Sedimentary Evolution of Paleozoic and Triassic Sequences of Wrangel Island

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Wrangel Island is located between East Siberian and Chukchi Seas and composed of metamorphic Wrangelian Complex and overlying Silurian, Devonian, Carboniferous, Permian and Triassic sedimentary sequences (Kos'ko et al., 1993). In the present-day tectonic setting the sequences of the Island are deformed by Northvergent thrust faults and related folds, representing the near-frontal part of Late Kimmerian fold belt of Northeastern Eurasia. The collisional-related deformation probably took place in Neocomian (pre-Aptian) time, as it was shown for Chukotka Peninsula (Katkov, 2007; Sokolov et al., 2002).

Sedimentary sequences, exposed on Wrangel Island provide unique information about the age and composition of folded basement of South Chukchi and sedimentary cover of North Chukchi Basins respectively. Thus the study of Island is critical for regional tectonics and petroleum geology. During the field works of 2006 in the Central and Western parts of the Islands we studied and sampled all the mentioned above PZ-T rocks (Pease et al., 2007; Sokolov et al., 2007). Upper Silurian-Lower Devonian sequence is presented by two different units - terrigeneous and carbonate. Upper Devonian contains different clastic units, including conglomerates. Carboniferous sequence comprise mostly carbonate units with minor clastic and evaporates. Permian comprise carbonates as well, but is mostly slate dominated with minor coarser clastic. Triassic sequence corresponds to turbidites with quite thick sandstones beds. The main goal of the study is to understand regional stratigraphy and sedimentary evolution of East Siberian - Chukchi sector of Eastern Arctic. It is interesting to note, that carbonate rocks of Carboniferous age contain some organic-rich beds, whereas Permian slates are characterized by voluminous (much greater) amount of buried organic matter. It is also notable, that some intervals of Carboniferous and Permian obviously sulphidized. One of the most important intervals studied correspond to the intra-Permian transition from carbonate to clastic sedimentation and to be considered in details.

The study of Paleozoic-Triassic complexes of Wrangel Island also provides us the unique base for the correlation of sedimentary evolution between Russian and US sectors of Eastern Arctic.