



PLT and SNL

Integrated Production and Spectral Noise Logging

Integration of PLT and SNL is a very efficient tool to extract more information on flow geometry.

The biggest advantage of PLT over the Noise Log (SNL) is that the PLT measures flow rates and identifies points of fluid entry into the wellbore. The SNL, on the other hand, measures noise volume, which is a complicated function of multiple

parameters (like pressure drop and fluid composition) and, therefore, it cannot be calibrated to measure flow rate.

Meanwhile, the SNL delivers unique information on the active flow units behind the casing – which, obviously, cannot be provided by the PLT. By correlating zones of fluid entry from the PLT with active flow zones from SNL, one can reconstruct the possible channellings which redistribute the fluid behind the casing.

Clearly, SNL complements PLT with information on flow character in reservoir, by discerning between matrix flow and open features flow, like fractures or high permeability streaks. This information is unique and it will help in monitoring sweep efficiency and identify possible by-passed oil.

SNL may also help in picking up minor inflow/injection zones which can be missed on PLT when the rate is below spinner threshold.

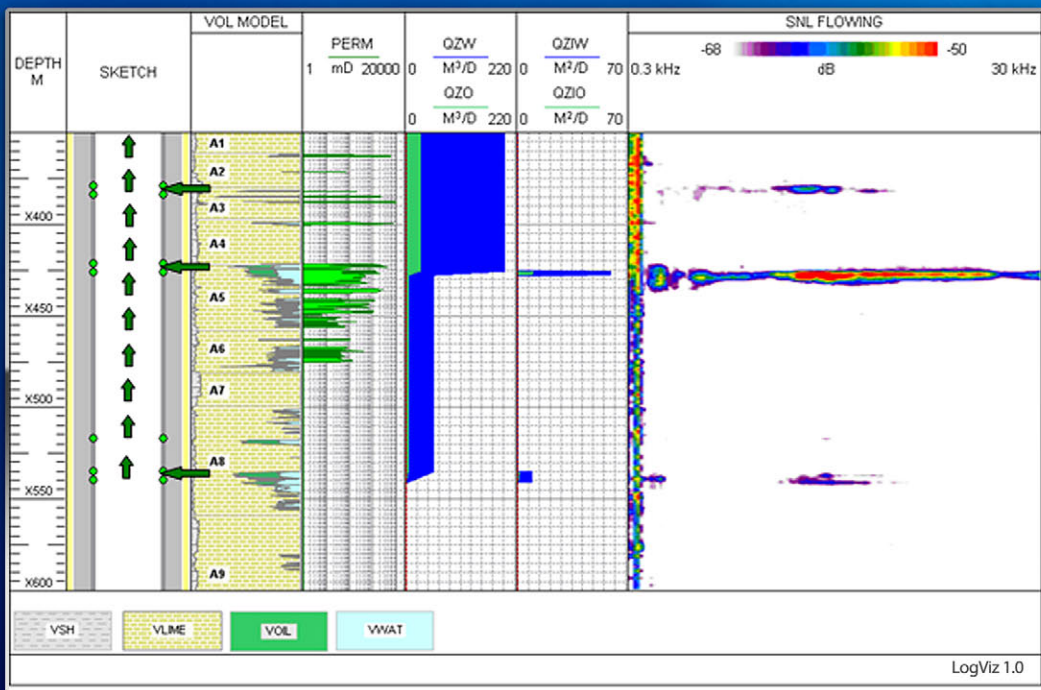


Example 1

The example below shows that the most of the inflow is coming from the perforated interval at about X425 m with a less inflow from the zone at about X540 m.

The flowing SNL perfectly matches the response from the PLT across these two zones but it also shows some minor inflow from the third interval at about X375 m which PLT failed to pick up due to the spinner threshold.

SNL also shows low frequency noise accumulation all the way up from the bottom hole which is a clear indication of borehole flow. The flow is too small to be captured by spinner and not seen on PLT panel.



Spectral Noise Logging
Tool

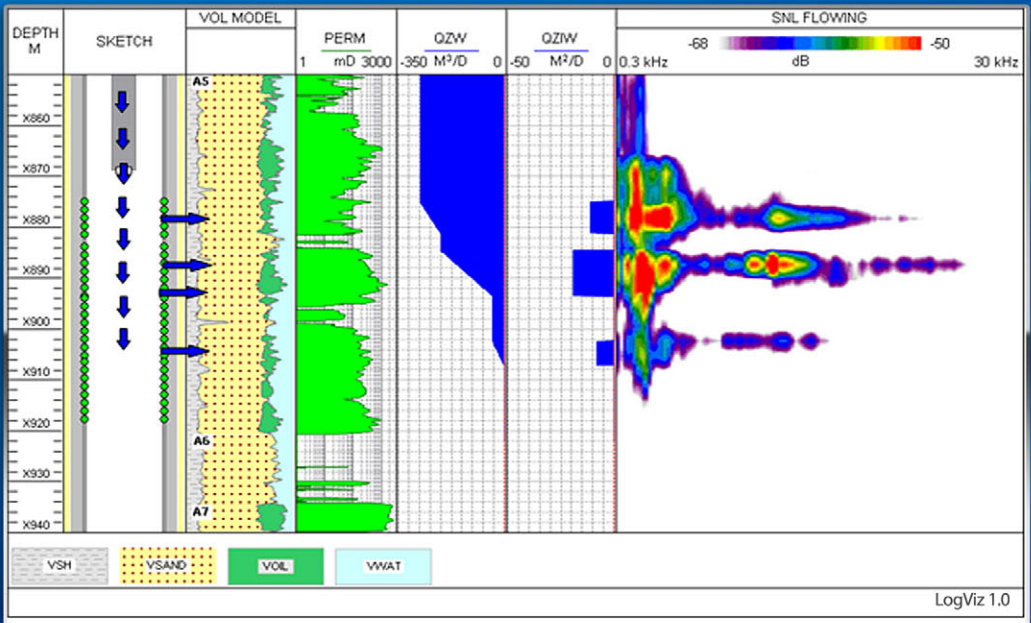


Example 2

The example below shows very good match between PLT and SNL logs across the injection zones.

The perforations noise is mostly accumulated in low frequency (left part of the SNL panel). When moving the eye further right (to the higher frequencies) one can see that noise volume is rapidly decaying except three narrow streaks which relate to the reservoir noise and match the injection zones from PLT.

The high frequency extension suggests that fluid is moving through a large number of different sized pores which is an indication of good sweep potential area.



Production Logging
Tool





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