WELL CONTROL INCIDENT LESSON SHARING

Wrong practices for influx detection while manipulating fluids at the surface

The IOGP Wells Expert Committee/Well Control Incident Subcommittee believes that this incident description contains sufficient lessons to be shared with the industry. We further encourage the recipients of this mail to share it further within their organization.

What happened?

While drilling the 8 ½" section, an 8m^3 drilling fluid transfer to the active pit was carried out from the reserve pit which was not equipped with sensors. At this point, a sudden increase of SPP and mud flow-out percentage were detected, and bubbling was observed from the rig floor. The well was shut in, showing the following data: SICP stabilized at 2700 psi, SIDPP at 75 psi (float valve present in the BHA) and an approximate gain of 15 m^3.

The well was controlled by implementing the driller's method with a final MW of 2.24 sg (after four cycles of mud weight increments).

What Went Wrong?

- The pit volume increase was masked by the ongoing drilling fluid transfer operation. The total gas influx was estimated between 10-20 m^3
- The pore pressure estimated for well design (1.78 sg) was significantly lower than the pore pressure encountered (estimated at 2.18 sg)
- People's awareness of the associated risks proved to be low; gas had been circulated while drilling, but it was not associated with the fluids' transfer risk
- Detection systems did not work as intended: The theoretical threshold for detection was 0.8m^3 (5 bbls), but the system allowed an influx >10m^3

Corrective Actions and Recommendations:

- Implement a program to increase people awareness of well integrity operations and associated risks
- Review and enhance influx detection system
- Define clear instructions for transferring fluids at surface to avoid losing control of the active system
- Implement detection drills for well influx to reduce closing time. Reinforce procedural adherence both for the supervisory staff and the crew

Disclaimer

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither the IOGP nor any of its members past present or future warrants its accuracy or will, regardless of its or their negligence, assume liability for any foreseeable or unforeseeable use made thereof, which liability is hereby excluded. Consequently, such use is at the recipient's own risk on the basis that any use by the recipient constitutes agreement to the terms of this disclaimer. The recipient is obliged to inform any subsequent recipient of such terms.
This document may provide guidance supplemental to the requirements of local legislation. Nothing herein, however, is intended to replace, amend, supersede or otherwise depart from such requirements. In the event of any conflict or contradiction between the provisions of this document and local legislation, applicable laws shall prevail.

Italic text in the body of this Lesson Sharing report represents editorial comments by the IOGP Well Control Incident Subcommittee.