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Making Wells Safer; Rectification of High Annulus Pressure via Diagnostic and New Technologies Through Annulus Intervention Method

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Abstract

Sustained annulus pressure is an increasingly common well integrity issue encountered particularly in aging platforms. The issue is normally discovered via periodic wellhead maintenance programs or during monitoring by the production team. Subsequently, the wells integrity team will pursue well diagnostic via annular pressure diagnostic by manipulating and creating specific conditions to acquire information on the potential leak rate, leak path, and source of the leak. The probable culprit of the tubular integrity issues is due to completion or casing leakages, or failed cement conditions.

The generic rectification technique available varies from rig to rigless method. Considering the low economic of the field & remote jacket location with a small footprint and limited crane capacity in Sabah waters, either the rig or workover option can be unfavourable. Therefore, the options available to remediate the sustained annulus pressure are limited considering the platform's design and operational setup. Historically, the team has attempted with a conventional pump and lubricate the annulus to mitigate the symptoms. However, the effectiveness was questionable as the pressure kept creeping up within a short period which urged the team to look into better technology solutions.

With the limitations above, the team warrants a new holistic approach to resolve the sustained annulus issue. Annulus Intervention System (AIS) provides better fluid conveyance and circulation for better fluid displacement at the targeted depth. The AIS system has a smaller footprint as compared to a pumping or workover unit which is a major advantage for a small and remote platform directly applicable to the target Sabah asset. This paper will table out the step-by-step method that has been taken by the team to ensure the AIS system is engineered and tailored to rectify the sustained annulus pressure in a less than 500-meter square deck space.