

Halliburton Team Significantly Increases Production in Challenging HP/HT, High-H₂S Field

MULTI-PSL TEAM DELIVERS OVER 150,000 BOEPD OF ADDITIONAL PRODUCTION IN A CHALLENGING ENVIRONMENT

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CHALLENGES

- » Execute safe and efficient well intervention operations in a challenging work environment
- » Reduce well intervention costs through optimization in personnel without negatively impacting HSE or operational performance
- » Decrease operator risk by engineering solutions tailored to the client's needs

SOLUTION


- » Assign Halliburton well intervention engineers to the project to optimize operations, present integrity solutions to the client, and drive efficiencies and planning
- » Implement time- and cost-saving technologies and methodologies
- » Assign multi-skilled crews to the project

RESULTS

- » Utilized multi-skilled crews to carry out all required services, resulting in significant efficiency improvements, along with time and cost savings
- » Delivered LTI-free project
- » Increased production over 150,000 BOEPD, with minimal NPT
- » Achieved project cost savings of more than USD 300 million by reducing deferred production revenue

OVERVIEW

Halliburton was awarded a multi-service contract from an independent oil company to provide Light Well Intervention Services (LWIS) in a challenging high-pressure/high-temperature (HP/HT) field with high hydrogen sulfide (H₂S) content, and with 28 wells and five production islands. The contract began in July 2017 and is due to continue until mid-2021.

150,000
BOEPD
Additional
Production 

EXECUTING EFFICIENTLY IN A CHALLENGING H₂S ENVIRONMENT

For this operator, the risks associated with conducting these multi-platform well intervention operations included:

- » No local team, equipment, or support available at the tender stage
- » Small production island, which required innovative equipment rig-ups
- » Harsh environment
- » Need to reduce number of operating days
- » Uncertain downhole conditions on several wells
- » Contingency equipment required for possible downhole scenarios

These challenges had the potential to add significant cost to the project's economics.

The Halliburton Project Management team was also tasked with leveraging Halliburton well intervention expertise during the planning and operational phases.

Health, safety, and environmental (HSE) exposures, given the sensitive nature of the worksite and the potential for incidents on an offshore installation, were treated with the expected due diligence, and these considerations drove the implementation of scope-specific HSE key performance indicators (KPIs).

The well portfolio varied in complexity, and there were several unknowns in the wellbore – e.g., pressure under plugs, challenging wellbore materials (such as scale), various well integrity questions, and water production – that required extensive contingency planning. Equipment selection was imperative to cover the provision of all well scenarios and remediation techniques. The application of innovative technology and the implementation of multi-skilled personnel were imperative to positively impact the project delivery from commercial and technical perspectives.

COLLABORATION, EXPERTISE, AND SOLUTIONS DRIVE IMPROVEMENTS

Halliburton was awarded a multi-service contract to provide pumping, bleed-off, coiled tubing, slickline, e-line, and stimulation services.

Alignment was key between all project stakeholders, as common project delivery durations meant that all were accountable for performance and were mutually incentivized to collaborate in order to achieve the project's goals. Similarly, alignment for HSE at the worksite drove a "one team" safety culture offshore.

A Halliburton team – including a project manager, well intervention engineers, a performance development coordinator, and product service line (PSL) representatives – were assigned to the project.

Successful implementation of the above required:

- » Assigning multi-skilled crews to reduce personnel on board (POB) costs including PLS-specific supervisors to oversee cross-trained crew members for all operations (cementing, abandonment fluids, coiled tubing, slickline, and e-line)
- » Implementing wireline-retrievable safety valves to restore well integrity
- » Using slickline-deployed cement plugs for water shut-off operations
- » Utilizing acid and scale inhibition operations to remove scale and restore production

The Halliburton team captured lessons learned and opportunities for improvement, and leveraged experience from previous projects, to help foster a safe work environment focused on continuous improvement.

PROJECT TEAM DELIVERS ADDITIONAL PRODUCTION WITH ZERO SAFETY INCIDENTS

The project has been operating safely and efficiently since July 2017, with production optimization levels ahead of the originally planned schedule, and with zero HSE incidents. Additionally, production was increased over 150,000 BOEPD, with minimal non-production time (NPT), resulting in project cost savings of more than USD 300 million by reducing deferred production revenue. The multi-skilled Halliburton crews were able to carry out all required services, thus providing significant efficiency improvements, and time and cost savings.

This successful project delivery has allowed Halliburton to gain access to other well intervention work scopes in the Caspian area, and to build on our track record of notable well intervention operations in this region.

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