Significant Incident Report No. 286

Subject: Near miss following unplanned movement of autonomous haul trucks during recovery operations

Date: 24 May 2021

Summary of incident

Two operators were exposed to potentially serious injury when the two autonomous haul trucks (AHTs) they were attempting to board unexpectedly drove forward.

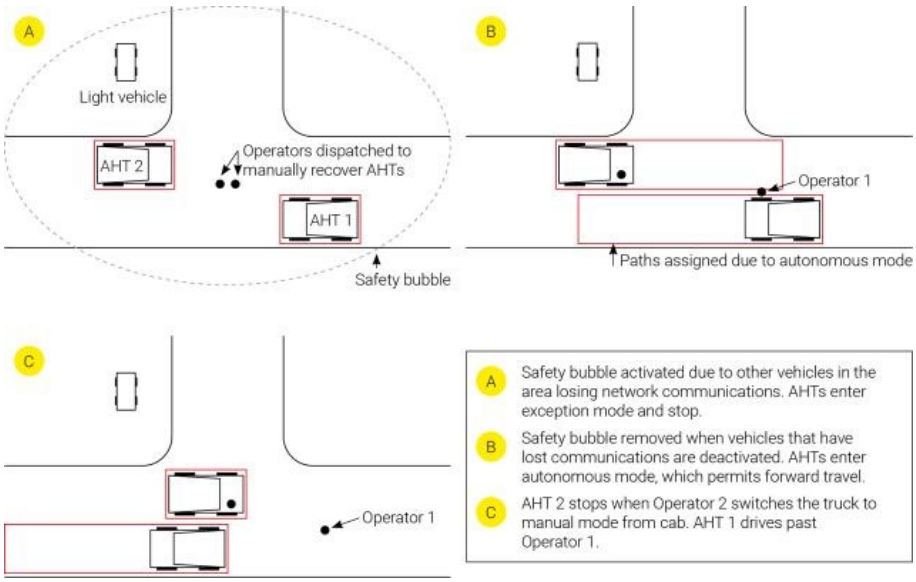
The failure of a communications trailer providing wireless coverage for the autonomous haulage system (AHS) caused a reduction in network coverage. As a result, the two AHTs came to a stop as per protocol for loss of communications. The operators were dispatched to recover them manually.

The reduction in communications network coverage was believed to have caused both manned and unmanned vehicles to lose communications. Instructions were given to deactivate vehicles that were in the area, due to the belief that all AHTs were unable to resume autonomous operations.

While the operators were near the trucks and moving to board, the last vehicle that had lost communications was deactivated, removing the safety bubble holding the AHTs, which were in exception mode. The AHTs reverted to their last command and resumed autonomous operation, activating two blasts of the horn to signal commencement of forward movement.

On hearing the warning, the operators took evasive action, with one entering the AHT cab and taking control, while the other moved out of the path of the second AHT as it drove past.

It was later determined that the two AHTs had not lost communication, but had stopped due to other vehicles nearby losing communications.



Direct causes

Operators attempted to board the AHTs while they were not under their control.

The operators did not identify that the AHTs were in exception mode when attempting to board.

Once the light vehicles in the area were deactivated, which removed the projected safety bubble, the AHTs reverted from exception to autonomous mode allowing them to resume operations.

Contributory causes

AHTs were in exception mode and not suspended (unsafe mode to approach).

Lack of understanding or clarity regarding the actions of the AHTs in various modes of operation.

Limited redundancy in communications network utilised by the AHS.

Ability for personnel to override system functions that are designed as critical safety controls.

Operators did not observe the AHTs status mode indicator lights.

Previous AHS communication issues may have desensitised the operators to potential hazards.

AHTs did not detect a person about to board.

Actions required

Review procedures for boarding an AHT ensuring that:

- safe systems of work are based on original equipment manufacturer recommendations
- comprehensive training and assessment programs are developed and delivered to ensure personnel are competent to undertake assigned tasks - task observations are undertaken to check compliance with training standards and operating procedures
- conditions are risk assessed if personnel are permitted to manually override safety controls
- safe states in which AHTs can be approached are clearly defined and recognisable in the field and that AHTs are not approached by personnel unless adequate controls are in place
- robust communication networks are in place
- tele-remote operation or follow me operation for moving AHTs is considered.

Further information

- Code of practice – *Safe Mobile Autonomous Mining in Western Australia*
  www.dmp.wa.gov.au/Documents/Safety/MSH_COP_SafeMobileAutonomousMiningWA.pdf
- Mines Safety Bulletin 110 – *Seeking safe mobile autonomous equipment systems*
  www.dmp.wa.gov.au/Documents/Safety/SRS-Publications-Mining_and_Explorations-Safety_Bulletin_110.pdf

This Significant Incident Report was approved for release by the State Mining Engineer on 24 May 2021