

Origin of Platinum-Bearing Placers in the Aluchin Horst, Russian Far East

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Abstract

The Quaternary gold–platinum-group mineral (PGM) placers of the Aluchin horst, western Chukotka, Russian Far East, contain PGM (mostly Pt-Fe alloys) typical of those associated with Alaskan-Ural-type complexes. Such complexes intruded Mesozoic sedimentary rocks. They form the primary source of PGM. The PGM placer nuggets vary considerably in size (0.1–9 mm), shape, and degree of abrasion, indicating a long history of placer-forming processes. Some of the nuggets are covered by shells of detrital minerals (mostly Al-Si phases) indicating derivation from previous host sediments of the Volga (Late Jurassic) stage. The quartz inclusions observed in Pt-Fe alloys are detrital and have been pressed into the nuggets during lithification of the Volga sediments. Concentration of the PGM took place in two stages: during erosion of the Alaskan-Uraltype intrusions and deposition of PGM-bearing detritus in the lowermost Volga Series; and recycling of the Volga sediments and deposition of the PGM in placers during the Quaternary.