SAFETY ALERT - #15 - 2009
Regulator Fails After Being Over-Pressured
RELEASE DATE: SEPTEMBER 10, 2009

Function: Production Operations	**Incident Date:** August 5, 2008
Incident Type: Equipment Failure	**Country and Region:** Western Canada

Summary:

A replacement pressure regulator failed when it was over-pressured.

Description of Incident:

A gas release resulted when a replacement pressure regulator was over-pressured and failed. The regulator was a component of the fuel supply for a plunger lift system installed on a wellhead. No fluids were released and the gas release was negligible. However, component failure at a higher pressure or H_2S content at the wellsite may have resulted in more significant impact including worker injury.

- The replacement regulator which failed was only rated for 250 PSI. The regulator typically installed in this application is a 4,000 PSI regulator. The regulator installed was a non-typical component for the plunger lift system and should not have been placed on the parts shelf along with the regulator inventory.
- The worker who was completing the work had no formal training or certification, training was limited to field training with an experienced installer. He did not have sufficient knowledge to recognize that the regulator he selected did not match the system design nor did he have enough experience or training to carry out the installation without supervision.


Typical Plunger Lift Installation

We Can Prevent Future Incidents:

As discussed in a 2007 Workplace Health and Safety bulletin, WHS investigations have revealed that many near-miss incidents involving plunger lift systems are occurring. However, since no injuries were associated with these occurrences, many these incidents are not recorded or communicated. An important comment made in this bulletin:

> *Because of the nature of oil and gas operations in Western Canada, the use of this technology is increasing. With more workers being exposed to this equipment, it is critical that workers tasked with operating and maintaining these systems are trained and aware of the system operating limits and potential hazards associated with the equipment and operation.*

This hazard alert reinforces the concern identified by Workplace Health and Safety. Recommendations to prevent similar incidents include:

1. Installation of any equipment should only be carried out by competent individuals who are familiar with the equipment being serviced. For example, the Industry Recommended Practice for Upstream Gas-Fired Equipment Requirements published by CAPP recommends that in

addition to basic safety skills, personnel should have the following competencies before being allowed to perform maintenance work of this nature:

- Ability to explain the working principles of the equipment
- Understanding of gas-operated equipment
- Ability to locate and identify the components, explain their function, and trace the flow of fluids through the equipment
- Understanding of pre-start-up checks
- Ability to perform start-up procedure
- Ability to monitor and adjust the control system
- Ability to shut down the equipment
- Ability to perform post shutdown procedures
- Ability to validate equipment safeguarding devices and settings

2. An up-to-date engineering drawing of the wellhead and control system should be referenced by the installer prior to installation of any equipment. It is important to ensure that all replacement parts are consistent with the original design.
3. Ensure that a suitable inventory quality control system is established and maintained. Again, it is important to ensure that all replacement parts consistent with the original design are available.

Additional Information:

WorkSafe Alberta Bulletin AL034: Worker Seriously Injured Servicing Plunger Lift System

CAPP Industry Recommended Practice for Upstream Gas-Fired Equipment Requirements

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