MDL Dynascan Driver Updates in HYSWEEP®

By Dave Maddock

Last month I spent a few days down in Texas with Andy Holroyd of HTS Advanced Solutions, updating the HYSWEEP® SURVEY driver for the MDL Dynascan topographic laser. During our tests, we mounted the equipment on a van and scanned the city block around their offices. This article will feature some of this data for illustrative purposes.

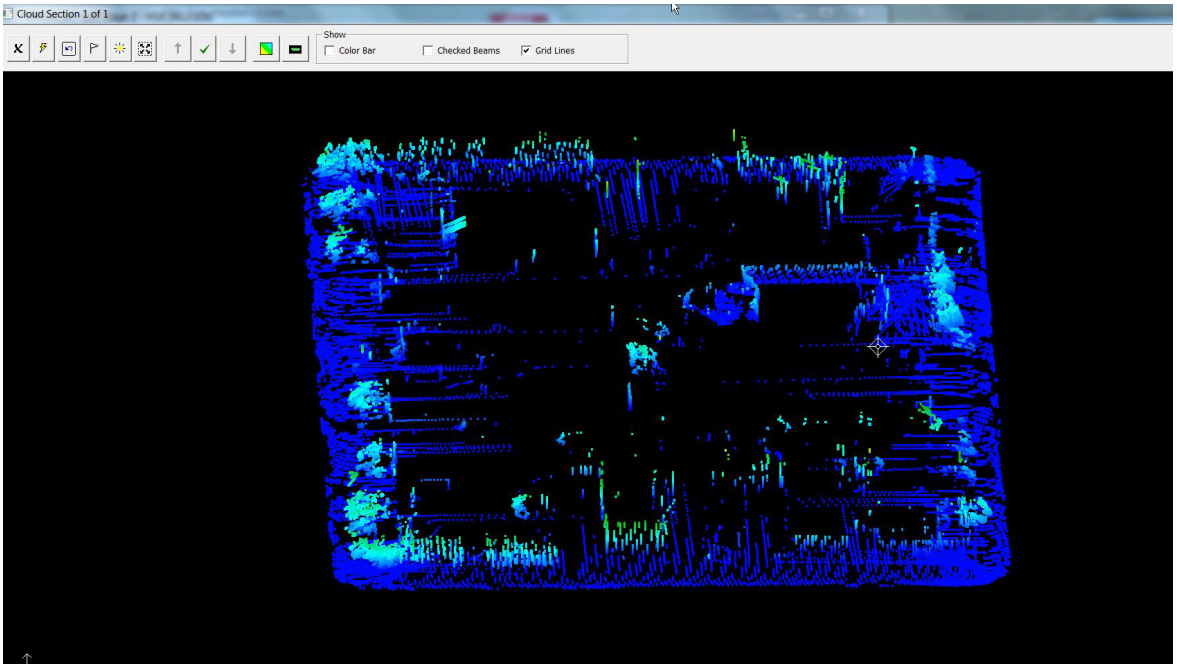
As I detailed in the last issue of *Sounding Better*, current HYSWEEP® development is focused on expanding the topographic laser support—improving displays, logging higher resolution data, and exploiting the full capabilities of these devices.

The MDL Dynascan is a bit different than the other topographic devices supported in HYSWEEP® because it features a full 360º field of view—it can scan off the port and starboard side of the vessel simultaneously.

EXISTING DRIVER CAPABILITIES

To fit the MDL into the HYSWEEP® world, HYPACK® 2012 and earlier requires you to select a 144º sector to use, which effectively restricts the device to only one side of the vessel. Secondly, the 1440 beams per ping limit in HYPACK® 2012 limits the driver to the coarser 1/10th degree angular resolution setting. Finally, because the Dynascan data stream did not include time tags, the driver used arrival time for time-stamping which could introduce a small latency.

FIGURE 1. *Low-res, Single-side Capture in HYPACK® 2012*



For future comparison, here is a reference scan around the office block using the 2012 driver. We were collecting data off the port side and driving counter-clockwise around the block:

2013 Updates

As I mentioned in the last issue, we are currently beta testing a HYSWEEP® with expanded topographic laser capabilities. Without rehashing everything I wrote in that article (if you haven't read it, I'd encourage you to do so since much of it applies to the MDL), the implications for the MDL Dynascan driver is that HYSWEEP® can now log the full 360º scan in the highest resolution mode.

