

Stratigraphic control of large detrital rocks of the Yuzhno-Sakhalinsk Mud Volcano

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Abstract. One of the crucial tasks in studying the genesis and deep structure of mud volcanoes is to determine the origin of the erupted material and the depth of its original location, the so-called roots. The purpose of this study was to present the first results of stratigraphic control of solid emissions from the Yuzhno-Sakhalinsk Mud Volcano with local stratigraphic units. As a result of field work, a collection of rock material sampled from the mud volcano deposits and natural outcrops of the stratigraphic units typical of the study area has been compiled. According to lithological characteristics, sandstones, siltstones, clay-bearing carbonate, and carbonate rocks have been identified among the large detrital rocks in the solid emissions of the Yuzhno-Sakhalinsk Mud Volcano. The largest group of rock fragments was represented by the sandstone, which was different in its structural and textural characteristics. The first confirmations have been obtained that the mud volcano chamber extends beyond the traditionally accepted boundaries of the Bykov Formation. The preliminary results of stratigraphic control of large detrital rocks indicate the highest lithological similarity with the deposits from the Lower Bykov Subformation and Naiba Formation, suggesting that the main source (mud volcano chamber) of the erupted large detrital rocks lies within the depth range of 2,500 to 3,500 meters. Evidence of Cenozoic rock inclusion in the mud volcano process has also been found.

Keywords:

mud volcano, mud volcano chamber, Central Sakhalin Fault, stratigraphic control, stratigraphic units, rocks

For citation: Verkhoturov A.A. Stratigraphic control of large detrital rocks of the Yuzhno-Sakhalinsk Mud Volcano. *Geosistemy peredodnykh zon = Geosystems of Transition Zones*, 2024, vol. 8, no. 2, pp. 104–113. (In Russ., abstr. in Engl.).

<https://doi.org/10.30730/gtr.2024.8.2.104-113> ; <https://www.elibrary.ru/jjlpzq>

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