

Matrix Stimulation with OilSEEKER Acid Diverter Restores Production in Dead Well with 70% Water Cut

PEMEX eliminates water cut and more than doubles initial oil production rates in offshore Mexico well

CHALLENGE

Save highly damaged offshore well with 70% water cut in high-temperature, carbonate reservoir.

SOLUTION

Use OilSEEKER* diverting agent to plug water zones and enhance zonal coverage of acid in hydrocarbon zones.

RESULTS

- Increased oil production to 6,800 bbl/d—148% higher than initial production rates.
- Eliminated water production.
- Reduced skin damage to -2.
- Avoided CT nitrogen kickoff.

“In the last two years, stimulation jobs with OilSEEKER diverter have consistently helped us increase oil production while reducing water cut.”

Nemesio Miguel-Hernandez,
Design and Evaluation Coordinator,
PEMEX



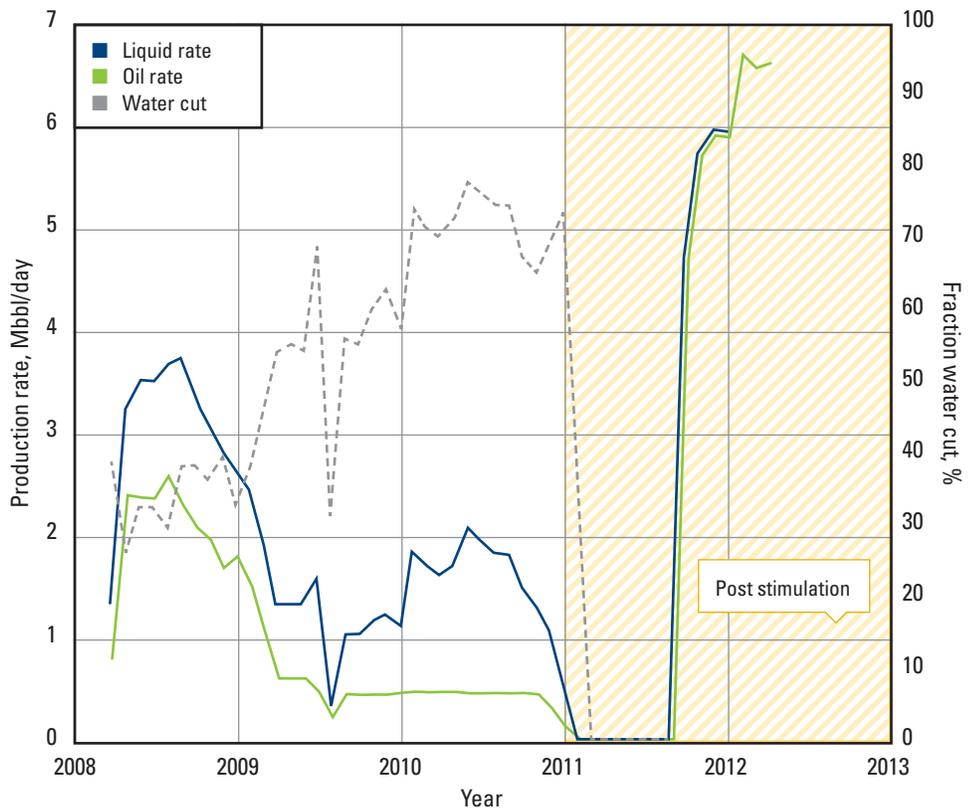
High water cut led to severe productivity decline in offshore well

The Homol field, located approximately 35 miles off the coast of southeastern Mexico, is rich in light oil. It is characterized by naturally fractured carbonate rocks of the Cretaceous and Upper Jurassic era. Wells in this field are prone to formation damage due to organic and inorganic deposits. One well had an initial oil production rate of 2,500 bbl/d with a 25% water cut. Three years later, the well’s water cut reached 75%, forcing PEMEX to shut it in. PEMEX partnered with Schlumberger to restore oil production.

OilSEEKER diverter system selectively stimulated oil zones, removing damage

Schlumberger recommended OilSEEKER viscoelastic surfactant diverter system to improve zonal coverage. The selective diverter breaks when it comes into contact with oil, but remains viscous in contact with water. Without OilSEEKER fluid, PEMEX would risk pumping treating fluid into water-bearing zones, increasing water cut even more.

First, Schlumberger cleaned the wellbore by pumping CLEAN SWEEP* solvent system. Then, the team alternated stages of acid and OilSEEKER agent to stimulate oil production.



After the OilSEEKER treatment in 2011, well production rose from virtually zero to 6,800 bbl/d—148% higher than initial production rates. In addition, the treatment eliminated water cut, which had climbed up to 75%.

PEMEX stopped water production and exceeded initial oil production rates

OilSEEKER engineered diverter enabled PEMEX to direct stimulation fluid toward damaged pay zones while minimizing acid injection into the water zones. After the treatment, the well cleaned up by itself, eliminating the need for nitrogen kickoff to initiate production.

NODAL* production system analysis showed 6,800 bbl/d of oil with zero water production on a 1-in choke. Skin damage decreased to -2, confirming successful diversion and stimulation. To date, water cut is still zero. PEMEX has used OilSEEKER diverter in other offset wells, resulting in similar outcomes.

“OilSEEKER has made an important contribution to our matrix stimulation treatments in naturally fractured, high-productivity wells,” said Nemesio Miguel-Hernandez, Design and Evaluation Coordinator, PEMEX. “In the last two years, stimulation jobs with OilSEEKER diverter have consistently helped us increase oil production while reducing water cut.”

www.slb.com/stimulation

Schlumberger