

# Reservoir Evaluation Services

## Obtains Critical Water Sample With No Sticking Issues in Low-Permeability Well

### Objectives

- Acquire an uncontaminated formation water sample from a low-permeability aquifer in a deviated, large-borehole well. The operator sought the water sample because of the valuable information it provides to calculate field reserves. Previous attempts by other companies using competitive formation testers had proven unsuccessful in this zone and field because of hole issues and tool sticking.

### Our Approach

- Weatherford deployed the Compact™ formation pressure tester (MFT) to acquire pressure data and to assess borehole conditions without the risk of sticking downhole.
- The MFT provided flow response, formation pressure, and mobility measurements, which helped in choosing the right depth and fine tuning operations for water sampling.
- The team ran the reservoir evaluation system (RES) inflatable packers and sampling modules to acquire water samples.
- The team adjusted the spacing between the packers based on the 12.25-in. hole size, and they regulated the pump flow rates in real time to maintain a seal with the formation.
- The team pumped out mud filtrate and formation water for 4.5 hours and performed real-time monitoring of fluid resistivity to confirm the fluid type.
- Two samples were taken and retrieved to the surface for further analysis at a pressure-volume-temperature (PVT) laboratory.

### Value to Client

- The Weatherford MFT provided valuable information to plan for successful water sampling from the formation for the first time in the field.
- Data from the MFT enabled the operator to run the RES, to save valuable rig time associated with sticking issues, and to obtain the critical water sample. A stuck formation tester typically requires a 3-day fishing operation, and often all logging is cancelled thereafter.



The Weatherford formation evaluation team assembled the optimal RES testing configuration.

#### LOCATION

Iraq

#### WELL TYPE

Onshore, development

#### LITHOLOGY

Limestone

#### HOLE SIZE AND ANGLE

12.25 in., 27°

#### CASING SIZE

13-3/8 in.

#### WELL DEPTH

8,642 ft (2,634 m)

#### WELL TEMPERATURE

176°F (80°C)

#### PRODUCTS/SERVICES

- Reservoir evaluation system (RES)
- RES packer section with inflatable packers
- Compact formation tester (MFT)

