

Case study: Deepwater, Israel

First deployment of HPDU in a remote location enabled flawless execution of two completions, avoided tool failure

The customer planned an open-hole gravel pack completion in the Mediterranean Sea at a remote location with difficult access leading to logistic and implementation challenges. The rig to be utilized has been stacked for several years, tank cleaning was not present, and rust and debris were likely in the circulating system, thus presenting the potential of debris plugging the completion tools which would cause increased operational cost and time.

Since the operator had multiple successful deployments of the Baker Hughes High-Pressure Debris Unit (HPDU) in the Gulf of Mexico (GoM), they requested to ship the unit from GoM to the remote location for this operation. The HPDU has the ability to handle high flow rates, high pressures, and offers superior reservoir protection and uninterrupted flow during pumping activities. It is ideal for both land and offshore applications and can operate in 10,000 psi (690 bar) environments. In deepwater operations, an additional HPDU filter can be connected to the boost line to remove debris before it enters the system through the flow path.

The HPDU was rigged up and utilized over six successful displacements/circulations. Approximately 16,200 bbls of brine were processed through the HPDU resulting in the capture of over 6 lbs of tool and formation of damaging debris that was not captured by standard filtration operations (filter press). Debris capture includes pipe scale, fibrous material, paint chips, sandy granular debris, plastic particles, and pebbles.

The success of this first HPDU application in Israel enabled the operator to flawlessly perform two completions in a remote location without any HSE issues, NPT, and complications due to debris. The HPDU provided insurance to the operator that all the debris was captured before entering the wellbore and coming into contact with the completion tools, thus avoiding consequent increased operational cost and time.

The collaboration between the operator and Baker Hughes demonstrated a successful technology transfer between GoM and a remote location, thanks to the FES Filtration team who oversaw and supported all aspects of the project.

Challenges

- Deepwater drilling operation
- Remote location—little to no oilfield infrastructure
- High potential of debris plugging the completion tools
- Reactive shales and gas hydrates

Results

- Successfully deployed the HPDU from GoM to a remote location
- Filtered more than 16,200 bbls of brine
- Captured over 6 lbs of tool and formation damaging debris, preventing tool failure during two completions
- Avoided HSE issues and NPT