



CASE STUDY

MEASUREMENT OF WELLBORE ID BY ACAT™ IN HORIZONTAL OIL PRODUCER ALLOWED TO LOCALIZE WASHOUTS

Location: Middle East

Well type: horizontal oil producer

Open hole ID: 6 1/8"

Challenge: presence of washouts in open-hole oil producers poses several challenges:

- increase wellbore diameter, making it difficult for tools to access pay zones or stay aligned, potentially leading to stuck tools or failed interventions.
- weaken the wellbore and surrounding formation, risking collapse or instability, and complicating zonal isolation or sealing.
- allow excessive flow in certain areas, leading to uneven depletion, bypassed hydrocarbons, and unwanted water/gas production.
- irregular wellbore shapes result in inaccurate reservoir readings, affecting flow profiling and production understanding.
- difficulty in achieving proper sealing for well treatments (e.g., stimulation or sand control), compromising treatment effectiveness.
- increased erosion in washout zones accelerates wellbore degradation and production of fines or sand, damaging equipment.
- lead to higher intervention costs, longer downtime, and increased non-productive time (NPT).

Washouts can significantly impact production efficiency and wellbore stability, making early detection and intervention crucial.

Objective: to measure the ID changes of the open hole section with the highest accuracy and precision.

Solution: the Acoustic Caliper Array Tool (ACAT) was proposed as a reliable technology to identify variations in the wellbore's internal diameter (ID) caused by washouts or other structural issues.

ACAT employs 12 distributed acoustic sensors positioned across the tool. This configuration enables the tool to achieve high-fidelity measurements of the entire 360-degree inner surface of the well tubular. With its precise acoustic sensing capabilities, the ACAT provides a clear and comprehensive picture of the wellbore geometry for early detection of washout zones.

Results: ACAT data revealed two major washout areas across the intervals of 2044.0-2115.0 m and 2524.0-2589.0 m with maximum increase of the wellbore radius up to 4.14" and 4.44" respectively. In addition, minor washout area was detected right below the liner shoe at 1661.7-1776.8 m with maximum increase of the wellbore radius up to 3.65".



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