



3D Seismic Navigation & Positioning

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OVERVIEW

3D seismic navigation and positioning is accomplished via three main systems: Spectra Integrated Navigation System, Digicourse II, and Posnet.

Spectra Integrated Navigation System

Navigation Control Node

The NCN receives DGPS data (Cnav 3050, Seapath 200, and Pos MV), gyro data, depth data, compass data, range/ bearing GPS data, water velocity data, acoustic ranging data, etc. through RTNu's (real time navigation units) which have their own GPS engines and timestamp the data as it arrives. The NCN positions the source and the streamers on a shot by shot real-time basis. NCN serves as the overall timing controller for data acquisition. It issues "fire command" to the Digishot source controller, initiates the acquisition cycle on the Syntrek 960 recording system, and triggers the source and streamer mounted acoustic transponders. The NCN (via one of many display nodes) provides a real-time position of all deployed seismic equipment.

Data Logging Node

The DLN writes all "raw" observables to a UKOOA p294 file for every shot (recording sequence).

QC Node

The QCN node monitors the health and quality of all data inputs.

Turn Node

The turn node can steer the vessel during acquisition to optimize coverage as well as calculate and steer the vessel to the next line.

Binning Node

The binning node provides real-time binning coverage displays to better determine best course to steer for optimum coverage.

Digicourse II

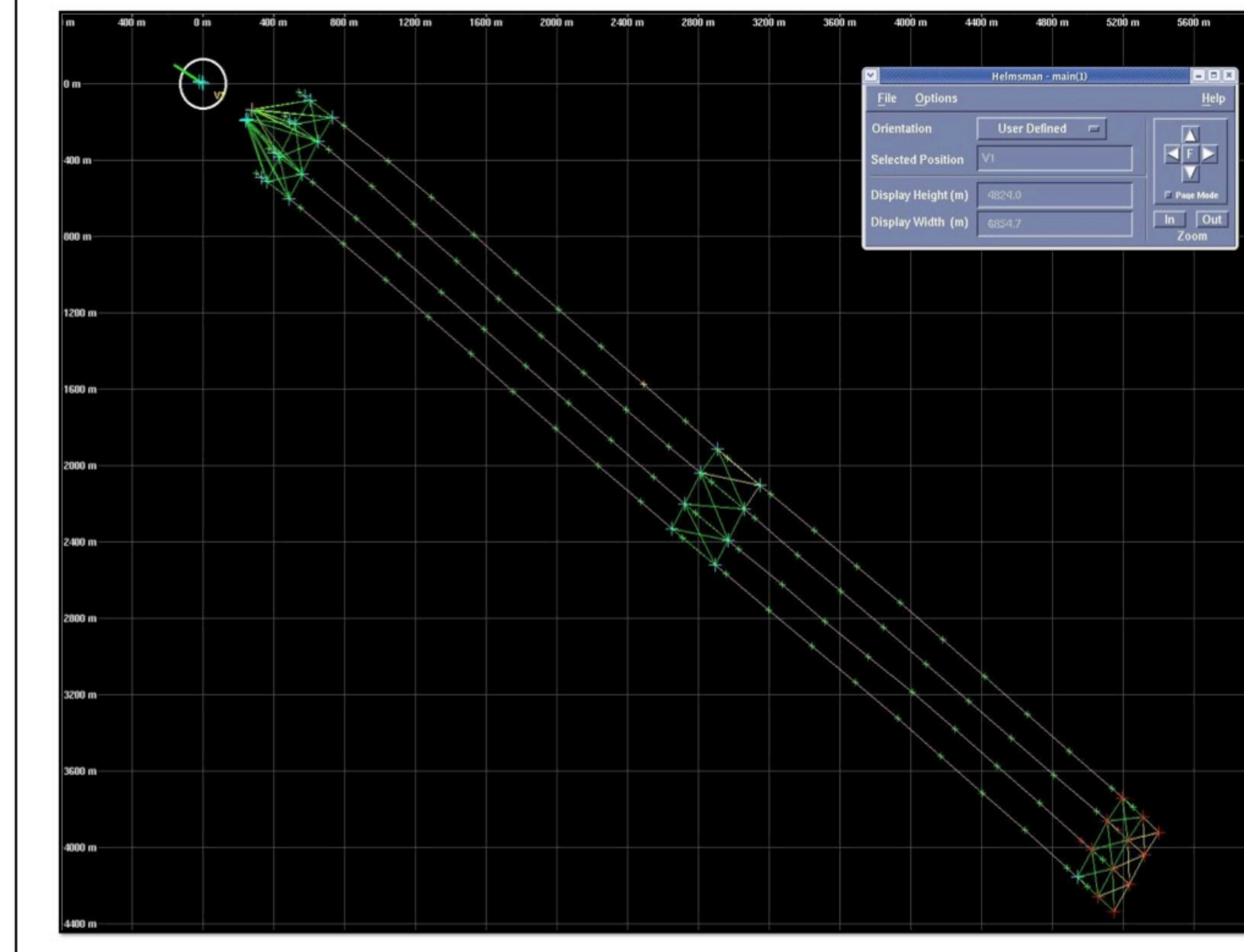
Digicourse controls the streamer mounted compass/ levelers (birds) and the streamer, source, vessel, and tailbuoy mounted acoustic transponders. Compass, depth, fin angle, and acoustic range data are sent to Spectra on every shot sequence.

