TECH REPORT

VENEZUELA

LAKE MARACAIBO, SHALLOW-WATER OPERATION

Lithology	Sandstone, 87% quartz
Formation pressure, psi [MPa]	4,000 [27.6]
Temperature, degF [degC]	307 [153]
Permeability, mD	29
Porosity, %	19

Background

The treatment success rate of sandstone acidizing is relatively low, estimated between 50% to 60%. Losses not only affect the treatment and operation costs, but they also compromise well productivity because of the potential formation damage generated by the treatment. PDVSA needed to minimize the risk of treatment failure, reduce the required treatment volume, and decrease operating time, cost, and logistics in comparison with conventional stimulation systems.

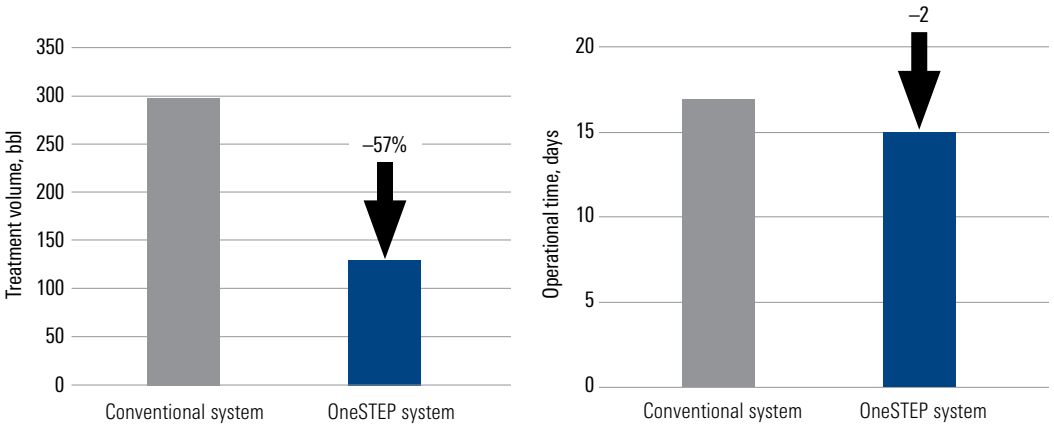
Technology

- OneSTEP* simplified sandstone stimulation system

Schlumberger

PDVSA Increases Cumulative Oil Production in Three Wells by 1,174 bbl/d Using OneSTEP System

Simplified sandstone stimulation system reduces conventional mud acid treatment volume by 57%, and saves PDVSA two days in one well on average



The OneSTEP system saved PDVSA two days of operation time on average in each of three wells, minimized the risk of deferred production, and reduced the mud acid treatment volume by 57% in comparison with conventional systems for sandstone acidizing. Cumulative oil production increased by 95%—from 1,241 bbl/d to 2,415 bbl/d—in the three wells treated using the OneSTEP system. In one of the three wells, the OneSTEP system was used with a single chelant agent stimulation fluid to treat a 72-ft zone, making diversion easier and more practical than injecting a sequence of fluids with relative volumes.

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