Cast Blasting as a Cost Saving Reclamation Tool: A Case Study[1]

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Abstract: Cast blasting is typically used in a production setting to uncover coal, but it can be adapted to surface mine reclamation of highwalls. The main purpose of cast blasting is to use explosive energy to move overburden material to the final location of the spoil pile, thereby reducing mechanical loading, and hauling requirements. When using cast blasting for reclamation purposes, highwall material is being cast to backfill the former production pit. It is possible to use blasting to displace the top part of the highwall to the bottom part of the slope almost getting 100 percent cast-to-final. Cast-to-final for reclamation can be considered as any material below the final grade line that is not moved by equipment. Cast blasting was proposed as a conceptual design, as opposed to mechanical loading and hauling, to move native overburden material for the annual bond release estimates on the Eagle Butte surface coal mine in Wyoming. Movement of native overburden material represented 30% of the total bond cost, and this novel method significantly reduced earth movement cost for annual reclamation bond reporting requirements. All changes to bond release documentation must be approved by the State of Wyoming, and cast blasting for reclamation was approved in this case. Details of the conceptual design will be provided.[3]

Additional Key Words: Overburden; Earth Movement; Bond Release; Backfilling

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3. Work reported here was conducted near 44° 23’ 16” N; 105° 30’ 54” W.