

Halliburton Collaborates to Deliver Largest Regional Subsea Well Abandonment Campaign

MULTI-PSL TEAM DELIVERS P&A PROJECT WITH 19 SUBSEA WELLS

UK CENTRAL NORTH SEA

CHALLENGES

- » Mitigate any inherent risks and challenges of the aged subsea wells
- » Reduce P&A costs through optimization in personnel without impacting HSE or operational performance
- » Reduce operator risk by risk sharing through a collaborative model across integrated services and rig contractors

SOLUTION

- » Drive efficiencies through delivery of scope in phased batches of operations
- » Assign multi-skilled crews to the project to reduce POB costs while also implementing DSL technology, PVC applications, and performing through-tubing P&A operations abandonment operations
- » Align with the customer and rig operator to implement and execute KPI-based risk-sharing performance targets

RESULTS

- » Successfully completed one of the largest-ever P&A operations in the Central North Sea area
- » Finished project with no recorded HSE incidents
- » Provided significant efficiency improvements, along with time and cost savings for the operator

OVERVIEW

A major operator in the UK Central North Sea awarded Halliburton a multi-service performance contract to provide plug and abandonment (P&A) services for multiple subsea wells. At the time, this was the largest P&A campaign of subsea wells ever attempted over multiple mature fields located in the Central North Sea area. Halliburton was contracted to provide project-management integration, both onshore and offshore, including cementing materials, fluids, integrated cased-hole services (slickline and e-line), tubing-conveyed perforating, plug and packer products, a well-testing bleed-off package, and mud-logging services for well monitoring.

HALLIBURTON
Integrated P&A Team
saves time on
19 Subsea Wells

EXECUTING COMPLEX SUBSEA P&A OPERATIONS

The risks associated with conducting subsea well P&A operations are considered to be among the most challenging to undertake. The 19 wells for this project were split over 10 various batch locations all across the Central North Sea area.

The logistical challenges of the subsea environment, along with the inability to easily move between the wells should there be any unexpected downhole conditions, were significant challenges to overcome in order to conduct safe and efficient phased P&A operations.

In addition, a variety of contingency equipment for multiple potential scenarios was required to be available to the operations while performing interventions to subsea wells hundreds of feet below sea level.

The well portfolio varied in complexity, and included:

- » Four different wellhead systems
- » A batch approach to the Phase 1 and Phase 2 operations, requiring blowout preventer (BOP) hopping in subsea templates
- » Twelve planned rig moves for the mobile offshore drilling unit
- » Potential requirements for the subsea Christmas trees to be dry- and wet-stored
- » Possibility for conventional and through-tubing P&A operations

Halliburton Project Management addressed these challenges, and put together a team of experts from multiple Halliburton product service lines (PSLs) for both the planning and operational phases.

MITIGATING CHALLENGES WITH A MULTI-SKILLED CREW AND TRI-PARTY COLLABORATION

With the challenges identified, intensive project planning was performed. The Halliburton teams worked closely with the customer and rig operator to ensure that risk-sharing performance targets, based on key performance indicators (KPIs), were successfully achieved. It was imperative for the well engineering teams to collaborate with all involved for the selection of effective and efficient solutions in order to cover the varied ages and types of well stock, and to consider all the potential downhole scenarios that could be encountered. Advance preparation, contingency planning and risk management were all necessary for the timely delivery of this project.

Gaining an alignment between three key project stakeholders (the client, rig operator and services provider) with mutually agreed-upon project delivery durations was the key to ensure that all were accountable for performance and were incentivized to collaborate to achieve targets. Similarly, alignment for regarding health, safety, and environmental (HSE) concerns at the worksite drove a “one-team” safety culture offshore.

To drive project efficiency, the Halliburton team recommended state-of-the-art technologies, along with:

- » Assigning multi-skilled crews to reduce personnel-on-board (POB) costs where feasible
- » Utilizing Halliburton Remote Open Close Technology (ROCT) products, including hRed and eRed plugs, to reduce wireline runs by remotely operating the wellhead isolation barrier
- » Implementing an industry-standard cement plug checklist to remove the requirement of tagging cased-hole cement plugs
- » Providing offshore testing to verify allowable specifications for discharge
- » Implementing Halliburton digital slickline (DSL) technology for optimization of P&A operations

Industry-leading Halliburton DSL technology, which combines the advantages of slickline (SL) and e-line (EL), allows the end user to see real-time data from the diagnostic runs. Implementation of this technology resulted in significant time savings for the operator, as it reduced the number of necessary runs and the need to change the SL units to EL units between jobs. It also eliminated the need for the tools to be broken down on surface and for the data to be downloaded and analyzed.

A clear one-team project ethos was established early on and was maintained throughout the project, as a result of each party’s executive leadership engagement during the startup, planning and execution phases.

DELIVERING ONE OF THE LARGEST SUBSEA P&A CAMPAIGNS

Through the duration of the project, the Halliburton team performed P&A operations on a total of 19 wells. The Halliburton team’s operating performance was excellent throughout, providing significant savings on 50% of the batches, based on planned overall project timings. Additionally, the project team achieved the following:

- » Set 17 cased-hole plugs
- » Left 14,000 feet of completion tubulars in the hole
- » Retrieved 100,000 feet of completion tubulars
- » Pumped 2,400bbl of cement
- » Performed eight perf, wash and cement (PWC) applications on seven wells
- » Executed one through-tubing abandonment operation
- » Executed 10 perforate-circulate cementing operations

Halliburton completed this large P&A project with no HSE incidents. With the efficient delivery of this project, the Halliburton team proved its ability to deliver integrated services for one of the largest subsea P&A campaigns ever planned in the Central North Sea area.

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