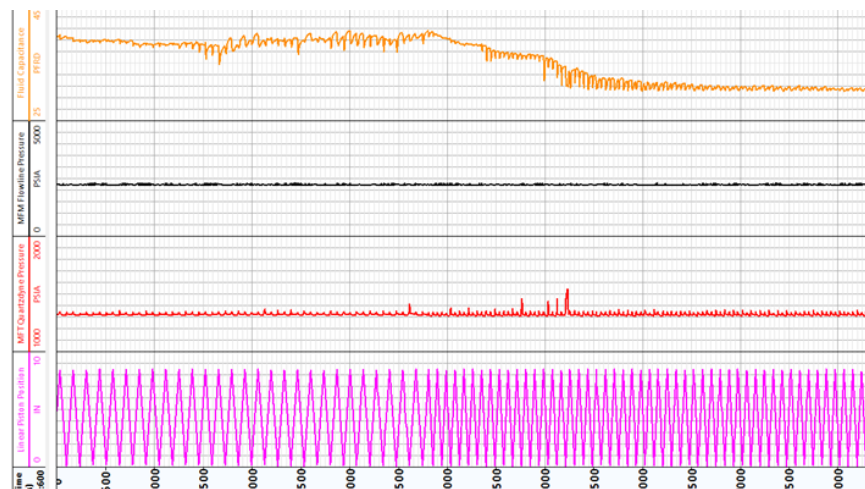


Compact™ Logging Technology Samples Gas Using a Single-Fluid Identifier Sensor in Depleted, Shaly Sandstone Reservoir in Debut Deployment



Sample from MFT-D Sampling Station 1 displays the pressure response (red line) recorded during the pretest and pump-out phases. The drawdown mobility was 292.6 mD/cP, with a formation pressure of 1339.88 psia. The fluid resistivity sensor was coated with oil-based mud (OBM), making it unsuitable for fluid identification. Therefore, only the capacitance sensor (orange line) was used. The capacitance reading transitioned from an initial mud response of approximately 47.0 pF to a stable low value of 30.4 pF, indicating the presence of non-aqueous reservoir fluid (gas). Three gas samples were successfully collected.

LOCATION

Kuwait

WELL TYPE

Producer

FORMATION

Clastic

HOLE SIZE

12-1/4 in.

DEPTH

4,940 ft (1,505 m)

PRODUCTS/SERVICES

- Compact gamma ray (MCG) tool
- Compact sonic sonde (MSS)
- Compact array induction (MAI) tool
- Compact photodensity (MPD) tool
- Compact dual neutron (MDN) tool
- Compact formation tester and sampler (MFTD)
- Compact borehole geometry (CBG) tool
- Wireline services

Objectives

- Acquire data to analyze the reservoir's petrophysical properties.
- Measure formation pressure and evaluate fluid mobility using the pump-out module.
- Acquire and recover oil and gas samples from two distinct reservoir zones.

Our Approach

- After consultation with the operator, Weatherford field personnel deployed the Compact quad combo toolset (including gamma ray, neutron, photo density, induction resistivity, and sonic sonde) for comprehensive petrophysical evaluation of the reservoirs.
- The team ran the slim Compact formation pressure tester to measure the reservoir pressure and fluid mobility.
- The capacitance sensor in the Compact formation pressure tester identified the hydrocarbon types across two measurement stations.
- The combined wireline technology acquired and retrieved reservoir fluid samples from two stations: oil from a sandstone formation and gas from a shaly sandstone formation.



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Value to Customer

- The analysis of the high-quality acquired data reduced uncertainty and enhanced confidence in both the petrophysical evaluation of the reservoirs and the selection of sampling stations.
- Weatherford technology and expertise enabled effective hydrocarbon identification and confirmation of gas-oil contacts.
- The deployment of the Compact tool suite prove a key factor in minimizing the risk of tool sticking during operations.
- Laboratory results confirmed the validity of the retrieved samples, with contamination level below 5%.



Sample from MFT-D Sampling Station 2 shows the pressure response (red line) recorded during the pretest and pump-out stages. The drawdown mobility was measured at 150.1 mD/cP, with a formation pressure of 1689.82 psia. Due to OBM coating the fluid resistivity sensor, it was unsuitable for fluid identification. Therefore, only the capacitance sensor (orange line) was utilized. The capacitance reading transitioned from an initial mud response of approximately 50.0 pF to a stable low value of 30.2 pF, indicating a non-aqueous reservoir fluid (oil). Three oil samples were successfully collected.

