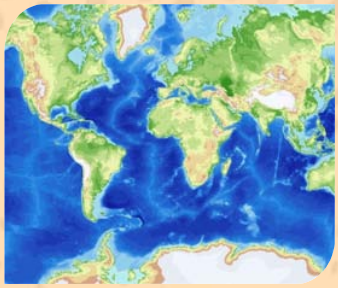
[IA] Arctic Solution

THE ARCTIC FRONTIER - RENEWED INTEREST



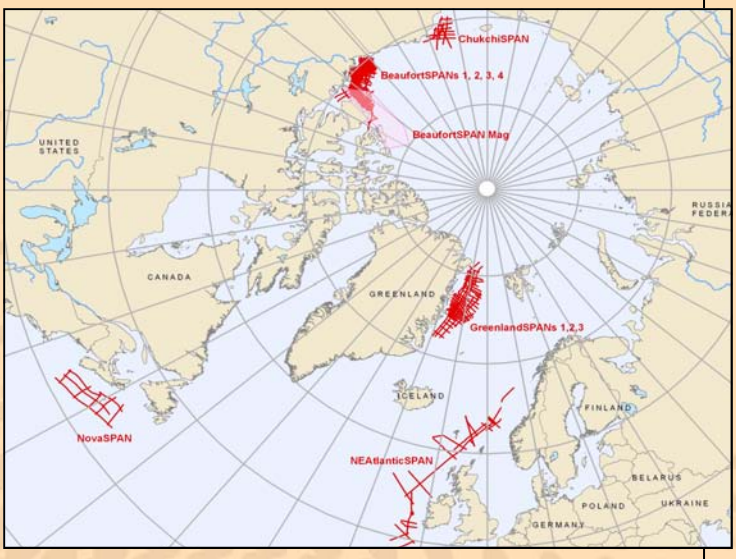
Recently oil and gas companies have renewed interest in the Arctic because it's one of the world's last untapped reserves. The most recent USGS reports estimate that approximately 25 percent of the world's remaining undiscovered reserves lie in the Arctic. Initial exploration was conducted through the early 1980's, but very little seismic activity has taken place since then. Now new advances in technology combined with sustained high oil prices and limited access have compelled E&P companies to take a second look at the Arctic for viable, economic production.

ARCTIC EXPERIENCE

ION has been on the forefront of that renewed exploration activity since 2006. Over the last few years, ION has acquired over 38,000 km of seismic data in the Arctic through multi-client programs in the Canadian Beaufort and US Chukchi seas. In 2009, ION acquired the first under ice long offset marine towed streamer survey off of Northeast Greenland. In 2011 ION returned to the Arctic with two under-ice marine streamer crews. Collectively known as ArcticSPAN™, these geologically-driven, basin-scale programs help oil and gas operators better understand the deepwater petroleum systems in the region and more effectively assess the Arctic's hydrocarbon potential.

THE CHALLENGES

Highly prospective areas of the Arctic had been bypassed due to the risks of operating in this environment. Harsh weather conditions and vast polar ice provide a very short seasonal window to complete seismic surveys. In addition, this extreme climate poses risks to personnel, equipment, and data quality. Until 2009, seismic exploration was designed to get as close to the ice as possible. ION recognized that to expand exploration beyond what we had achieved to date, it was going to require a new way to acquire seismic data in the Arctic. The result was ION's [IA]™ Arctic Solution, the first in-ice marine towed streamer survey, deployed in 2009 off the coast of Northeast Greenland.



ION's Arctic Region Programs

Built-to-Fit, Image-Driven Solutions

ION's Image-Driven™ portfolio of tools allows us to develop and deliver comprehensive, customized solutions across the entire seismic workflow. Focusing on our customer's imaging objective, we develop tailored solutions that integrate advanced hardware, software, and expert services. Our ultimate goal is to improve image quality while reducing risk and cost at every stage of the seismic process.

Whether working on 2D programs for regional geologic insight; 3D P-wave surveys to deliver high-quality structural imaging; or full-wave surveys that require a more complete measurement of the seismic wavefield — we always begin with close customer collaboration to fully understand and define their objectives. We then pinpoint survey parameters, acquisition technologies, and processing applications to deliver customized seismic imaging that will meet those objectives.

ION can provide the customized seismic imaging programs to meet your unconventional reservoir challenges. You can count on ION's proven experience, leading-edge toolkit, and world-renowned team of geoscientists and seismic operations experts to maximize the economic value of your resource play.

ION GEOVENTURES™

UNIQUE, COLLABORATIVE SOLUTION

ION's [IA] Arctic Solution is unique in that it is the first acquisition system designed to operate in the ice. It is a collaborative effort between ION's core competencies including:

- GeoVentures program management
- Marine Imaging System's [IA] Arctic technology
- Data processing by ION's GX Technology group

ARCTIC TECHNOLOGY

ION leveraged its Marine Imaging Systems division to develop a custom technology solution capable of overcoming challenges of in-ice acquisition. Intelligent Acquisition™ is an integrated, survey-wide platform that harnesses all available data to predict and actively drive the spread to acquire seismic data intelligently.

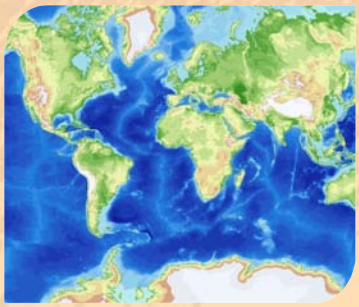
- **Polar-class icebreaker** clears a path for the seismic vessel following behind it
- **Proprietary towing arrangement** deflects remaining ice from streamer cables
- **Orca®** command and control centralizes and automates survey control
- **DigiSTREAMER™** solid streamer acquisition system excels in cold, icy conditions
- **DigiFIN™** and **DigiBIRD™** positioning systems actively steer cables around ice

BREAKING BARRIERS

ION's highly skilled program management team with extensive Arctic expertise pulled together a complete solution to image the Northeast Greenland coast. Known as one of the largest untapped reserves with some of the heaviest ice, ION's [IA] Arctic solution enabled acquisition under the ice in areas thought to be previously inaccessible. ION's success in Northeast Greenland provided a step forward in seismic acquisition by:

- Increasing the operating window
- Improving the likelihood of survey completion
- Expanding exploration areas
- Mitigating risk in the field
- Reducing operational costs

ION Acquires Data in Icy Offshore Northeast Greenland



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