WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

HSWA

SAFETY ALERT

Quarries Safety Alert 2 | 17 May 2017 | Version 1

EXTRACTIVES – QUARRY OPERATION

Hydraulic power pack and ram failure causing death

WHAT HAPPENED?

A mine worker at an alluvial gold operation was using a hydraulic power pack and ram to undertake maintenance on the rear struts of a dump truck. The ram ruptured and high pressure hydraulic fluid erupted from the ram, hitting the worker and causing fatal injuries.

HOW DID IT HAPPEN?

The hydraulic power pack and ram were assembled off-site and brought to site by a contractor. The mine operator did not undertake any safety checks on the hydraulic unit prior to it being used on-site. The hydraulic ram and power pack was built by the victim's employer using a ram sourced from an excavator.

The pressure relief mechanism on the power pack was not compatible with the ram's safe operating pressure. The ram was also positioned in a location not approved by the truck's manufacturer.

The hydraulic ram was not high enough to reach the truck's lifting point and the ram was inadvertently extended to its maximum height. Not realising this, the victim continued to engage the hydraulic power unit, which allowed the pressure inside the hydraulic ram to reach the maximum output, and cause the ram's rupture.

COMMENTS

Most off-the-shelf hydraulic jacks for this type of use have the power unit and ram built as a single unit. This means any pressure compatibility issues are addressed at point of manufacture. It is critical that designs of custom-built systems are verified by an appropriately qualified engineer.

WSNZ_2659_MAY 2017

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WHAT CAN BE LEARNT FROM THE INCIDENT?

> Pressure relief systems should always be compatible with the components under pressure.

> Any hydraulic system using modified parts should be reviewed by a engineer experienced in hydraulic system design.

> Manufacturer-recommended lifting points should always be used.

> Hydraulic lifting systems should undergo regular servicing and inspection by a person qualified to carry out the work.

> Mine and quarry operators should develop, implement and maintain systems to verify that equipment brought on-site is safe.

> Mines and quarries should have a comprehensive management plan to manage the risks associated with high-pressure fluids.

MORE INFORMATION

Mine and quarry operators or other industries should engage hydraulic servicing specialists to verify the integrity of their equipment.

The New South Wales Mines Safety Unit has produced a guideline that provides helpful advice: www.resourcesandenergy.nsw.gov.au/__data/assets/pdf_file/0008/419489/MDG-41.pdf

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