Posnet

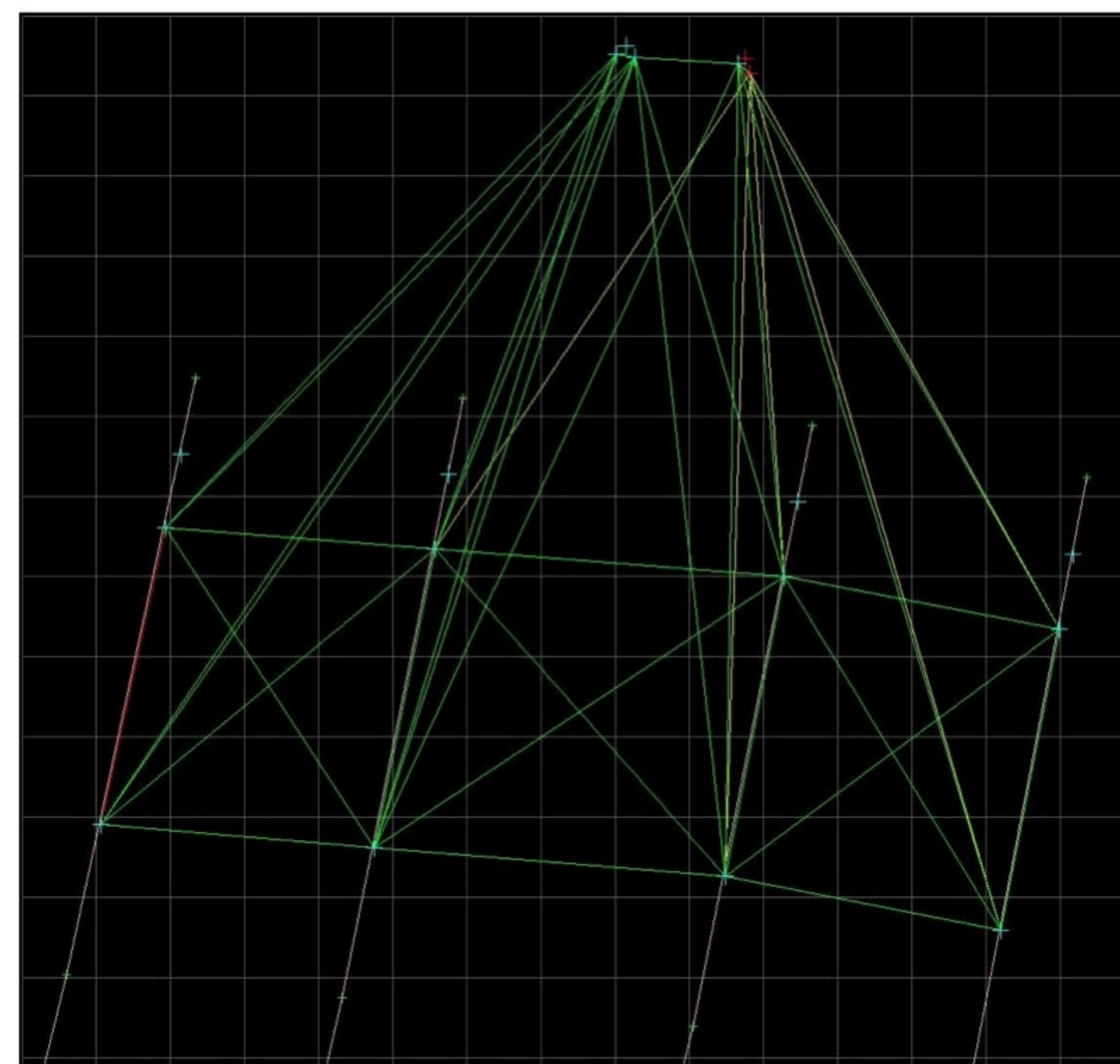
Posnet receivers are mounted on each of the four individual source arrays and each of the four tailbuoys. Posnet controls the source and tailbuoy mounted rGPS receivers and produces range and bearing calculations for Spectra.



