

Making Advances

Dave Moffat and Jeff Cunkelman, ION Marine Imaging Systems, USA, give an overview of ION and Furgro-Geoteam's advanced marine streamer acquisition.

The E&P industry is challenged to meet increasing demand in the face of declining discoveries, scarce resources, and skyrocketing costs. To minimise exploration risk and expedite field development, oil and gas companies prefer service providers who supply high resolution images quickly, enabling asset teams to make fast, confident decisions.

To meet such demands, geophysical companies require new, innovative technology capable of increasing the quality and fidelity of seismic data while improving efficiency.

ION Geophysical Corporation is addressing these technology and resource challenges with an integrated approach, Intelligent Acquisition™ (IA). IA simplifies and automates operations while enhancing image quality through more complex survey geometries.

Advancing technology

ION and Furgro-Geoteam are collaborating to deploy state of the art streamer acquisition technologies that improve productivity and data quality for offshore seismic operations. As a company committed to providing a technical edge to its oil and gas company customers, Furgro-Geoteam has begun to outfit its

modern seismic fleet with three advanced technologies from ION's IA portfolio:

- DigiSTREAMER™ solid streamer data acquisition system.
- DigiFIN™ lateral streamer control.
- Orca® command and control.

Advancing data acquisition

Marine acquisition systems represent close to half the investment required to outfit a modern seismic vessel, so it is important to select one with the appropriate balance of acoustic performance, efficiency, and HSE features.

Furgro-Geoteam successfully deployed ION's first DigiSTREAMER data acquisition system on a 2D vessel involved in a commercial acquisition programme in the North Sea. DigiSTREAMER provides continuous acquisition in an extended weather window using low noise, solid streamer technology. The system increases productivity while providing the highest overall bandwidth of any commercial system, which is critical to capturing a wide range of frequencies for improved image quality. In production since April this year, less than six hours of downtime has been attributed to the system in its first



Figure 1. DigiSTREAMER installation on Fugro-Geoteam vessel in April.

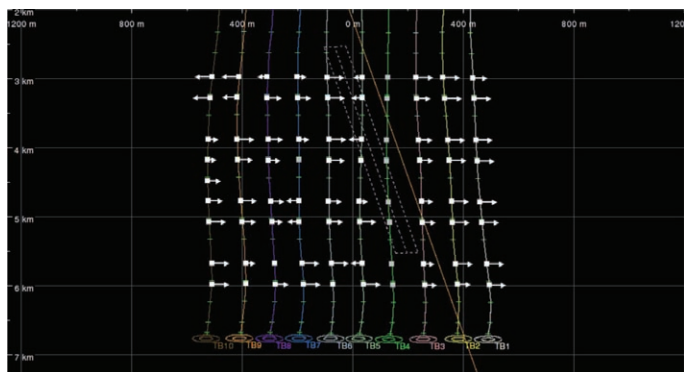


Figure 2. Orca display monitoring DigiFIN even streamer separation.



Figure 3. DigiFIN lateral control.

four months of operation. The solid active sections reduce environmental exposure and the uniform ballast is designed to reduce workboat activity.

Advancing spread positioning

The latest requirements for high resolution seismic imaging have necessitated an increased number and length of streamer cables towed closely together for denser spatial sampling. Unfortunately, variables in the marine environment can cause the streamers to feather and form asymmetrical shapes, increasing the risk of tangling. To mitigate this risk, the cross line bin size, and ultimately image quality, was determined by equipment limitations rather than geophysical objectives.

Until now, only one company with proprietary technology was able to provide lateral control capabilities. ION utilised its CompassBird technology to develop DigiFIN lateral control. Fugro-Geoteam benefited from spread stability and control by deploying DigiFIN throughout a 10 streamer configuration during a recent survey in challenging ocean current conditions. DigiFIN controlled the spread resulting in tighter, more uniform cable separation for repeatable, finely sampled seismic data and minimal infill.

Fugro has ordered four additional DigiFIN systems, including one for its flagship Geo Celtic vessel.

Advancing command and control

The ideal navigation platform integrates systems and centralises data to automate and simplify operations spanning the seismic workflow. These advanced management and control capabilities become increasingly important as surveys become more complex, competition intensifies, and resources become scarcer.

Fugro recently upgraded a third vessel in its fleet to Orca; ION's next generation command and control software system for marine towed streamer vessels. Building on industry leading Spectra, Sprint, and Reflex, Orca streamlines data management and provides greater visibility and control into the full scope of streamer operations, ranging from 2D surveys to complex, multi vessel programs.

Intelligent Acquisition

DigiSTREAMER, DigiFIN, and Orca are critical components of ION's aim to usher in a new era of marine streamer acquisition with an approach called IA. By integrating traditionally stand alone acquisition, navigation, positioning, and source systems in a seamless platform, IA aims to simplify and automate operations while enabling improved image quality through more complex survey geometries. IA is designed to dynamically position the spread to optimal parameters and reduce the complexity of configuring, controlling, and monitoring acquisition while decreasing cycle time and cost.

Future co-operation

ION's portfolio of advanced technologies improves data quality and productivity. Integrating ION's marine technology in a single intelligent system will leverage all available data to automatically control acquisition and maximise image quality, efficiency, and safety. ION and Fugro-Geoteam will continue collaborating to deliver marine acquisition technologies that meet today's complex survey requirements and address the exploration and production challenges of tomorrow. 