

## **Structure and Petroleum Potential of the Russian Arctic Sedimentary Basins**

**Anna A. Suslova<sup>1</sup>, Antonina Stupakova<sup>1</sup>, Roman Sautkin<sup>1</sup>, Maria Bolshakova<sup>1</sup>, Irina Sannikova<sup>1</sup>, Maria Agasheva<sup>1</sup>, Albina Gilmullina<sup>1</sup>, Dariya Pushkareva<sup>1</sup>, Yuriy Karpov<sup>1</sup>, Dmitry Mitronov<sup>1</sup>, Sergey Bordunov<sup>1</sup>, Alina Mordasova<sup>1</sup>**

<sup>1</sup>Petroleum Department of the Geological Faculty, Lomonosov Moscow State University, Moscow, Russian Federation.

### **ABSTRACT**

Within the Russian Arctic basins the following main tectonic elements can be identified: extensional depressions (Central Barents, Yenisei-Khatanga) with sedimentary thickness is more than 12- 14 km; platform massives with average thickness of sediments of 4 – 6 km, monoclines and tectonic steps, like transition zones between extensional depressions and platform massives. Thickness of the sedimentary cover within the offshore areas according to various sources is up to 7-9 km, in the North Chukchi trough – to 20 km. Arctic basins are filled by mainly Palaeozoic and Mesozoic sedimentary successions. In the sedimentary cover of this large region, many common stratigraphic complexes and unconformities can be traced within Palaeozoic and Mesozoic complexes that show similarity of geological stages of their formation. Analysis of the Russian Arctic basins, their structures and hydrocarbon prospectivity shows the areas, which are favourable for hydrocarbon accumulations. Epicenters of subsidence and maximum sedimentation of the basin. Ultra-deep depression – the most drawn parts of the sedimentary basin, which represent a system of linear troughs of rifting nature, experiencing prolonged plunging compensated by sediments. Ultra-deep depressions are common for the Paleozoic-Mesozoic basins, where the sedimentary cover thickness is doubled by Paleozoic and Mesozoic sedimentary complexes. In the epicenters of plunging, the consolidated crust is thinned to 10-15 km, and the longitudinal waves velocities in it are characteristic for the basalt layer. The depth of the Earth crust base (Moho) in such troughs varies from 25-35 km in the axial zones of plunging up to 40-42 km in the marginal parts. This ultra-deep depressions form regional gas accumulation belts, extending for thousands of kilometres, where the largest fields can be expected in the zones of their intersection with the major tectonic elements of another strike. On the flanks of the depressions the sedimentary cover profile does not contain the complete set of oil-and-gas-bearing complexes, identified in the central parts of the extensional depressions. Within the Barents-Kara shelf, the large belt of predominantly gas accumulation extends from the north of the West Siberian province through the South Kara basin and into the Barents Sea. The second potential belt of predominantly gas accumulation may be associated with the Laptev depression and North Chukchi Trough.