



SURVEY Simulator

By Ivan Izaak

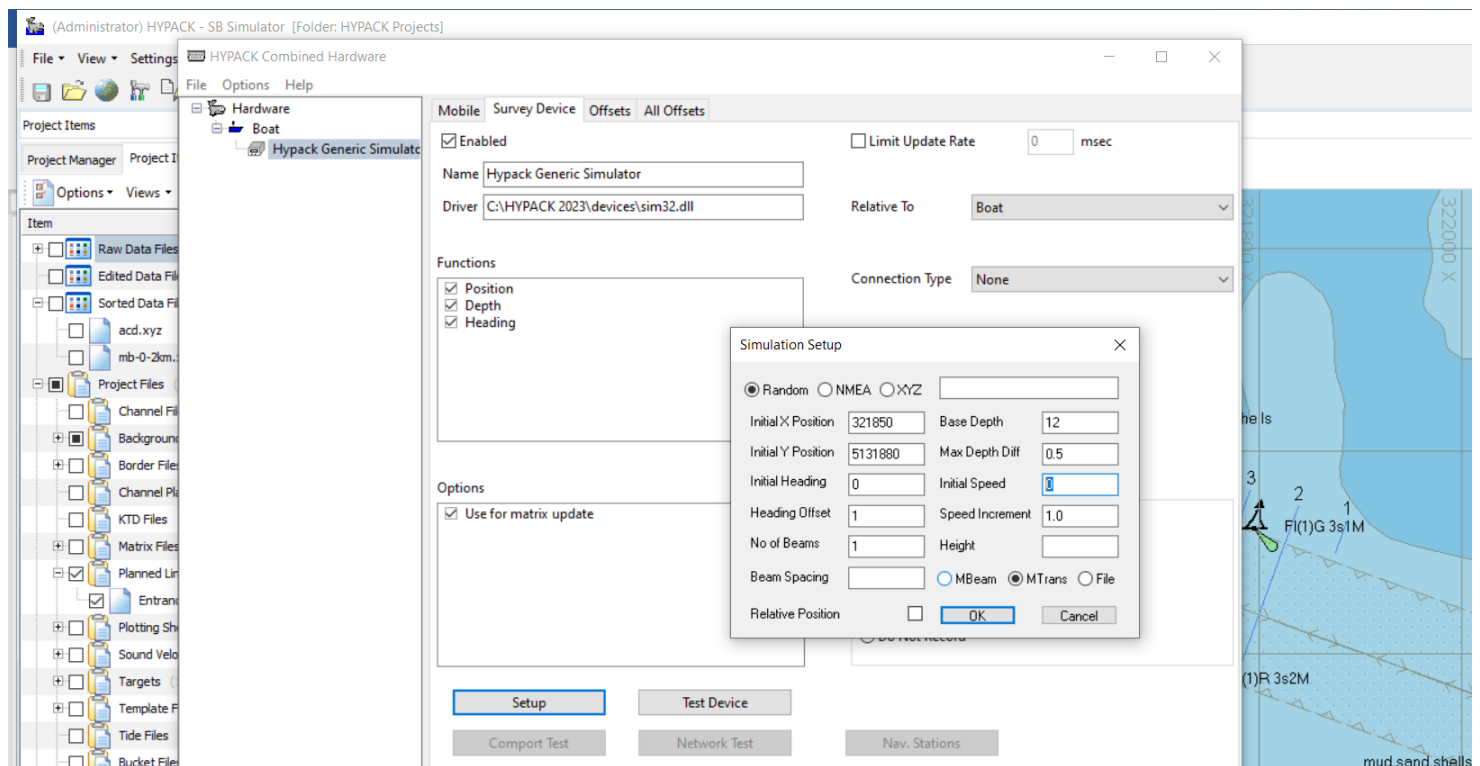
During most of my trainings and seminars, I try to show our users how to set up a simulation project to learn how our SURVEY program works. You see, there is no time to learn when you do the real survey and you should concentrate on successful data collection, so why not spend some time while you are in the office and study the SURVEY program without any equipment connected and nothing is rushing you for quick decisions?

To start, you need to set up a fresh project. Preferably somewhere in the location of your future surveys. Grab some background charts so that you are not “surveying” in a white space. Create some planned lines, boat shapes, matrix and anything else you want to put your hands on during the simulation.

To set up a simulation project to test out the SURVEY program:

1. Run the HARDWARE program. Clean it if it has some drivers already set. Do not worry, you won't lose your real hardware setup as this operation will only clear the settings of this specific project you've just set up.
2. Add the Sim32.dll (HYPACK Generic Simulator) driver.
3. Click the [Setup] button and set the parameters. An example is shown below in Figure 1.

