

Stratigraphic Model of Vendian Terrigenous Deposits of Nepa Arch (Nepa-Botuoba Antecline, Eastern Siberia)

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Nepa arch is located in the central part of Nepa-Botuoba antecline, in the southeast part of Eastern Siberia. Nepa arch is the most studied oil and gas area of Eastern Siberia. Such oil and gas fields as Vakunay, Verhne-Chona, Timpuchikan, Talakan and others have already been discovered. Revealing of oil and gas field shows high petroleum potential of this area.

Despite this fact there are still some unsolved questions. One of them is a productive horizon V_{10} stratification in conjunction zone Nepa-Botuoba antecline and Pre-Patoma regional trough. Here horizon V_{10} differs from horizon V_{10} of inside areas of Nepa-Botuoba antecline in its structure, structural and textural features. Therefore two types of horizon V_{10} were distinguished in the Nepa arch on this ground.

The first type of horizon V_{10} is identified in inside area of antecline (Verhne-Chona, Timpuchikan, Chaianda fields). Thickness of this type of horizon V_{10} reaches 10-12 m. It consists of quartz-fealdspathic sandstones with mudstone and siltstone interbeds with 1-2 m thickness.

Three parts can be selected in the first type of horizon V_{10} .

The lower section consists of alternation of anisomeric sandstones (mainly gritstones) and thin, lenticular mudstone and siltstone interbeds.

The midsection consists of fine-grained (rare medium-grained) argillaceous sandstones. This part of horizon V_{10} is characterized by higher radioactivity because of high content of clay minerals.

The upper section consists of alternation of anisomeric sandstones (mainly fine- and medium-grained sandstones) with lenticular and horizontal mudstone and siltstone interbeds.

Porosity of the first type of horizon V_{10} is ranging from 2-5 % to 22 %, the permeability reaches $500 \cdot 10^{-15} \text{ m}^2$.

The second type of horizon V_{10} was revealed in the southeast and the east slopes of antecline (Talakan field and other).

The second type of horizon V_{10} embodies heterogeneous alternation of sandstones and clay rocks. However a number of beds can be indicated. Each bed has clear marked bottom, where coarse-grained, gravel sandstones gradually moved on to mudstones lie. Sandstones are characterized by massive structure, rare lenticular, inclined bedding. Mudstones are characterized by horizontal bedding,

Porosity of the second type of horizon V_{10} is 10-15 %, the permeability reaches $200 \cdot 10^{-15} \text{ m}^2$.

Taking into consideration difference of structure between the first and the second types of horizon V_{10} it was decided to name horizon V_{10} of the second type horizon V_{11} , as it is older.