FluidControl Case Study

Customized, Island-based CRI System Sets Waste Management Benchmark

Challenges

- Effectively manage waste generated from extended reach (ERD) development wells drilled from remote artificial islands
- Process multiple waste streams and protect sensitive ecosystem with no related bottlenecks in drilling operation
- Abnormally high injection flow rates and atypically hard receiving formations
- Logistical challenges due to remote islands and the requirement of local power source

Well Information

- Location: Middle East, Arabian Gulf
- Operator: National Oil Company (NOC); major International Oil Company (IOC) partner
- Contractor: National drilling contractor
- Project Scope: Artificial island based cuttings re-injection (CRI)
- Well Type: ERD (20,000 ft laterals) development wells
- FluidControl Technologies: Cuttings re-injection and Downhole surveillance services

Solution & Results

- Fully engineered CRI equipment and services for permanent disposal of all solid and liquid drilling wastes
- Robust, project-specific CRI components custom-designed and manufactured in-house
- Continuous, safe and cost-effective injection of more than 7.5 million bbl
- Self-supporting CRI process initiated within tight timeline with minimal non-production time (NPT) and exemplary HSE performance

2800 N Frazier Street
Conroe, Texas 77303, USA
Phone: 936 523 2600
Fax: 936 523 2791

Based on an artificial island in the Arabian Sea, the FluidControl CRI configuration is unique in that all components, including injection and grinding pumps, high-pressure piping, the slurrification unit and classifying shakers were custom-designed and manufactured by multiple NOV divisions. Installation of a similar CRI setup is underway on the second island awarded in the initial contract.

Operating from one of four artificial islands, the fully customized and technologically advanced FluidControl cuttings re-injection service has established a global standard for the permanent and cost-effective disposal of drilling waste with minimal non-productive time (NPT) and zero HSE incidents.

The operator revised the development strategy for the high-profile Arabian Sea field by replacing additional offshore wellhead platforms with four artificial islands. The objective was to increase production to 750,000 bopd by 2015, and do so more economically, with a minimal environmental footprint. The operation posed a number of technical challenges, including drilling wells of up to 35,000-ft (10,668m) MD with 20,000-ft (6,096m) laterals. Moreover, the project would necessitate the continuous management of multiple solid and liquid waste streams with zero environmental impact and minimal non-productive time (NPT). Cuttings Re-injection (CRI), including oil-based mud cuttings from thermal treatment, offered the best solution for meeting the waste management targets.

FluidControl was awarded the contract to provide CRI equipment and services on all four man-made islands. Nearly all of the CRI equipment had to be custom-designed and manufactured in-house. A typical inland setup consists of: 700bbl total capacity grinding tank system, integrated grinding pumps and classification shaker, 1000hp diesel driven triplex pump, standby back-up pump, and hundreds of metres of high pressure injection line. The absence of a power grid on these remote islands required the configuration to be self-sufficient. Portable Power provided nine 500Kw generators and fuel tanks, along with workshop, office and storage facilities. A dedicated CRI team was established to oversee daily operations and communicate regularly with the client. Finally, the bespoke data logging system that monitors the injection data which is fed to the 24/7 downhole surveillance team, makes the full NOV offering into a complete CRI solution.

The ERD wells required the system design to accommodate injection of multiple waste streams both without interruption and under uncommonly high injection rates of up to 13bbl/min. Furthermore, the harder-than-expected geology of the two injector wells prompted the CRI plan to be revised with an additional grinding mill, additional power and larger diesel storage.

The CRI project was in operation on the first island in less than 12 weeks after the contract award. In six months of operation, FluidControl safely and continuously injected 7.5 million bbl of fluid (comprising cuttings slurry, mud, slops and seawater). The ongoing project has recorded an exemplary safety record with minimal NPT. Thanks to in-house engineering and manufacturing capabilities, FluidControl delivered a customized, cost-effective and technologically sophisticated system credited with setting a new regional standard for CRI operations.

To learn more about how our advanced cuttings re-injection technology can help you achieve your HSE objectives and reduce costs, contact your nearest FluidControl representative.