

Case study: Gulf of Mexico, United States

NeutraProp LWC neutral-wettability proppant saved \$438,000 USD in flowback costs

An operator working in the deepwater Gulf of Mexico needed a frac pack to complete a new well. The well had very low bottomhole pressure, low reservoir energy, and no gas lift.

In order to produce economically, the operator needed to reduce the effective pressure necessary to flow the well. This presented a challenge because conventional proppant packages are water-wet: they capture small amounts of fluid in their pores, which significantly slows fluid flow through the propped fractures thus extending the time required to recover the treating fluids. The operator planned to use a rig to handle the flowback, but with rig costs at \$1 million USD per day, slow treating fluid recovery would mean extra rig time at a high cost. The operator asked Baker Hughes to find a way to enable production as soon as possible after stimulation and also create longer effective fractures increasing conductivity to hydrocarbons.

Baker Hughes recommended the **NeutraProp™ lightweight ceramic (LWC) neutral-wettability proppant**.

The NeutraProp LWC proppant has been validated by extensive testing and represents the only neutral wettability proppant in the industry pumped in the deepwater Gulf of Mexico. Rather than trapping fluids in the proppant pore space and slowing production, the NeutraProp LWC proppant surface is modified to repel fluids—accelerating flow and enabling low pressure wells to be stimulated and produced more efficiently. In tight pore spaces, it can prevent the water

blockages to which other proppants are susceptible and increase the relative permeability to hydrocarbons.

The NeutraProp LWC proppant was applied and all of the flowback fluids were recovered in approximately 14 hours. This represents a 43% reduction in rig time compared to an average of 24.5 hours on three previous wells where conventional proppant was used. With rig costs of \$1 million USD per day, the operator eliminated 10 hours of rig time and saved more than \$438,000 USD by using the NeutraProp LWC proppant.

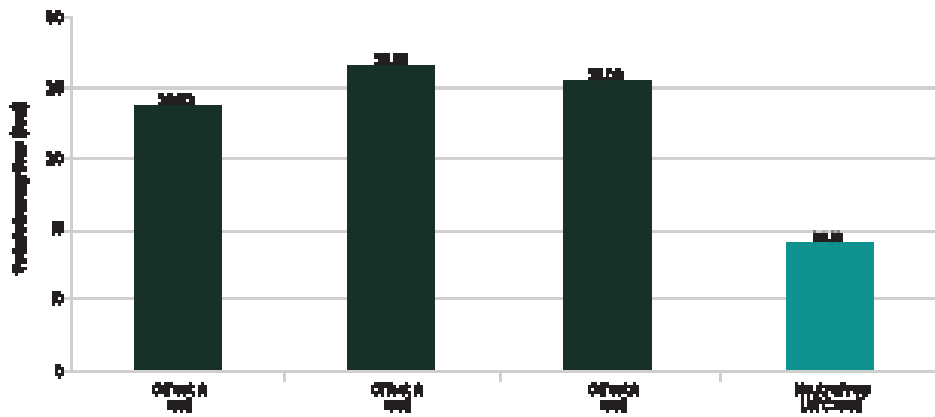
The operator was also able to expedite production from the well since flowback was so much quicker on this well compared with wells where conventional proppant was used. Based on this, the operator expects hydrocarbon production from the well to be higher and more efficient as well, and is planning to use the NeutraProp LWC proppant in multiple applications in the future.

Challenges

- Reduce flowback time from low-pressure, low-energy reservoir
- Minimize rig costs
- Expedite first-oil production

Results

- Eliminated 10.5 hours of flowback rig time
- 100% recovery of pumped stimulation fluids
- Saved more than \$438,000 USD
- Enabled oil production 43% sooner



Flowback fluids from the NeutraProp LWC well were recovered 43% faster than on the operator's wells where conventional proppant was used—saving the operator approximately \$438,000 USD.