

VEHICLE INTERACTION CONTROL IMPROVEMENT WORK PACKAGE SUMMARY

WBS Reference:	5. New Vehicle Interaction Control Implementation (Phase 4)
Work Packages:	5.5 Operational Integration 5.5.1 Logistics and Infrastructure 5.5.2 Training and awareness 5.5.3 Cold commissioning 5.5.4 Point of truth reference 5.5.5 Site Baseline update
Package Owner:	Project Manager
Owner Organisation:	Your company
Participants:	Facilitation skills and experience, training and communications, a cross-section of experienced operations, technical and maintenance personnel. The entire workforce
Capability required:	Cross sectional team with site operations knowledge and experience. Oversight by project manager, project team and senior operations personnel
Description: Introducing and integrating new processes and technology into operations is assumed to be a core management competency (not further developed) Review how changes to vehicle interaction processes, including the introduction of new technology will be operationally integrated: <ul style="list-style-type: none"> • Ensure User Requirements are met before deployment • Confirm that existing site processes can manage an increase in accurate design and operate information • Train all people who will work directly with the enhance vehicle interaction control • Make the balance of the workforce aware of new processes and technology 	
Completion State: New VI Controls proved in an operating environment.	
Case Study: Trackless Mobile Machine Collision Avoidance System at Glencore Waterval Mine	

The collision avoidance system was implemented at Waterval East Mine on diesel driven “non-intelligent” equipment for underground as well as at one of the open cast operations.

One of the original challenges faced was that TMM’s used at the mine are diesel driven without any electronic engine management system (EEM), this meant controlling the vehicles’ engines needed to be done mechanically or hydraulically.

This was achieved by the detection system identifying any threat between TMM’s and pedestrians, communicating to the vehicle interface system which activates varies hydraulic valves to achieve the desired result. All events are logged by the vehicle collision avoidance and interface system for reporting purposes.

During the first week of implementation of the system, approximately 24000 critical proximity events were logged, which was reduced to 12000 critical proximity events within a few months. These results indicated that the traffic management system at the mine needed to be reviewed. As the employees bought into the new system, the employees adopted a new philosophy and a drastic change in behaviour was clearly evident.

The PVDS stop vehicles and prevent collisions, the main purpose of the system is to change the behaviour of the employees whereby they instinctively avoid contact with vehicles. There were various key learnings, including an increase in brake wear per shift as a consequence of emergency stops. However, by reducing critical stops and improving maintenance redundancies a series of unforeseen obstacles were overcome to ensure success of the project. (Pages 2-3)

The systems supplied by the PVD OEM at that time were installed on various Glencore Alloys mining operations and provided effective proximity detection and warning to machine operators and employees. These systems were not designed for intervention control of the actual mining vehicle movement and relied on the operator to react to the warnings and alarms generated by the system for final collision avoidance (Page 1)

Point of Truth:

The system is commissioned at Waterval Mine with a holistic approach. Each module in the system has been verified as functional in terms of its role within the CMMS. Communication between modules and the CMMS Server is verified and furthermore communication between the CMMS and other third-party systems i.e. HR and T&A is verified and monitored.

Before the system was interlocked where it influences the flow of people through the lamp room it is verified that the entire CMMS is working and communicating as per scope requirement.

During this period a team of occupational instructors was deployed in the lamp room providing “on the job” coaching and training that ensured employees are trained and confident to use the new system.

Only after system functionality and competence was verified the system was interlocked to start enforcing procedures and business rules. Both system specialists and instructors remained on-site to ensure there is minimum impact on production. (Page 10)

ICMM Innovation for Cleaner Safer Vehicles Case Study 2018

References:

- Company and site project management approaches

Title: 5.5 Operational Integration	Effective date: 21 Dec. 20	Version: 1.0	Page 2 of 2
Published: 20/12/2020	Review period:	Status: Draft	