



Editing Laser Scanner Data in HYPACK® 2015

By Jerry Knisley

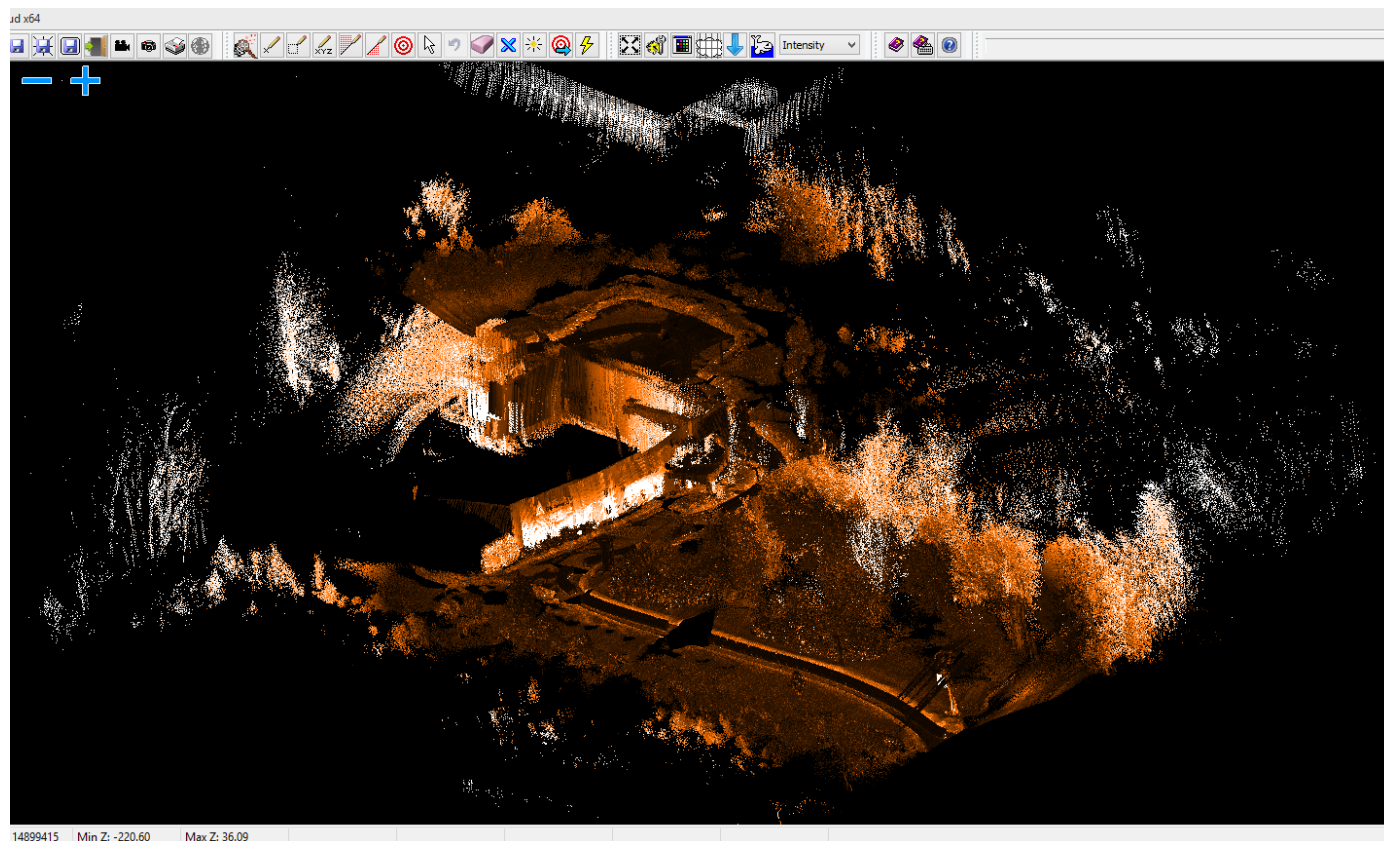
Recently, we had the chance to test a Velodyne Laser scanner. With the unit in the office for a couple of weeks we were able to set up several field tests. Now we are in New England at the end of winter, so our tests were completed using a warm mini-van and not a survey boat. That being said, the data is the same from the laser taken on readings all above water.

With so much data, I learned a few tricks to make editing it easy.

First, the data you are about to see was recorded without the help of RTK and therefore has some errors in it. I know about them but we did not have an RTK unit available for the testing. The topography near our office can be hilly at times so I was not as concerned with perfect data as I was editing the data.

Second, the system was not patch tested to account for alignment issues until the last day. Our version of Bob the builder, Bob Glover, mounted everything on a board that John Lindberg provided, we strapped the board to the roof of a minivan and took off. Please remember we are software people and not professional surveyors.

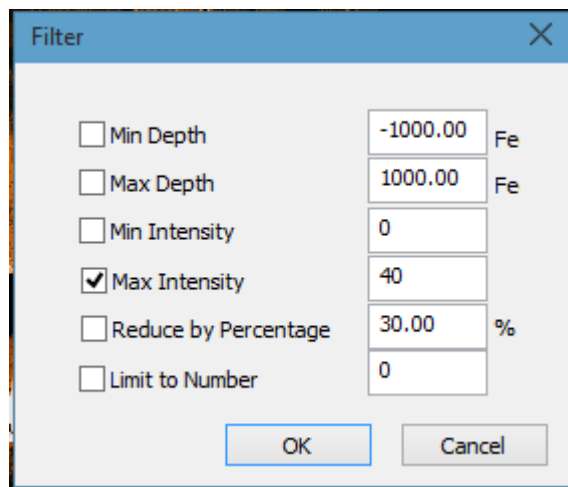
FIGURE 1. *Sample Laser Scan*



I edited the data by first creating an XYZ,Intensity file in MBMAX 64 (64-bit HYSWEEP® EDITOR) which I brought into CLOUD64 (64-bit CLOUD). I did this because the ability to view the larger data sets in CLOUD64 was convenient.

Once I had the data in CLOUD64 I used the filter option to remove some of the data with the Max Intensity filter.

FIGURE 2. Filtering Soundings in CLOUD



In Figure 1, you can see a lot of white pixels. Most of that data was reflecting off of random items in the air. I assumed that was the case because a lot of it was in localized areas and not associated with any surrounding structure. I also used the Reduce by Percentage to thin out the data. There are so many reflections that thinning out the data in my case was useful. The image in Figure 1 has 14 million returns in it. Reducing the data by 25% had no effect on the final display.

The next part of editing in the CLOUD64 was to draw a rectangular box with the cursor to select what I wanted to delete. I used the Select Rectangle tool.



Editing in 3D means that I, unfortunately, selected points that I did not want to delete either below or behind the ones I did want to delete. To deselect these points, I rotated the display so I could use the same tool to deselect the points I wanted to keep. Once the display is rotated I clicked the Select/Unselect tool to change how the tool operated. Now the Select Rectangle tool can be used to deselect the points.

In Figure 1, I have loaded the trip around the block. There are 233 million returns loaded into the display. Figure 3 shows I was using 74% of my 16 GBytes of RAM, but I was able to rotate the display with the mouse and view the data without any problem.

FIGURE 3. CLOUD64 Handles Large Data Sets Easily!