Figure 1. Sim32 Driver Setup

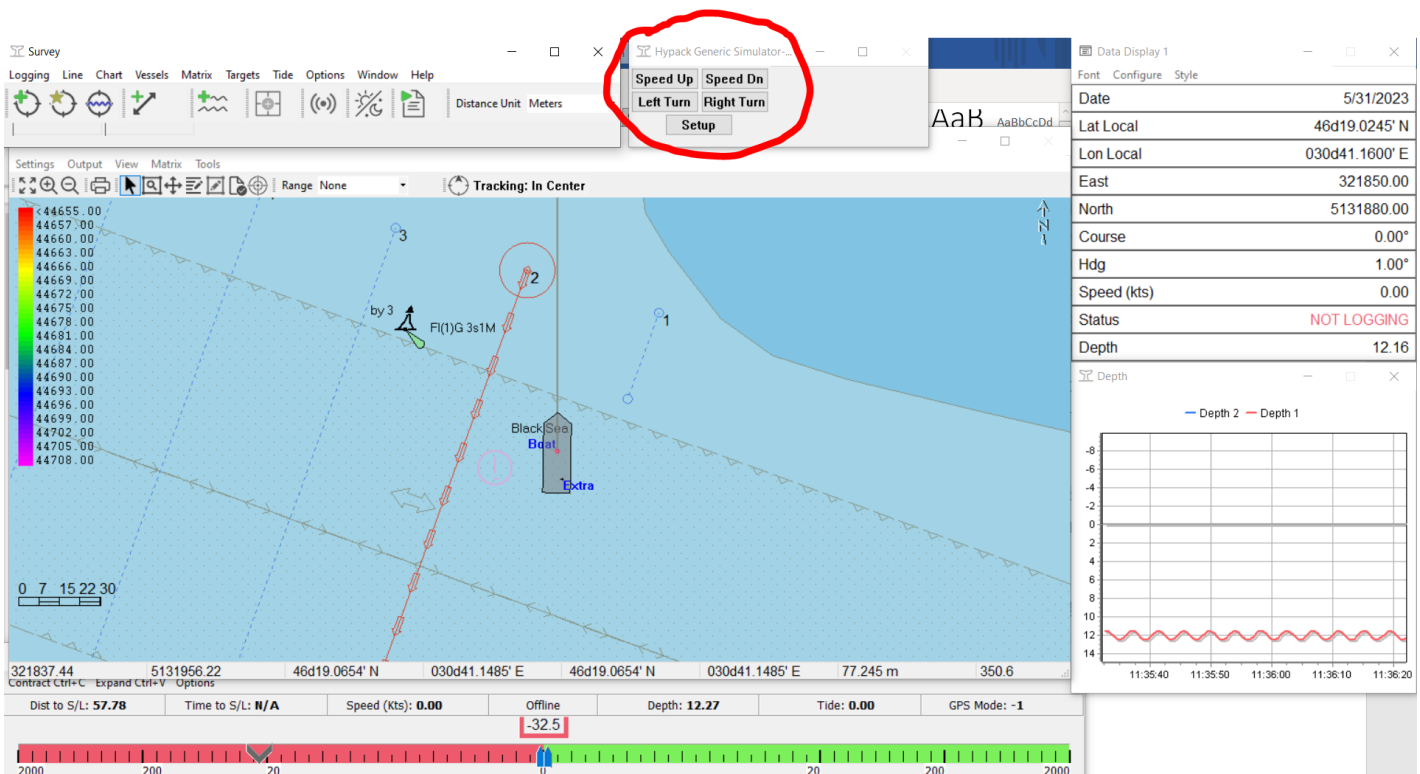


- **Initial X/Y Position** - I want my boat to appear at the beginning of my second planned line. To get the approximate coordinates, I just hover the cursor where I need my simulator boat to appear when I run the SURVEY program.
- **Initial Heading** - I set my boat to face North so I entered 0.
- **Heading Offset** - When you run the SURVEY program, you will see the driver's window where you can change its heading by clicking the buttons. So, each click of the corresponding button will turn your boat the set number of degrees. I use a 1 degree increment here.
- **Base Depth** - set a value here and also set the Max Depth Diff - the program will draw a sinusoid curve at the given depth with the given amplitude.
- **Initial Speed** - I prefer my boat to stand still when I start the SURVEY program, so I leave it at 0 and set the Speed Increment to 1 knot. This means that each click of [Fwd] or [Bwd] buttons in the driver dialog will move her 1 knot faster or slower.

