

TETRA Radio Network and Tunnel Radio Coverage



New Gold discovered its mission-critical communication system at New Afton was end-of-life. It needed new way to communicate above and below ground.

Leveraging New Gold's existing fibre optic investment, Cartel designed, supplied, installed, and commissioned a cutting-edge radio system for the mine. Working with its sister company TASC, Cartel also customized the mine's radio-sharing capabilities to include asset tracking. Having liked Cartel's solutions so much, New Gold is again in talks to with Cartel over the best ways to expand their network as they expand their tunnels.

We believe that life is better when we communicate. Read more to find out how that proved true at New Afton mine.

Challenge: Replace phased-out iDEN

Owned by New Gold, the New Afton copper and gold mine is located approximately 10 KM west of Kamloops, British Columbia. It spans 3 square KM above ground with 21 KM of underground tunnels.

In 2011, the mine's communication system was still based on Telus' integrated Digital Enhanced Network (iDEN), a technology that combined trunked radio and cellular signal. Telus, who owned all the existing licensing and network infrastructure on the mine site, announced that the iDEN system was end-of-life. They would terminate iDEN, taking the communications system at New Afton down with it.

Communications are mission-critical on a mine. On land and underground they must work 24/7. Any time they are interrupted, workers are evacuated, production halts, and the mine grinds to an immediate halt. The looming loss of their network posed a huge problem for New Afton.

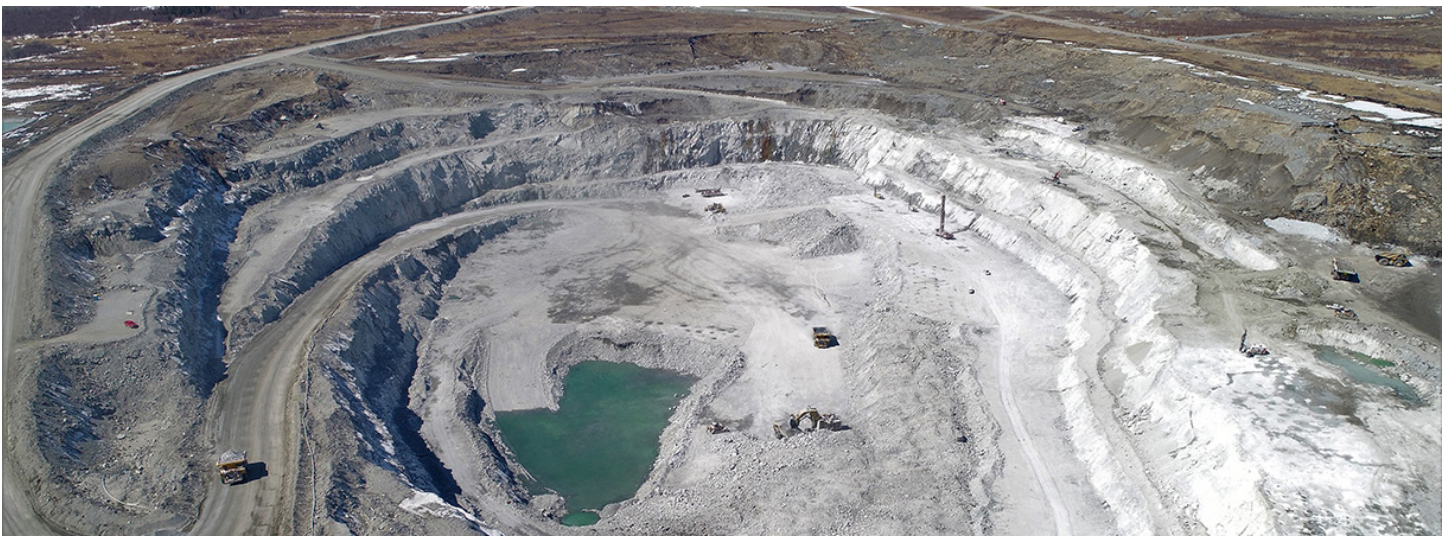
Knowing the site and the predicament, Cartel knew they could also provide a solution. Cartel had collaborated with New Gold in 2007. Working through existing carriers, they supplied a fibre optic Distributed Antenna System (DAS) to feed the existing New Afton's pit portal and the underground communication network. Reaching out to their stakeholders, Cartel suggested this would be a good time to reconnect.

