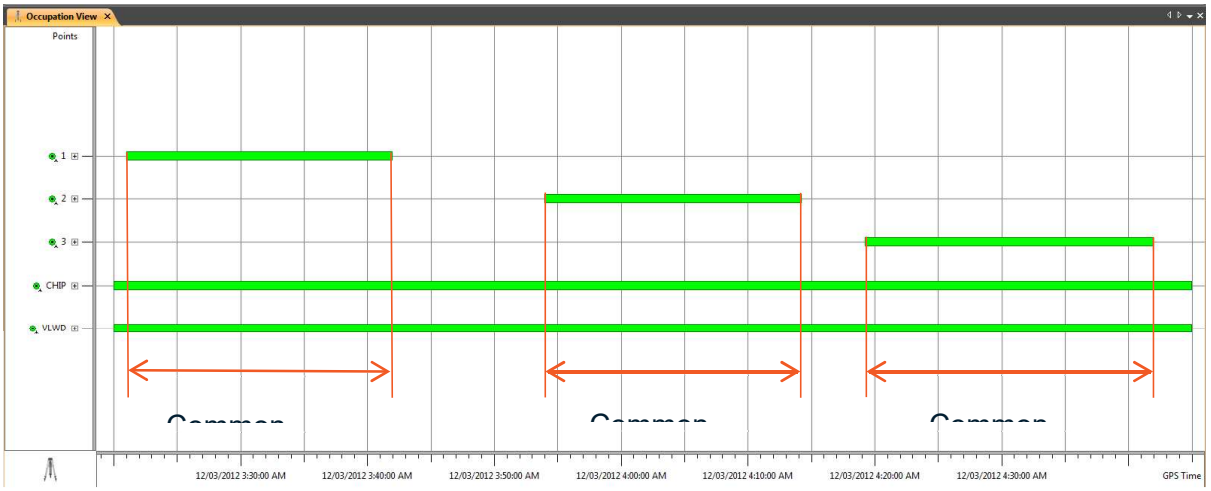
Each occupation can be expanded to view the number of satellites in view during the occupation (see p.20 Occupation). Undesirable satellites, i.e. very short signals or broken signals can be disabled. To disable a signal, draw a selection box around it, right click and select **Disable** from the options displayed.

Enable/Disable SV's in Epochs To Enable/Disable only the selected area of epochs

Enable/Disable SV's To Enable/Disable the entire occupation regardless of area selection

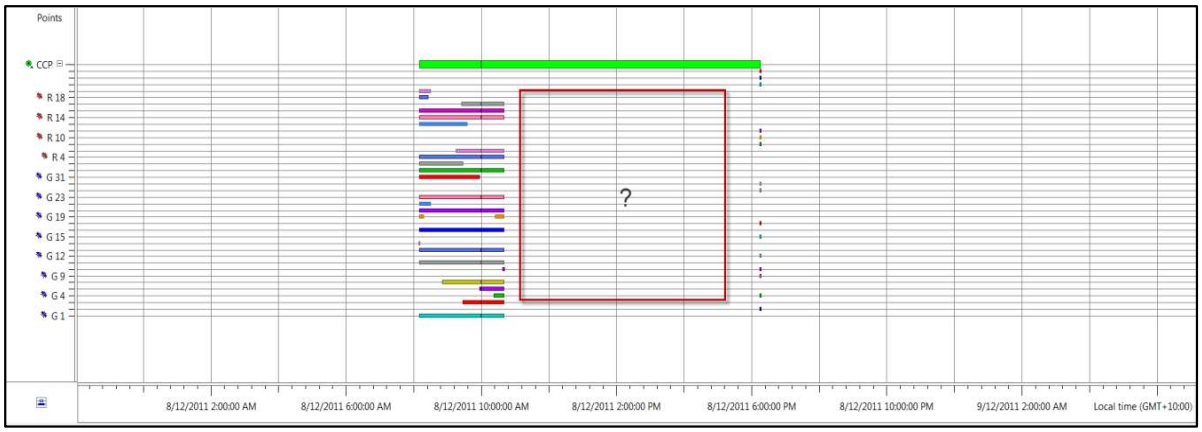
Enable/Disable SV's in whole job To Enable/Disable in all loaded occupations

The **Occupation View** also gives good visualization of common time between receivers. Only this common time can be processed later so use the occupation view to verify that all receivers were recording data simultaneously.



In some instances, a power shortage, malfunction, or other unforeseen event may occur and stop a receiver from recording, the **Occupation View** can be used to identify durations where data is

missing. The example below shows a base receiver that lost power during the survey and so a large section of data is missing.



The **Observation View** is also useful for visualizing common time with vectors between receivers that were recording simultaneously being displayed. Only the vectors displayed will be processed so use the Observation View to verify if all required data is present.

The **Observation View** can also be used to disable individual vectors that you do not want to process, perhaps vectors in between base receivers for example. To disable a vector, right click and select **Disable** from the pop-up menu that is displayed.