

Inrush of Ay River Water into Kurgazakskaya Mine Workings as Trigger for Tectonic Rock Burst

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A hypothetical mechanism of one of the strongest rock bursts ever at Russian mines is considered in this paper. Kurgazakskaya mine is located in one of the geodynamically active areas of the southern Urals near the Ay river course. The mine field is intersected by major tectonic faults, which incidentally constitute boundaries of the crustal blocks that are active in the current stress field with a horizontally oriented axis of maximum compression. Mining operations created large gob areas supported by pillars. Over and over again karst voids used to be developed at the same place of the Ay river bed where it crosses the boundary of the active crustal blocks and it is there that river water ingressed into the mine workings through tectonic faults. This paper considers the case when the normal stresses at the major fault plane decreased due to hydrostatic expansion pressure after yet another inrush of river waters into tectonic faults which triggered a tectonic rock burst with sudden fault wall displacement towards the mined-out area. It is concluded that the inrush of the Ay river water into the mine workings through tectonic faults could be the trigger of the tectonic rock burst.