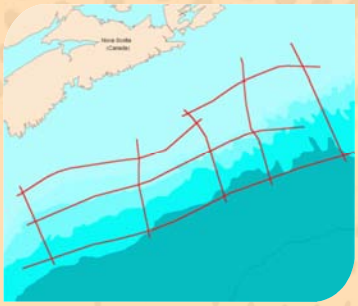
NovaSPAN

PROGRAM OVERVIEW

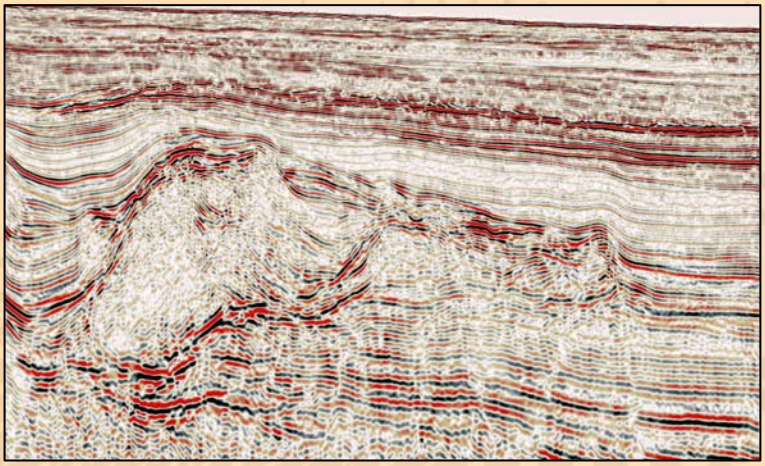


Historically, areas from the Canadian-U.S. boundary to the prospective waters of offshore southern Newfoundland have lacked a consistent regional seismic framework and needed depth imaging to properly target deep shelf reservoirs and identify untapped reserves.

ION's NovaSPAN™ was designed to deliver a new and superior insight into the geologic evolution and basin architecture of the Scotian Margin. The project provides a regional 2D seismic framework that spans the area from Georges Bank through the Sable Delta to the western edge of the Laurentian Channel.

All lines were acquired to correlate major seismic events from near shore into the deep basin and to tie the principal structural and stratigraphic features and key wells. The lines are located and oriented to image subsalt and basement geology with the purpose of understanding the true extent of the system, both laterally and vertically. The data provides the Scotian Margin with a much-needed, state-of-the-art, comprehensive, regional framework, required to understand existing plays and enable new play concepts and sediment fairways.

This survey is expected to provide new insights into the architecture of the Scotian Margin by increasing the effectiveness of the existing data sets with improved event identification and cross-survey correlation, thus delivering improved, cost-effective interpretation, mitigating geological risk and increasing the ventures' probability of success.



Deep Water Imaging

About BasinSPANS™

ION's BasinSPANS (SPANS) are geologically inspired, basin-scale seismic data programs acquired and depth-imaged by ION's unmatched GX Technology experts using the most advanced geological and geophysical processing tools available. They provide upstream companies with the ability to evaluate the geologic evolution, deep basin architecture and depositional and structural histories of entire petroleum systems in a region.

Unlike conventional multi-client seismic surveys, BasinSPANS are custom designed in collaboration with ION's GeoVentures group, regional experts and the O&G companies. Once the program objectives are agreed upon, ION serves as project manager and applies the best survey design, acquisition and processing technologies with a proprietary mindset that adds value and achieves exceptional results. Such in-depth data and the associated interpretation tools greatly assists asset managers with portfolio management and provides significant risk mitigation as they develop exploration and appraisal programs with greater confidence.

ION owns one of the most up-to-date seismic data libraries in the industry, consisting of 2D, 3D and full-wave (multicomponent) data from around the world.

ION GEOVENTURES™

PROGRAM OBJECTIVES

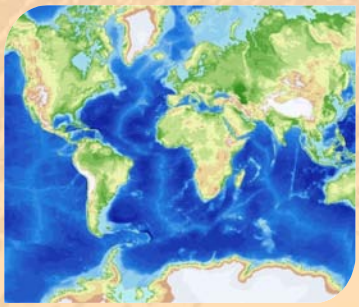
- To properly target deep shelf reservoirs and identify untapped reserves
- To provide a more comprehensive understanding into the geologic evolution and basin architecture of the margins of Nova Scotia and Newfoundland
- To better understand the regional geology and the deeper, less explored areas of the basin.

KEY COMPONENTS

- Program design and physical layout of more than 3,000 km, driven by known geology, collected with 9,000 m offsets and 17 sec record time
- Integrated geologic and geophysical interpretation to improve understanding of key geologic features and places them in a basin-wide context
- Provides a consistent seismic regional framework to be used for tying in existing 2D and 3D seismic archives, which can allow direct correlation of older stratigraphy from the shelf to the deep basin
- Illustrates regional variation in structural style above multiple salt layers and provides insight into underlying crustal architecture of horsts, grabens, oceanic crust and fracture zones
- Applies technical specifications of acquisition, data processing and depth imaging of the seismic data
- Minimizes the effect of water bottom multiples with critical line placement and application of advanced technology

DELIVERABLES, WITH FULL PARTICIPATION, INCLUDE

- Navigation merged shot records (SEGY)
- Post-processed Kirchhoff PSDM stack (SEGY)
- Final depth, interval velocity model (SEGY)
- Structural and stratigraphic interpretation (faults and horizons)
- Individual line displays annotated with interpretation, wells and fields
- Final acquisition, processing and interpretation reports
- Structural and stratigraphic analysis and line summaries



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