Iceland Exploration Revived

Recent license awards suggest that active exploration may soon resume in Iceland's freezing waters

Iceland is currently not producing oil or gas. However, the very first oil and gas offshore licensing round of some 40,000 km^2 on the Jan Mayen Ridge, which lies between Norway and Iceland, was announced in 2009. In October 2011 the second licensing round was announced, which has resulted in the award in January 2013 of the country's first exploration and production licenses, to operators Faroe Petroleum and Valiant Petroleum. A third application was also received from Eykon Energy, and the applicant has been given until May 1, 2013 to find an additional participant in order to undertake the licensed activities.

Promising Geology

Following the opening of the Atlantic between Norway and Greenland in the Early Eocene, the Jan Mayen Ridge itself detached from Greenland in the Early Miocene, and now lies east of the mid-Atlantic spreading center as a discrete micro-continent. The Mesozoic and early Tertiary of the Jan Mayen Ridge has strong affinities to the sections of eastern Greenland, where oil is known to have been generated and trapped, as well as the petroleum systems west of Shetland, the Norwegian Sea and the northern North Sea of the UK.

The hydrocarbon play system of Jan Mayen comprises Middle and Upper Jurassic source rocks, charging Jurassic to Late Cretaceous sandstones within the Mesozoic sequence. Amplitude anomaly 'bright spots' and possible gas chimneys observed on the seismic, as well as pockmarks on the seafloor, indicate the presence of hydrocarbons in the basin.

Structural traps mappable on high quality reprocessed 2D data available in the area comprise both extensional rotated fault blocks, and very large inversion anticlines. Stratigraphic traps consisting of onlap pinchouts and constructional fan geometries have also been identified at several levels providing additional prospectivity.

Prospectivity has also been highlighted in a sampling survey that was conducted by the Norwegian Petroleum Directorate and the University of Bergen using a remotely operated vehicle, uncovering good quality sands and rocks of Mesozoic age, similar to the main source rock on Greenland. TGS has also acquired ten gravity cores and two dredges in 2011, indicating active seepage of Jurassic oil and the existence of a petroleum system on the Jan Mayen Ridge.

What's Next?

Even though no deep wells have been drilled on the Icelandic Shelf for the purpose of exploring for hydrocarbons, exploration activity and data acquisition has been ongoing since the 1970s, with seismic data being acquired by different geophysical companies. With the license awards further exploration activity will take place to unravel the Icelandic Continental Shelf. ■

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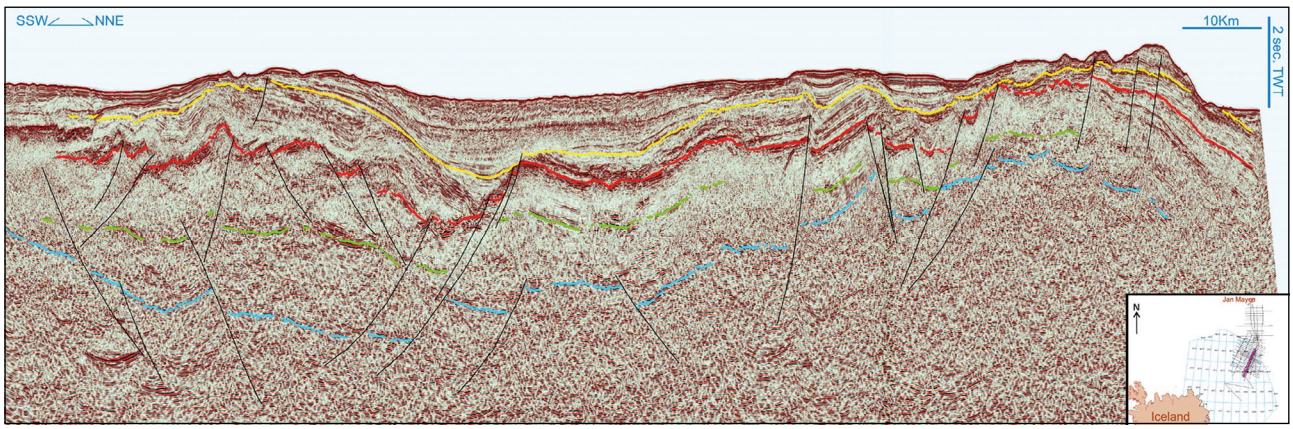
Seismic section across the licensed blocks of Iceland.



The sketch shows the geological interpretation of the seismic and the related Petroleum System.