

Autopilot in HYPACK

By Jerry Knisley

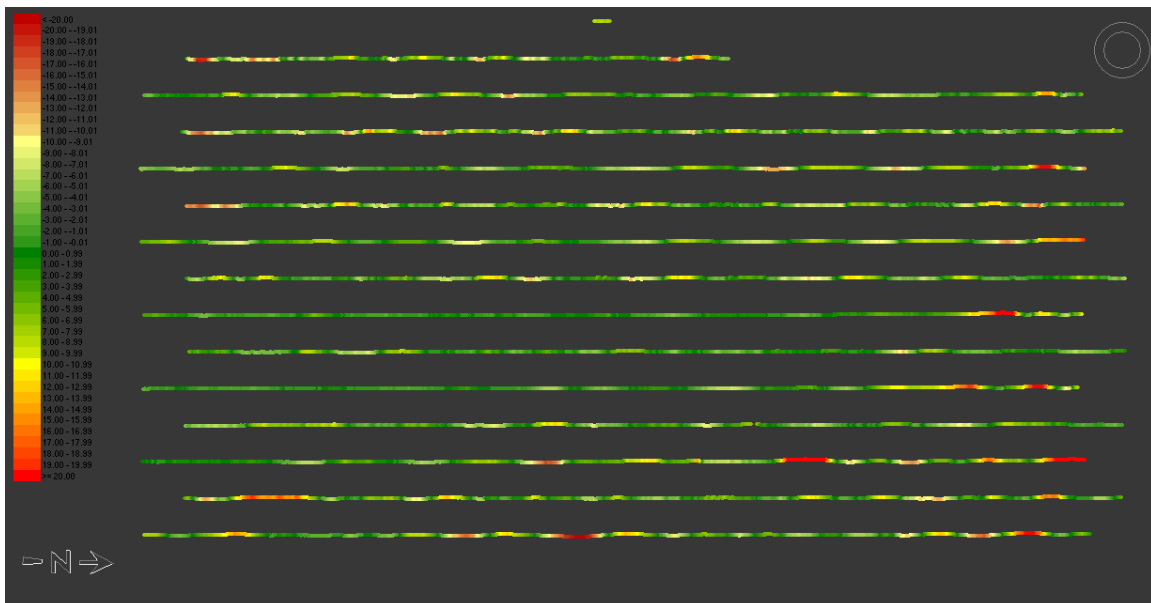
Recently I spent time on a boat with a SIMRAD AP-11 Autopilot, a device that helps maintain heading of your vessel. In HYPACK® the device driver sends a cross track error value to the device and the autopilot corrects the path of the vessel accordingly. Previous testing with the AutoP.dll resulted in severe fishtailing while in SURVEY. On this trip, we finally got it right.

Using the AutoP.dll in HYPACK® you can set a multiplier in HYPACK® HARDWARE for the cross track error that is sent to the Autopilot.

In the new driver, Autopilot.dll, there is a slider bar in the driver for online access. This provides the adjustment control while in SURVEY so you can make the system more or less aggressive as conditions change.

In tests with the Autopilot driver, we noticed that, at about 4-5 knots, the multiplier had to be 0.003. Using lower values, the boat was less responsive and drifted off line; using higher values the boat would respond too aggressively, creating a weaving track line.

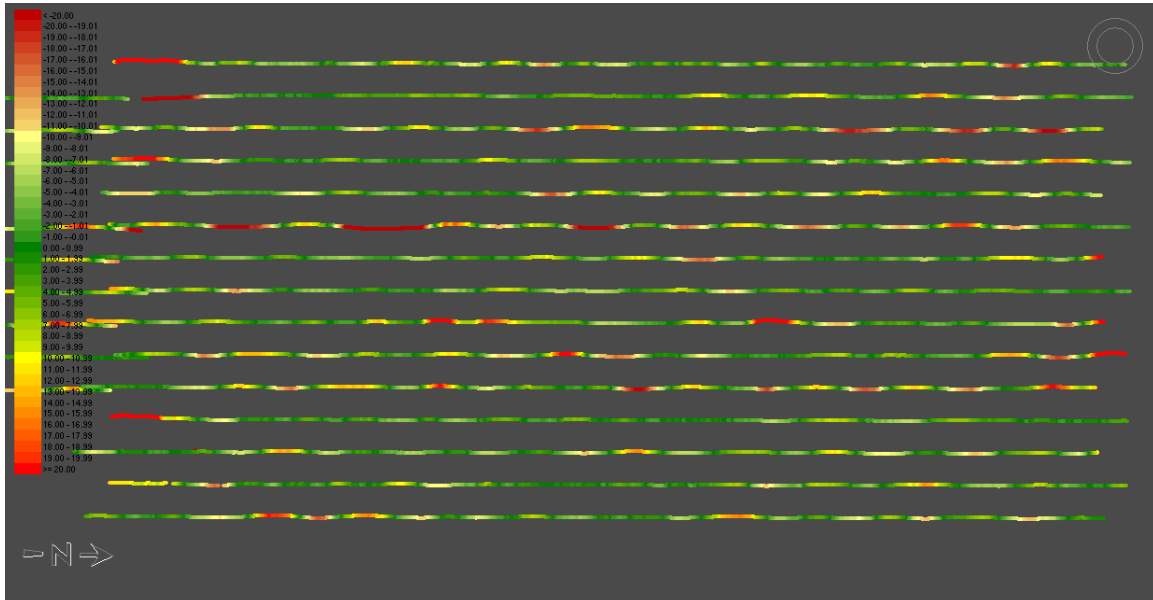
The first image below is of the Simrad Autopilot in the HYPACK SURVEY software. The boat was in 2-3 foot sea state all day. These lines are 500 feet apart and the boat was running with 550+ feet of sidescan cable deployed. Green is online and Red is 20 feet offline. In the beginning the autopilot driver had a scale factor of 0.001 and after a few lines it was adjusted to 0.003



New Autopilot.dll at work. Lower 3 lines multiplier=0.001. Upperlines, multiplier=0.003.

The next image is from the Survey from an area farther south conducted 10 days **before** the Autopilot was configured to work properly. The boat was under

constant control of the captain. The colors still represent the same information at the same scale.



Pilot-controlled data collection.

After running the tests and finally getting this to work there are some important things to remember.

- The autopilot cannot watch for traffic.
- The boat operator has to first put the autopilot into a position to succeed. The autopilot can then keep the boat online.
 - If you engage the autopilot before the boat is solidly on line, the autopilot will start a seek mode where it drives across the intended track several times to align itself and much of the time it fails.
 - If you leave the autopilot engaged at the end of a line, it will immediately apply a hard rudder to get online. This wasn't good for man or machine!
- If you want to give the boat operator (Captain) a short break while you are mid-line, the autopilot is a good idea. Just remember to keep him from taking a nap or bad things could happen!