



# SAFETY UNDERGROUND

INNOVATIVE MOTOTRBO™ TWO-WAY RADIO SYSTEM PROTECTS WORKERS



## SALT UNION/DEEPSTORE

Salt Union mines rock salt at its Winsford, UK facility. In 1998 Compass Minerals, the mine's owner, opened DeepStore, a records storage facility to take advantage of the 1.8 million square feet of space excavated by the mine. It could house every paper record ever created in the UK and is ideal for storage – the temperature is a constant 14°C and humidity easily controlled.

Both Salt Union and DeepStore used analogue two-way radios to manage communications. However, the system was unreliable and, with safety of critical importance, Compass Minerals looked for a new two-way radio solution. After an extensive review of options, it partnered with two-way radio specialist 2CL Communications to deploy a MOTOTRBO™ two-way digital radio system. Chosen for its durability and versatility, the system provides an array of innovative safety features to safeguard teams, backed with crystal clear, reliable audio, which is helping to enhance productivity. The technology is giving users their confidence back to rely on two-way radios to keep them safe.

### CUSTOMER PROFILE

#### Organisation

Salt Union/DeepStore

#### Location

UK

#### Industry

Mining and records archive

#### Partner

2CL Communications

#### Application Developer

Neocom Software

### Motorola Solutions products

- **Infrastructure**
  - 17 x UHF DR 3000 repeater base stations, wall mount brackets and IP-rated enclosures
  - 17 x back-up batteries
  - 17 x duplexers
  - 17 x UHF 4 stack antennas
- **Radios**
  - 54 x DP 3600 portables with lithium ion batteries
  - 112 x DP 3400 portables with lithium ion batteries
  - 2 x DM 3600 local base station radios
  - A range of charging accessories and spare batteries
- **Applications**
  - MOTOTRBO IP Site Connect
  - 1 x TRBOnet™ Enterprise and supporting infrastructure
  - 107 x TRBOnet subscriber licences

**“Ours is a tough environment for communications technology. We have to protect miners operating in a dusty salt seam on the one hand and, on the other, look after teams working in the DeepStore archive with tunnels and rooms that stretch over a huge area. With MOTOTRBO we found the answer, installing the first system of its kind in the UK: we have linked 16 repeaters underground using IP to provide clear audio, with the facility to track teams continuously and send override messages to effect evacuations. The system safeguards our people and is improving productivity too.”**

Chris Gamble, UK Logistics Manager, DeepStore Ltd

## CHALLENGE

Salt Union and DeepStore had used analogue two-way radio, but the technology was unreliable. Congestion was a problem and audio quality was poor, so users often had to return to the surface or nearest telephone handset to relay messages and receive jobs. The biggest issue, however, was patchy coverage. The mine covers a vast area underground and operatives often work and travel alone. Reliable coverage across all locations was therefore an absolute necessity. Salt Union and DeepStore looked for a new communications system. This needed to cope with the RF obstructions caused by the 20m thick pillars throughout the mine and provide reliable, high-quality coverage across the facility.

## SOLUTION

Salt Union and DeepStore explored various options before partnering with 2CL Communications. 2CL Communications has extensive expertise in two-way radio and quickly understood what was needed. It recommended installing the IP-based MOTOTRBO digital two-way radio system.

In the salt mine and within DeepStore, a fibre-based IP network was already in place. Using MOTOTRBO IP Site Connect, 16 DR 3000 repeaters were connected to the network. The system is linked to three PC-based dispatch consoles (two on the surface and one underground) to provide instant, reliable and clear voice and data communications. In addition, 130 wall-mounted beacons link to the IP network. The beacons wirelessly ‘handshake’ with users’ DP 3400 and DP 3600 mobile radios to monitor users’ locations. If a user presses their emergency button, or a man-down alert sounds (triggered if the radio tilts quickly through 30-60 degrees), dispatch is notified and help can immediately be sent to the user’s location. A further safety measure is provided by the lone worker function. This periodically sends a status message to the radio that must be acknowledged before it can be used again.

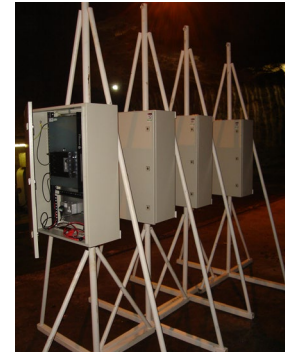
As well as protecting individuals, 2CL Communications has used the TRBOnet™ Enterprise application – one of a number of versatile applications available with MOTOTRBO – to develop an override system for evacuations. Command supervisors can use their radio keypad to insert a set code to raise an alarm (alarms can also be raised by dispatch). The alarm sends a warning to users’ radios with a voice message. Once the message has been broadcast, the radio channels are opened to support the evacuation. The message tells users which evacuation routes to use. In the case of a fire this is critical, as the message will direct teams safely away from the prevailing airflow to the nearest lift shaft.

## BENEFITS

The system provides instant, high-quality voice and data communications throughout the salt mine and DeepStore. The users’ radios are shock-resistant and IP57 certified. As such, they are ideal for the demanding conditions (especially in the salt mine) and provide the assurance of continuous and reliable communications.

As users no longer need to make regular trips to the surface to relay messages, significant productivity benefits are being achieved. In addition, with forklift drivers carrying radios, they are easily locatable to help move palletised loads more quickly. Command supervisors are also seeing additional time savings by using their DM 3600 radios to send quick SMS messages (e.g. to update a job status or request an engineer).

Compass Minerals, which owns both facilities, is delivering against its commitment to ensure the safety of its teams, with the facility to quickly implement evacuation procedures, track people’s positions and monitor their status.



## Applications

- **Clear audio:** Between teams underground and on the surface
- **Evacuation protocols:** Dispatchers or shift supervisors can initiate evacuation procedures with audio alerts and messages relayed to users’ radios
- **Tracking:** Users’ radios connect with beacons to track them as they move through DeepStore
- **Man-down alerts:** Radios include a man-down feature for lone workers
- **Status messaging:** Shift supervisors can share status messages, e.g. to report on jobs or request an engineer to visit faulty equipment

## Benefits

- **Enhanced productivity:** With reliable and clear audio, users don’t need to return to the surface to speak to colleagues
- **Improved safety:** Evacuation procedures are tried, tested and reliable, ensuring the quick evacuation of teams
- **Employee safety:** Lone workers are better protected by the system and can be found quickly if they have a problem
- **Increased uptime:** With rugged design, the radios provide continuous operation

For more information on how Motorola Solutions’ MOTOTRBO digital two-way radio system can improve the efficiency and safety 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)

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