LITHOLOGICAL AND MINERALOGICAL FEATURES OF LOWER TOARCIAN LACUSTRINE SEDIMENTS OF WEST SIBERIA

AKSENOVA, T. P., VAKULENKO, L. G., SOLOTCHINA, E. P. AND SOLOTCHIN P. A. Institute of Petroleum Geology Siberian Branch of RAS, Novosibirsk, Russia

Lower Toarcian silty-argillaceous sediments (2730-3250 m), are regional datum horizon, seals and hydrocarbon source rocks in West Siberia. Rocks were investigated using the optical and scanning electronic microscopy, X-ray, IR-spectroscopic and spectral analyses. The method of mathematical modeling of X-ray diffraction patterns of clay minerals was applied to separate components of clay substance. Three types of sections have been established: essentially argillaceous, silty-argillaceous and essentially psammitic. Lateral and vertical regularities in change of material structure rocks connected with the influence of clastic material sources, genesis of sediments and catagenesis are established. Clay component of rocks of the considered sections differs in a variety of clay minerals in sample, quantitative ratio of basic rock-forming minerals - illite and kaolinite, contents of non-clay minerals, kaolinite structural ordering, crystal chemical features of illite, chlorite, mixed-layer illite/smectite. The correlation of parageneses of clay minerals with the degree of metamorphism of organic matter was distinguished. Analysis of material composition, structural and textural features, interstratification character, geochemical and paleontological data specifies that the sediments accumulated in a humid climate in shallow basins with a changeable coastal line. Reducing-oxidizing potential varied in rather wide ranges. During Lower Toarcian prevailing lacustrine, marsh-lacustrine and marsh-lagoon conditions were periodically replaced by marine conditions. Against a background of general transgression 2-3 ingressions of sea have been established.