ORGANIC GEOCHEMISTRY OF THE BAZHENOV FORMATION - THE MAIN OIL-GENERATING FORMATION OF WEST SIBERIA

KONTOROVICH, A.E., DANILOVA, V.P., KOSTYREVA, E.A., MELENEVSKY, V.N., MOSKVIN, V.I. and FOMIN, A.N. Institute of Petroleum Geology SB RAS, Novosibirsk, Russia.

The Upper Jurassic (Volgian), distinguished as the Bashenov Formation, are spread over an area above 1 million km2 in the West Siberian petroleum megabasin. They accumulated in an extensive, relatively deep-sea basin with anoxic near-bottom waters and intermittently occurring hydrogen oxide contamination. The thickness is 28-30 m. The formation is composed of two main rock types. The first type is argillites and siliceous argillites. These rocks contain 5-7% Corg. The second type is carbonaceous-argillaceous-siliceous. N.B. Vassoyevich called them bazhenovites. They contain 15-25% Corg. The amount of bazhenovites in the section and Corg content in the rocks increase from the periphery to the central. Kerogen from the organic matter of bazhenovites and argillites of the formation contains 6.5-8.0% hydrogen and 2-3% sulphur. 13C values are (-31.8)-(-30.3)‰. Residual oil-generating potential of bazenovite OM is 350-450 mg HC/g TOC. OM catagenesis corresponds to the principal zone of oil formation (oil window) and only in the north of the basin to the beginning of the zone of intense gas generation. Among n-alkanes of the Bazhenov bitumens, the C17-C19 show maximum concentrations. The n-C27/n-C17 ratio, Pr/Ph ratio and CPI are less than 1.0. Steranes are dominated by cholestanes (C27). Terpanes are dominated by hopanes, followed by tricyclanes. The C23-C26 hydrocarbons show maximum concentrations among tricyclanes. Moretane and tetracyclane concentrations are low. The Bazhenov Formation has been identified to be the main oil source (above 80%) in the West Siberian basin. Genetic relationships between the organic matter of the Bazhenov Formation and the Upper Jurassic and Neocomian oils have been established.