

## **An Integrated Approach to Hydrocarbon Prospectivity in the South Western Barents Sea**

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Large areas of the south western Barents Sea remain unexplored. An integrated approach to the understanding of the south western Barents Sea is presented in order to determine prospectivity and risk in areas of sparse well control. Only 76 wells have been drilled in the south western Barents Sea and nearly half of those are inside the Hammerfest basin. The total area of the south western Barents Sea that is available for licence is approximately 250,000km<sup>2</sup>. This method of integrated evaluation will help to determine more accurately potential resources and risk of leads and prospects.

The most accurate structure maps are dependent upon state-of-the-art seismic data for imaging the deepest formations and accurately delineating fault planes and salt diapirs in structurally complex regions. A grid of long offset data has been shot across the south western Barents Sea and provides the latest insight into structure and detailed seismic stratigraphy of formations.

In addition, basement reflectors can be more accurately picked on this data for input into geohistory and source maturity modelling. These long regional lines that straddle right across the area covering different basins and highs have enabled a more accurate assessment of recent Tertiary exhumation and erosion that has severely affected the area. (Examples of the data quality are shown)

These structure maps form the basis for formation isopachs that can be integrated with geological parameter maps. By integrating petrophysical and geological data with accurate seismic isopachs, geological parameter maps can be produced that have been conditioned to the seismic maps. These maps can then be used for parameter input into resource calculations. For prospect generation and evaluation seismically conditioned geological parameter maps provide a more accurate prediction of resources and risking than solely relying on contoured well control points. A series of reservoir parameter maps are shown comparing those based solely on well data and those integrated with seismic maps. Examples of prospects are shown comparing input resource parameters from each set of maps and the resulting risks.

Large areas of the south western Barents Sea remain unexplored and prospective for oil and gas. More accurate prediction of reservoir quality, source rock presence and maturity is possible when well data is integrated with the latest structural depth maps