Memory Raptor® Cased-Hole Evaluation System

Logged Wireline-Equivalent Data With Slickline, Reduced Operational Costs by 54%

Objectives

- Evaluate the current fluid contact, fluid type, and saturation via a slickline unit.
- Identify potential behind-casing opportunities (BCO), if any.

Our Approach

- The conventional solution for this saturation logging job would involve deploying tools via wireline, but the customer did not want to incur the high costs associated with wireline. In addition, the physical infrastructure on the platform was unable to lift the heavy wireline equipment to the platform.
- Weatherford experts recommended the Memory Raptor cased-hole evaluation system. Ideal for locations poorly suited for traditional wireline operations, the Memory Raptor system adds a memory and battery controller and a safety sub to deliver advanced pulsed-neutron measurements in all modes with data that is identical to that from conventional wireline operations, eliminating the need to mobilize, transport, and install a full-service wireline unit.
- The Memory Raptor system was deployed via slickline to capture critical carbon/oxygen (C/O) measurements for oil saturation evaluation, and N-Vision data for gas saturation analysis in a dual-string producer with casing sizes from 7 to 9-5/8 in. and 3 1/2-in. tubing.
- Careful pre-job planning and a site inspection test were executed in collaboration with the local slickline provider to ensure the compatibility of the Memory Raptor system with the available slickline unit and slow speed unit.
- The pressure-temperature log was acquired together with the Memory Raptor system measurement to provide a hint on the tubing fluid type or any temperature anomalies.
- The N-Vision mode was chosen and designed to provide the highest sensitivity to gas within the reservoir with the least effect of formation water salinity, especially well-suited for Malaysia's freshwater reservoirs.
- The customer requested specific integrated response characterization modelling for each completion zone and detailed saturation quantification was estimated based on the results.
- Drawing on their understanding of the regional field and nearby wells, Weatherford experts performed data validations to evaluate the current field-wide fluid contact movement and ascertain the fluid type.

A single engineer, using a small, lightweight slickline deployment package, operates the Memory Raptor system, reducing operational complexity and enabling efficient, cost-effective operations.

LOCATION
Malaysia

WELL TYPE
Development well (dual oil and gas producer)

FORMATION
Clastic

HOLE SIZE AND ANGLE
12-1/4 in., deviated up to 32°

CASING SIZE
Dual 9 5/8-in. casing and 7-in. liner with dual or single 3 1/2-in. tubing

MEASURED DEPTH BELOW DRILL FLOOR
10,230 ft (3,118 m)

TOTAL LOGGING INTERVAL
1,200 ft (365 m)

PRODUCTS/SERVICES
- Memory Raptor cased-hole evaluation system
- Interpretation and Evaluation Services

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Value to Customer

- By using the slickline conveyance of the Memory Raptor system, the customer reduced wellsite manpower, spacing, and equipment.
- The reduced operational footprint of the Memory Raptor system deployment saved the customer approximately 54% in cost compared to a standard wireline operation.
- The system delivered complete information on the fluid contact movement within the multi-stacked siliciclastic reservoirs, even in a complex completion setting with large, 12 1/4-in. borehole.
- The interpretation provided by the local Interpretation and Evaluation Services team helped the customer understand the current fluid contacts and saturation for the primary reservoirs with data equivalent to the real-time Raptor 2.0 cased-hole evaluation system.
- The results from the Memory Raptor system were validated by correlation with production history of the subject well and corroborated with past pulsed neutron results from nearby wells. This data helped to de-risk the future infill drilling program.
- Based on the result in the subject field, consistency had been demonstrated in field-wide fluid contacts of target reservoir. This showed the reliability of Memory Raptor system in providing accurate pulsed neutron measurement for reservoir asset management.

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