

TECHNIQUE OF A PROGNOSIS AND PROSPECTING OF DIAMOND S HOST ROCKS ON THE SOUTH OF SIBERIAN PLATFORM.

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The technique of a prognosis and prospecting of diamond s host rocks worked out with help of the system approach. Flow sheet of investigations for local forecasting is following:

1. Data base analysis and the substantiation of the scale of forecast map.
2. Typological analysis and the classification of all diamonds deposits and manifestations of diamond's discovered before.
3. The investigation of typical and standard objects (kimberlite districts, fields, bodies).
4. The formation of geologo-genetic models of kimberlites.
5. Detecting of ore-control factors with evaluation of the scales of their manifestation in geological space: magmatic (sources of diamonds), tectonic (structures of localization of kimberlite districts, fields, bodies), dynamic (stress state of ore emplacement environment), metamorphic (the transformation of substance), lithological (environment of ore emplacement), stratigraphic factors.
6. Detecting of regularities of diamond s host rocks localization
7. The substantiation of prognosis criteria for objects of forecasting: diamond subprovince, district, field, body. Criteria of the prognosis: geological (magmatic, structural, mineralogic, lithological, dynamic), geophysical (magnetometric, gravimetric, electrometric, seismometric, radiometric), geochemical (scatterings, isotopic).
8. The selection of optimum complex of the forecast criteria and methods of their observation and measuring.
9. The formation of physico-geological model (PGM) of the forecast objects.
10. The compilation of the forecast map reflecting the probability of detecting of the aim objects.
11. Quantitative evaluation of forecasting diamond s resources.
12. Geologo-economical evaluation of the objects of forecasting.

The dynamics PGM of diamond subprovince and of the diamond district, the static PGM s of kimberlite subprovince, kimberlite district, PGM of Kimberlite field (a-with primary magmatic

chamber, b-without primary magmatic chamber) were created. Elements of the dynamic PGM of diamond subprovince and of the diamond district are following: asteno-lenses; earth crust; plastic mantle substance; viscous mantle substance; basalts; overthrusts and underthrusts; zones of deep faults; levels of an oversaturation of the substance by volatile components when their contents is equal 4,5%, vectors of the pressure gradient determining the motion of a substance; the domain of detecting of volatile components into independent phase; directions of motion of volatile components; gas lens of intermediate accumulation of volatile components; the volcanic display on the earth surface; extrapolated curve of water solubility in silicate melting with temperature 1000° C ; subvertical crust-mantle zones of higher electric conductivity and density.

The following complex of geological and geophysical criteria was chosen.

Kimberlite subprovince: the depression in a relief of mantle free surface, the immersion of asthenosphere surface (the depth > 150 km), increasing of the thickness of the lithosphere, haloes of mantle diapirs.

Kimberlite district : increasing of the thickness of the lithosphere and Earth crust , rising a ground of the surface of crystalline basement , the system of mantle diapirs pressing zones in the lithosphere , highly crust-mantle heterogeneity with high density and low conductivity , anomalous unhomogeneous mantle characterizing by seismic velocity 8,4 km/s within Moho surface , subvertical crust mantle zones of higher electric conductivity, finds of diamonds and their mineral-satellites

Kimberlite field : increasing of the thickness of the earth crust , structural- erosion ledges of the crystalline-basement surface , mantle diapir , subvertical crust-mantle zones of the higher electric conductivity and low density , finds of diamonds and their mineral - satellites , local anomalies ΔT and Δg , Kimberlites bodies.

The technology of prospecting of diamonds is substantiated with help of successive approaches. It consists from the following steps : the main target object - techniques - industrial geophysical works. All geological and geophysical methods (magnetic , gravity , electric and seismic prospecting , geochemical survey) are used for prognosis and prospecting of diamonds.