

Raptor[®] Tool, Reservoir Intelligence Network

Divert Workover Plan from Water-Bearing Zone to Save Operator More Than \$250,000

Objectives

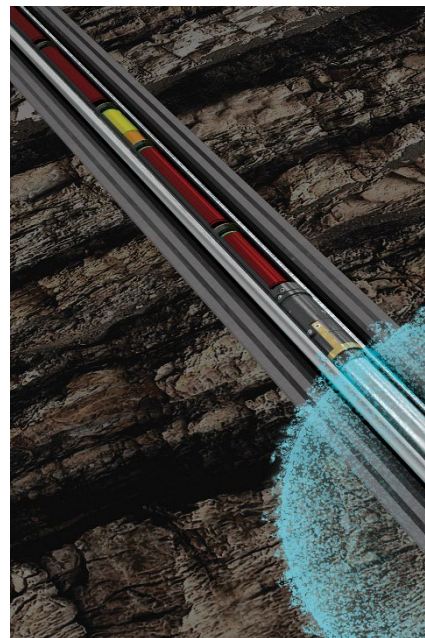
- Locate bypassed reserves in a cased-hole well as part of a workover campaign in a mature field in the Tamaulipas Formation. The wells here present production challenges because of the location near an injector and among producing wells.
- Assess depletion, water saturation, and oil-water contact after massive amounts of water injection may have impacted the reservoirs since the original openhole petrophysical evaluation.

Our Approach

- Weatherford Wireline Services and the Reservoir Intelligence Network worked together as a team with the operator to discuss performing a proper petrophysical assessment and evaluating water-injection displacement.
- Weatherford recommended using the Raptor 2.0 cased-hole evaluation system to examine a workover well and quantify oil-water saturations in the reservoir with accuracy, even in this low-porosity environment.
- The team deployed the Raptor system in enhanced carbon-oxygen (C/O) mode to log the well behind casing, and the Reservoir Intelligence petrophysicists used the logs to determine the oil and water saturations.
- Although the original logging information showed the upper area had the best conditions for new perforations, the logs from the Raptor system showed very high water saturation because of the nearby producing wells and water injectors.
- Based on the Raptor C/O results, the operator moved the perforations down to the medium body of the formation, which showed very good oil saturation.
- The operator had expected to produce 55 BOPD (8.74 m³/d oil) according to pre-job technical documents but actually achieved 384 BOPD (61.1 m³/d oil) based on a production report in the evaluated interval.

Value to Customer

- The Raptor 2.0 system and Reservoir Intelligence Network helped to locate more accessible hydrocarbons and avoid water-bearing zones for prolific production.
- Accurate evaluation enabled revising the original plan from perforating the upper part of the formation, which would have produced mostly water. Performing services—for wireline perforations, pressure pumping, fracturing, and water-production perforation isolation—in the wrong section would have cost at least US \$250,000.



Despite areas with low reservoir porosity in a carbonate formation, the Raptor C/O technique enabled effective evaluation for production results beyond expectations.

LOCATION
Mexico

WELL TYPE
Onshore, heavy oil

FORMATION
Lower Cretaceous Tamaulipas Inferior (KTIA)

MAXIMUM WELL DEVIATION
10°

BIT SIZE
8-1/2 in.

CASING SIZE AND TYPE
6 5/8-in., 24-lb/ft N80

TEMPERATURE
171°F (77°C)

PRESSURE
1,973 psi (13.6 MPa)

DEPTH
4,895 ft (1,492 m)

PRODUCTS/SERVICES

- Wireline services
- Raptor 2.0 system
- Reservoir intelligence network