There is no connection needed for the driver. You may add a boat shape if you like and save the HARDWARE. Remember, the program saves your current hardware settings into the Survey32.ini file inside the project folder you are working on now.

Let's start the SURVEY program now. You may need to verify that you have enabled a background chart and planned lines (optionally, a matrix).

Figure 2. SURVEY Windows with the Sim32 Driver



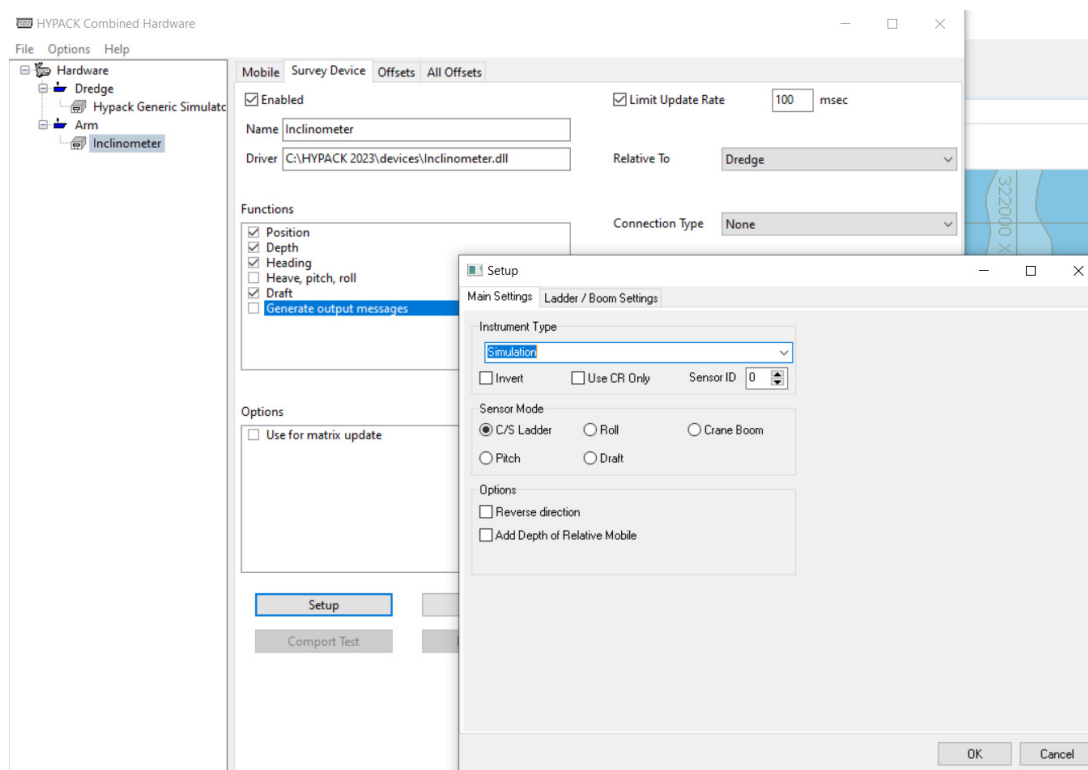
There is a HYPACK Generic Simulator dialog (circled with red at the top center). There you can speed her up or down, and turn her left or right. You can also open its Setup, which will show the same settings as in Figure 1 to quickly change each parameter.

Now you are ready to study the SURVEY program not in real survey conditions but whenever you have time in the office.

I often use this simulator to check various things - for example, new features in the program, how additional drivers work, etc.

There are a bunch of other drivers for the simulation of the SURVEY program as well as DREDGEPACK. For example, if you have a cutter suction dredge you want to simulate, you can use the Inclinator.dll and set it to Simulation:

Fig. 3 Setting Up a Cutter Suction Simulator



Or you can use the SimVessel driver (SimVessel.dll) instead of Sim32. SimVessel offers more options such as the ability to simulate motion (heave, pitch, and roll). For instructions on using SimVessel, see my article [Setting a Simulator for the Single Beam Survey Using the Sim32 and SimVessel Drivers](#).

Finally, another option you can start with is the Halifax project where everything is already set up. But there is a different driver (TestDev.dll) by default, which reads an ASCII file with the list of coordinates, therefore you can't control the vessel. However, you can swap TestDev.dll and use Sim32 instead. I still recommend creating a new project in your area of responsibility with local geodesy, background charts, and any historical data, because that is the best way to familiarize yourself with using the SURVEY or DREDGEPACK programs in the location of your future surveys.