

Seismic zoning of the Teutejak ore field area (Magadan region)

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Abstract. Earthquakes' nature was studied and detailed seismic zoning and seismic micro-zoning were carried out for the Teutejak ore field area (Magadan region), considering geological, geophysical and seismological data. Detailed seismic zoning was based on tectonic zoning maps of Magadan region and seismological monitoring data in the vicinity the Teutejak ore field area, carried out by MB GS RAS. 10 source zones and 8 faults generating earthquakes were identified. Hypocenters of potential maximum earthquakes were determined. They are associated with the largest deep faults (Khurensky and Chelomdzha-Yamsky) and can cause ground shake in the area of main structures. According to the results of the JSR, the initial (background) seismicity in the area of the ore field for objects with an increased level of responsiveness is 9 points, the magnitude of the most dangerous earthquake according to calculations will be $MS = 7.5$. The initial seismicity for objects with a normal level of responsibility is 8 points, the magnitude of the most dangerous earthquake will be $MS = 6.8$. The obtained results of the detailed seismic zoning were the initial estimates of seismic impacts for seismic micro-zoning. The initial seismicity for objects with a normal level of responsibility is 8 points, the magnitude of the most dangerous earthquake will be $MS = 6.8$. The calculated increment of the score and the calculated intensity of the seismic impact on the 10 areas, characterized by different engineering and geological conditions of the soils of the upper part of the section, both the method of direct registration of earthquakes and explosions, and the method of acoustic stiffness were used. The research results are shown on detailed seismic zoning map.

Keywords Seismic hazard, seismic activity, source zones, seismic shake parameters, detailed seismic zoning, seismic micro-zoning, seismic profiling.

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