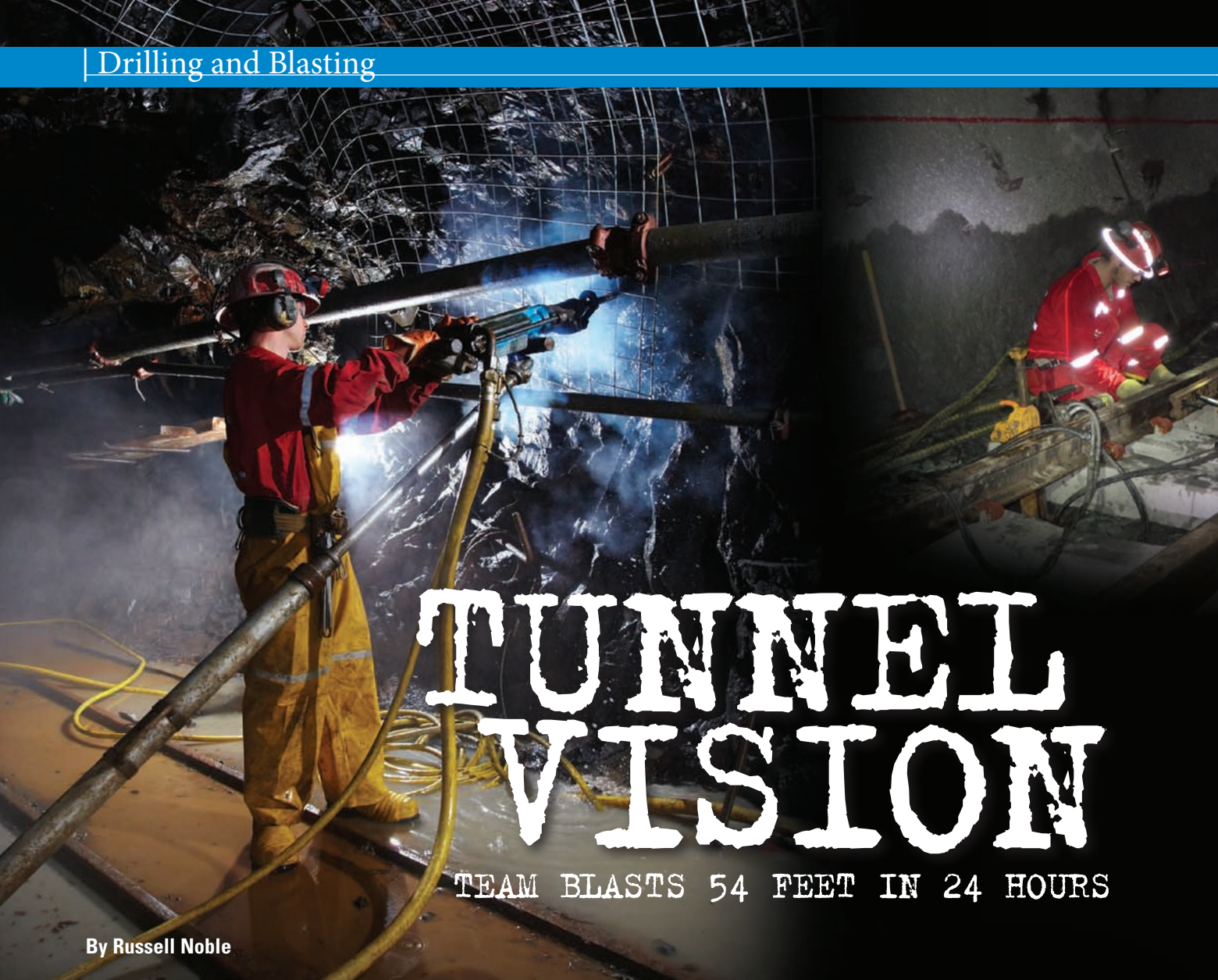

# TUNNEL VISION

## TEAM BLASTS 54 FEET IN 24 HOURS

**By Russell Noble**

It's a mining project with a twist because part of the work being done by Goldcorp at its Red Lake Gold Mines right now looks more like an urban transportation corridor than the underground workings at a remote mine site.

In fact, the combination of 366 new steel rails sitting on a ribbon of 3111 freshly molded concrete ties gives the impression that a commuter train will soon be coming out of the tunnel to pick up passengers along its Northern Ontario route.

But that's obviously not the case, nor intent, of the rail-lined drift being built by Goldcorp, about 350 km northwest of Thunder Bay.

The drift, a massive 20,000-foot-long structure located more than 5300 ft (or 1645 m) m below surface, will connect Goldcorp's Campbell Mine with a new shaft being drilled at its adjacent Cochenour Mine.

When completed later next year, the 14-foot wide by 16-foot high drift will feature a fully ventilated tunnel with a single track connecting the two mines to provide Goldcorp with a direct underground means of transporting ore from Cochenour to its mill at the main Red Lake Gold Camp.

