

Case Study

Namdeb



CLIENT

Namdeb Diamond Corporation (PTY) LTD

LOCATION

Windhoek, Namibia

KEY CHALLENGES

- Required to migrate from its outdated and limited conventional analogue radio communication network.
- Reliance on a lesser amount of spectrum

RESULTS

The successful migration from an analogue to digital network has delivered fast, efficient, reliable and secure communications to Namdeb.

- Secure voice and data
- Improved safety on the mine
- Mine-wide communication
- Group and private calls
- Emergency telephone calls (Full Duplex)
- Vehicle and personnel location service (GPS)
- Seamless roaming
- Voice recording
- Dispatching
- Network management
- System redundancy

ABOUT ALTRON NEXUS

Altron Nexus, formerly known as Altech Alcom Matomo, is an ICT products and services solutions provider that focuses on providing telecommunication services, spanning both narrowband and broadband networks - fixed and wireless.

Altron Nexus (Pty) Ltd is the holding company for the business units focused on two way radio distribution, turnkey ICT solutions and operating our own national radio network.

The company provides a variety of converged telecommunication products and services ranging from narrowband, wireless two-way radio communication networks across the entire ICT spectrum to broadband fibre networks. Altron Nexus is an accredited level 1 B-BBEE contributor.

HOW ALTRON NEXUS MANAGED THE SCOPE AND IMPLEMENTATION OF THE PROJECT

The multi-phased approach to the implementation saw the installation of a digital radio 'backbone' network together with the installation of digital radio units in vehicles and the creation of a central control centre (mobile switching office). Key staff were then assigned the required digital handheld units followed by user training.

In May 2015, six months after the project was completed, the network performance report revealed system availability of 99,999%, with nearly one million calls made during that month alone.

EXECUTIVE SUMMARY

In January 2012, Namdeb Diamond Corporation, a wholly owned subsidiary of Namdeb Holdings (Proprietary) Limited, invited telecommunication service providers to tender for the implementation and maintenance of upgraded digital radio communications solution.

After the tender was awarded to Altron Nexus, Namdeb tasked Altron Nexus with the flawless migration of Namdeb's existing analogue radio communication network to a modern, digital platform.

Safety and reliability were key components of the tender request and Altron Nexus met and exceeded these expectations with the deployment of the latest Motorola Terrestrial Trunked Radio (TETRA) 8.1 Platform. The Integrated Safety and Security Communication Network (ISSC) would incorporate trunked voice and data capabilities, including short text messaging, and automatic vehicle and personnel location tracking.

After the first sites went live in May 2014, the project was completed in its entirety in December 2014. Seven months after the conclusion of the network roll-out, Namdeb are benefitting from a fast, efficient and secure digital network that ensures the organisation's personnel and assets are well protected.

HISTORY AND CONTEXT

Namdeb Diamond Corporation was established in 1994 and is jointly owned by the Namibian Government and De Beers. The organisation operates an alluvial diamond mining operation from the Orange River in the South of Namibia to Luderitz in the North, an area totalling 30,000 square kilometres. Included in this is Southern Coastal Mines, running from the Orange River to Chamais Bay. The environment is severe; both dusty and corrosive and historically, radio communications are limited due to the nature of the terrain. This terrain and mining conditions determine the calibre of the telecommunications solution required.

Security is critically important to the day-to-day functioning and long-term commercial success of the mine. The asset base is voluminous and extremely valuable. The Namdeb security team carries the responsibility of ensuring that the organisation's property and assets are protected against theft, abuse and misappropriation throughout the value chain.

The organisation's most important asset is the product itself, the rough diamonds that are recovered from the extensive mining operations. Another important safety concern is the mineworkers themselves, and a reliable communications system allows mineworkers to be in touch with the central control system should they find themselves in a dangerous or threatening predicament. Many leading technologies, supported by an

engineering team dedicated solely to security, have been incorporated into Namdeb's operations to safeguard the integrity of the product. This technology is underpinned by competent security personnel, diamond theft awareness campaigns and reward systems.

