Electronic Detonators Exceed Conventional NONEL® Limitations in Stopes

Project Summary

GREATER INITIATION LIMITATIONS REQUIRED

This mine in Washington State needed an initiation system that would not restrict them from blasting a much larger stope than they typically do, with a single hole initiation.

The primary constraint was access availability back into the stope after it was blasted. Vibration constraints originating from a complaining neighbor were also a factor. This underground operation historically used EZ-Det 17/700 which was very reliable in their production stopes. However, this access restricting stope blast event was going to require a different initiation system because of the greater number of holes required to complete the blast design.

Background

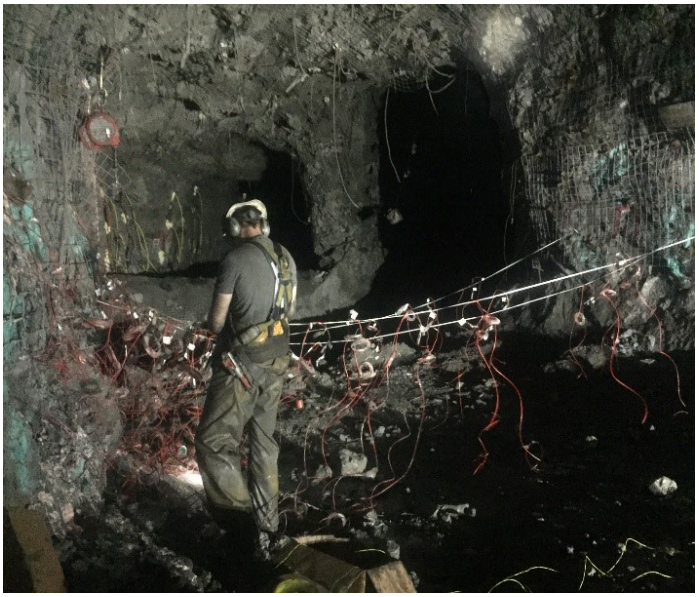
CONTINUOUS PRODUCTION SINCE 2014

The operation started mining lead and zinc in 1906. After mine closures and openings influenced by the trending sulfide metal markets, POM has worked continuously since December 2014. The Pend Oreille mine uses room and pillar stope mining methods to extract ore-bearing rock and transport it to the surface. The targeted production rate for this mine is 2,200 tons/day.

Project Goals

EFFECTIVELY BLASTING COMPLEX STOPES

The mining method at this mine is long-hole fan drilling in combination with down hole stope holes averaging 40



feet in depth. The mine required an electronic detonator with high tensile down-line wire, precise timing, and flexibility both in terms of allowable number of detonators in any one blast and blast duration.

The Dyno Nobel DigiShot® Electronic Initiation System was an easy choice to make. The system met the deployment requirements while providing an easy to use system with minimal components, allowing the blasters to conveniently tie-in the blast in the method and order they wanted the holes to fire.

The mine chose this system unaware of the advantages of greater wall control it would provide or the superior fragmentation that went hand-in-hand with precision initiation.

Electronic Detonators Exceed Conventional NONEL® Limitations in Stopes

Technology Applied

THE DIGISHOT SYSTEM PROVIDES BETTER CONTROL OVER BLASTS

Dyno Nobel's DigiShot electronic initiation system utilizes a double-insulated down-line wire capable of withstanding tough loading conditions. It has water resistant connectors which provide a physical two-way communications line. This two-way communication connects every detonator's electronic chip allowing testability as a group or as a single unit.

DigiShot allows for up to 450 detonators to be fired in one blast location with a maximum blast event duration of 20,000 ms.

Value Added

EXPANDED STOPE AND HAPPY NEIGHBORS

The mine was able to achieve its goal of expanding Stope size along with keeping neighbors happy. The neighbors reported that they heard the blast but did not feel it. The seismograph set at the neighbor's barn had the trigger set at .20 inches per second but was not tripped.

The major benefits noted by mine personnel were the simple tie-in along with complete control of hole firing order and direction of blast. The mine was also very pleased with the unexpected wall control and significant muck fragmentation. The next stope, as simple as its design may be, will be blasted using the DigiShot System.