

FLOW IDENTIFYING NOISE DETECTOR



The Flow Identifying Noise Detector (FIND) Technology is based on the acquisition of acoustic signal (noise) generated by the fluid passing through different types of media (formation channels/fractures, completion elements, cement bond, etc.) in frequency and amplitude domains.

The FIND is a new generation of spectral noise logging tool which records data within four independent channels with different frequency ranges and amplification to the signal, which allows the acquisition of the entire noise spectrum data from 0.1 to 60.0 kHz without distortion.

Applications:

- Well integrity evaluation (tubing/casing leaks, completion elements leaks, etc.)
- Evaluation of production/injection-related processes inside the reservoir behind single/multiple barriers or in an open hole section of the well

Advantages:

- Split-channels architecture of the FIND allows to precisely capture the processes related to a particular zone of the well or reservoir in a situation when the same response (frequency/amplitude signatures) might be interpreted obliquely



Tool Specifications

Split-Channels architecture	Yes
Number of channels	4
Number of hydrophones	3
Dynamic range	0-90 dB
Number of spectral bands	512 x 4
Internal memory	4 Gb
Maximum operating pressure	14,500 PSI (100 MPa)
Maximum operating temperature	150°C (302°F)
Tool OD	1.65 in (42.0 mm)
Tool length	2.46 ft (0.75 m)
Tool weight	13.2 lbs (6 kg)
Connections	15/16 SR
Operational time in memory mode	Over 100 hrs
H ₂ S resistance	6% standard (25% optional)
Surface read-out / Memory	Both

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The FIND records data with three highly sensitive hydrophones placed in oil-filled chambers. The recorded noise passes through an ultra-silent amplification stage, is converted into a digital bitstream, and then digitally processed. A part of the digital processing is the Fast Fourier transformation which builds the frequency response of acquired noise.

Deliverables:

- detailed acoustic profiles related to wellbore/reservoir processes
- wellbore/reservoir flow intervals localization
- leak detection
- flow behind the casing localization
- determination of different types of reservoir response (formation matrix flow, fractures, channels, cavities, and faults)

