

Service Rig Tank Flash Fire Results In Worker Injury

SAFETY ALERT

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Enform

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

Description of Incident:

A crew was conducting well kill operations on a sweet oil well. A worker was monitoring the return flow to the service rig trough from on top of the rig tank. When the returns became gassier, the return flow was opened to the degasser section of the rig tank and the trough flow was pinched in slightly. The rig manager proceeded to the top of the rig tank stairs where his personal gas monitor immediately began to alarm on high LEL (lower explosive limit). The rig manager looked up to observe both the rig tank and the worker on the rig tank being engulfed in flames.

The worker standing on top of the rig tank jumped over the handrail to the ground, and suffered a broken hand from the landing. The flash fire resulted in minor burns to the worker's face, chest, back and thighs, and extensive burns to the forearms which required skin grafting surgery and 18 days in the hospital. The rig manager jumped off the stairs and was not injured in the event.

	<p>The source of ignition was a poorly terminated electrical livestock control fence "jumper" wire.</p>
	<p>The poorly terminated end provided voltage from an electrified wire strand attached to the lease perimeter fencing to a single poly line located within two meters of the service rig tank.</p>

What Caused It:

Investigation determined the source of ignition was caused by a poorly terminated electrical livestock control fence “jumper” wire. It provided voltage from an electrified wire strand attached to the lease perimeter fencing to a single poly line located within two meters of the service rig tank.

The poorly terminated wire was hanging freely and made periodic contact with a barbed wire strand two inches below the electrified wire. This contact between the two wires created a spark, which ignited the gassy oil returns to the rig tank as they vented from the open top of the tank.

Contributing factors included:

- The electrified fence was not identified as a potential source of ignition
- The power jumper wire was not properly terminated according to manufacturer specifications
- The corporate and contractor PPE policy was not adhered to: the worker’s sleeves were rolled up past the elbows leaving the forearms exposed to intense heat and flame contact
- The worker was not wearing a personal gas monitor to warn of potentially explosive atmospheres

Corrective/Preventive Actions:

- Site Specific Hazard Assessments should include a physical search for other potential sources of ignition on or near the work site perimeter. Land owners may be consulted if these potential sources of ignition are found to exist near the operated properties
- The operating company has reviewed and identified the types of operations that may have potential for gas to surface equipment and has implemented an administrative control for keeping personnel out of the potential hot zone
- All personnel working on or near the rig tank should use personal gas monitors to warn of high LEL environments
- All personnel are required to wear fire retardant coveralls as designed to minimize the amount of exposed skin