

# THE AUSTIN ADVANTAGE

BULK EMULSION  
UNDERGROUND  
DECREASES NOX BY  
80%



## GENERAL INFORMATION

**Location:** Austin Powder Midsouth LLC

**Project Type:** Underground

**Industry:** Limestone sloping/development and production

**Products Used:** Hydromite 4100, Shock\*Star Detonators, DC Cast Boosters (Diamond Nugget, Red D GEM Gassed Emulsion UG Equipment

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## THE HISTORY

Historically, this quarry has a moderately wet environment. The site has an established surface quarry and had just started with underground development at the beginning of the Red D GEM trials. By partnering with this customer, Austin Powder was able to test the Red D GEM and chemically sensitized emulsion underground for one of the first times in the United States. Through extensive work between Austin Powder, the customer, and the regulatory authorities, the mine was granted a variance from CFR 30, 57.6960 to “mix” explosive material underground.



## THE GOALS

- 1.** Work with the customer to receive a variance from CFR 30, 57.6960 to produce chemically sensitized bulk Hydromite 4100 underground with a bulk loading unit, in this case, the Red D GEM.
- 2.** Display the benefits of bulk emulsion as compared to the drawbacks of bulk ANFO and packaged emulsion in wet environments underground.
- 3.** Provide the customer with another option when it comes to selecting an explosive product that fulfills their needs, while considering the various working environments our customer can encounter.
- 4.** Work with the developers of the Red D GEM, to gain familiarity with the unit in the US.
- 5.** Quantify the reduction in NO and NO<sub>2</sub> in post-blast fumes when using bulk emulsions versus bulk ANFO.

## CUSTOMER CHALLENGE

The process of working with authorities for approval of the variance took many months. By diligently working together, Austin Powder and the customer were able to represent chemically sensitized emulsions and the Red D GEM with accurate safety considerations to allow authorities to grant the variance to the mine.

Prior to the trials, our sales and technical managers had to overcome the unknown Red D GEM, which is an Austin developed technology which we had designed and used extensively in Europe, but is new to US and Canada. The challenge of working with a new system was mitigated by working closely with our developers in Germany. With the help of our One Austin approach, the US team was able to work with our colleagues around the world and the customers saw no downtime resulting from ordering/shipping parts or troubleshooting from other locations.

## THE AUSTIN SOLUTION

The Austin Solution provided the customer with a new option for their underground explosives selection. In over 25 blasts, the customer used 25,000 lbs of bulk chemically sensitized emulsion to mitigate the effects of water in boreholes, while maintaining the fragmentation and underground advance standards they had when using bulk ANFO and packaged emulsion. Austin Powder's underground chemically sensitized bulk delivery unit, known as the Red D GEM, made its first quantities of chemically sensitized emulsion in the United States during these trials. The customer was pleased with the load efficiency and effectiveness of the Red D GEM unit, the need for only one product for wet and dry conditions, and the benefits for on-site storage of bulk emulsion oxidizer versus bulk blasting agent. The change in bulk product and bulk loading equipment provided the benefits of both products. By combining these benefits along with maintaining post-blast quality, the customer was very happy with the trials and will keep this technology in mind for future cases.

## THE OUTCOME

Over 25 successful blasts utilizing over 25,000lbs of bulk Hydromite 4100 emulsion. The Red D GEM is a viable unit, as is chemically sensitized emulsion for underground conditions. These are two added "tools" to be used in the various mine conditions encountered across the US.

Post-blast fume monitoring showed a significant decrease in peak NO and NO2 fume concentrations. For NO, the reduction was close to 80%, while NO2 reduction was close to 70%.

The customer is aware of the new tools they have been introduced to and may choose to use these tools in future operations where there is compatibility between the operation, the Red D GEM, and chemically sensitized emulsions.



**AUSTIN POWDER**