

WHEN OPEN PIT OPERATIONS INTERSECT OLD UNDERGROUND WORKINGS

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ABSTRACT

In 1933 the Cobre Mining Company re-opened the 32-year-old UV Industry Mine, which is located in a scenic canyon near Silver City, New Mexico. The site location is shown in Figure 1. Current mineral extractions are copper and magnetite; both extractions similar to those mined many years ago. Copper is extracted from chalcopyrite imbedded in the host rock of massive limestone deposits and magnetite, an iron ore, is a by-product of the same extraction process.

The UV Mine is both an open pit and an underground mining operation that utilizes diverse operations. Surface methods involve primarily trucks and shovels. Benches are blasted on 20-30 ft lifts. Due to the structural integrity of the rock the underground operation uses large, sloping methods.

This particular project presented a unique challenge when the operations moved into an area that had been mined from the underground approximately 24 years ago, thereby intersecting some old, open stopes. The initial stope that was encountered was quite large, with a width of 80-100 ft, a height of 70-100 ft, and several hundred ft in length. Cobre's engineering department decided to have blasting personnel "cave in" the old stope. The engineers felt that after the "cave in" (or caving) sequence the materials could be mined when operations had benched down to the level at the bottom of the old stope.

Real concerns occurred when the drilling exploration hole broke into the old stope at the level of 54 ft. If an attempt was made to shoot into the stope and it failed, disastrous results for production would ensue. Consequently, the initial plan was to take another 26 ft lift off before the caving sequence. Also, and of equal importance, the issue of safety became a primary concern. Would the rock structure support men and equipment with only 26 ft of material? In the final analysis, a decision was made to shoot the total depth of the stope after a lengthy visit to the underground stopes.