NSW GOVERNMENT

NSW Resources Regulator

SAFETY ALERT

DATE: August 2019

Flight bar ejects - hitting worker while installing a conveyor chain

This safety alert provides safety advice for the NSW mining industry.

Issue

A flight bar hit a worker on the shoulder when he was installing a conveyor chain on a continuous miner at a NSW Hunter Valley underground coal mine.

Circumstances

The incident occurred at 4pm on 23 June 2019.

The conveyor chain jammed when it was being pulled through the bottom race and around the foot shaft sprocket at the front of the continuous miner.

A 3 tonne sling was looped around both sides of the flight bar and was pulled over the top deck of the conveyor race by a 22 millimetre rope attached to a 10 tonne QDS winch on a load haul dump (LHD) vehicle.

One side of the flight bar failed and was ejected from the tensioned sling towards the worker who was standing near the rib bolter controls on the right hand side of the continuous miner.

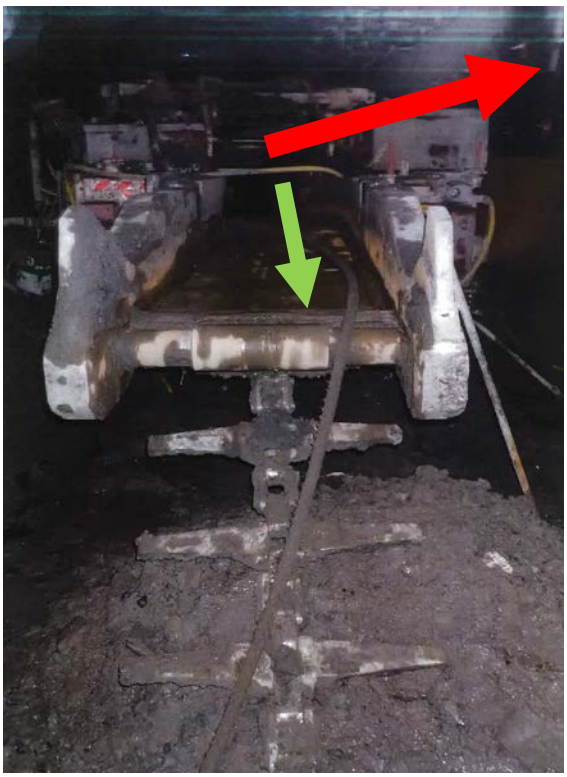
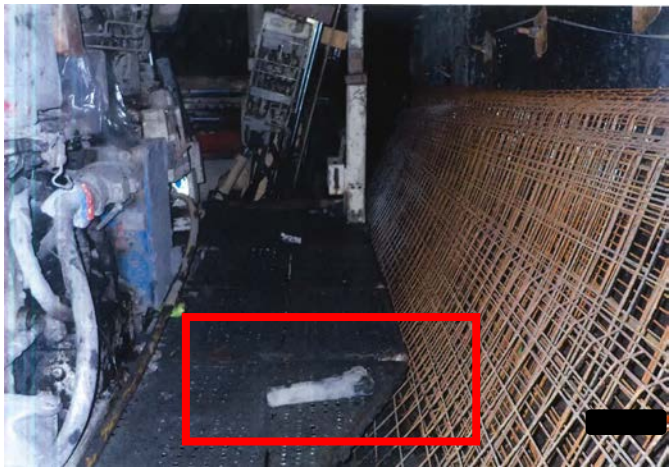


Figure 1 The red arrow shows the trajectory of the broken flight bar. The green arrow shows the pull direction of the 22 millimetre rope pulling the conveyor chain around the sprocket underneath the head of the miner.

Figure 2 (left) The broken half of the flight bar on the platform of the continuous miner and Figure 3 (right) A simulation of where the injured worker was reportedly positioned when the flight bar hit him



Key issues

- **Inadequate OEM information**: The original equipment manufacturer (OEM) who documented procedures for the conveyor chain installation, did not provide specific procedures for the method of pulling the conveyor chain onto the conveyor race. The steps were discussed partially in three other OEM procedures.
- **No safe work procedure for a routine task**: There was no SWP for replacing and pulling the conveyor chain even though the task was routinely conducted at this site. The mine operator required a SWP for 'routine tasks' to be created as stated in the 'lifting and towing engineering control plan'.
- **Workers thought they were positioned in a safe standing zone**: The workers created a JSA for the task and placed themselves in locations to view the movement of the pulling rope and the conveyor chain over the foot shaft sprocket. The locations selected placed them at risk of being hit with components of the failed pulling system.
- **Pulling connection point failed**: The workers used a sling and rope that they considered would be 'fail to safe' (a slow release of energy on failure). They did not consider that the sling reeving method, which was looped around the flight bar, may cause the failure of the flight bar.

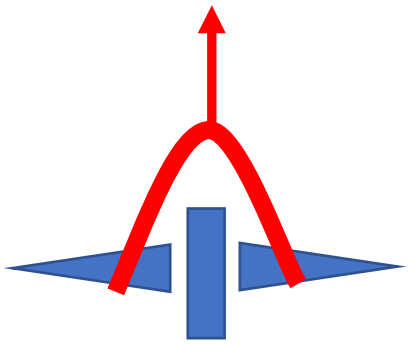


Figure 4 Diagram of the sling looped around both sides of the flight bar

- **Supervisor:** There was a failure of the 22 millimetre pulling rope before the injury incident. The rope failure was not investigated and was not notified to a relevant supervisor to review the cause. The shift mechanical engineering supervisor had

visited the work area earlier in the shift but was not present at the time of the rope failure and the flight bar failure incident.

- **Training competencies**: The injured mine employee had completed a refresher training course (licence to perform dogging[1]) about 10 weeks before the incident. The mechanical trades contractor who looped the sling around the flight bar had undertaken 'licence to perform dogging' training in 2010. He held a national licence to perform high risk work in dogging current to 2020.

Investigation

The Regulator has conducted site assessments to obtain information about the incident.

Recommendations

1. Mine operators should review lifting and towing plans and procedures and provide safe work procedures for systems of connecting to, and pulling, conveyor chains.
2. Mine operators should consult and engage with the relevant OEM in the development of SWP where OEM procedures provide inadequate information to conduct pulling and lifting tasks.
3. Mine operators should review safe standing zones when pulling continuous miner conveyor chains. If the elimination of a spotter, standing in the line of fire during the pulling task cannot be achieved, then suitable protection for a spotter must be put in place such as a mobile hard barrier guard.
4. Mine operators should review the training competencies of mechanical tradespersons and other mine workers who are required to conduct risk analysis, develop pulling systems and select pulling attachment points. Mine operators should review training competencies of contracted trades workers who undertake similar activities.
5. Mine operators should review compliance reporting systems to ensure workers notify a supervisor when pulling and lifting failures occur. Workers should not resume the pulling or lifting task until supervisors are notified of the failure and the incident is reviewed, with additional controls put in place.
6. Mine operators should ensure they also review the recommendations made in the Regulator publication, Investigation Information Release IIR 19-03 *Worker injured releasing jammed conveyor chain.*

[1] Dogging – consists of the application of slinging techniques to move a load (including the selection and inspection of lifting gear) and/or the directing of a crane/hoist operator in the movement of a load when the load is out of the view of the crane/hoist operator. SafeWork NSW

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