NSW GOVERNMENT

NSW Resources Regulator

# INVESTIGATION INFORMATION RELEASE

**July 2020**

**Incident date:** 13 May 2020

## Worker injured while conducting repairs to mobile jaw crusher

**Event:** A worker was injured when struck by a failed lifting lug while conducting repairs to a mobile jaw crusher

**Location:** Hera Mine, Cobar region via Nymagee in NSW

## Overview

A contract worker sustained an injury during an attempt to rotate a fixed liner plate in a mobile jaw crusher. To remove the liner plate, a temporary lifting lug was welded to the plate. An excavator was then used to lift the plate, however the weld failed and the lug struck the worker's hard hat at speed. The hat was damaged, resulting in a laceration to the worker's forehead which required nine stitches.

*Figure 1 Impact damage to hard hat*

*Figure 2 Crusher with excavator in position*


*Figure 3 Fixed jaw liner plate*


# The mine

Hera Mine is a polymetallic underground mining operation and associated 450,000 tonne per annum processing plant, recovering gold and base metals such as lead and zinc. It is located approximately 100 kilometres south-east of Cobar in NSW. The mine utilises bench stoping, with the stopes backfilled with waste rock fill.

# The incident

A contract boilermaker was conducting repairs to a mobile jaw crusher that was located on the surface ROM pad at the Hera Mine. The task involved the removal of the fixed jaw liner plate, rotating the plate and reinstalling it. Because there were no designated lifting points on the fixed liner plate, the boilermaker had to weld a temporary lifting lug to the upper centre portion. A 25-tonne excavator was attached to the lifting lug, using a 10-millimetre lifting chain and hook assembly. The excavator operator had successfully removed the opposite swing jaw plate on the same crusher in recent weeks. The swing jaw liner plate does not require the crusher side cheek plates to be removed to allow it to be lifted, however it's not possible to remove the fixed jaw plate without the side cheek plates being removed beforehand.

The excavator operator attempted to lift the fixed jaw plate with the side cheek plates still fixed in position. It then appeared to be jammed and the boilermaker stopped the lift. He then stood on the crusher platform, where he leaned over to see what was preventing the jaw plate from moving. The lifting assembly was still under tension due to the excavator not releasing the unknown additional load, caused by the jammed plate during the lift. The boilermaker had positioned himself so that he could visually communicate with the operator of the excavator. This placed him in direct line of fire should the lifting attachments fail. The weld on the lifting lug failed unexpectedly, which allowed a sudden release of stored energy in the lifting chain and lug which struck the boiler maker on his hard hat. Subsequently, he received an approximately 8-centimetre laceration to his forehead.

*Figure 4 Failed lifting lug attached to lifting hook*

# The investigation

The NSW Resource Regulator attended the mine site the day after the incident and conducted an initial assessment. Further investigation has identified the following:

- Workers involved did not identify that crusher side cheek plates had to be removed before the fixed jaw liner plate could be lifted.
- A specific job safety and environmental analysis (JSEA) with work procedures, including the requirement to remove the side plates prior to lifting the fixed jaw liner plate, was available for the task, but was not used by workers.
- Neither the contract boilermaker nor excavator operator were familiar with the maintenance procedures for the crusher involved in the incident.
- The excavator used in the lifting process was not fitted with a load sensing device to alert the operator about the additional load placed on the lifting assembly, when the fixed jaw liner plate was jammed.
- The excavator lift rating was 2,480 kilograms and the worn fixed jaw liner plate weighed approximately 750 to 800 kilograms.
- The 10-millimetre lifting chain assembly was rated at WLL of 3,200 kilograms.
- The fixed jaw liner plate being removed did not have designated lifting points. A new fixed jaw plate observed on site had designated lifting points on both ends.
- The communication method used between the boilermaker and the excavator operator was hand signals only.
- An exclusion zone had not been implemented to protect workers during the lifting operations.
- A non-slewing mobile crane was available on site but not utilised.
- The boilermaker directing the lift held a competency as a qualified non-slewing mobile crane operator.
- The boilermaker started working for the contractor two weeks prior to the incident. The excavator operator started working for the same contractor four weeks prior to the incident. Both workers were allocated as leading hands while the contractor shift supervisor was rostered off.

- The contractor supervisor was on his rostered break and there was no other contractor supervisor available on the day of the incident.
- The mine supervisors were not aware that the jaw crusher liner plate was being removed and rotated by the contractors.

## Recommendations

The Regulator recommends the following:

- Mine operators should review their contractor health and safety management plan to ensure that risk controls have been implemented that manage the health and safety of the contractor's workers at the mine.
- Mine operators must provide adequate information, training and instructions to protect workers from risk while carrying out lifting tasks.
- Mine operators should review their management plans to ensure all lifting activities are appropriately addressed, including non-routine lifting.
- When planning a task involving lifting, the rating load of all components, including the connection points, must be considered in the design of the lifting plan.
- Mobile equipment used for lifting activities should be fit for purpose and be fitted with a load sensing device.
- Safe standing zones must be established to account for component failures within the system.
- Mine operators must ensure that personal protection equipment (PPE) is available and worn as determined in the mine safety management system.

## Further information

Please refer to the following guidance materials:

- Safety Alert SA04-09 Broken chain connector results in serious injuries
- IIR 19-03-Lateral load shifting video
- Springvale worker injured releasing jammed chain

# About this information release

The NSW Resources Regulator has issued this information to draw attention to the occurrence of a serious illness in the mining industry. Further information may be published as it becomes available.

The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the NSW Resources Regulator or the user's independent adviser.

Visit our website to:

- learn more about our work on causal investigations and emergency response
- view our publications on other causal investigations



| DOCUMENT CONTROL | |
|---|---|
| **CM9 reference** | DOC20/447917 |
| **Mine safety reference** | IIR20-09 |
| **Date published** | 2 July 2020 |
| **Authorised by** | Chief Inspector<br>Office of the Chief Inspector |