As can be imagined, drilling and blasting a drift of this length required a great deal of knowledge and understanding of working underground and to help ensure that everything went as planned,

a team of J.S. Redpath Limited, Mining Contractors and Goldcorp was brought together, to oversee the construction of the drift.

Drilling and blasting of the drift was done by conventional methods using an emulsion, followed by shotcreting, rock bolting, screening, and face preparation. The crews are able to drive to meet 24 feet per day targets with shotcrete in cycle.

The bolting pattern is 5x5 with 7-foot rebar and 7-foot cone bolts in the back and a 5x5 pattern with 6-foot rebar in the walls. The ventilation system is a push/pull system created by using 36 inch soft vent for fresh air with a 48-inch hard vent as the exhaust.

What really set this work apart from the "traditional" approach was the team's imaginative and cost-saving's use of blasted muck for track bed ballast and the roadway itself.

Instead of hauling new ballast into the drift from the surface, an underground crusher was installed to crush muck from the rounds blasted. Eventually, ballast cars were used to stabilize the tracks but long before that, crews had to devise a delivery system whereby rails and ties would be installed almost simultaneously to keep construction on schedule.

Rails and ties were delivered into the head frame using forklifts at the Campbell Mine. The 39-foot-long rails, each weighing 1300 lbs, were lowered to the 3900 level where they were pulled out of the shaft using an air tugger. The 425-lb ties were bundled 8 ties per pallet and delivered to the level in the cage.

In addition to the straight rails, three track switches ranging from 35 feet to 39 feet in length, and 7 feet, 6 inches in width, were also lowered to the 3900 level.

With rails and ties at the bottom, they were loaded on flat cars and delivered to the crews who lined them up along the sides of the drift to allow access for excavating the roadway to grade using a 5-foot grade line.

Next came aligning the concrete ties using a laser before installing the rails. Each section consisted of 17 ties, 34 insulators, and two rails. Crews used fish plates to connect the rails with a Huck bolter, a machine that is designed to rivet the bolts instead of using a bolt-and-nut system.

In addition to the main line, the drift also features a service bay with a shop designed with two sets of tracks and an overhead crane, plus a battery station that will enable maintenance crews to maintain and service up to three locomotives at a time.

Eventually there will be eighteen, 18 ton cars used to transport materials to the waste pass. The cars will be loaded by chute and will empty into the waste pass by a camel back dumping design. And, as visioned earlier, the underground railway will also carry people in its two, 16-crew personnel cars.

Goldcorp's railway is not intended to be a commuter line but thanks to its imaginative and innovative engineering and design, it could easily serve as a model for urban planners when it comes to cost-effective underground construction. **CMJ**

## **A Team Effort:** Dedicated and Determined

Redpath's Area Manager Rolf Arnold.

When the words "professional team" are used, most people immediately think "sports," but as those in the mining industry know, "teams" are what make up its profession too. In fact, almost everything that happens in a mine is done by a team of one kind or another and perhaps nowhere is this more evident than when it comes to drilling and blasting rock.

It's unquestionably the most dangerous aspect of mining and unless it's handled by professionals with years of experience, it can prove to be disastrous.

At the Cochenour site, the "team" of drillers and blasters have nearly a half-a-century's worth of underground experience and are all professionally certified in Basic Underground Hard Rock Mining Common Core and Specialty Modules.

In addition, they are experienced and trained in the use of Emulsion, the preferred explosive used instead of Amex in order to cut down on high levels of ammonia nitrate

Under the leadership of Redpath's Area Manager, Rolf Arnold, the team works well as a unit and looks out for each other's safety all of the time because as Arnold says, " Drilling and blasting are always potentially dangerous, especially if methane gas is present. Scaling the face before prepping it is also dangerous and that's why it's critical that everyone keeps a close eye on the ground conditions while working the drift."

Asked what's the most challenging or unusual part of building a drift, Arnold said: "Passing through various dykes (bad ground) and changing bolting requirements as requested by the ground control department. Also, incorporating the shotcreting process into the cycle while maintaining the drift and all of the other services."

As mentioned above, underground work to build the 20,000 foot haulage drift between Goldcorp's Cochenour mine to Campbell mine took real team work and Arnold says he's proud of his team for many reasons but two that stand out are blasting 54 feet in a 24-hour period and laying 7111 feet of track in 17 days.

"With all the achievements we've accomplished here and as proud as we are of our haulage drift, it could not be done without a great team mentality. From Goldcorp, our management, to our first-line supervisors, the mechanics and the electricians, who are always ready to help whenever necessary, makes this project work very efficiently. All of the great teamwork that we have here really makes this project a joy to be a part of," said Arnold.

From left to right: Crew leader - Derek Wilkins, Chris Kennedy, Alfred Sears, Karl Chaval.