

Case study: Mexico

BRIDGEFORM reduced lost circulation, saved \$2 million USD in costs

The Xux oil field, off the coast of Mexico, presents a number of technical challenges due to its complex formations and high-pressure, high-temperature environment of more than 10,000 psi (690 bar) and 340°F (171°C).

The narrow mud window through the wellbore and low-pressure, high-permeability sandstone and shale layers required pore pressure control to reduce losses while drilling and cementing and to maintain borehole stability.

Losses of up to 8,200 bbl (1,304 m³) have been experienced in wells drilled in this field, resulting in increased operations costs and delays.

Invert emulsion fluids are typically used to drill the 3,937 to 17,864 ft (1,200 to 5,445 m) sections. The overbalances reached values up to 3,200 psi (221 bar) and caused differential sticking, operational delays, increased costs, and losses while drilling and cementing.

Baker Hughes delivered its **BRIDGEFORM™ single-sack wellbore strengthening system** to reduce pore pressure and mud losses in a number of wells.

The BRIDGEFORM system was added into the mud systems while drilling, and pills were placed in the open hole before successfully running section casing. The cementing was accomplished according to the original program and losses were significantly reduced.

The BRIDGEFORM system addressed the issues associated with pore pressure transmission and borehole instability and provided significant technical, logistical, and economic advantages.

The system enabled the operator to reduce mud losses by 86% and maintain excellent wellbore stability. The operator was able to run section casings to the interval's total depth.

The use of the Baker Hughes BRIDGEFORM single-sack wellbore strengthening system saved the operator approximately \$2 million USD due to reduced mud losses and increased efficiencies.

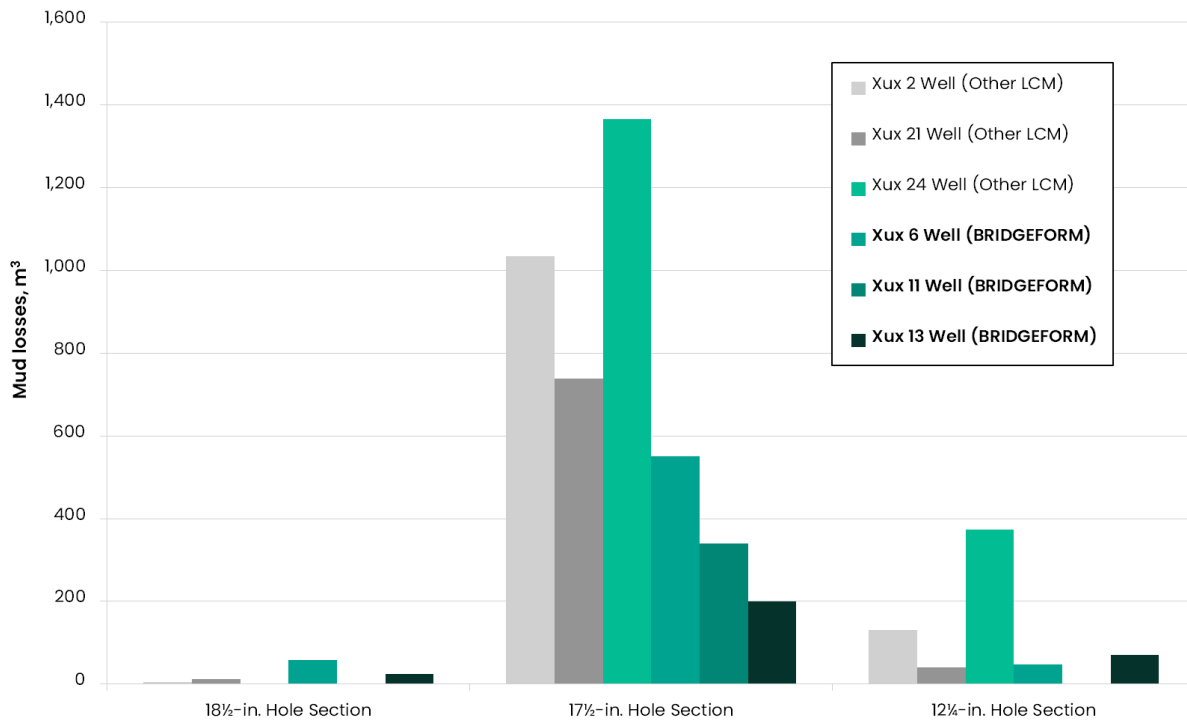
Challenges

- Extremely overbalanced pressure of up to 3,200 psi (221 bar)
- Narrow mud window with pore pressure of 16.91 ppg and a fracture gradient of 17.49 ppg
- Low-pressure and high-permeability sandstone
- Avoid losses that occurred on offset well

Results

- Reduced operational and mud costs by \$2 million USD
- Reduced mud losses by 86% when compared to offset wells
- Mitigated problems related with pore pressure transmission
- Prevented mud losses during cementing operations on all casing strings

Mud losses with and without BRIDGEFORM system



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