Baker Hughes

Case study: Indonesia

Rigless mono-trip gas lift completion system delivers well with fewer POB and zero LTI, saves costs by 12%

A customer discovered the top of sediment 52 to 66 ft (16 to 20 m) inside 7-in. tubing, hindering access to the bottommost production zones. The existing third-party packer allowed a flowrate of only 3 bpm, potentially creating a higher top of sediment inside the tubing, so the customer needed a more efficient method to install a completions system and optimize production while reducing costs.

Baker Hughes suggested the patented **mono-trip gas lift (MTGL) completion**. With a 95% success ratio, the MTGL provides a single-trip, cost-effective, true-monobore completion while facilitating completion accessories installation to maximize well potential and prolong well life.

The MTGL system is cement tolerant and enables a one-trip installation. The **CEMENTSAFE™ tubing-retrievable surface-controlled subsurface safety valve (TRSV) flapper** can endure the slamming effect in the unlikely event of a sudden pressure spike from the wellbore. The gas lift mandrel features a self-cleaning capability. The **HP Defender™ sliding sleeve** enables excess cement to be circulated out of the annulus after the packer is set, ensuring a clean annulus for gas lift operations. The **Transmatic™ time-controlled intervention-less barrier system** features a temporary internal plug which converts to a live valve through disintegration of its material, saving on well intervention costs.

Curious about methods to improve efficiency, the customer conducted an internal study that compared a traditional drilling rig to a rigless operation anchored by a hydraulic workover unit (HWU). The results indicated the best driver of efficiency would be to combine the HWU with the MTGL system.

Since the MTGL system and the HWU had never been deployed in conjunction, engineers from the customer and Baker Hughes collaborated and identified optimal procedures for the perfect execution.

With those plans in place, field personnel executed the operation flawlessly. The job was completed in 11.6 days without any lost time incidents (LTI), contributing to a savings of 12% for the customer. The top of sediment was tagged 43 ft (13 m) above the top of the landing collar.

The MTGL system required less equipment at the rig site, reducing the number of field personnel, mitigating health, safety and environmental (HSE) risks. Those Baker Hughes field personnel who remained on the platform were cross-trained to perform multiple tasks while on the rig, providing a seamless operation despite fewer rig workers.

This first rigless MTGL deployment in the field also validated other aspects of using a MTGL system with a HWU. The combination improved the sweeping efficiency of the MTGL wiper plugs and established a system for collecting and analyzing crucial cementing data. Additionally, the HWU contractor pro-actively developed the infrastructure to perform future operations more efficiently.

Challenges

- Optimize production in bottommost zones
- Drive operational efficiencies to reduce number of trips required

Results

- Validated MTGL effectiveness when deployed with HWU
- Completed operation in 11.6 days
- Saved rig time and associated costs by 12%, approximately $100,000 USD
- Incurred zero LTIs and nonproductive time (NPT)
- Mitigated HSE risks by having fewer field personnel at the rig site