THE CURRENT SITUATION AND CHALLENGE:

To remain in line with global trends, Namdeb was required to migrate from its outdated and limited conventional analogue radio communication network, to a more modern, sophisticated digital system that relied on a lesser amount of spectrum.

Therefore, one of the objectives of the digital radio network migration was to integrate the respective systems (vertically and horizontally – functionally and per mine area) and to ensure prompt communication and information was available and accessible to key employees at various sites.

The overall system functional requirements were designed to meet operational performance, information generation, information retrieval and utilisation, logistical support, desired group architecture, and control equipment support requirements of current telemetry systems in line with modern information technology.

BUSINESS OBJECTIVE

Namdeb has a geographically large operating footprint and the coordination of activities across this space is paramount to operational and strategic success. Namdeb therefore required a communications infrastructure that facilitated efficient and effective real time voice and data communication with a strategic focus on risk mitigation, product protection and production efficiency.

Other than the planned analogue-to-digital migration, Namdeb also required a feature-rich integrated radio communication network which would assist it in improving the safety and security of its workforce and product.

The implemented system would improve:

- Effective and secure intercommunication between personnel, departments and mining areas
- Safety of personnel and assets
- Security of the product
- The quantity and efficiency of production through data applications
- Emergency response times
- Redundancy in case of system failure
- Ship-to-shore communication

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The Tetra Network is certainly a useful tool and feedback received from end-users and senior management is that this system is definitely a benefit to our operation. The SafeMobile AVL system has, amongst other things, potential to identify gaps for business improvement.”

Jan Sutherland,
Namdeb ISSC Project Manager



THE SOLUTION

The solution is centred on 13 remote Tetra sites spread throughout the mine. In addition, the solution consists of one central switching office, two microwave link sites, three emergency control centres, one network control centre and finally, 1 500 two-way radio users.

The network architecture consists of the following core components:

- A Central Mobile Switching Office (MSO) located at central control
- Four MTS4 base transceiver sites located at Ridge, Uubvley, Elizabeth Bay and Daberas Plant
- Seven MTS1 base transceiver sites located at Kerbehuk, Boegoeberg, Buntvelds, Gabis, Kowis Berg, Luderitz, Rooilepel and Sendelings
- Green Solar Sites - Blouberg, Rooilepel, Ruan, Obib, Skilpadkop, Buchuberg, Kerbehul, Gabis and Kowiesberg
- Cambium PTP800 8GHz and 18GHz microwave backhaul links to connect the various remote sites to the MSO in a chain configuration
- Fibre connections to existing Namdeb fibre infrastructure to connect the MSO to some of the

remote base transceiver sites and enable network redundancy

- Motorola MCC7500 dispatch console positions at PCC, Daberas and Elizabeth Bay
- Central NICE voice recording and playback stations at PCC
- SafeMobile GPS position and status services and terminals
- Telemetry subsystem
- Fuel management subsystem
- Ship-to-shore radio communication via Kowies, Gabis, Bundfeldts, Buchu and Kerbehuk sites.

At the heart of the solution is a Motorola Dimetra IP Compact MSO (Platform 8.1) that consists of a core subsystem, a VPN gateway router, MTSs, MCC 7500(S) consoles and NM clients. This is the minimum number of elements required to provide voice services only. Additional features include: core redundancy subsystem, telephony subsystem, short data subsystem, packet data subsystem, voice logging subsystem and authentication.



RADIO TERMINALS

Mobile Radio

The solution incorporated the feature rich Tetra mobile radio from Motorola, the MTM5400. The device is designed to be software upgradeable as and when new Tetra features become available. Its critical advantage is the 10Watt RF output option that is ideal for the Namdeb environment.

Hand-held Radio

The hand-held radio chosen for the project was the Motorola MTP3150. It is a rugged and powerful 1.8Watt radio with integrated GPS. As is the case with all Motorola radio products, a wide range of accessories are available to suit the varying needs of the respective user groups.



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