

IMPROVING FRAGMENTATION DURING RING-HOLE BLASTING IN COAL IN BLASTING GALLERY PANELS

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ABSTRACT

Blasting Gallery (BG) method was introduced in India for higher production and low cost of excavation to substitute conventional hand section and stowing methods for thick coal seam. The Singareni Collieries Company Ltd. (SCCL) adopted this method in the year 1989 and since then successfully operating at GDK-10, GDK-8 & VK-7 Incline mines in Andra Pradesh, a southern state of India. It is also successful at Chora 10 Pit Colliery of Eastern Coalfields Ltd. (ECL) in West Bengal whereas at East Katras Colliery of Bharat Coking Coal Ltd. (BCCL) in Jharkhand State, the method has been partially successful due to some geological constraints of the area.

An important aspect of BG method of extraction is the fragmentation of blasted coal which should be at optimum level so that they can easily be lifted totally by remote controlled LHDs thereby mitigating the possibility of occurrence of spontaneous heating in BG districts before exhaustion of the panel.

Central Mining Research Institute (CMRI) undertook one S&T Project sponsored by the Ministry of Coal and Mines, Govt. of India to study this sensitive problem in order to evolve suggestive guidelines of design patterns under varying geomining and site constrains. Under such scheme, a total of 180 ring-blasts were conducted at different sites and thoroughly monitored for establishing optimum design patterns. Different drill designs, staggered charging patterns, use of smaller and bigger spacers while charging, strata monitoring and blast damage index were the key parameters mostly concentrated upon.

This paper briefs the scientific approaches and consequent field investigations followed during trial blasts to improve fragmentation of coal to a significant level at reduced charge.