



# KEEPING MINERS SAFE

MOTOTRBO™ PROVIDES VITAL VOICE AND DATA COMMUNICATIONS FOR MINERS



## IMPALA PLATINUM

Nestled in the heart of the Bushveld Complex, near Rustenburg in northern South Africa, the Impala Platinum mine produces approximately one million ounces of platinum each year.

Impala Platinum had used an analogue radio system for communications between its teams. But, with some of its shafts plunging to 1,000 metres, the radio signal was unreliable at best and, at times, non-existent. Also, the radios were susceptible to failure caused by moisture and dust.

The mine will sustain current production levels for at least another three decades: its 14 existing shafts are being expanded and construction has begun on three new deep-level shafts. So with its sights set on long-term expansion, Impala Platinum needed an advanced and scalable communications network to ensure the ongoing productivity of its operations and the continued safety of its miners.

Lazer Buwa, specialists in two-way communications technologies, provided the answer. It installed a MOTOTRBO professional digital two-way radio network, linked to an underground leaky feeder system. It's providing higher capacity for calls and flawless voice and data communications between the shafts and the surface to keep users safe and improve incident response.

### CUSTOMER PROFILE

**Organisation**  
Impala Platinum

**Location**  
South Africa

**Industry**  
Mining

**Partner**  
Lazer Buwa

### Motorola Solutions' products

- 55 DP 3600 and DP 3400 portable two-way digital radios
- TRBOnet/Windows 7-based applications

**“We are delighted with the MOTOTRBO digital radio network installed by Lazer Buwa. Safety is our number one concern here and, with the connection to the leaky feeder system, we have the assurance of continuous and excellent quality audio between our teams above and below ground. In the past when alarms were sounded, we had to send people down to understand the nature of the issue and where it was occurring. With the radios providing reliable communication, we can now instantly locate the problem to send help if needed much faster and reduce downtime from an average of 2.5 hours to 30 minutes per incident.”**

Raymond Payne, Electrical Foreman, Impala Platinum

## CHALLENGE

Impala Platinum operates over an area of 260 square kilometres. Its 14 shafts reach depths of up to 1,000 metres.

Conditions underground are demanding for communications networks and equipment. Impala Platinum had used an analogue network, but the signal below ground was notoriously unreliable and calls were barely audible against substantial background noise. Also, the radios were constantly being corroded by heat, dust and moisture and needed to be replaced frequently. With communications critical to ensuring the efficiency of operations and coordinating response in the event of emergencies, a new communications solution was needed.

## SOLUTION

Impala Platinum has a long-standing relationship with Motorola Solutions and approached the company – along with its partner Lazer Buwa – to recommend a new communications system. A comprehensive solution was presented, comprising an above-ground digital MOTOTRBO network linked to a below-ground leaky feeder system. With the promise of continuously available and clear communications, Impala Platinum went ahead with the network deployment.

The MOTOTRBO network spans 14 base stations linked to 4 repeaters below ground. Miners use 55 DP 3400 and DP 3600 MOTOTRBO portable two-way digital radios with TRBOnet/Windows 7-based software applications. The radios are IP57 compliant to resist heat, dust and moisture and withstand the drops and knocks associated with use in a heavy industrial environment. A leaky feeder system (a long coaxial cable acting as an antenna) was installed underground to connect the radios and the repeaters. The repeaters send the frequency through the cable and the signal is amplified.

A telephone patch was also installed: connected to base station computers above ground and miners’

radios below the surface, it allows personnel to use their handsets to make and receive phone calls to/from phones. In addition, an SMS system is being set up. This will allow management to send instructions or job specs from their computers directly to workers’ radios. When miners mark these tasks as complete on their devices, the information will be instantly relayed to the control room. The mine is also planning to use the system to implement lone worker applications and personnel tracking to enhance the safety of teams.

## BENEFITS

MOTOTRBO’s TDMA technology doubles capacity from one to two talk paths per channel; with one channel per repeater and four repeaters installed in each shaft, Impala Platinum now has eight talk channels per shaft. Plus, the capacity increase has allowed the mine to designate one talk channel exclusively for emergency use to better safeguard the workforce. And if they need to make an emergency call, miners know their radios will work: in 18 months the mine has yet to see a single radio break.

The new system is improving efficiency. The handsets’ noise cancellation capability has substantially improved audio quality and voice clarity so information and job specs can be passed on to miners quickly with no risk of misunderstanding. Furthermore, control room staff can send job specs to a large group of workers at once using the SMS function, thereby reducing the time spent making individual calls.

Cost savings are being achieved too. For a set fee, Impala Platinum has an exchange contract in place with Motorola Solutions to replace faulty or damaged devices so removing the risk of rising costs relating to device management. Costs are also falling compared to the old analogue devices due to improved reliability and the fact that incidents are resolved faster to cut downtime.



## Applications

- **Underground network coverage:** MOTOTRBO with leaky feeder system provides clear signal to a depth of 1,000 metres
- **Voice services:** Two talk paths per radio channel; designated emergency talk path; separate telephone patch
- **Data services:** SMS for quick exchange of information between teams
- **Rugged devices:** Handsets are IP57 compliant to withstand heat, dust and moisture
- **Support contract:** A Motorola Solutions Platinum support contract is in place to replace any faulty damaged devices next day

## Benefits

- **Doubled system capacity:** Two talk paths per channel doubles the old analogue system’s capacity
- **Alleviation of traffic on talk channels:** SMS and a telephone patch offer alternative modes of communication
- **Improved call quality:** Noise cancellation on handsets improves voice clarity
- **Increased productivity:** SMS function relays job specs to groups of miners simultaneously, eliminating the need to make individual calls
- **Reduced downtime:** Damaged devices are instantly replaced so no miner is ever out of action

For more information on how Motorola Solutions’ MOTOTRBO digital two-way radio system can improve the safety and efficiency of your teams, please visit us on the web at [www.motorolasolutions.com/mototrbo](http://www.motorolasolutions.com/mototrbo) or access our global contact directory at [www.motorolasolutions.com/contactus](http://www.motorolasolutions.com/contactus)