



Case Study: Marmara Sea, Turkey

Integrated Project Management Solution Delivers 5 Offshore P&A

Project Overview

A Major Operator needed to Plug & Abandon 5 Offshore UGS Well at the end of the Well's production life in the Marmara Sea, Turkey.

The horizontal section, together with the lack of integrity of the wells due to age and cyclical pressurization and depressurization common in UGS wells, made the project more challenging from a technical point of view.

Aside from the typical offshore challenges, the project was conducted during the COVID 19 Pandemic. This made everything more difficult from organization and management of operations, procurement of materials, logistics, to the field personnel point of view, who were not able to enter and exit freely from the Country.

To overcome all issues, meticulous preparation and particular attention to detail had to be followed to avoid NPT and COPQ. Contingency cases were planned and ready on board.

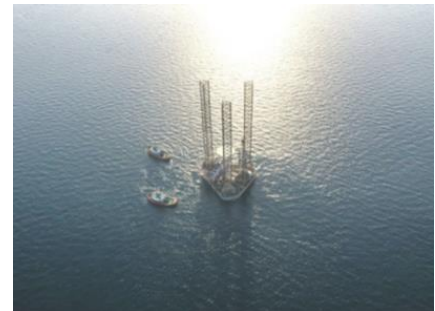
A great collaboration within ME-ADS, Customer, and Subcontractors were essential for the planning and design throughout the entire project.

Challenges

The Operator's Main Challenge was conducting the entire campaign of Multiple Offshore Plug & Abandonment Wells safely and costs efficiently, guaranteeing long-term well integrity.

The best way identified to achieve the objective was having one single Supplier, as the key challenge was to ensure a quick turnaround from a planning perspective, in readiness for the offshore operations.

Developing a cost-effective solution to the technical challenge was also one of the main issues, which meant improving and developing the best operational practice through a Customized Design of Service, making sure to follow Oil & Gas UK (OGUK) standards for the P&A.



The lack of the integrity of the well, due to the age and the long productive life which eroded the downhole completion, was also an obstacle to overcome and hazardous to manage, as well as specific operational and contingency procedures to take. Also, continuous pressure changes due to the active UGS usage was a big challenge during the operations.

Last, but not least, the operations had to be conducted during the well-known pandemic from Covid 19, which brings considerable and continuous inconvenience and additional difficulties to standard operations.



Solutions

ME-ADS proposed the Turnkey fully Integrated Project Management model to satisfy the Operator request to have one single provider.

The Turnkey approach allows the Operator to avoid incurring



extra unplanned costs, that such a big project, aggravated by the ongoing pandemic, could surely lead. Respecting the initial fixed assigned budget for P&A operation is essential, given the nature of the job and the impossibility to absorb the costs with well production.

ME-ADS proposed to supply all services, personnel, and equipment to achieve the final scope of work (SOW) and to overcome all project challenges. Within the ME-ADS fleet of services and equipment there are:

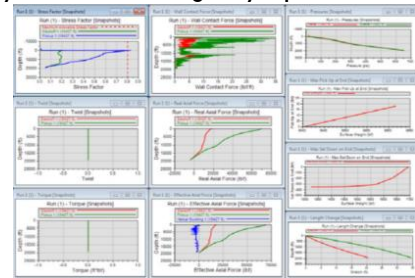
- Offshore Rig - Jack up
- Full logistic Service – including 2 PSV for all transfers from-and-to the jack-up
- Cementing Service – including Cement laboratory at the port for faster and reliable tests
- Coiled Tubing Service
- Wireline and Slickline Services
- Downhole tools Service
- Pressure Pumping Service
- Well Testing Service
- Mud Logging Service
- Fishing and Milling Service

To overcome the offshore usual crane limitation, it was proposed to use fit for purpose offshore equipment, as for the

offshore Coiled Tubing Reel Drop in Drum (DID) model, which gave the opportunity to reduce the overall weight to be lifted, which is usually the Coiled Tubing Reel. This also provided a quick Tubing change capabilities during the entire project in case of operational need. To save space and cut rig down/rig up time, ME-ADS decided to provide a Wireline & Slickline combo unit. Aptly named, the combo unit is equipped with both slickline and wireline cables.

A deep study was conducted to propose the best Engineering Design of Service which covered all aspect of the P&A, including all contingency cases. Great collaborations with the Operator, as well as with the Subcontractors' Engineers, was essential to design the best fit to purpose abandonment Cement Technology, a crucial part of the P&A operations to guarantee long term well integrity over the years.

The Coiled Tubing (CT) Operations were also key for the success of the project, given the importance of fishing the SSSV, re-gain the full wellbore accessibility down the formation, maintain the well control, and to squeeze the cement plug at the bottom. Due to lacking well integrity before starting any operation it was key to RIH with CT inside the completion string and place a cement



barrier against reservoir area made all further operations such as milling and retrieving permeant packers safer.

CT Design Software was used to run the simulation and customize the suggested cement mud technology, to avoid any potential issues. The Real Time Software in the control cabin ensured the monitoring and recording of all main well parameters among the CT operations.

As part of the Design of Service (DOS), tubing (tbg) and casing (csg) punches were necessary to circulate the cement through the

annulus as a second barrier. Wireline was the main option with the non-explosive downhole tool.

Abrasive Technique through the Coiled Tubing was the contingency plan for the punches. A special design abrasive nozzle was manufactured to allow multiple punches per step all around, and acidifiable sand to avoid any potential issues with sand left in hole that could compromise the cement sealant.



Mechanical cutter was the first suggested option for cutting the tubing and the casing.

In this case as well a contingency plan was already in place, which consisted of running the Coiled Tubing to the target depth and cut with abrasive technique.

Jack up was essential for safely retrieving tbg and csg out of the well and to remove the X-mas tree after the final surface cement plug.

Achievements

The ME-ADS Jack up was ready with all well intervention equipment partially rigged up and fully tested on board, before mobilizing it to the well, when still at the port of Silivri. This strategy avoided any potential delays or issues during the operations.

The Coiled Tubing successfully fished, at the first attempts all SSSVs, retrieving them safely at surface, before re-gaining the full well bore



accessibility in all 5 wells. The best fit to purpose abandonment cement mud technology was then squeezed into the formation as per Engineering Design of Service, while the CT real time software kept all job parameters monitored and recorded, allowing the operations to be run smoothly.

Punches and cutting of tbg and csg were successfully executed by the Wireline, without using the contingency plan, even if everything was ready on board.

Jack up retrieved the tbg and csg out of the well safely and smoothly, without any issues even given the tbg and csg conditions. The Surface final Cement plug was done, subsequently, to seal off completely the well, ensuring long term integrity.

ME-ADS show that zero is possible, since zero LTI and Zero COPQ along the entire project was achieved.

The COVID 19 was well managed, and no contagion occurred on board during the entire project.

Value Added

The P&A Campaign was executed safely and efficiently, and the performance was beyond expectations.

The Operator achieved the key objective to have only one single provider to deal with, and the Integrated Project Management approach has proven its effectiveness and preciseness.

The lump sum turnkey model guaranteed the respect of the initial planned budget for the project, without incurring in any additional costs. ME-ADS was able to absorb any risks and work with the subcontractors.



The combination of ME-ADS experience in managing the Integrated Project Management, planning all possible contingencies, together with the ability to supply all services, to deal with the multinational well service subcontractors acquiring their best technology, were the keys of success of the project as well as of the foundation of ME-ADS idea and business strategy.

Do you want to know more?

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