

Depositional Environment and Structural Style of Permian and Triassic Sequences of Wrangel Island, Russian Arctic

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Chukchi and East Siberian Seas region represents one of the most remote and poorly studied areas of East Arctic. 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. In the present-day tectonic setting the sequences of the Island are deformed by North-vergent 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 the Chukchi and East Siberian Seas shelf, very promising for the oil and gas discoveries. During the field works of 2006 in the Central and Western parts of the Islands we were focused on the study of the Permian and Triassic clastic sequences. Permian strata is mostly slate dominated with minor coarser clastic, but comprise some carbonates. Triassic sequence corresponds to turbidites with quite thick sandstones beds. We noted, that the Permian slates are characterized by voluminous amount of buried organic matter and thus could be of regional significance for the further exploration. Some intervals of Permian are intensively sulphidized, showing the latest reducing environment. One of the most important intervals studied correspond to the intra-Permian transition from carbonate to clastic sedimentation. Triassic, Permian and older sequences of Wrangel were subjected to the latest extensional event, recognized by superimposed normal faulting and extensional veins formation, likely related to the South Chukchi Basin opening in post-Neocomian, Aptian(?)–Tertiary time. The weathering crust on the Southeastern part of the Island, developed above the Upper Triassic sequence, was referred as Late Cretaceous(?)–Paleocene in age (Kos'ko et al., 1993; 2003). In general the post-deformational strata of Upper Cretaceous (?)–Paleocene age could represent the upper parts of the adjoining South and North Chukchi offshore basins sedimentary infill, whereas Triassic and older sequences constitute the folded basement of South Chukchi and lower sedimentary section of North Chukchi Basin.

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