Hydraulic Fluid Injection

Safety Alert Issue #: 12-2015

Enform

Enform is the health and safety association for Canada's upstream oil and gas industry. We provide leading health and safety training, programs and services, touching the lives of hundreds of thousands of workers each year. We are dedicated to the continuous improvement of safety with a vision of eliminating work-related incidents or injuries in the upstream oil and gas industry.

An Industry Product

This document was developed by industry for industry. Working collaboratively, Enform works with the submitting organization representative in developing these documents to improve the industry's hazard awareness. Canada's leading oil and gas industry trade associations support the use of shared information to help companies of all sizes improve performance.

Disclaimer

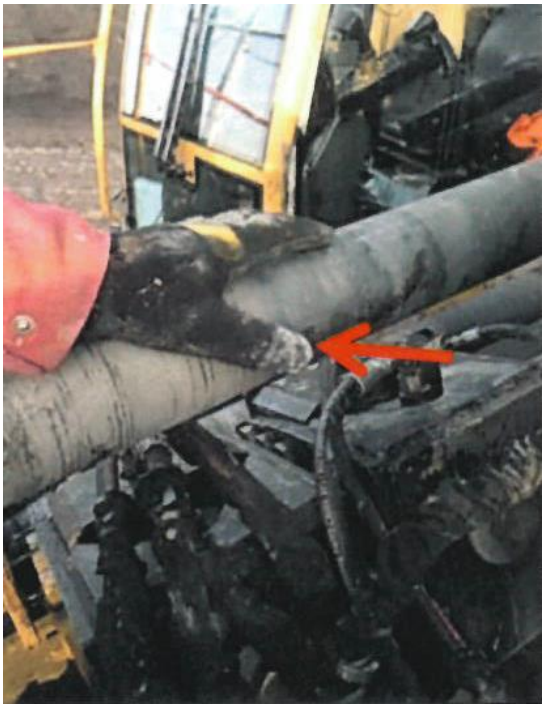
This document is intended to be flexible in application and provide guidance to users rather than act as a prescriptive solution. Recognizing that one solution is not appropriate for all users and situations, it presents accepted guidance that generally apply to all situations. While Enform believes that the information contained herein is reliable under the conditions and subject to the limitations set out, Enform does not guarantee its accuracy. The use of this document or any information contained will be at the user's sole risk, regardless of any fault or negligence of Enform and the submitting organization.

For more information on this event, please contact: safety@enform.ca

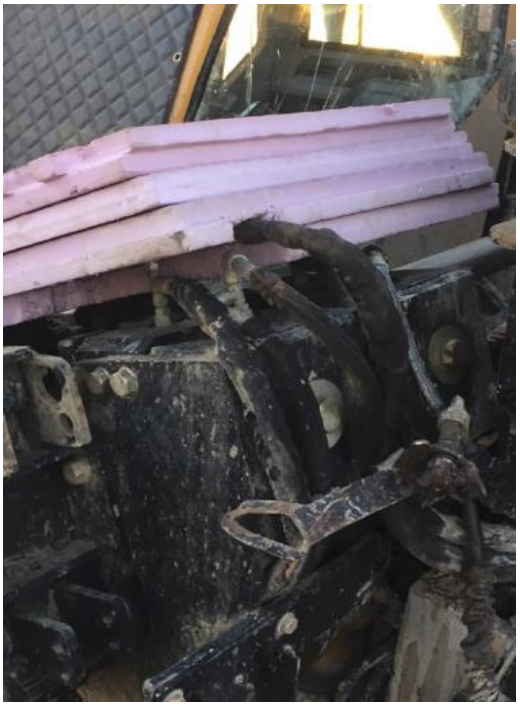
Description of Incident:

While drilling for the installation of a pipeline, employees of a horizontal drilling company installed a sling attached to the cab-mounted crane to facilitate removal of a drill rod. The orientation of the drill rod was such that the load was unbalanced. In an effort to stabilize the rod, the worker placed his left hand on top of it.

When the lift occurred, the drill rod made contact with one of the hydraulic fittings that control the drill tongs, resulting in the release of pressurized hydraulic fluid (~3000 psi) out of a pinhole in one of the fittings. The stream of fluid penetrated the worker's glove, and entered his thumb. Injection of hydraulic fluid can lead to serious injury including loss of limb or life if not treated immediately. The worker was taken to the hospital to undergo minor surgery to remove the hydraulic fluid from his thumb, and then was closely monitored.



Arrows indicate direction of jetted hydraulic fluid from the fitting to the left thumb (re-enactment)



Temporary styrofoam blocks used after incident to protect hydraulic fittings

What Caused It?

Drill rod struck fitting, causing release of high pressure (~3000 psi) hydraulic fluid.

Contributing Factors Included:

- Tag lines were not used
- Written work procedures were not followed and were inadequate for the manual removal of the drilling rod
- Hydraulic fittings were exposed in area where contact with equipment is likely

Corrective/Preventative Actions:

- Develop written procedures for the manual removal of rods and enforce use
- Use tag lines to secure a load when conducting a lift
- Install temporary and eventually permanent protective enclosures around hydraulic fittings subject to damage
- Educate workers on the hazards of hydraulic fluid injection