



Performance and Value of the inVision System in Snubbing Interventions

Case Study #0005

Date

August 28–
September 23, 2016

Client

Chevron Canada

Location

Fox Creek, Alberta

Contractor

High Arctic
Energy Services

Executive Summary

Starting on August 28th, 2016 Intelligent Wellhead Systems (IWS) mobilized one of their inVision Spool Systems to the Fox creek area in support of a stand alone snubbing unit working on a four well pad for Chevron Canada.

The purpose of these four jobs was to install a 73mm (2 7/8") production tubing strings.

Well and Equipment:

- 285k Stand Alone Snubbing Unit
- Well Depths: confidential
- Surface Pressure: HIGH
- PCE 179mm (7.062") × 70 MPA (10M) fully guided BOP stack
- inVision 130mm (5.125") × 103Mpa (15M) pancake system

The well pressures at surface made it necessary to stage the BHAs and all tubing couplings utilizing stripping rams.

The inVision System provided information that allowed the snubbing unit operator to improve efficiency and safety during the trips.

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RIG UP DETAILS

The DAS control system for the inVision spool was rigged up on the LMS sub floor of the snubbing unit. The inVision spool was installed between the stripping rams. This placement enabled the operator to positively identify tubing couplings as they entered the staging section of the stripping BOP stack.



Figure 1. The inVision Spool in the stack (A)

The main zone rated HDMI screen was placed at the operator's panel. This interface gives the user real time information as to diameter and lateral position of tubing/BHA at the location of the inVision spool. The system also provides audio and visual indicators when diameter changes, or the spool senses that there is no object across it (Out of Hole).



Figure 2. The inVision System HMI screen (B)

OPERATION DETAILS

These four wells represented the first time the inVision System was used with this snubbing unit. IWS personnel were on location to guide and assist the HAES crew with the setup and use of the system.

The overall rig-up height was approx. 25m (85') and involved multiple sets of BOPs.

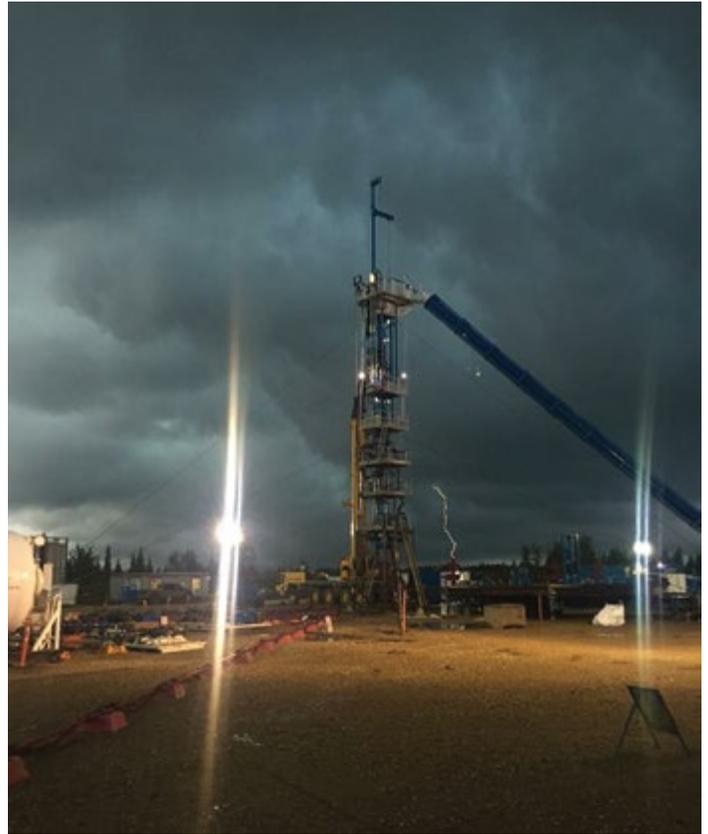


Figure 3. Built for weather extremes

The operations were to install production strings which were configured as follows from the bottom up:

- Re-entry guide
- 60cm (2') pup joint
- Dual burst discs
- Empty XN nipple
- 3m (10') Pup
- Empty X nipple
- 1 joint tubing
- 3m (10') pup
- Tubing to surface
- 127mm (5") Tubing hanger

DELIVERABLES

- Provided information that allowed the crews to confidently stage pipe at high pressures.
- Confirmed string component placement thus avoiding potential problems due to differential pressures.
- Provided time stamped logs of the trip times.
- The inVision System provided a technical solution that potentially mitigates human error and fatigue from being as large a factor during complex, yet repetitive tasks such as staging hundreds of joints at high pressures.

After completing pressure tests on all of the PCE, the crew began snubbing in the strings on each job while staging every tubing coupling using ram to ram stripping techniques. The inVision System allowed the snubbing crew to see that each coupling was placed properly during the staging sequence, preventing unwanted ram collisions and potential pipe damage.

Once the tubing string was deployed, the crew then added the tubing hangers to the top of the strings, and they were also staged through the stripping stack. The inVision System allowed the operator to see detailed dimensional data on the tubing hangers. This ensured proper placement of the hangers during equalization of the staging cavity during hanger deployment. This allowed the crew to avoid any extreme differential pressures during this crucial stage of the trip.

CONCLUSIONS

During the course of this job, the ability to transfer information to the crew in real time during trips lessened stress and increased speed of the operations. Having visual and audible alerts to confirm placement of couplings and other string components added value to the overall process.

FINAL THOUGHTS

Intelligent Wellhead Systems would like to thank Chevron Canada and High Arctic Energy Services for having the trust and vision to utilize our systems on a continuous basis.

Your commitment to the systems have allowed us to continue to develop and refine the inVision System to the benefit of the industry.



To learn more about how the inVision System can assist your snubbing interventions, visit our website at www.IntelligentWellheadSystems.com



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