



Paleomagnetism of the Permian-Triassic intrusions of the Norilsk region, Siberian Traps Province: implications for the ore-bearing intrusions genesis

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The Permian-Triassic intrusions of the Norilsk region belong to the Siberian Traps Large Igneous Province and are of exceptional interest due to the presence of the huge Cu-Ni-PGE deposits. At the present time, the plenty of models of the ore-bearing intrusions genesis exist. Since the various models suggest the different correlation of the ore-bearing intrusions to the volcanic section of the Siberian Traps (e.g. Naldrett et al., 1995), the reliable information about the correlation of the intrusive complexes with the lava pile is important for the understanding of the Norilsk deposits genesis.

We obtained the paleomagnetic directions for the intrusions of Norilsk, Ergalakhsky, Dal'dykan and Oganer complexes and compared them with the volcanic section. Sills of the Norilsk and Oganer complexes demonstrate the normal polarity and very close paleomagnetic directions and are likely coeval. Furthermore, the paleomagnetic data favors the correlation of the ore-bearing Norilsk intrusions with the Morongovsky – Mokulaevsky Formations of the upper part of the volcanic section of the Norilsk traps.

In addition, we found both reverse and normal polarities in two sills of the Ergalakhsky complex. Since the contact zones of these intrusions have the reverse polarity and the central parts show the normal polarity, we suggest that the emplacement of these sills took place during the geomagnetic reversal. This fact allows us to establish the age of the Ergalakhsky intrusions as the Permian – Triassic boundary, in the end of the Ivakinsky Formation lavas eruption. Since the Ergalakhsky complex represent the initial stage of the Siberian Traps magmatic activity, this result is important for the estimation of the total duration of the trap magmatism. Moreover, the studied sills can be used as the unique objects for the investigation of the geomagnetic field during the reversals and for the reconstruction of the thermal history of intrusions.

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