



Internal structure, rock composition and sulfide mineralization of Maslovskoe deposit (Noril'sk region, Siberia, Russia)

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One of the most important aspects of the unique Pt-Cu-Ni Noril'sk deposit's origin is that it probably is a united magmatic system. It is composed of lava and ultrabasic-basic intrusions with massive sulfide ores (Talnakh, Kharaelakh, Noril'sk 1) which is regarded as the tholeiitic magma feeders to the surface (Rad'ko, 1991; Naldrett, 1992, 1995; Naldrett et al, 1996; Li et al, 2003). Maslovskoe deposit situated to the North of the Noril'sk depression nearby the Noril'sk 1 deposit is the main part of this magmatic system. It consists of two parts: Northern and Southern intrusive branches but their relationships and correlation with Noril'sk 1 massif are not studied. The Northern branch intrudes the Ivakinsky formation rocks while the Southern one is located inside Nadezhdinsky formation (upper on 400 m). The main goals of this study were: to unravel the correlation between vertical sections of two intrusive bodies inside Maslovskoe deposit; to study mineralogical composition of rocks and sulfide ores, and to compare with the ones from Noril'sk 1.

Two main cross-sections (drills OM-4 and OM-24) show the essential differences between these branches: Northern intrusive branch have a very thick gabbro-diorite horizon and lacks taxitic gabbro-dolerites which are typical for Southern one and Noril'sk 1.

Olivine and pyroxene compositions from all intrusive bodies were studied by EPMA, SIMS and LA ICP-MS. There are differences between olivines from Northern intrusive branch and Noril'sk 1 and between Northern and Southern branches. Hence, they form two groups: the olivines of the first group is enriched in Ti (130-240 ppm), Cr, HREE, Y and depleted in Ca, V. The olivines of the second group are depleted in Ti (50-60 ppm) etc. Very similar distribution characterizes pyroxenes from the rocks of these three intrusions. They contain higher concentrations of Ti and REE (from Northern intrusive branch and Noril'sk 1) contrast to the pyroxenes from Southern branch.

Sulfide ores are represented by disseminated and droplets varies, sometimes veins and veinlets present in the lower part of these intrusions. Main minerals are pyrrhotite, pentlandite, chalcopyrite and cubanite. Rare minerals are gessite, millerite, native gold, silver. It is very important fact that many minerals of Pt and Pd were recognized in the ores from Northern branch of Maslovskoe deposit: atokite-rustenburgite, majakite, kotulskite, native Pd, maslovite, sperrilite, tetraferroplatinum, isoferroplatinum etc. They have grate size, up to 300-800 mcm while usually they form grains of a 20-50 mk size.

Conclusions. (1) Northern branch of Maslovskoe deposit is similar to Noril'sk 1 massif by geological structure, mineral composition of ores and rocks, as well as by the composition of olivines from gabbro-dolerites. It probably is its south-eastern end.

(2) The southern part of the deposit vastly differs from both Northern branch of Maslovskoe deposit and Noril'sk 1 massif by the structure of intrusive body and by minegalogic-geochemical parameters. It is supposed to be considered a separate massif of the Noril'sk complex.

(3). The position of Northern branch of Maslovskoe deposit within a cross-section of tufa-lava thickness casts doubt on the hypothesis of Noril'sk intrusives formation from initial Tuklon magma, since the massif breaks through not only Tuklonsky formation but also Nadezhdinsky formation.

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