



Safety Alert

From the International Association of Drilling Contractors

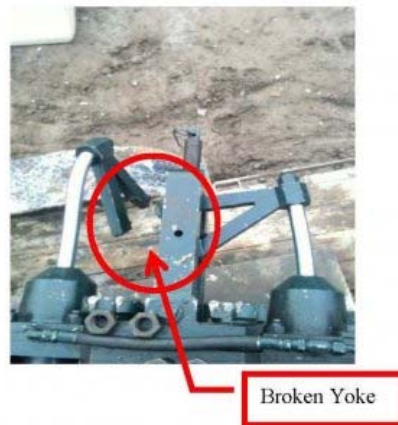
ALERT 11 – 22

FAILURE OF BOP RAM YOLK RESULTS IN A NATURAL GAS RELEASE FROM BOP

WHAT HAPPENED:

A rigless snubbing unit was preparing to stage a production tubing string into a well. The average well bore pressure was recorded at 28mPa (4000 psi). At that pressure it is required to snub the tubing using the ram to ram staging method. As the snubbing operator was staging the coupler of joint #44 into the staging chamber of the snubbing unit, he closed the lower stripping Quick Ram Change (QRC) rams, de-pressurized the chamber, and opened the upper stripping QRC rams. Immediately after the upper QRC rams were opened there was a natural gas release from the closed annular blowout preventer (BOP) on top of the snubbing stack. The operator closed the upper QRC rams and investigated the cause of the release. It was noticed that the lower stripping QRC rams had malfunctioned and did not close properly. The operating yoke of the QRC stripping ram was found to be broken on the left side. This made it impossible to apply the correct closing pressure to the QRC stripping pipe ram to achieve a seal on the tubing. The tubing hanger was staged in using the upper stripping QRC rams and the damaged QRC rams were removed from the snubbing stack and sent for analysis of the failure.

The BOP involved in the incident was within its 3 year required certification, having been inspected 1.5 years ago by a third party recertification facility. No damage or irregularities were detected.



WHAT CAUSED IT:

- The immediate cause of the incident was the failure of the operating yoke on the QRC BOP.
- The original purchaser of the rams had requested the manufacturer to modify the original equipment design to improve overall ease of handling, as well as, rigging in and rigging out of the BOP.
- The underlying causes of the failure included a faulty design that did not account for the conditions the QRC BOP was being used.
- A full management of change review was not conducted prior to the changes made to the equipment and assumptions were made about the strength and durability of the operating yoke and QRC.

The Corrective Actions stated in this alert are one company's attempts to address the incident, and do not necessarily reflect the position of IADC or the IADC HSE Committee.

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CORRECTIVE ACTIONS: To address this incident, this company did the following:

- Prior to commencing operations a safety meeting was held and a review of the company's ram to ram staging Job Safety Analysis (JSA) was completed. These actions were documented with all personnel on location.
- The company has 6 sets of the faulty QRC BOPs and all were upgraded with new, heavier yokes. The yokes that were removed from service were sent for Non-Destructive Testing (NDT) and it was discovered that they were ALL cracked in the same spot.
- Recommended that snubbing operators add a visual inspection of BOP components to the supervisor's daily checklist.
- Recommended that snubbing operators utilize original equipment manufacturer (OEM) or an OEM approved vendor for BOP service and recertification.
- All companies that purchase remanufactured equipment must not take for granted that all designs are flawless and to ensure that a management of change process is developed and followed when any changes are made to equipment or processes.

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