[PS]Increasing Operational Efficiency in Extreme Extended Reach, Offshore Wells - A Case Story from Middle East*

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Abstract

This case story will present an extreme extended reach offshore well operation in which story two Sliding Sleeve Doors (SSD's) were opened in a single run on e-line, an outstanding achievement due to the inner diameter restrictions and depth of the well. We review the planning, operation, achievements and the lessons learned. Due to the well going on total losses during the workover, a closed system was deployed to enable the operator to position and set the hydraulic packers. The packers are utilized for zonal isolation, with each of the two zones having two SSD's, in which one SSD per zone was required to be opened to allow access to the formation. The selected solution was an electric over hydraulic tool string consisting of tractor, stroker and selectable shifting tool to address the profile in the SSD. The operator was using the service provider for other interventions and decided to challenge them with opening two SSD's in one run while not shifting the adjacent SSD's. The challenging underlying economics of the industry has created a powerful driver for operators to find alternative cost effective intervention methodologies. The operation covered in this case provided just such improvements to the client: by utilizing electric line intervention tools the operator negated the requirement for a larger footprint coiled tubing intervention.

A System Integration Test (SIT) was completed onshore prior to mobilization, where multiple shifts were successfully executed using a single set of shifting key pads. Test results were then repeated offshore, completing two interventions in a single run. The SSD's were successfully opened at ~12,000 ft MDRT and ~8,000 ft MDRT, respectively while leaving the two adjacent SSD's in the closed position. The client's objective was 100% achieved using electric line, enabling the client to move forward with similar well designs having the confidence that a safe, reliable electric line solution is available. Additional results include reduced HSE risks as the e-line approach eliminated the use of a heavier CTU. This poster will also cover some lessons learned as debris in the profile and tubing caused some challenges. This operation shows how the industry is constantly trying to improve on existing methods in order to be more efficient, safe and cost effective.

case story from Middle East

INCREASING OPERATIONAL EFFICIENCY IN EXTENDED REACH, OFFSHORE WELLS

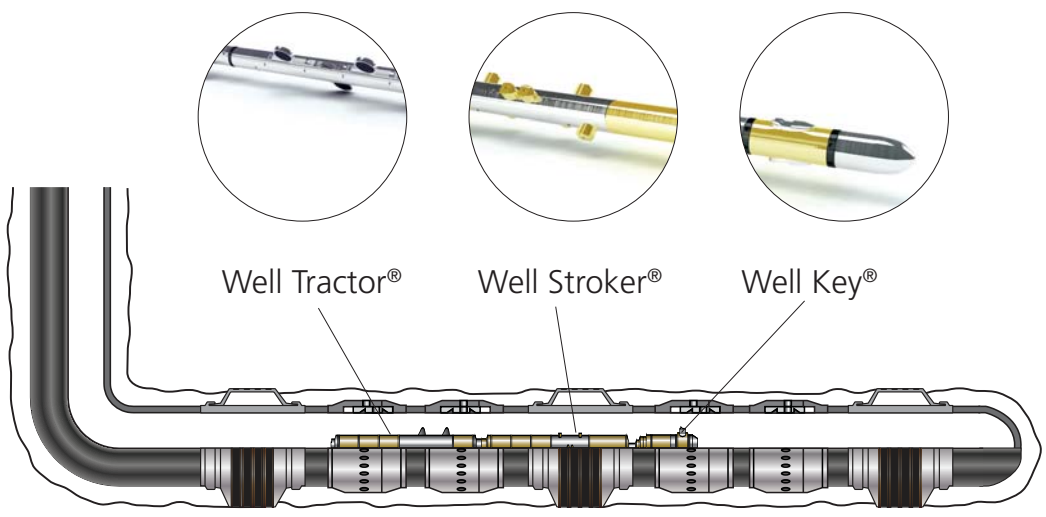
Presented by Anthony MacLeod, SPE, Middle East.

In this case story two sliding sleeve doors (SSD's) were opened in a single run on e-line, an outstanding achievement due to the inner diameter (ID) restrictions and extended reach of the well. Using the technology of downhole robotics a smaller footprint was provided to complete this operation.

METHODS, PROCEDURES, PROCESS

This well was recently worked over for retrieval and new installation of upper and lower completion. Due to the well going on losses during the workover, a closed system was deployed to enable the operator to set the hydraulic packers. The packer is utilized for isolation between two zones, with each zone having two SSD's in which one SSD per zone was required to be opened to allow access to the formation.

From day one of planning the primary solution for this intervention was an electric over hydraulic toolstring made up of six tools, a 218 electric release device, 218 CCL for correlation, a 218 tractor for conveyance, a 218 stroker for the mechanical manipulation and a 218 key to address the shifting profile in the SSD (toolstring). A slimhole toolstring was required due to the packer ID of 2.81".



The operator was using the service provider for other interventions on this workover campaign and decided to challenge them with opening two SSD's in one run while not shifting the adjacent SSD's.

The challenging underlying economics of the industry today has created a powerful driver for operators to find more efficient, cost effective and safer intervention methodologies.

The operation covered in this case provided just such improvements to the client: by utilizing electric line intervention tools the operator negated the requirement for a large footprint coiled tubing intervention.

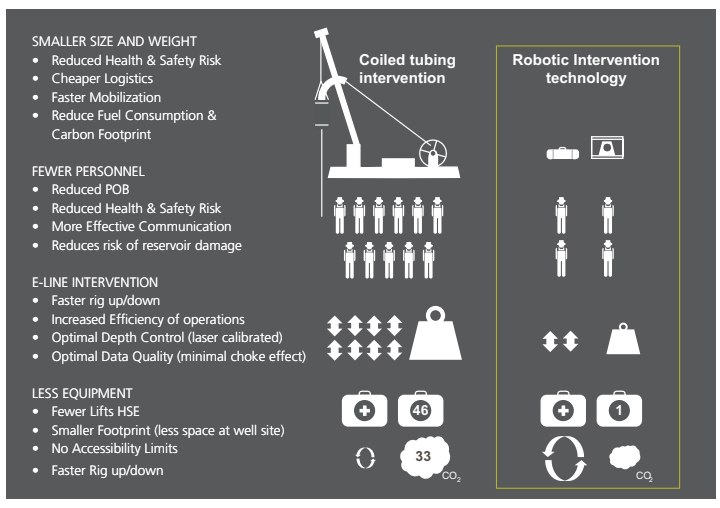
RESULTS, OBSERVATIONS, CONCLUSIONS

A System Integration Test (SIT) was completed onshore prior to mobilization, where multiple shifts were successfully executed on a 90° deviated pipe using a single set of shifting key pads.

Test results were then repeated offshore, completing two interventions in a single run. The SSD's were successfully opened at ~12,000 ft-MD and ~8,000 ft-MD, respectively while leaving the two adjacent SSD's in the closed position.

Results: Client objective was 100% achieved using only electric line, enabling the client to move forward with similar well designs having the confidence that a safe, reliable electric line solution is locally available.

Additional results include reduced HSE risks as the e-line approach eliminated the use of a heavier CTU. Further contributing to the HSE benefits on this operation, only 6 persons were needed on site and no heavy lifts were required.



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