



The Safety Association for Canada's
Upstream Oil and Gas Industry

Instrument Tubing Failure Resulting in a Serious Injury

SAFETY ALERT

ISSUE #: 10-2011

Enform: Your Partner in Safety

Enform is the upstream oil and gas industry's advocate and leading resource for the continuous improvement of safety performance. Our mission is to help companies achieve their safety goals by providing practices, assessment, training, support, metrics and communication. Our vision is no work-related incidents or injuries in the Canadian 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.

Copyright/Right to Reproduce

Copyright for this document is held by Enform, 2011. All rights reserved. Enform encourages the copying, reproduction and distribution of this document to promote health and safety in the workplace, provided that Enform is acknowledged. However, no part of this publication may be copied, reproduced or distributed for profit or other commercial enterprise, nor may any part be incorporated into any other publication, without written permission of Enform.

Details

Release Date: April 13, 2011
Incidence Type: Serious injury
Country and Region: Alberta, Canada

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

Description of Incident:

Operations was commissioning a high pressure gas well (approx 3000 psi). Contractors had installed instrument tubing from the wellhead to the pre-fabricated meter skid. All tubing in the skid was to have been checked for correct installation and marked with an "x". Three days later while flowing the well, an operator noticed that a 1/2" to 3/8" inch tubing fitting was leaking at the point where it was installed into a "T". This fitting and tubing carried full well pressure to a transmitter. The operator went to his truck and returned with two wrenches. The operator bent over the knee high fitting at about a 30 degree angle. As he placed his 11/16th wrench on the fitting nut, the tubing released from the nut and the operator was blasted in the face with the full force of the gas pressure. The gas caused a 4 1/2" tear in his esophagus, deflated one lung and partly deflated the other. He was transported by air to hospital where he is recovering.

What Caused It:

- The tubing was 3/8" .049 wall thickness stainless steel. The fitting is a double ferrule style. All met manufacturer's specs.
- The tubing had been installed into the fitting nut to the correct depth and the ferrules were installed in the correct order.
- The fitting nut had not been tightened as per manufacturer's recommendations (finger tight plus 1 1/4 turns) therefore the ferrules were not "set" into the tubing. When examined post event, the nut was found to be finger tight (3 full turns).
- The installer had 'batch marked' the fittings in his post installation check vs. checking then marking one at a time.
- The well commissioning process had not caught the leaks.
- Fittings under pressure need to be depressured before tightening; this practice may have not always be followed.

Corrective Actions:

- Leaking tubing fittings under pressure can be extremely dangerous and must be depressurized before being touched.
- Field correcting of tubing installation deficiencies without follow up with the contractor prevents the sharing of findings and the opportunity for the contractor to correct the deficiencies and implement the necessary corrective actions into their procedures.
- Field installed tubing should be hydrostatically or pneumatically tested per ASME B31.3 methods in conjunction with the contractor's QA/QC program.
- Review well commissioning processes to identify tubing installation testing and verification.
- Verify training for the correct installation and operation of fittings.

More information on page 2.....

By industry, for industry

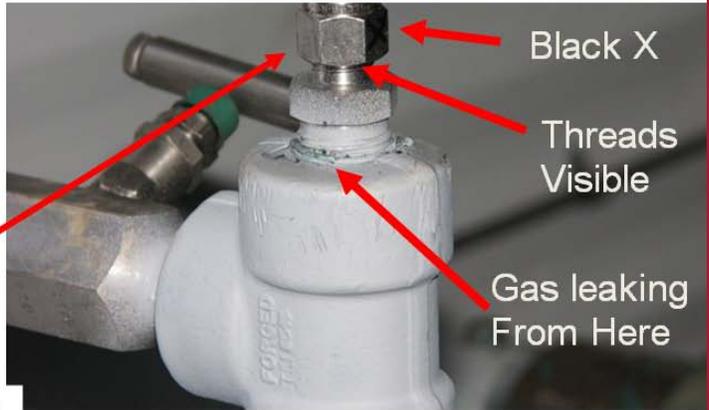




Tubing Bent By Release.

Fitting Nut

Casing Assembly



Black X

Threads Visible

Gas leaking From Here