

## Case Study: Fugro Pelagos

Fugro Pelagos is a world leader in providing reliable and innovative solutions to the offshore oil and gas industry, which include a variety of tasks from high-precision rig positioning for oil exploration, to delivering preliminary seismic survey data, and pipeline inspections. The company operates in all the major offshore exploration areas with over 30 locations worldwide.

### Challenge

One of the areas in which Fugro Pelagos has been undertaking marine operations, is off the coast of Alaska, from northwest of the Aleutian Islands to as far east as Glacier Bay. The operations vary from hydrographic surveys to tidal studies, and for various organizations interested in fish harvesting and offshore exploration. Despite having access to the latest motion sensor marine technology, the company was having difficulty maintaining heave accuracy in the unpredictable sea conditions along the Alaskan Coast. Doug Lockhart explains, "The marine survey environment is extremely challenging. Long period waves with continuously variable swells in both period and amplitude can play havoc with just about any motion sensor."

### Solution

Fugro quickly saw the solution. By implementing Applanix TrueHeave technology with their existing POS MV system, they could very effectively improve their heave precision, with the added bonus of reducing heave artifacts at the same time. TrueHeave is based on an advanced processing algorithm, which uses both past and present vertical motion data, to compute a significantly improved heave estimate. The POS MV has sufficient computational speed to utilize a two-sided filter, which allows a secondary estimate of heave to be generated shortly after the sonar acquisition event.

### Result

The new system with TrueHeave installed was used operationally for the first time in 2003, when the company undertook a hydrographic survey for the National Oceanic and Atmospheric Administration (NOAA). Describing the results Doug Lockhart said, "In analyzing the data profiles we could immediately see an improvement in heave accuracy of about 20cm, which was substantial. We effectively improved the error budget from IHO Order 1 to IHO Special Order, an impressive feat given the sea state at the time of the survey."

In addition to improving the quality of their data, Fugro were able to take advantage of the reduction in heave artefacts generated with the new system. This allowed for a significant reduction in time and operational expense. TrueHeave dramatically reduces filter settling time as compared to a traditional heave filter, which almost completely eliminates the need for line run-ins. This means a saving of several minutes per survey line, which can translate into a saving of hours or even days worth of labor and vessel costs.

Image 1: Fugro Pelagos Vessel in Alaska



Image 2: Real-Time vs. True Heave vertical exaggeration

