

CASE STUDY:

Mining Company Aligns Stars to Set Record-Breaking Numbers



The Client

A North American mining company with four silver and gold mines in Mexico that strives to be the world's largest primary silver producer.

The Challenges

USC had recently completed a successful project with the client involving their underground mobile maintenance fleets, with substantial results on improving equipment availability. That's when they came to us with a different challenge at another of their mines. Here are a few of the challenges we experienced.

A switch in mining operations to another underground mining site that was not producing the expected results. The company had been working this mine for many decades with a cut-and-fill mining technique. A mine can only support that type of operation for so long. It was an older technique and posed hazards and safety concerns, but in addition, it was also about the life of the mine. How much longer could they extract silver using these old techniques? They decided to switch to a newer mining process — long-hole drilling. It is a technique that is commonly used in Canada, but not in this part of the world, so they brought in some experts to help. Initially, they saw good results, but soon those results diminished. They had benchmarked with other mines and were not hitting those numbers consistently. So they asked us to come in and help.

Tensions between the longtime employees and the new experts in long-hole drilling. This mine has 30-year veteran employees who had known only the cut-and-fill system. Clashes between the old and new guards occurred.

Skeptical attitudes. We were brought in because we had achieved great success in another of their mines with a different challenge. But the mine foremen and employees were skeptical of us because they had already tried long-hole drilling with their "experts," and it did not produce the desired results. There was an attitude of "We've already tried this. It doesn't work. What are you going to do differently?"

Strong employee union and other non-management variables. The union put a cap on how much the miners were supposed to be doing every day — 85 meters per shift. But the numbers we needed to hit were much higher. The union would step in and say the drillers simply weren't going to drill after getting to 85 meters. Sometimes, employees would strike because they said the conditions weren't safe. Other times, the landowners' association would shut down the mine for a day, or even a week's time.



The Solution

Despite all of the challenges, this project hit it out of the park for the company. Here's how USC did it.

A new Management Operating System (MOS).

This is a typical start of any job for USC. We do a deep dive into operations and identify gaps and opportunities. In this case, we looked at the long-hole process, mine services and drifting. Part of this organizational change was implementing supervisor audits, to highlight what was working and what areas could use improvement.

Enhancement of long-hole and supporting areas.

We needed to know what we were proposing was sustainable, and enhancing those areas ensured the system could drive the desired behaviors.

Development and installation of visual management tools. This helped to facilitate the planning, follow up, reporting and evaluation of the daily activities. It can be as simple as a management whiteboard with goals, targets and performance posted in a common area for everyone to see.

One-on-one training for supervisors and area managers. Creating a new MOS is one thing, but training will ensure accountability of the MOS utilization.

Quick wins. Coming out of the gate with successes, no matter how small, builds trust in a skeptical audience that you can accomplish what you say you're going to accomplish.

Bonuses for hitting longer-length goals.

To convince the employees it was possible to get much farther on any single shift of drilling, we instituted bonuses for hitting 105 meters or more per shift. The bonuses would go higher if the drill length was higher. We posted which crews got those bonuses on the Management Board we had in place.

"It's interesting, the process of changing the minds of people," said Rafael Guarin, Senior Project Manager. "We just started posting the numbers and workers were seeing that some of the guys were hitting 120 meters, 130 meters per shift and making more money because of it. That changed the mindset of other workers, who wanted to make that extra money too."

Aligning the stars. Early on in the process, the number they were hitting was 85 to 90 meters. One day, they got to 220 meters. That was the first time ever. We asked the supervisor about it. He said: "That's because the stars were aligned." That became a guiding principle for every management meeting. How are we going to align

the stars today? It meant giving the drillers everything they needed to drill, meaning six machines needed to be serviced and ready to go each day. Why six? The crew could only use five machines. The sixth was a backup in case there was a problem with one.

Regular maintenance. Goals couldn't be met if the machines broke down. Regular maintenance was an important key to success. Part of this was improving communication between maintenance and the long-hole team.

The Results

The project schedule was set for 28 weeks. We ended in 25. And we hit historic numbers in terms of the meters the crews drilled each day.

"It got to the point that we did such a good job, we created a new bottleneck, which was development," said Chase Ryan, Project Manager. "They had no way to remove the material and keep up with the dropped tons per day."

- **47% improvement in daily production meters drilled**
- **20% improvement in daily production meters drilled per drill**
- **38% improvement in LH development meters drilled per day**

"It has been a very positive change for us in the long-hole. The use of the tools that have been implemented has given us better visibility of what's going on during our shifts as well as planning for our next shifts ... It has permitted us to be more visual and understand better what our challenges are and in the end be more productive." – Mine Manager



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