



## CASE STUDY

### LEAK DETECTION BY FIND (SNL) & MBTT3 CORROSION LOGGING ALLOWED THE LOCALIZATION THE 3<sup>RD</sup> PIPE LEAK POINT AND B-ANNULUS FLOW

**Location:** West Africa

**Well type:** ESP oil producer

**Challenge:** pressure build-up was revealed in B-annulus during the latest surface pressure test while the tubing and A-annulus pressure was constant.

**Objective:** integrity check-up of well casings and localization of the interval of B-annulus flow.

**Solution:** a combination of SNL (FIND) and High-Resolution Temperature (HRT) tools was proposed as an industry-proven approach for leak detection. A new generation FIND tool allows to capture of leak points behind several barriers, to localize the flow intervals in tubing, A/B-annuluses, and behind the casing.

The MBTT corrosion logging was proposed for quantitative confirmation of leak points and localization of corrosion distribution across them.

The survey was proposed to be done in three runs: the first two runs during the static shut-in conditions to obtain the baseline for temperature and noise as well as to record the MBTT log, the third run was done during the B-annulus continuous bleed-off.

#### Multi Barrier Thickness Tool (MBTT3-4)

Tools MBTT3 and MBTT4 are designed to evaluate the metal loss of the tubing and casings up to 4th barrier based on emission and measurement of an electromagnetic field with the following data processing. Tools provide a qualitative evaluation of tubulars thickness from 2 7/8" to 20".

#### Flow Identifying Noise Detector (FIND)

A new-generation spectral noise logging tool FIND has split-channel architecture. The tool records data by four channels with different frequency ranges and amplification to signal. It allows the precise localization and differentiation between the wellbore flow, annulus flow, and flow behind the casing intervals.





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### Results

FIND Channels 2 and 4 revealed narrow horizontal noise anomalies of a wide frequency range (3.0-45.0 kHz) related to a minor leak point in the casing as well as an indication of the flow behind the casing. The MBTT4 tool confirmed the leak by a localized interval of moderate corrosion on the 3rd pipe (9 5/8" casing) with 17% of the average circumferential metal loss. There is a good indication of the 13 3/8" casing shoe which is the 4th pipe.

### Major outcomes

- 3rd pipe leak point and corrosion evaluation
- Localization of the flow in B-annulus
- 4 barriers corrosion evaluation

