

## Prospects for increasing uranium resources in the Khiagda ore field (Russian Federation)

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The Khiagda ore field uranium deposits are located in the Republic of Buryatia, on the Amalat Plateau formed by the Neogene basalts.

The position of the ore field is defined by a large tectonic structure having a north-eastern strike the Baisykhan Uplift. The slopes of the Baisykhan dividing uplift are incised by short (4 to 16 km) lateral tributaries of the Amalat and Atalanga paleorivers. The paleovalley network is filled with terrigenous-volcanogenic units of the Miocene Dzhilinda Formation (N1dz) buried under a thick cover of plateau basalts.

The upheaval of the Baisykhan Uplift in the Neogene caused the penetration of the hydrodynamic flow of oxygenous uranium-bearing water into the sedimentary rock mass and formation of the subsoil/tabular oxidation zone (STOZ) on the boundary of which there formed uranium mineralisation.

The new data obtained from geological exploration activities and mining of the ore field deposits allow for the following confident statements:

- the current position of the Khiagda field uranium mineralization is controlled by the STOZ pinching-out boundary;
- the STOZ underwent partial gley reduction which is accompanied by the removal of soluble iron;
- the development of the STOZ within the Khiagda ore field takes place from the Baisykhan Uplift in the sides of the Atalanga and Amalat paleovalleys. In plan view it has a continuous complex bay-like morphology of the pinch-out;
- the oxidation zone and uranium mineralisation is developing in all permeable assemblages of rocks:
  - in the weathering crust of granites and in the disintegrated fractured portion of granites of the Paleozoic basement;
  - in the sedimentary, volcanogenic-sedimentary and

The volcanogenic deposits of the Neogene Dzhilinda Formation;

The STOZ pinching-out within the Khiagda ore field and associated uranium mineralisation have currently been studied in detail only in the basal portions of the sedimentary deposits of the Lower and Upper Members of the Lower Dzhilinda Formation. This has been done in the upper reaches of the revealed principal paleotributaries of the Atalanga and Amalat stem paleovalleys, within the areas of the STOZ pinching-out near the thalwegs of the paleotributaries. No detail study of the pinching-out of the oxidation zone that retreats to the sides in the lower reaches of the paleotributaries and the sides of the stem paleovalleys or in the upper layers of sedimentary deposits has been performed.

A detailed study of these areas will allow a significant increase in uranium resources in the deposits most proximate to those explored and mined.

The pinching-out of the STOZ and associated mineralisation occurring in the volcanic-sedimentary deposits of the Dzhilinda Formation within the Khiagda ore field has been intersected by single lines of holes drilled in some of the deposits. A focused study of this ore-bearing level within the area of the entire ore field will reveal multi-layer mineralisation associated with the pinching-out of the STOZ not only in the upper reaches of the paleotributaries but also in the sides of the Amalat, Atalanga stem paleovalleys.

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