



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

SAFETY ALERT

Contractor fatally injured by high-pressure hydraulic equipment

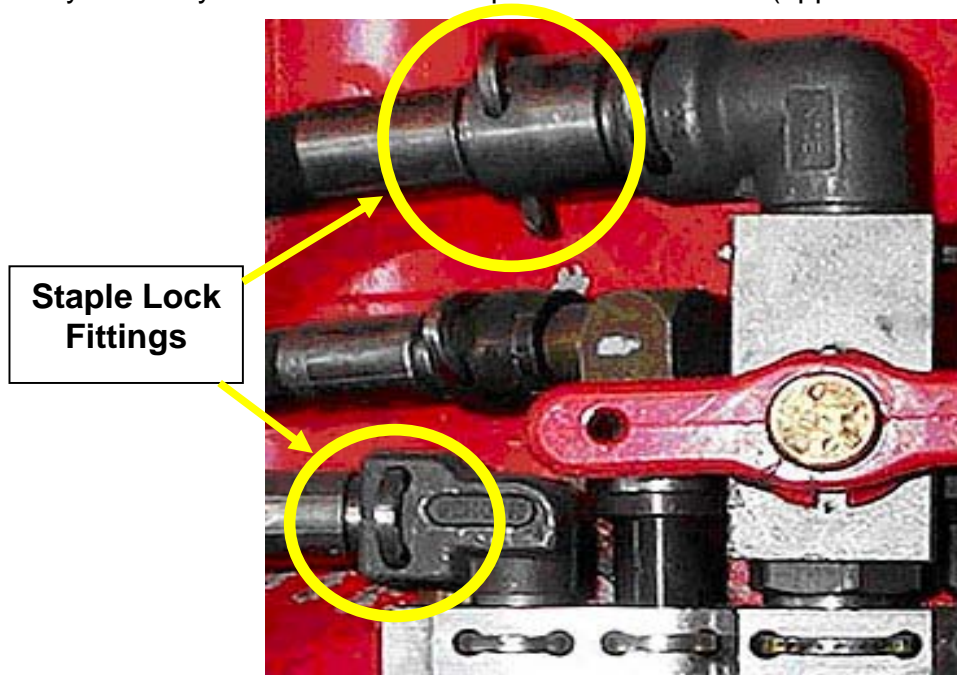
INCIDENT

A contractor was fatally injured while taking fluid samples from a large hydraulic system used to power longwall machinery at an underground coal mine.

CIRCUMSTANCES

The contractor was at the mine to take fluid (oil) samples from the longwall hydraulic system at various points. The contractor was found adjacent to an open high-pressure hydraulic staple connection. Fatal injuries were consistent with hydraulic injection.

The hydraulic system has a nominal pressure of 305 bar (approx. 4350 psi).



Example of Staple Lock fittings NOT related to this incident.

INVESTIGATION

A detailed investigation has been initiated.

RECOMMENDATIONS

Specific recommendations are not available until the investigation nears completion.

All mines should include the management of high-pressure fluid systems as an integral part of their mine safety management system which should include:

1. A comprehensive Management Plan to manage the risks associated with high-pressure fluids.
2. A review of previous injuries, accidents and significant incidents due to high-pressure hydraulics.
3. A hazard awareness program to include the dangers of high-pressure hydraulics and oil injection.
4. Appropriate levels of competence for persons accessing high-pressure hydraulics.
5. A clear isolation policy on what work can and cannot be conducted on equipment that is pressurised. A process to positively isolate the system or parts of a system by lockable means.
6. A process to identify if pressure is contained in a system and a means to drain pressure from a system without disconnecting fittings.
7. A process to take fluid samples from a system safely without the need to disconnect fittings and access to high-pressure points for sampling using specific purpose-designed equipment. Fit-for-purpose equipment suitable for the intended use must be used.
8. Clear identification of high-pressure, medium-pressure and low-pressure fluid lines.

9. Preventing excessive external loads being placed on hydraulic fittings and hoses.
E.g. Assembly of a number of fittings together can result in increased leverage on a rigid end fitting. External loads may include standing on the assembly, being pushed through spillage, movement of assemblies relative to one another and force required to move a valve on the assembly.
10. Avoiding having quick-action hydraulic valves which can be opened and spray a person with high-pressure hydraulic fluid.
11. An effective hose management system with clear guidelines to determine when hose replacement is required.
12. Use of hydraulic hoses with an appropriate factor of safety, fatigue life and resistance to damage relevant to the location of the hoses, movement of the hoses and their proximity to persons.
13. Use of anti-whip devices for those hoses most vulnerable to becoming disconnected.

References available are safety legislation, AS4360 *Risk management*, MDG 1010 *Risk Management for the Mining Industry* and the *National Minerals Industry Safety and Health Risk Assessment Guideline* and Draft MDG 41 *Guideline for fluid power systems safety at mines*

(see www.minerals.nsw.gov.au/safety/mechanical_engineering/current_issues).

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations.

Signed



Rob Regan
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NSW DEPARTMENT OF PRIMARY INDUSTRIES

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