

## The Executive Summary of Projects

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| <p><b><u>Project title:</u></b><br/>Design for Induced caving by Blasting for the Depillaring Workings of the King Seam at PVK 5 Incline Mine, SCCL for the Designated CM Project Area of M/s GainwellComosales Private Limited</p> <p><b><u>Project No.</u></b><br/>CNP/4872/2019-20</p> | <p><b><u>Executive Summary:</u></b><br/>This report relates to the study of hard roof management using induced caving by blasting in the proposed depillaring panels of King seam using continuous miner at PVK-5 Incline, SCCL. The cavability index of the overlying rock strata of King seam up to 23.42 m come under the category both 'Easily cavable roof' and 'Moderately cavable'. Regular roof falls are expected to occur during depillaring operations as per the draft report submitted by CSIR-CIMFR (CNP/4873/2019-20). However, massive formation of coarse to very coarse grained sandstone stratum having layer thickness of 3.49 m and RQD value more than 85% is also present in the immediate roof of King seam. Therefore, caving may be delayed due to massiveness of the roof although compressive strength and cavability index are less. Hence, induced caving by blasting may be necessary to cave the overhanging roof if regular falls do not occur in the depillaring panel. Therefore, the blast designs have been suggested for safe and effective caving of the overhanging roof for the proposed CM panels. Based on the study of the different strata of the overlying roof, the following conclusions and recommendations are made for conducting safe and efficient induced blasting in the proposed depillaring panels at PVK-5 Incline, SCCL.</p> <ol style="list-style-type: none"><li>(1) Two processes of induced blasting have been suggested for strata control in the depillaring panels such as: (i) induced blasting along the barrier pillar to create initial fracture line and (ii) induced blasting along the line of extraction.</li><li>(2) The main purpose of induced blasting along the barrier pillars is to ease the caving of the roof as well as to prevent chances of damage to the isolation stoppings and overriding of barrier pillars during main fall. Hole depths for induced blasting along the barrier pillars are combination of 1.8 m and 2.1 m, drilled in three rows.</li><li>(3) Induced blasting should also be conducted in every main junction as well as split junction along the line of extraction. Holes should be drilled out-bye side of the breaker lines, inclining towards the goaf.</li></ol> |
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|  | <p>(4) The rock strata having highest cavability index in the overlying roof of King seam is located at 8.5 m. Therefore, two rows of holes with 10.5 m and 8.2 m lengths having inclinations of and 55° and 45° respectively towards the goaf are recommended for induced blasting along the line of extraction to encounter this strata.</p> <p>(5) The fan angles for the corner holes should be maintained properly such that a minimum distance of 2.5 m parting should be made to avoid damages to the overlying roof rocks of the next coal pillars to be extracted.</p> <p>(6) The assessment of ground vibration generated by induced blasting for various distances have been carried out based on similar studies conducted by CSIR-CIMFR in different underground coal mines in India. The suggested safe levels of explosive charge for induced blasting are given in <i>Table 8</i> and <i>Figure 14</i>.</p> <p>(7) Monitoring of ground vibrations on surface as well as in underground for each induced blasting have been recommended for the safety of surface structures, underground openings (roof and sides of the galleries) and other underground installations. Pre and post-blast gases should also be measured for the safety of underground working environment.</p> <p>(8) The suggested guidelines for induced blasting as given in <i>Section-7</i> should be followed for safe and effective induced blasting operation.</p> |
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