

Geology and Assessment of Undiscovered Oil and Gas Resources of the Mezen' Basin Province, 2008

Chapter M of
The 2008 Circum-Arctic Resource Appraisal



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COVER

Eocene strata along the north side of Van Keulenfjorden, Svalbard, include basin-floor fan, marine slope, and deltaic to fluvial depositional facies. The age and facies of these strata are similar to Tertiary strata beneath the continental shelves of Arctic Eurasia, thus providing an analog for evaluating elements of those petroleum systems. Relief from sea level to top of upper bluff is approximately 1,500 feet. Photograph by David Houseknecht.

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Edited by T.E. Moore and D.L. Gautier

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U.S. Geological Survey**

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U.S. Geological Survey
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Geology and Assessment of Undiscovered Oil and Gas Resources of the Mezen' Basin Province, 2008

By Timothy R. Klett and Janet K. Pitman

Abstract

The Mezen' Basin Province is situated along the White and Barents Seas in the northeastern part of the Russian Federation. Only a small area of the province, part of one graben, extends slightly north of the Arctic Circle onto the Kanin-Kola monocline, where it converges with the Timan-Varanger deformed belt and the Fennoscandian shield (Roberts and Siedlecka, 2002).

The main petroleum potential in the Mezen' Basin Province is associated with grabens in which clastic Proterozoic source and reservoir rocks are present. One Proterozoic-Paleozoic Composite Total Petroleum System was defined, although Paleozoic and younger strata are too thin (<1–2 km) for significant petroleum accumulation. The total thickness of the sedimentary interval is <6 km. The Northwest Mezen' Basin Assessment Unit was delineated north of the Arctic Circle. Proterozoic (Riphean) mudstone is organic rich and thermally mature, providing a source for petroleum; younger Proterozoic (Vendian) rocks are also organic rich but thermally immature (Kuz'min, 2005). Because of its limited extent, the potential for an oil or gas field exceeding the minimum size of 50 million barrels of oil equivalent (MMBOE) within the small graben north of the Arctic Circle is remote (assessment-unit probability, 0.005). Therefore, the Mezen' Basin Province was not quantitatively assessed.

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