



WELL START FOR WELL INITIATION PHASE CONTRIBUTES TO EARLY DELIVERY AND CAPEX SAVINGS

CLIENT:

NORTH SEA OPERATOR

PRODUCT:

WELL START

A North Sea operator awarded Aquaterra Energy with a contract to provide its Well Start solution for their high-pressure/high-temperature (HPHT) gas field, located in the UK continental shelf (UKCS). We were awarded the project in 2015 to assist with the planning of the development.

Since then we have continued to provide services and equipment supply through to present day, providing a completely integrated approach that has significantly de-risked the project.



CASE STUDY / WELL START

BACKGROUND The project required the drilling of a number of platform wells through a jacket, before and after topsides installation. The drilling of these wells required careful consideration of a large number of complex interfaces and as such, careful management of these interfaces and solutions were going to be required in order to achieve an optimised installation in terms of cost, safety and operability.

The operator approached us for our Well Start package of equipment and services - a single source solution to support well initiation. Deploying this expertise on such a development would assist the operator's drilling team by ensuring no opportunity for improving efficiencies was missed, whilst enabling their drilling engineers to focus on the many challenges of the wells beyond setting the surface casing.

We worked collaboratively with the operator, providing support in developing an integrated platform drilling well construction, that ultimately reduced OPEX and CAPEX for this project.

SOLUTION We worked to optimise all aspects of the early stage well construction; from analysis, through to equipment selection, management of vendors and the offshore supervision of detailed operational procedures.

Throughout the project we were able to call on support from our entire resource base, whether it was for equipment supply, offshore services, procurement management, or scenario planning to optimise the overall solution. Throughout we sought to find optimisations in the equipment requirements and in the operational aspects of the project. We identified many areas which deserved early attention:

- Management of the ongoing riser analysis to achieve optimised configurations.
- A review of the jacket interfaces and our recommendations for optimisations. Initial areas included jacket guide alignment tolerances, jacket installation tolerances and how to manage or mitigate these.
- Review of disconnection requirements with a view to improving the operational window achievable without disconnect, or ideally engineer out all requirement for disconnection.
- Conductor management - the conductor supplier needs active management and control. Issues such as space-out, control of interface to weld on starter head, coating, pup joint selection and handling can all lead to issues later in the project. Welding and non destructive testing was specified and supervised, to ensure compliance to the riser analysis in order to achieve the required designed fatigue life and strength and stability

- Drilling and cementing interfaces for the conductor string - a tightly packed platform drilled well will array several issues that need consideration. Ensuring a spud, central to the conductor guides, is important to ensure the conductor can be run centrally located in the hole.
- Development of centralisation specifications and strategies to match analysis requirements - disconnection consideration, jacket tolerances and conductor interfaces.
- Interfaces with wellhead equipment for conductor, surface riser, flowlines and topsides interfaces.
- Consideration of any potential impact from shallow gas at location - drilling over a platform can impact the drilling rigs diverter system and require new solutions.
- Operations optimisation - handling conductor on the rig is time consuming, difficult and potentially hazardous. Proper loadout planning can save many hours of rig time and enable things such as centraliser installation to be carried out offline. Similarly, surface riser installation and BOP nipple up/nipple down times can be greatly optimised. All of these and more need consideration to lead to the most efficient drilling campaign.
- Equipment supply - as part of this project we supplied a range of equipment and services, including but not limited to: riser analysis, a complete riser system package, centralisers, tensioning equipment and tieback engineering services.
- As a part of the provisions of service, we also provided a riser monitoring system (RMS) to capture critical component fatigue damage, environmental conditions, rig to platform displacement and warnings for any resultant overloading of components. By using our technology and supply chain, all aspects were monitored successfully and a wealth of data was captured and produced for an easy visual representation of current status of each element. This allowed operational decisions to be made quickly and efficiently based on live and recorded data, decreasing conservatism compared to analytical predictions and therefore decreasing the likelihood rig downtime.

RESULTS By providing our Well Start solution, Aquaterra Energy were able to support this North Sea Operator and de-risk many aspects of the project initiation phase.

The project was delivered ahead of schedule and more than 10% below the initial budget due to rig time savings made.

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