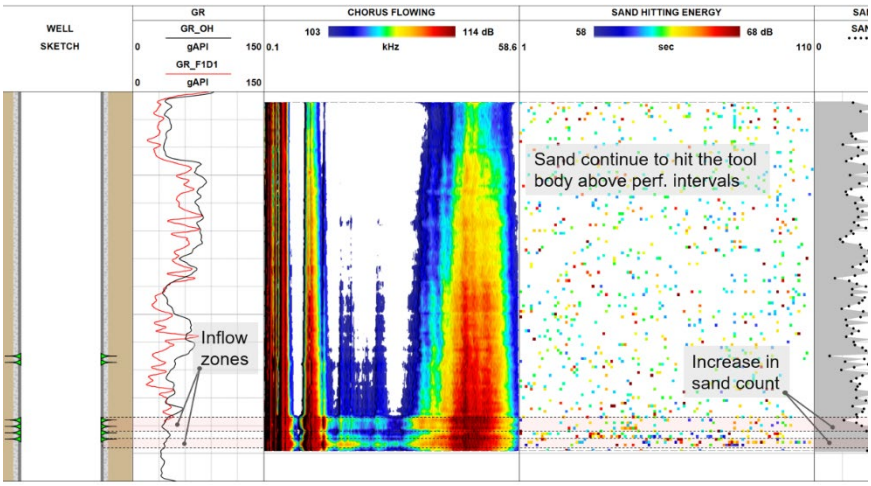
Advanced Logging Tools, Reservoir Analysis

Located and Quantified Downhole Sand Production, Minimized ESP Failures



Flowing conditions - Sand Flow (high-precision temperature + spectral noise logging)

Objectives

- Perform sand flow quantitative analysis for the sand production
- Detect the inflow zones across the Burgan and Wara reservoirs

Our Approach

- An SNL tool with HPT gauges was deployed to accurately assess the volumes behind the tubing and the casing flow profiles.
- Sand accumulation stopped the tool at a depth of 5,748 ft (1,752 m).
- No inflow was detected from the perforated and squeezed zones, but sand inflow was observed from the middle perforation, 5,740 to 5,742 ft (1,749.5 to 1,750.1 m), and 5,744 to 5,747 ft (1,750.7 to 1,751.6 m).
- Production logging tools were used down to 5,613 ft (1,710.8 m) to help the customer better understand the downhole well conditions.
- The results indicated all the flow came from the uppermost Burgan perforation at 5,714 to 5,718 ft (1,741.6 to 1,742.8 m). The well was partially filled with sand covering the main contributor during the SNL-HPT run (the upper part of the middle Burgan perforation nearly from 5,737 to 5,742 ft (1,748.6 to 1,750.1 m)).

Value to Customer

- The customer opted to squeeze the Burgan formation and produce from the Wara reservoir.

LOCATION
Kuwait

WELL TYPE
Deviated oil producer

FORMATION
Upper Burgan

HOLE SIZE AND ANGLE
12-1/4 in., 40°

CASING SIZE AND TYPE
9-5/8 in., #40, L-80

DEPTH
5,748 ft (1,751.9 m)

PRODUCTS/SERVICES

- High-precision temperature (HPT) gauges
- Spectral noise logging (SNL) tool
- Production logging tools

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