Discovery & Collaboration

Cartel's discovery process involved conversations with multiple stakeholders: the functional deliverable service, mine safety and evacuation teams, operations, maintenance, and security. Through these conversations, and with an understanding the existing network infrastructure, Cartel engineered an integrated solution that would keep New Afton communicating.

A Solution for Coverage

With the frontier spirit that has defined it since its earliest days, Cartel proposed a cutting edge, new to the Canadian market, radio solution for communication: Terrestrial Trunked Radio (TETRA). TETRA offers the most advanced digital 2-way radio communications in today's market. In addition to secure digital voice, it provides text, status, alarm messaging, GPS, mobile gateway capability, and applications for emergency situations. Cartel's partner, Damn Cellular, had successfully deployed TETRA solutions at mines in Western Australia, Indonesia, and Turkey. Cartel knew the technology would be a perfect solution for Canadian mines too.





Firstly, New Afton needed radio frequency rights. On behalf of New Gold, Cartel created and submitted a Spectrum Utilization Plan to Industry Canada. Industry Canada approved and issued 3 (800 MHz duplex) licenses for the mine. Soon after, the deployment of an integrated TETRA-based solution began.

The mine's TETRA system consists of a single-site TETRA base station with 3 carriers, 11 radio channels, and 46 talk-groups. It supports over 500 users and provides redundant transmission points and high availability. The base station uses a DC power supply capable of providing it backup power for up to 8 hours. Telephone integration deployed for the in-system design enables authorized radio users to make and receive telephone calls through New Gold's existing private branch exchange telephone system.

Cartel installed the TETRA system before the iDEN system shut down, allowing a clean cutover between the two systems, and keeping essential communication up.

A Solution for Enhancement

Knowing the lay of the land, Cartel also suggested other ways New Afton could enhance their communications processes on site. For instance, each user had been assigned a handset for communication during their shift. As the mine runs three shifts, this left expensive technology sitting idle two-thirds of the time.

Cartel came up with a custom "asset management" package that saved the mine hundreds of thousands of dollars in capital equipment and provides pin-point details on critical equipment and system performance.

Cartel, through its sister-company, TASC Systems, provided a custom-coded radio sharing application and the hardware needed to support it. The application allows radios to be drawn from a common pool and then 'personalized' through a log-in process that pushes user profiles and relevant talk-groups to the user radio. A new radio frequency shelf provides a point-of-interface that accommodates the TETRA signal.

CASE STUDY NEW GOLD

Users scan their RFID card into a networked terminal in the shift-change area, which pulls up their radio network profile. The user then scans the QR code displayed on the radio's LCD screen, which identifies the radio's TETRA Equipment ID to the system. This pushes the user's profile to the specific radio. Cartel integrated these into New Gold's existing DAS enhancing their existing investment.

This enhancement enabled New Afton to run with one third of the handsets they had previously deployed and lets them track where they are being used. New Afton liked this feature so much that 2 years after, they asked Cartel to design more asset tracking software, so they could keep track of essential items like respirators.

New Afton is expanding and Cartel is expanding its communications system with it. Plans are in the works to extend their TETRA / Voice DAS design for the new areas being tunnelled and to add WIFI coverage design and a private LTE coverage design. Interweaving these elements into a total package, Cartel can help New Afton future-future-proof their voice, data, and automation infrastructure.



The Cartel Way

Cartel Communication Systems was able to provide a solution for the New Afton mine that replaced their radio communications system, leveraged their existing private telephone system, and enabled more secure sharing. Cartel found a new way to keep communications up at New Afton so they could keep finding new gold.

If you are in the resource industry and need to upgrade your communications system, please give us a call. Cartel will find a solution to fit your requirements.



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