

DIFFERENTIAL ENERGY® in Casting Application



Background

NOx IS A CONCERN FOR THIS QUARRY DUE TO THE PROXIMITY OF THE SURROUNDING COMMUNITY

Dyno Nobel does not currently supply this Western United States market, but through the bidding process, approval was given for several test blasts using DIFFERENTIAL ENERGY. The site is currently utilizing a competitive technology. Casting holes range between 120' to 170' deep.

While casting percentages are important, one of the big drivers in several of the pits is NOx, given the proximity to the surrounding community.

The ground is primarily a super saturated sandy material noted for difficult blasting conditions. In both of the cast shots there was a lot of material on the toe of the shot which we anticipated would adversely affect the cast to final result.

Technology Applied

DIFFERENTIAL ENERGY® TRUCK USED TO LOAD 1.5 MILLION POUNDS OF EMULSION PER SHOT

Several cast shots were loaded, one utilizing TITAN® DIFFERENTIAL ENERGY with 100% gassed emulsion and the other utilizing TITAN® DIFFERENTIAL ENERGY with a 50/50 blend from a newly designed TITAN® DIFFERENTIAL ENERGY truck.

Patterns were 28' x 34" and five rows deep. Approximately 1.5 million pounds were loaded in each shot.



Results

NOx VERSUS CAST PERCENTAGE

The ground conditions were very difficult in areas of the emulsion shot. Although the TITAN® DIFFERENTIAL ENERGY emulsion was homogenized, there were about a dozen holes where the powder column slumped over a period of time.

The emulsion produced a 26% cast to final number and the only NOx seemed to come from the area where the holes slumped. The TITAN® 50/50 shot produced a 28% cast to final with more NOx than the 100% emulsion shot.

Next Steps

FURTHER TRIALS

Additional trial shots are scheduled for later this year to see if improvement in cast to final and NOx reduction can be achieved.