

GeoFORM installation saved 6 days, \$4.8 million USD in Indonesia deepwater application

An operator in Indonesia had completed 11 wells in a deepwater multi-layer gas reservoir using conventional cased-hole multizone gravel packing operations. They were looking for an economical single-trip solution that would offer similar or better sand control productivity, despite having intervals of varying lengths.

They reached out to Baker Hughes, a GE company (BHGE), to explore utilizing the **GeoFORM™ conformable sand management system**. The GeoFORM system was successfully deployed by the same operator in the Adriatic Sea to realize significant efficiency gains and reductions in rig time. The GeoFORM system's modularity and flexibility lets you customize the completion and stimulation design to best match the reservoir. Unlike conventional sand control techniques, the GeoFORM system leverages unique shape-memory-polymer (SMP) material—a filtration media that expands downhole and conforms to the borehole wall. GeoFORM system deployment is faster and offers much greater completion design flexibility compared to conventional multizone gravel or frac-pack completions.

The 8 ½-in. open hole was drilled with water-based drill-in fluid (DIF) and displaced with calcium chloride (CaCl₂) brine. The open hole length was 408 m (1,339 ft) with three gas

producing zones of different interval lengths. To maximize production, GeoFORM system joints were combined with **MPAS™ open hole packers** to isolate the lowest zone with the most potential for water production and provide selectivity between the segments. The GeoFORM joints were spaced out and installed across the three zones without sacrificing reservoir contact, and a seal assembly stabbed into the lower completion sealbore enabled isolation for the upper intelligent completion.

Flawless Execution

Deployment of the completion by trained BHGE personnel and spotting of the activation fluid to expand the SMP material was executed flawlessly with no HSE incidents. The operation was completed in a single trip with the aid of a **UniFlex™ liner hanger/packer system**, and required no sand control pumping operations.

Switching to an openhole completion scheme allowed the customer to avoid running liner and cementing, installing sump packers, and perforating, and eliminated wellbore cleanout operations, compared to conventional cased-hole gravel packing. By using the GeoFORM system, the customer saved six days of rig time compared to a previous multizone cased-hole gravel pack

Challenges

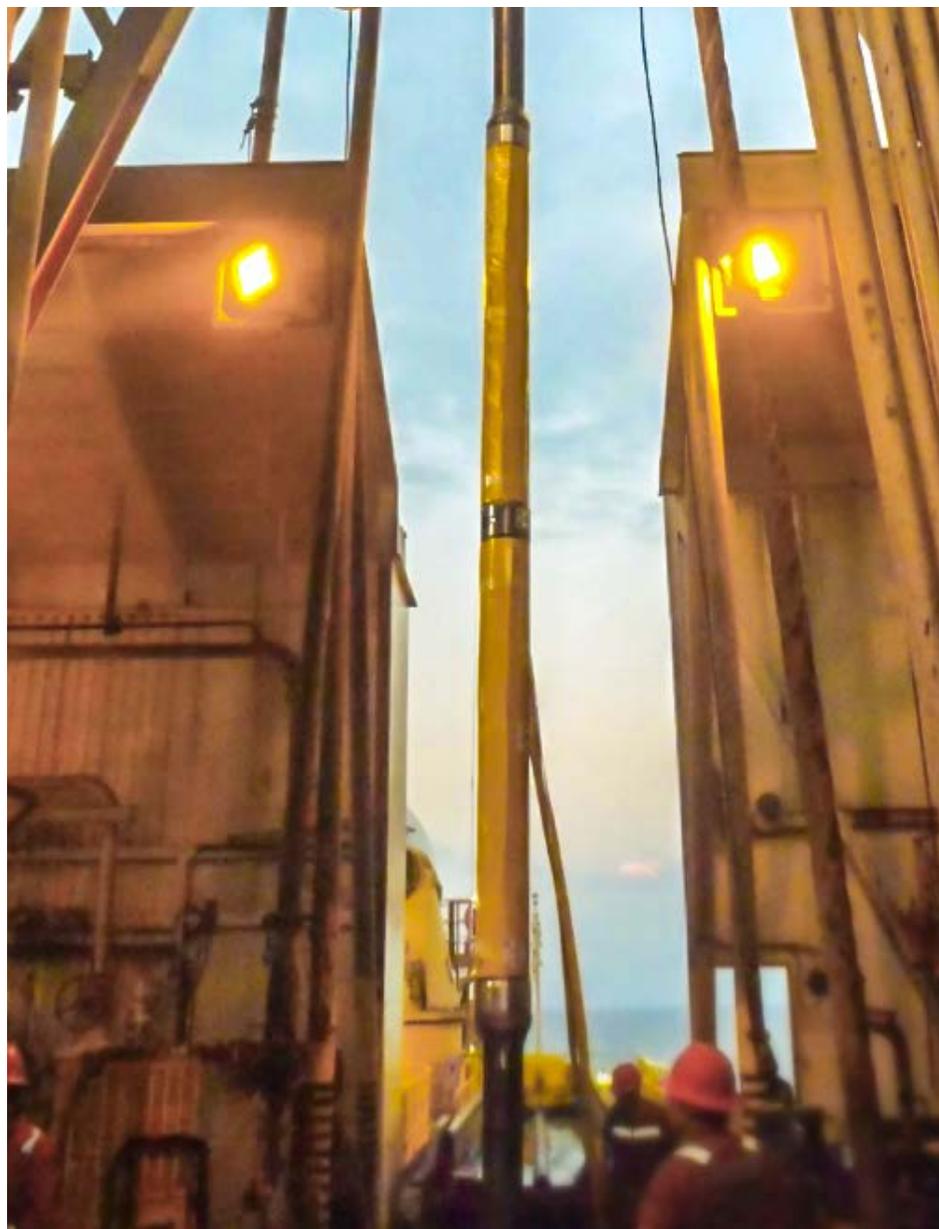
- Conventional cased-hole workover options had become uneconomic
- Multilayer reservoir with significant variance in thickness of sand layers
- Wells required sand control and isolation of gas-water contacts

Results

- Provided an effective alternative to single trip multizone operations
- Completed three zones in a single trip
- Reduced operational time by six days, saving \$4.8M USD
- Enabled precise zonal isolation and selective production
- Enabled economic, high rate sand-free production of gas



job previously performed on this well, and approximately \$4.8M USD. At the conclusion of well testing operations, the customer was pleased with production flow and experienced no sand production. The job exceeded customer expectations and they plan to install the GeoFORM system in a satellite field development to be completed in 2020.



GeoFORM system completion on the rig floor, being readied to be run in hole.

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