DualSTIM Service Increases Oil Production 300 bbl/d Per Well in Previously Uneconomic Wells

Engineered, water-base fracturing treatment bypasses damaged zones, mitigates skin damage, and enables stimulation of water-sensitive formation

**CHALLENGE**
Stimulate water-sensitive formation using water-base fluids.

**SOLUTION**
Hydraulically fracture wells using DualSTIM* acid and propped fracturing service to increase production.

**RESULTS**
Increased production by an average of 300 bbl/d without the increased cost and risk of oil-base fracturing fluid systems.

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**Water-sensitive formation brought stimulation challenges**
To improve hydrocarbon production and well economics in a mature, depleted field, Petroecuador needed to produce wells that had been shut in due to insufficient production rates. In many cases, the low production was the result of completion fluid damaging the formation and reducing production by 25% to 50%. However, because of high clay content, matrix acidizing treatments alone were not sufficient to remove the extensive formation damage. In addition, water-sensitive clays resulted in water-base hydraulic fracturing treatments decreasing production instead of increasing it.

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**Formation study revealed cause of positive skin factor**
After carefully studying formation mineralogy and core samples, Schlumberger determined that mechanical plugging and disrupted mica in the pore throats was damaging the fracture faces and creating positive skin. To treat the wells without damaging them, Schlumberger recommended DualSTIM service, which combines acidizing and propped fracturing technologies.

**DualSTIM service boosted production, mitigated damage and costs**
Schlumberger treated five previously shut-in wells with the DualSTIM service, which increased production per well by an average of 300 bbl/d—exceeding Petroecuador’s expectations. The treatment also eliminated the environmental risks and costs of oil-base hydraulic fracturing fluids.

Since the successful campaign, the operator has routinely used this dual-stimulation approach to stimulate similar water-sensitive reservoirs.

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On average, DualSTIM service increased oil production by 300 bbl/d.