CHALLENGE
Increase oil production in a high-temperature dolomitic reservoir with widely varying matrix permeability.

SOLUTION
Use chelant-base NARS* treating fluid to increase stimulation efficiency, decrease deferred production, and slow production decline.

RESULTS
- Increased well production from 1,388 bbl/d to 1,840 bbl/d.
- Avoided any increase in water cut.
- Reduced well cleanup time by 3 days, saving the operator USD 500,000 in deferred production costs.

Operator needed to improve stimulation of high-temperature dolomite reservoirs
The most important reservoirs in the southern region of Mexico are from deep, high-temperature, naturally fractured dolomitic-limestone formations. These reservoirs must be stimulated to achieve—and sustain—economic production rates. However, high temperatures and mixed mineralogy present a number of issues, including acid placement, tubular corrosion, water breakthrough, and increased risk of fluid incompatibility resulting in formation damage. With temperatures exceeding 300 degF [149 degC], there is also a tendency for acids to spend on the face of the formation at the wellbore or become lost in nonproductive thief zones.

Schlumberger introduced chelant-base stimulation fluid
Less than one year after being completed, water breakthrough forced the operator to recomplete the well and to stimulate the well by bullheading a combination of organic and inorganic acids. After the treatment, production increased from 700 bbl/d up to 1,388 bbl/d with a 0.5% water cut. However, after reevaluating well performance, the operator discovered the well had a positive skin.

To optimize the stimulation efficiency to remove drilling fluid and near-wellbore damage, Schlumberger proposed a combination of CLEAN SWEEP* solvent systems for damage removal and chelant-base NARS treating fluid, as a more effective alternative to conventional acid systems in high-temperature dolomite formations.

NARS fluid removed skin damage, increased oil production 33%
The NARS fluid successfully removed any remaining formation damage, reducing the formation skin from 2.2 to 0. As a result, oil production which was 1,388 bbl/d after the previous conventional stimulation treatment increased to 1,840 bbl/d. In addition, well cleanup time decreased by 3 days, helping the operator to save 3 days of deferred production—the equivalent of saving USD 500,000.

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NARS Treating Fluid Removes Damage from Dolomitic Reservoir to Gain Additional 450 bbl/d
Nonacid reactive solution increases oil production by 33% while saving 3 days cleanup time in high-temperature dolomite formation, Mexico

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