



## CASE STUDY

# RESERVOIR FLOW PROFILING BY **STREAM™** IN DUAL-STRING OIL PRODUCER FOR THE EVALUATION OF PERFORATIONS, RESERVOIR PERFORMANCE & WSO

**Location:** Asia.

**Well type:** dual-string deviated oil producer.

**Challenge:** evaluation of perforations and determination of real reservoir flow zones as well as localization of the water source behind the tubing and casing in dual-string completion.

**Objective:** assess reservoir performance, identify water inflow intervals, and construct the current production profiles across reservoir sections for each string separately.

**Solution:** conventional spinner-based methods are not able to evaluate perforations performance and reservoir flow zones behind the tubing. Therefore, the **STREAM™** has been proposed as a reliable solution in dual-string completions for quantification of reservoir performance, fluid flow evaluation behind the tubing and casing. The combination of T-FLOW and FIND technologies was applied for the precise localization of main reservoir flow intervals, water source localization, and perforations performance assessment.

**STREAM™ (SPINNERLESS TECHNOLOGIES for RELIABLE EVALUATION, ANALYSIS, and MODELING of well-reservoir flow)**

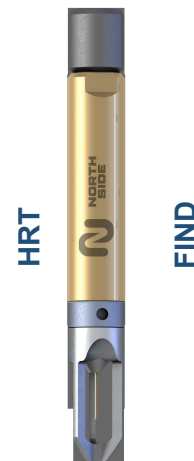
A powerful suite of tools and technologies that provide high-resolution and accurate logging capabilities. **STREAM** is an integration of **FIND**, **TFT**, and **T-FLOW** technologies, working in perfect harmony to unlock unparalleled insights into the processes occurring inside and beyond the wellbore.

### **T-FLOW (Temperature Modeling)**

The math solver allows predicting the heat exchange between the wellbore and the reservoir based on hydro/ thermo-dynamic theory and high-resolution temperature data acquired by the High-Resolution Temperature Tool (**HRT**). The method provides a detailed reservoir production/injection profile for open/cased hole wells with vertical, deviated, or horizontal trajectories.

### **FIND (Flow Identifying Noise Detector)**

A new-generation spectral noise logging tool records data by four channels with different frequency ranges and amplification to signal. It allows to provide detailed full-spectrum acoustic profile without distortion, including wellbore/reservoir flow intervals detailing, fractures localization, leak detection, and flow behind the casing determination.





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### Results

The log was done in two runs for long and short strings separately. According to the spinner-based summary profile, three zones of wellbore flow were determined across SSD, perforated tubing joint and lower perforated interval. However, based on the T-FLOW summary profile and FIND spectrum, several intervals of reservoir flow corresponding to perforations were determined. Based on the T-FLOW profile and FIND data the interval of reservoir flow corresponding to Perf.1 was captured as more extended (11 m wider than Perf.1). Meanwhile, the evaluation of Perf.2 revealed that only the first part of the perforated interval produces. The lower Perf.3 zone was characterized by a high WC. Despite the fact, that the WSO cement plug was installed on the wellbore, the T-FLOW modeled profile and FIND spectrum confirm the flow behind the casing from below the perforation zone due to water encroachment phenomena.

### Major outcomes

- intervals of real reservoir flow behind the pipes were determined
- perforation intervals performance was evaluated
- the flow behind the casing and water source were localized

