

Application: DNA Surveillance®

Monitor well to well connectivity to improve field development

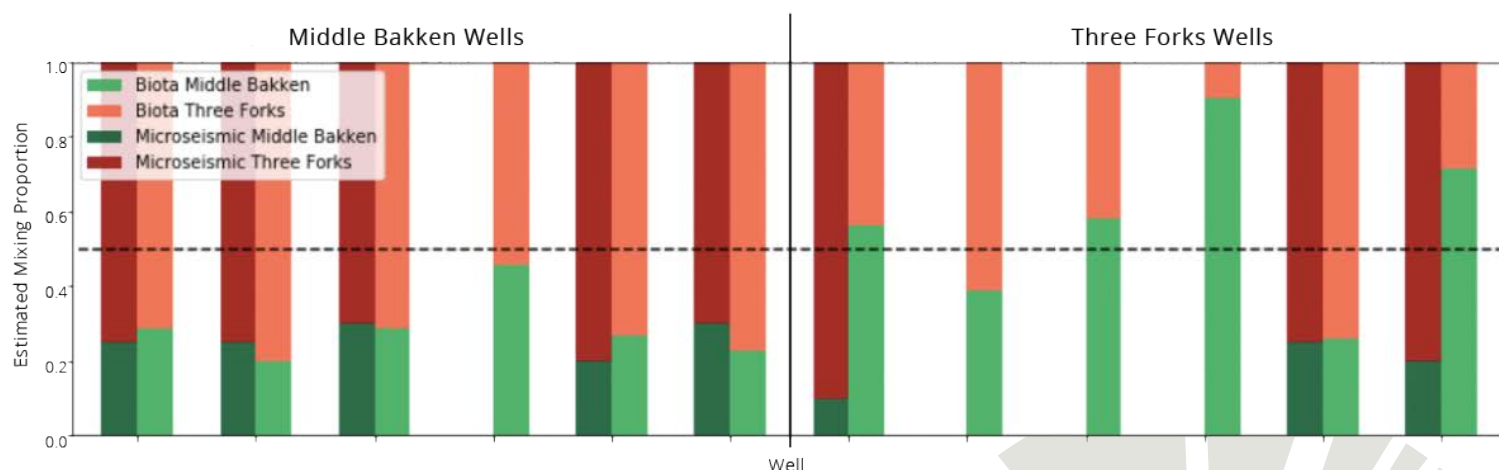
Location: Bakken

CHALLENGE

In order to optimize field development, operator needed to quantify the produced fluid relative contributions of Middle Bakken and Three Forks reservoirs.

SOLUTION

- Produced fluids from several wells landed in Middle Bakken and Three Forks were non-invasively sampled for four months
- Unexpected similarity of DNA signals from Middle Bakken and Three Forks wells led to closer examination of potential for out-of-formation contribution by deployment of machine learning tools using the comprehensive DNA data set
- The relative contribution of each formation in the produced fluids was quantified for each well
- The analysis was validated by microseismic data unblinded by the operator



RESULTS

- Biota indicated significant out-of-formation fluid contribution resulting in re-evaluation of subsurface model to optimize asset value
- Findings were corroborated with blinded microseismic diagnostic with significant agreement between both techniques
- Biota's analysis is consistent with the recently published time-lapse geochemistry findings* at a fraction of the time and cost
- Ongoing work will enhance findings using well cuttings and core for refined Middle Bakken and Three Forks end-member calibration

* SPE-2670186 "Time-lapse Geochemistry (TLG) Application in Unconventional Reservoir Development," URTeC 2017.