

SAFETY ALERT

Mine worker injured after falling from grader access ladder

INCIDENT

On 2 October 2014, a worker at an open cut coal mine sustained spinal injuries when he fell from an access ladder on a grader after it unexpectedly rotated to the raised position.

CIRCUMSTANCES

The operator had parked the machine to clean the windows. He did not shut the machine down. While cleaning the windows he descended the access ladder to a position where he could close the door. When he closed the door, the operator reported that the ladder rotated. As the ladder rotated, the operator became entangled, lifted and fell head-first to the ground. He managed to contact co-workers and was taken by ambulance to hospital where he was diagnosed with spinal injuries. Investigations are continuing.

Figure 1: Access ladder in raised position



Figure 2: Access ladder in lowered position



INVESTIGATION

Initial investigations have identified:

1. As supplied by the ladder manufacturer, the ladder control system prevents the ladder from being lowered if the park brake is not applied, and automatically raises the ladder if the door is closed and the park brake is released. This second function is intended to prevent damage to the ladder.
2. The system had an additional interlock switch, installed by the grader supplier, on the blade circle to prevent the ladder from lowering if the blade was not in a certain position, again to prevent damage to the ladder. This interlock switch was connected in series with the park brake interlock.

3. As a consequence of the park brake and blade circle interlocks being connected in series, the ladder control system considered the park brake was released when either the blade circle interlock or the park brake interlock turned off.
4. When the machine was inspected at the incident scene, it was noted the ladder control system was indicating the machine park brake was released, when it was actually applied. The blade had to be slightly adjusted to close the blade circle interlock, allowing the ladder to be operated.
5. It is believed the operator correctly aligned the blade to allow the ladder to be lowered, however the blade then moved enough for the interlock to turn off while the cab door was open. The ladder control system interpreted this as the park brake being released, and when the worker closed the door, the ladder operated.
6. The pressure settings for the ladder hydraulic system raise function appear to have been altered from the ladder manufacturer's factory settings.

RECOMMENDATIONS

1. Mine operators should consider auditing retractable ladder systems installed on mobile equipment to ensure they are installed and operating in accordance with the ladder manufacturer's recommendations.
2. Mine operators should review their risk assessments for mobile equipment fitted with retractable ladder systems to ensure the hazards associated with these systems have been identified, and appropriate controls have been established.
3. Mine operators should review operating, maintenance and training procedures for mobile equipment fitted with retractable ladder systems to ensure the controls identified in the risk assessments have been implemented.
4. Mine operators should ensure they have a rigorous process for introducing new equipment to site, that includes obtaining and reviewing all relevant safety documentation, including design risk assessments, before mobile equipment is placed into service for the first time.
5. Mine operators should ensure that a mine specific operations and maintenance risk assessment is carried out for new mobile plant, and the controls arising from the risk assessment are implemented before equipment is placed into service.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed



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MINE SAFETY OPERATIONS BRANCH
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