Resources Regulator
Department of Regional NSW

Safety Alert

Date: December 2023

Haul truck engine module narrowly misses workers

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

Issue

Two workers were in the engine bay of a Komatsu 930E haul truck adjusting lever hoists (cumalongs) and lifting chains while installing an engine module on 15 November 2023. As the overhead gantry crane operator was taking the weight of the module on the crane, the module slid back on the supporting tracks about 1.5 m. Both workers took evasive action to avoid being hit or crushed by the moving module, but were uninjured.

This dangerous incident was neither immediately reported, nor the incident scene preserved.

Figure 1: Worker manoeuvring engine module

Figure 2: Worker moves clear of moving module

Circumstances

Eight workers, from Komatsu and Cummins, were assigned to overhaul a Komatsu 930E rear dump truck in the mine workshop. Four of those workers were involved in changing the engine module which consisted of the main alternator, engine and radiator.

The engine module had been lowered into the engine bay guide rails and the front sat on blocks. The engine module lift frame was then removed as the engine is unable to be put into its final position with it on.

Lever blocks were then attached to the bottom rear of the engine to pull the engine into final position and lift chains were attached to the front of the engine at the top to the overhead crane which was used to take the weight of the front of module whilst it was pulled into position.

At the time of the incident the front lifting chains were being adjusted to stop them from fouling on the radiator and fan by the 2 workers who were located on either side of the engine.

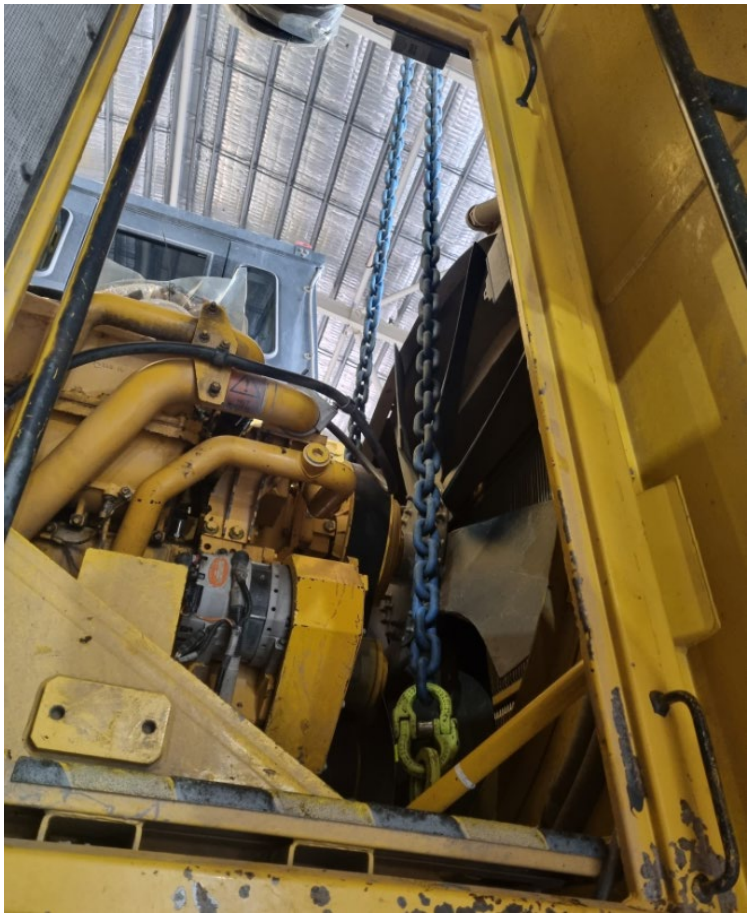
During this process the crane operator took the weight up on the front of the engine module and it began to slide backwards into the engine bay.

One of the workers leaped to the side of the front platform, whilst the other followed the engine module into the engine bay.

Investigation

The lifting jig was changed out for a 2 leg chain set to allow the rear end of the engine module to be lifted, while 2 lever hoists fitted horizontally pulled the module in on slide rails.

Figure 3: Chains supporting the engine module during installation



The investigation identified:

- Komatsu and Cummins crews each did their own work authority.
- They were using the Komatsu shop manual procedure.
- The job procedure did not give specific details for lifting the engine module because there was variation between the engines.
- The job pack had a handwritten JSA for the engine module removal process, with reverse steps for the installation, however, failed to identify the risk of unintended movement of the load or the potential for the load to unexpectedly roll along the chassis.
- The engine module was not secured from moving backwards towards the engine whilst installing. This hazard is not identified in OEM documentation. Typically, the engine module is difficult to install and has to be pulled into position with chain blocks and/or lever hoists.
- Neither the procedure nor JSA identified:
  - lift methods and/or rigging
  - crane interactions with the task
  - the work party to nominate no-go zones
  - positive communications requirements.
- There was no designated spotter, so the crane operator was taking instruction from all workers involved.
- The overhead crane was being operated while workers were in a no-go zone.
- Crane operation moved the engine module into position as intended.
- No faults were found on the overhead crane when inspected.

Prohibition notices were issued to the mine site, Komatsu, and Cummins, and all were conducting internal investigations at the time of publication.

Recommendations

During lifting activities, it is vital to have clear and concise communication between work parties and workers in control of cranes. When incidents occurs, workers must clearly and accurately convey the events related to any incident or near miss to their supervisor.

Manufacturers should:

- review risk assessments and procedures to ensure the hazard of unplanned movement during lifting an engine or radiator modules into or out of a haul truck is considered
- update existing procedures with photos for the site-specific removal or installation of engine or radiator modules
- ensure effective controls are in place
- ensure the procedures and controls are clearly communicated to workers

Mine operators should:

- review supervision requirements for major work on site conducted by contractors and other third parties
- review OEM documentation and procedures.
- review risk assessment and create site-specific safe work procedures (SWP) for engine module installation, addressing hazards identified from the incident and findings from incident cause analysis method (ICAM).
- When incidents occur:
  - isolate area and barricade off
  - notify the Regulator as soon as you are aware of the severity of any incident.

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 common area, such as your notice board where appropriate.

Visit our website to:

- find more safety alerts and bulletins
- use our searchable safety database

Document control	
CM9 reference	RDOC23/296870
Mine safety reference	SA23-07
Date published	22 December 2023
Authorised by	Chief Inspector Office of the Chief Inspector