

# THE AUSTIN ADVANTAGE

RED D GEM REACHES  
600 BLASTS  
AND GENERATES  
IMPRESSIVE SAVINGS  
FOR CHIHUAHUA MINE



## GENERAL INFORMATION

**Location:** Fresnillo PLC, San Julian Mine at Gpe y Calvo, Chihuahua.

**Project Type:** Underground

**Industry:** Metal

**Products Used:** E\*STAR, Hydrox U, Hydromite 100, Hydromite 3, Boosters, Red D GEM

**Project Lead:** APM SAB San Julian

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## THE HISTORY

This mine started its operations with manual loading of bagged ANFO in down-hole, fan drilling panels with non-electric detonators. In wet or blind holes, packaged emulsion was used.

Once operations started using Austin Powder blasting services, the mine migrated to Austin products. Eventually, they adopted bulk Hydrox U with the Red D GEM Underground Gassed Emulsion System and E\*STAR Electronic detonators.

Mine supervision found the Red D GEM equipment practical and effective because it makes loading more efficient and covers both dry holes and wet holes. Hydrox U / Hydromite 100 brought additional advantages to the drilling design.

## THE GOALS

1. Make blasting more efficient
2. Reduce the number of holes
3. Optimize powder factor
4. Reduce loading times
5. Maintain fragmentation within the mine requirements
6. Control the damage generated by blasts to rock surrounding the panel
7. Fire at specific times, as requested by the client
8. Complete every blast with no LTI's



## CUSTOMER CHALLENGE

This project was the first bulk (Hydromite 100) loading operation of these proportions in Mexico. One of the main challenges was the client's skepticism regarding the effectiveness of the Red D GEM unit and the likelihood of generating benefits and savings for their operation.

## THE AUSTIN SOLUTION

Once the loading performance in the rock and the shot design were understood, the team analyzed the mineral's fragmentation and fluidity within the extraction panels. Paradigm modeling helped the Austin technical experts analyze different scenarios including, increased burden between holes of different types and amounts; the number of charges in each hole; the interaction between them; and the possible effects on surrounding rock. Vibration records were carried out to corroborate the work of the holes using the established firing times.

## THE OUTCOME

Today, the blast design requires approximately 18% less drilling, the powder factor has been reduced by 17%, and the packaged emulsion use has been reduced. The stope pillar stability has also improved significantly. The extraction panels are emptied more efficiently and in reduced time. The fragmentation exceeds the client's requirements, reducing the production time of a 16,000 Mt ore panel by about 12 hours of work, or the equivalent of a full shift. Our crew and Red D GEM have the capacity and time to load and fire two panels in the same working day if needed. The operation has blasted about 12 million Mt since mid-2017, and significant savings have been achieved. The blasting plan and results are reviewed every day, and continuous optimization is applied.

## THE OUTCOME

1. 18% less drilling
2. 17% reduction in powder factor
3. 12 hours of work saved per mined panel
4. Less packaged emulsion used
5. Stability of pillars improved significantly
6. Extraction panels emptied easier and faster
7. Better fragmentation
8. Faster mining cycle of a 16,000 ton ore panel
9. The ability to load and fire two panels on the same day, if needed



**AUSTIN POWDER**