

Chilean Mine Rescuers Face Daunting Challenge

by Howard Berkes

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American mining experts say Chilean authorities face two daunting tasks as they try to rescue 33 miners trapped underground since Aug. 5: drilling a wide borehole nearly a half-mile down to reach the miners; and keeping the miners safe and sane during four months of expected drilling.

"A suggestion is that we might look around the world to try to enhance the technology to be able to affect a rescue a little sooner," says Davitt McAteer, a former chief of the federal Mine Safety and Health Administration. "A number of discussions are being held in the United States as well as other countries in Europe and South Africa to see what kind of help we can provide."

Chilean rescuers are already shipping a massive diamond-tipped drilling machine to the San Jose gold and copper mine outside Copiapo, about 530 miles north of Santiago.

They have also gathered a team of physicians and psychiatric experts to tend to the mental health of the miners, whose 18 days underground may now stretch as much as four months. Rescue leader Andre Sougarret says it could take that long to drill a borehole wide enough to bring the miners to the surface.

Similar Rescue Attempts

American mine rescue teams drilled similar boreholes to evacuate trapped miners at the Quecreek Mine in Pennsylvania in 2002 and the Sunshine Mine in Idaho in 1972. But those holes were just a fraction of the depth required in Chile. And Quecreek is a coal mine with relatively soft deposits.

"We're talking about a hard rock mine [in Chile], so I would expect the drilling progress is going to be a lot slower," says Robert Ferriter, a senior mine safety and health specialist at the Colorado School of Mines.

Ferriter lists some of the obstacles drillers face in reaching the trapped miners:

- Hitting a fault zone with soft material, which will "interfere with the drilling."
- Drills "wander. They don't go in nice straight line[s]. They'll corkscrew around."
- The ground between the miners and the surface may not be well understood, "so there's a possibility of losing that drill or losing that hole."

"There are a lot of unknowns drilling that big a hole and then extracting people up through it," Ferriter says. "I would hope they are looking at other ways of reaching them."

Other Alternatives

One other way would be digging back through the collapsed portion of the mine that trapped the miners in the first place. That's also suggested by Felipe Calizaya, a mine ventilation expert at the University of Utah who has mining experience in Peru. Calizaya says he worries about breathable air in the mine while rescuers drill toward the miners.

"The problem here is the enclosure," Calizaya explains. "They are in a confined space, and 33 people — they may run out of oxygen when it comes to waiting for weeks or months."

It's not clear how much air remains underground, whether there's any ongoing airflow, or whether sufficient air can be pumped in from the surface. Calizaya, McAteer and Ferriter don't expect much of a threat from toxic gases, including methane, the explosive and lethal gas that plagues coal mines. They're not as persistent in hard rock mines. But

Ferriter is concerned about the stability of the space in which the miners found refuge from collapsing tunnels.

"You have to keep the space open, and you have to keep it stable enough that it'll stay open," he says.

'Psychologically, It's Going To Be A Challenge'

All of this likely weighs on the minds of the miners.

"Your mind will wander around at all the possibilities of things that could go wrong," Ferriter says. "These guys are just sitting there waiting, so psychologically, it's going to be a challenge."

"They live there. They work there," Calizaya notes. "Probably they can survive for a couple of weeks without any problem. But when it comes to months, then it's another issue."

Rescuers are planning to lower food, water, medicine and even questionnaires through the small borehole drilled into the mine already. The questionnaires will help officials assess the physical and mental condition of each miner.

There's also a plan to lower microphones so that the miners can speak with their families while they await rescue. A video camera has already been lowered, and officials have been able to see eight or nine miners waving.

Crews are also drilling two more small shafts to make sure there are multiple ways to reach the men during the rescue efforts.

"Miners are resilient as a general matter, but that's a long time to be trapped," McAteer says. "No matter what the duration, whether it's weeks or months, it's going to be a difficult time."

Mario Gomez, 63, wrote an optimistic note to his wife on a sheet of notebook paper and sent it to the surface attached to the probe lowered into the mine.

"I want to tell everyone that I'm good and we'll surely come out OK," Gomez wrote. "God is great, and the help of my God is going to make it possible to leave this mine alive."

This report contains material from The Associated Press and NPR's Scott Neuman.