CASE HISTORY

Radioactive-free solution helps optimize fracturing program

CARBONRT inert tracer safely delivers valuable insight to advance field development, leading to optimized stimulation designs for enhanced production

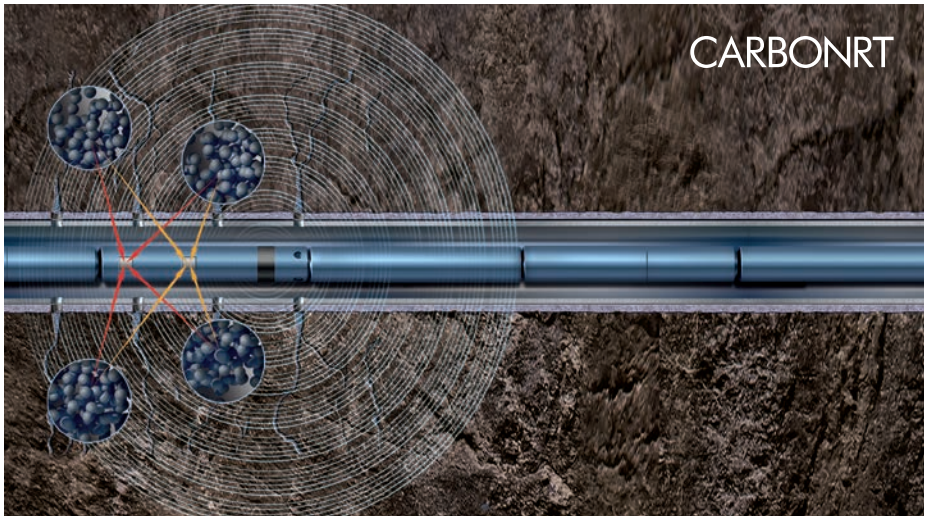
Offshore, West Africa

The challenge

To help optimize completion designs for future multi-stage development wells, the operator first needed to determine the fracture height in a single zone hydraulically-fractured conventional exploration well. Combining post-stimulation fracture height with corresponding pressure match data would enable the operator to identify coverage of the stimulated interval, calibrate fracture models, and accurately estimate fracture conductivity. In the past, radioactive tracers would be incorporated in the proppant slurry and detected with a conventional spectral gamma ray tool. However, tightening environmental regulations in offshore West Africa restrict the use of radioactive tracers, thereby mandating an HSE-acceptable alternative.

The solution

That alternative came in the form of the CARBONRT inert tracer technology, the enabling component of the CARBO exclusive FRACTUREVISION proppant-delivered fracture evaluation service. Together with the CARBONRT tracer, a Pulsed Neutron Capture (PNC) tool was deployed pre- and post-fracturing operations to identify the location of the proppant and measure near-wellbore fracture height. The strategy considered utilizing FRACPRO fracture design and analysis software to pressure match fracture treatment data to derive fracture height, thereby comparing the predicted and measured heights, and determining correlations to further calibrate the fracture model.



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Well Data

Location: Offshore, West Africa

Operator: Major E&P

Well type: Gas/condensate; vertical, single-stage well

Reservoir: Shaly sandstone marine deposition

Proppant: CARBOLITE NRT 20/40 and CARBOBOND LITE NRT 16/30 inert tracer technology

Detection tool: Pulsed neutron capture

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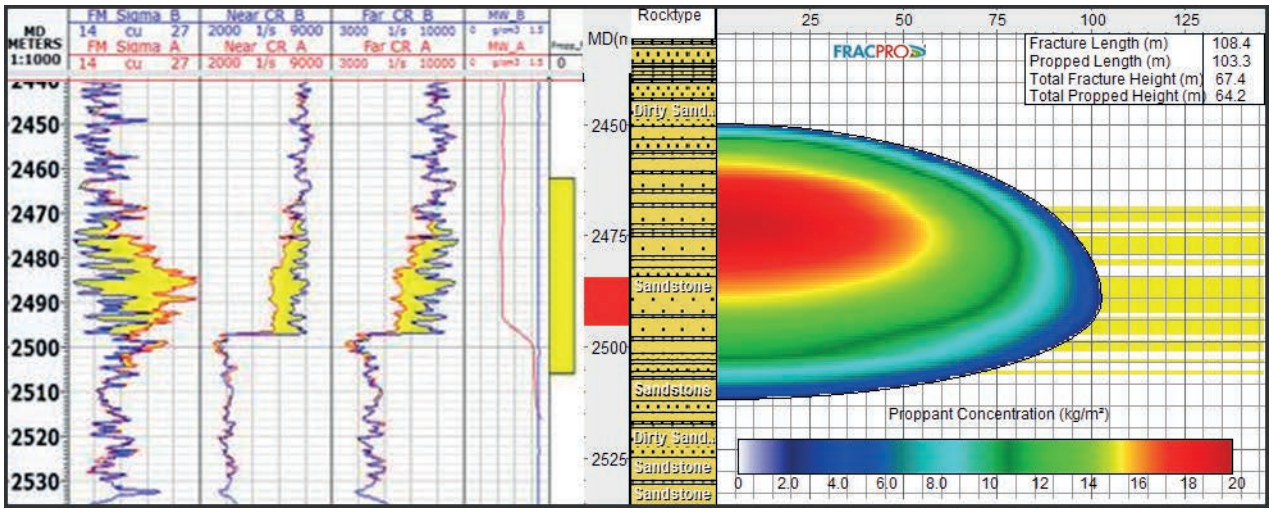
The results

CARBONRT tracer signals were clearly observed, with the post-stimulation PNC logs measuring a propped fracture height of 43.6 m, as opposed to the nearly 64.2 m modeled height growth, which seemed an over-estimation from the pressure match simulation. The propped fracture height obtained from the PNC logs was deemed far more accurate, as it represents a direct measurement of proppant placement in the near-wellbore region. The combination of CARBONRT inert tracer technology and the PNC tool yielded considerable insight that will advance full-field development, without the safety and environmental issues associated with radioactive tracers.



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