



SUCCESSFUL DEPLOYMENT OF CPS L9 IN NORTHERN CAPE MINING OPERATIONS

OVERVIEW

Mining environments demand the highest standards of safety for both machines and personnel. Probe IMT, in collaboration with Wabtec and NeroSpec, has successfully deployed the Wabtec Generation 3 Collision Avoidance System (Gen3 CAS), a Collision Prevention System Level 9 (CPS L9) solution, at a Tier 1 Northern Cape mining operation. The solution ensures seamless integration, advanced safety features and real-time monitoring across heavy mobile equipment (HME) / trackless mobile machines (TMM).

This deployment represents a critical milestone as Probe IMT's first fully operational CPS Level 9 site, demonstrating measurable value in a production environment. Across both the plant and mine areas, CPS L9 functionality has remained fully operational since activation, **logging 98 586 cumulative operational hours** with no major incidents (measured up to 19 Jan 2026).

IMPLEMENTATION PARTNER ROLES

PROBE IMT

Probe IMT is accountable for overall solution delivery as the primary implementation partner, coordinating all planning, integration and execution activities. IMT leads due diligence, implementation, testing, commissioning and ongoing operational support, ensuring alignment across OEM technology, site controls, personnel and operating processes to achieve reliable, compliant and sustainable deployment.

WABTEC

Wabtec provides the Gen3 CAS system - a Collision Awareness/ Avoidance/ Prevention Device (CxD). This technology ensures high-precision GNSS accuracy, vehicle-to-vehicle (V2V) communication and advanced intervention controls supported by the Wabtec Portal, an analytics platform that provides actionable insights.

NEROSPEC OSCON

NeroSpec Oscon specialises in the Trackless Mobile Machine Interface (TMMI), which integrates with machine control systems to enable real-time data retrieval and command execution.

DEPLOYMENT

THE PROJECT WAS ROLLED OUT IN TWO PHASES:

PLANT AREA

- ✓ **Activation period:** 30 June – 4 July 2025
- ✓ **Machines activated:** 6 (including front-end loaders, haul trucks, and a water bowser)
- ✓ **Operations:** Continuous 24-hour operation, with shifts from 07:00 to 19:00 and 19:00 to 07:00 excluding maintenance hours.

MINE AREA

- ✓ **Activation period:** 12 August – 22 August 2025
- ✓ **Machines activated:** 27 (including haul trucks, water trucks, front-end loaders, and wheel
- ✓ **Operations:** Continuous 24-hour operation, with shifts from 07:00 to 19:00 and 19:00 to 07:00 excluding maintenance hours.



TECHNOLOGY AND INTEGRATION

THE DEPLOYMENT LEVERAGES:

- ✓ **Wabtec CxD (Collision Awareness/ Avoidance/Prevention Device):** Provides multi-constellation GNSS accuracy, dual V2V coverage and advanced L9 intervention controls for vehicle safety.
- ✓ **NeroSpec TMMI (Trackless Mobile Machine Interface):** Integrates directly with machine control systems via CAN-bus, enabling real-time machine data retrieval and command execution, including controlled slow-down, stop and speed management.
- ✓ **ISO 21815-2 (2021) Compliance:** Ensures seamless communication between CxD and TMMI devices, supporting standardised intervention across multiple machine types.
- ✓ **Uptime and maintenance support:** Probe IMT provides man-on-site to perform preventative maintenance, response to breakdowns, installations of new machineries, decommissioning of system on old machinery and correctives to the systems.

The combined solution enables operators and site supervisors to monitor fleet health, receive alerts and ensure production safety, all while reducing human error risk.



OPERATIONAL PRIORITIES

- ✓ **The CxD is a Class A Technology Solution:** To ensure impact on safety and operations are minimised, breakdowns are treated as critical. Supported by Wabtec's Services Team, Probe IMT has an on-site maintenance crew.
- ✓ **Preventative maintenance:** This is essential to ensure the uptime and health of the CxD.
- ✓ **Real-time monitoring:** Continuous CPS L9 readiness with health status tracking remotely and on site.
- ✓ **Advanced safety features:** Automated interventions at all production speeds, protecting, operators, personnel and equipment.
- ✓ **Traffic management plan (TMP):** The CxD can help improve the TMP based on interventions and events that are recorded by the CxD system by identifying hotspots in an operational area.

Operators have reported improved situational awareness and confidence in the CxD, with audio and voice-based alerts providing clear, actionable guidance during complex interactions.

KEY OUTCOMES

- ✓ Full CPS L9 operational deployment in both the plant and mine area.
- ✓ Over **98 500** cumulative operational hours logged with no major incidents.
- ✓ Reduced vehicle interaction risks between vehicle to vehicle (including trackless mobile machines), vehicle to person and vehicle to infrastructure.
- ✓ Improved operational confidence and workflow efficiency.

CONCLUSION

Probe IMT's deployment demonstrates the real-world value of CPS Level 9 collision prevention technology. The collaboration with Wabtec and NeroSpec has enabled a safer, more productive mining environment while proving that CPS L9 solution can operate reliably in 24/7 production conditions.

This case study highlights how modern safety technology, when implemented and integrated professionally, can transform mining operations, protect personnel and equipment and deliver measurable value.

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