FULLY POSITIONED SOURCES & STREAMERS

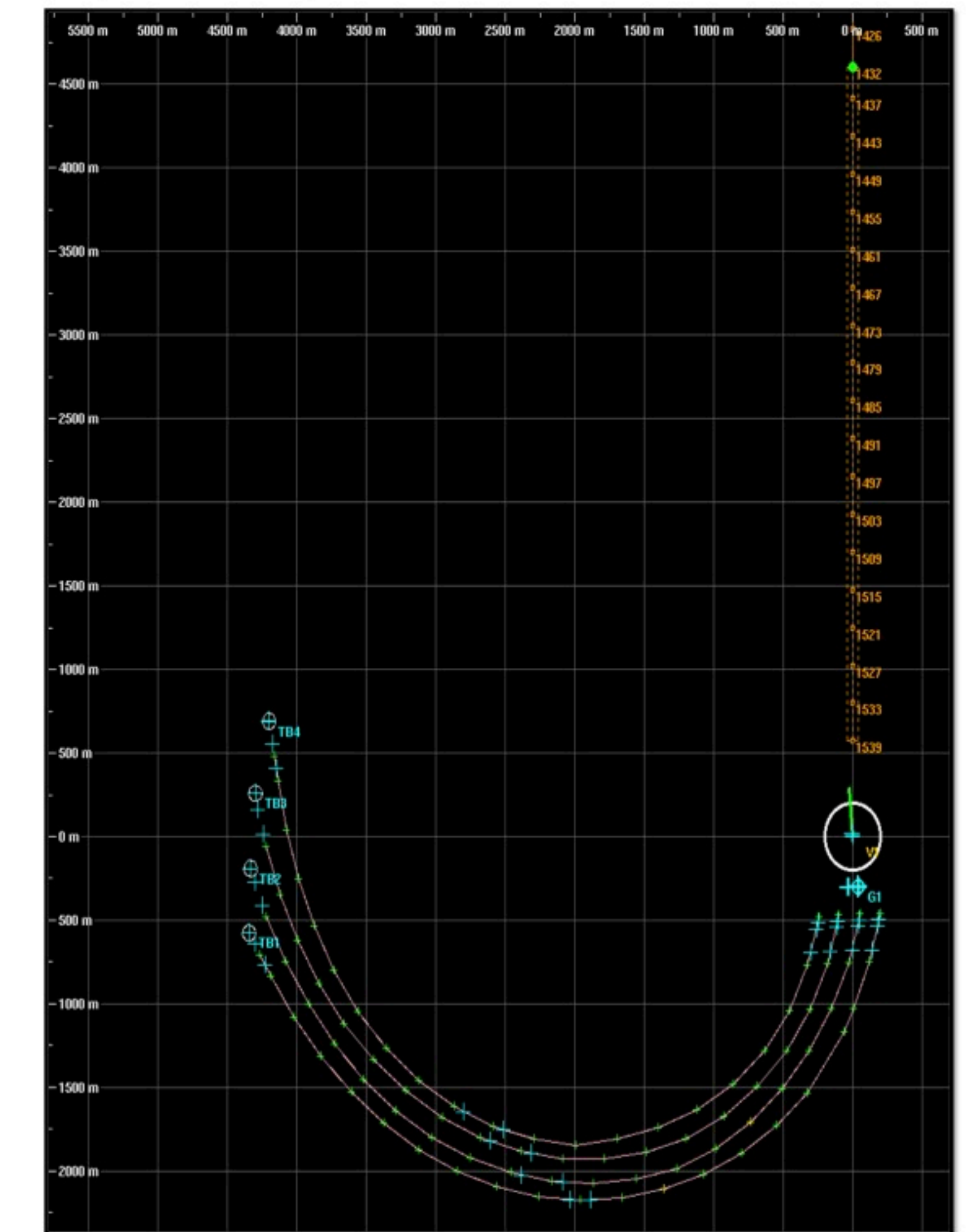


DETAIL OF FRONT END NETWORK



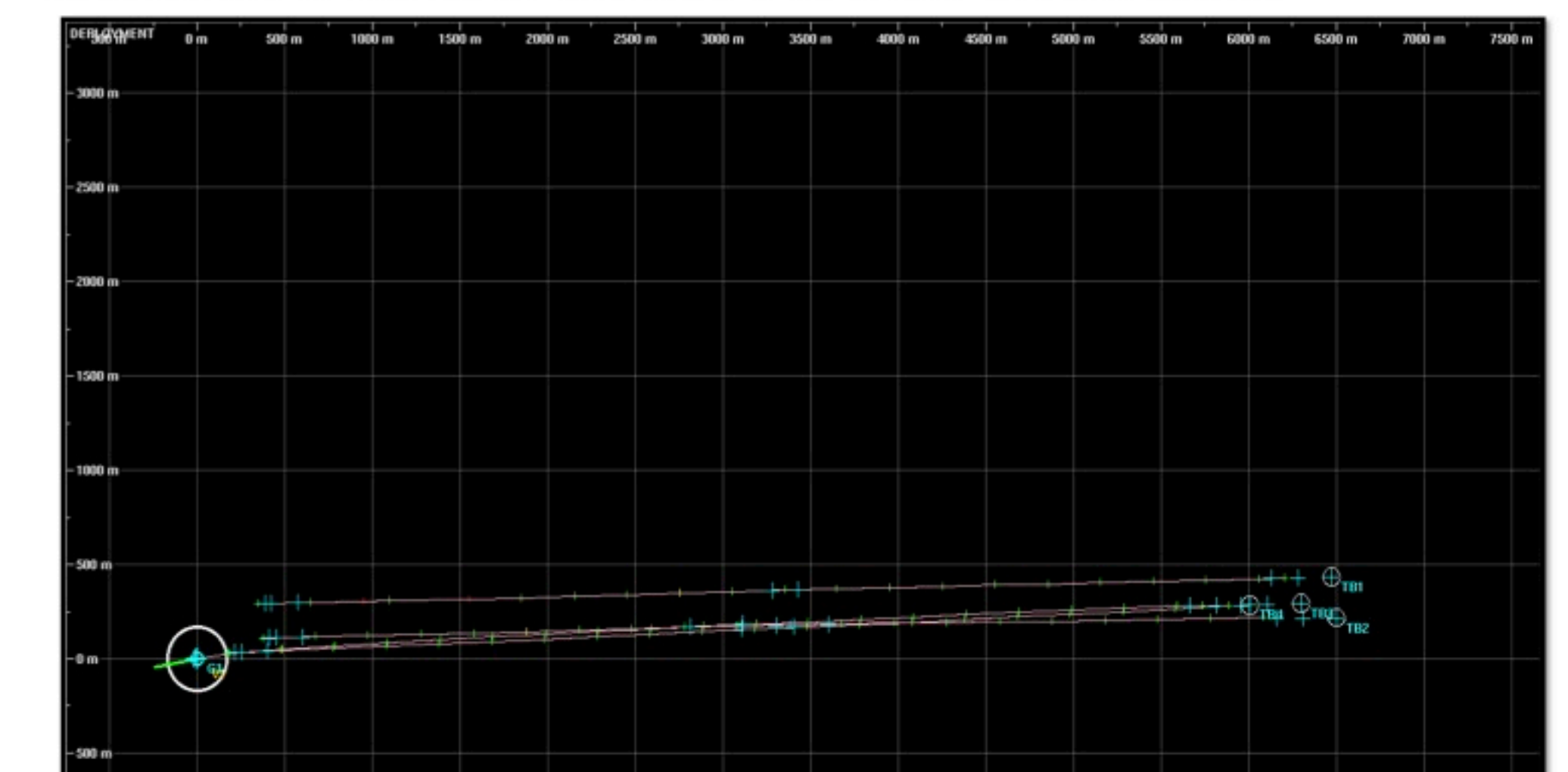
TURNING ONTO LINE

Vessel being navigated to the next line in the acquisition sequence. Note the preplotted shotpoint numbers on the sail line.



WHEN THINGS GO WRONG....

Example details streamers 3 & 4 having crossed over streamer 2. Knowing the in-water position of all deployed gear is of utmost importance to minimize damage and avoid entanglement.



CONTACTS

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