

A Paradigm Shift in Underground Raise Bore Reamer Removal

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ABSTRACT

Up until this point there had been two methods of removing reamer heads once the reaming of an underground shaft had been completed:

1. Lower the reamer head to the base of the shaft and use a thermal lance to cut the drill string and drag the reamer away from the hole. This method exposes the person doing the job to falling rocks from the unsupported mineshaft, a hazard which is difficult to control and has caused fatalities.
2. At the top of hole, install lifting plates in the backs above the reamer head and use pneumatic chain hoists to lift the reamer out of the hole. Steel beams are then placed across the hole which the reamer is lowered down onto, dragged forward away from the hole, disassembled and removed. This method is time consuming, expensive and complex in the controls required to ensure safe completion of the job

At Carrapateena, we had successfully been using the chain hoist method but there was still a belief that there must be a better way. Oz Minerals collaborated with Pybar to develop an industry first application of Enerpac SL100 lift and shift technology; a track mounted system with hydraulic lifting units that can both lift the reamer out of the hole but tram it back along the tracks away from the hole. One key component of turning the idea into a reality was made possible by a trusting and truly collaborative relationship between client and contractor. First arrival of the SL100 saw it being set up in Adelaide and trialled with the whole raise bore crew attending the two day workshop and risk assessment; a rare opportunity for drillers. There have now been three successful Reamer removals with the Enerpac SL100 at Carrapateena. It has proven to be an efficient process with the entire process from setup to demobilisation taking less than 48 hours. This new way has completely removed hot works and uncontrolled hazards from working at the bottom of a shaft as well as saving the reamer stem from being cut and thus wasted. Exposure to the open hole has been minimised significantly as assembly of the SL100 can be achieved whilst hole covers are in place. Not only is this new process quicker and cheaper but it is exponentially safer.