FIGURE 2. *Logging Both Sides of the Vessel Simultaneously*

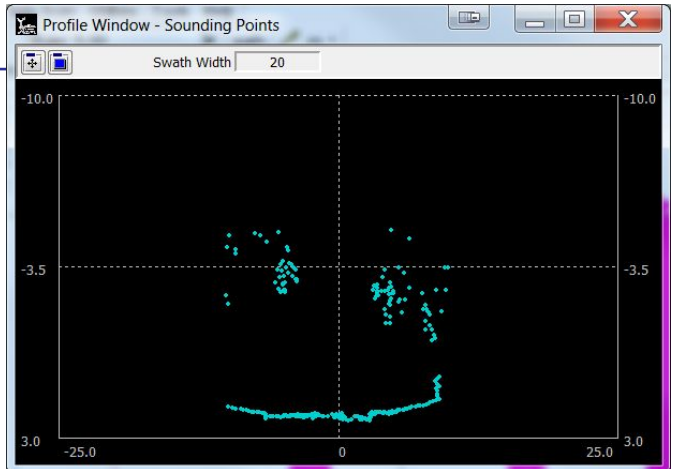
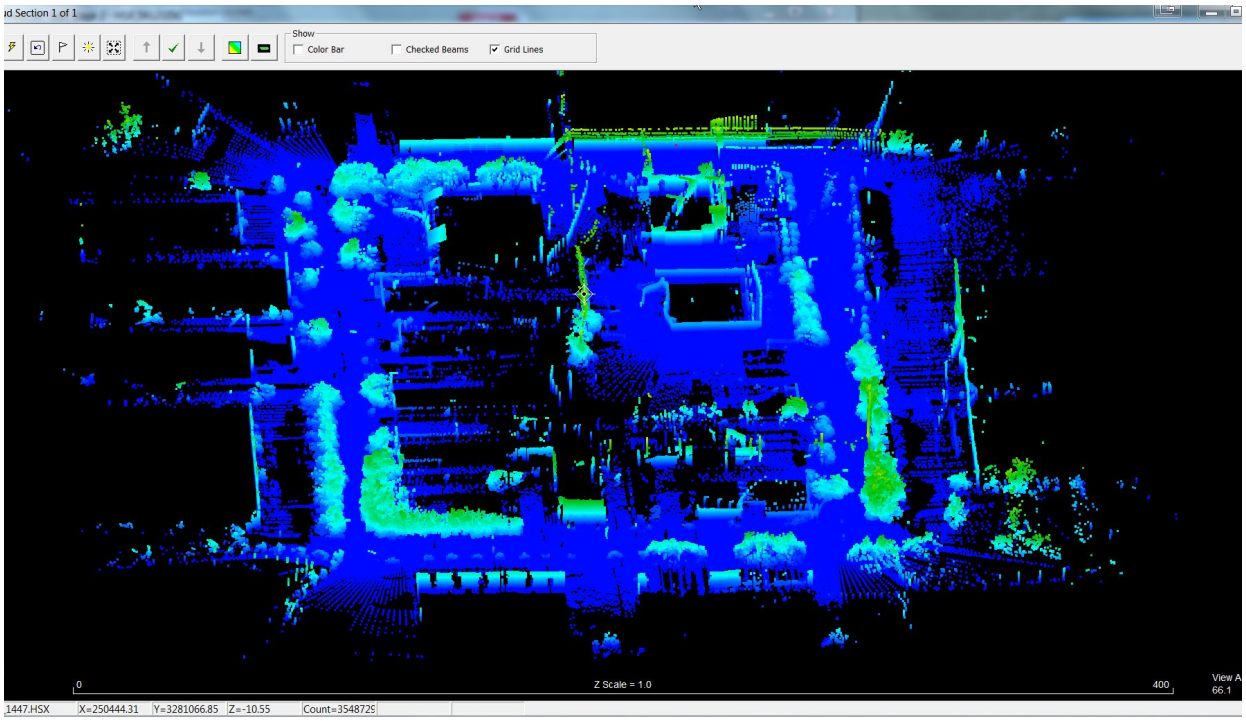


Figure 2 is a single 360º in profile during acquisition showing the road surface, shoulder, and overhead tree branches.

Here is the same area as above, but logged in full resolution:

FIGURE 3. *High-res, Dual-Side Scan in HYPACK® 2013*



This is a single pass of the exact same track. Clearly, the density of our point cloud is much greater. Also note that we've collected data on both sides of the street at the same time.

TIME TAGGING METHODOLOGY

The driver will now query your device for enhanced time tagging features that are offered by newer MDL firmware (the so called "X1" message). In this configuration, the GPS serial and PPS outputs are split and wired to both the Dynascan and the HYPACK® computer. The Dynascan will provide HYSWEEP® with full time tags synced to the PPS pulse. If the X1 feature is not supported by your device, the driver will continue to operate with the older time tagging method. To aid with installation and QC purposes, the driver will provide information on the type of timing mode being used in the Messages window (VIEW-MESSAGES) of HYSWEEP® during acquisition.