

CASE STUDY

ENHANCING WELL PRODUCTIVITY

USING DYNAMIC MARKER-BASED PRODUCTION PROFILING SURVEILLANCE DATA

Objective

The rapid decline in the productivity of horizontal wells after multi-stage hydraulic fracturing (MHF), as well as the uneven reserve recovery along the productive borehole is quite a common problem that requires a prompt response from the geological divisions of the license holders.

Dynamic marker-based production profiling surveillance technology yields diagnostic data on the production profile and composition by frac ports, which can be used in the selection and implementation of a range of well interventions aimed at stabilising production, as well as ensuring sustainable and rational recovery of reserves.



Location

An oil field in Western Siberia



Type of well

Sub-horizontal well with 5-stage hydraulic fracturing



Special conditions

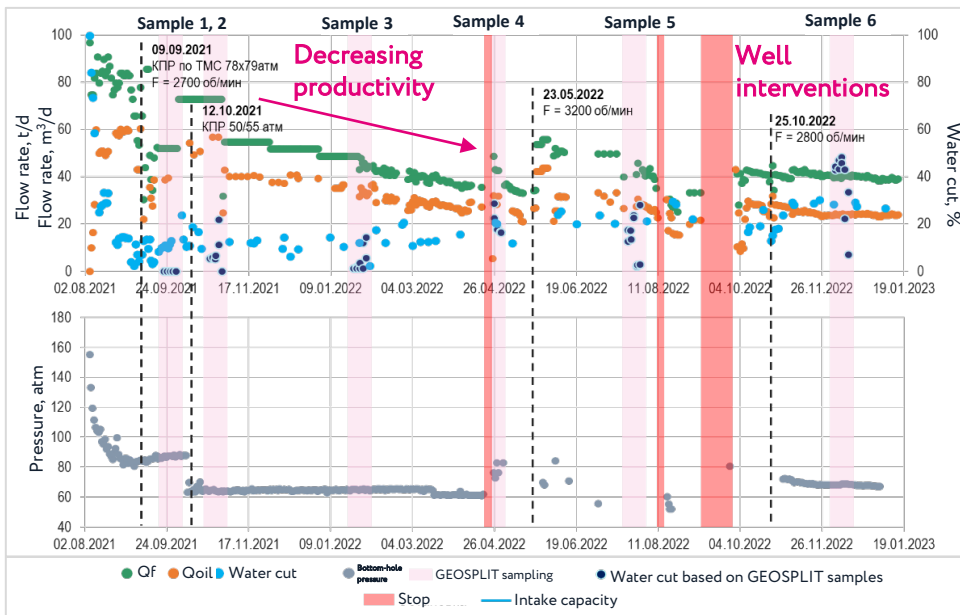
High subsurface uncertainty, a structurally complex reservoir, rapid decline in productivity after multi-stage hydraulic fracturing (MHF)



Solution

Dynamic marker-based production profiling surveillance was performed on a subhorizontal well with five-stage hydraulic fracturing in one of the large oil fields in Western Siberia, which helped identify the production profile and its dynamics. Ports No. 2–4 showed the greatest decrease in the productivity index along with subnormal reserves recovery.

Based on the information received, the geological deviation of the license holder decided to drill out frack ports No. 2–4 and conduct selective acidising of the bottom-hole zone using coiled tubing.

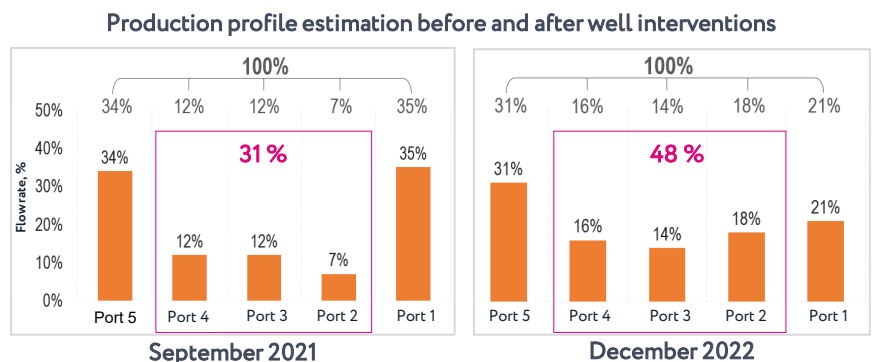
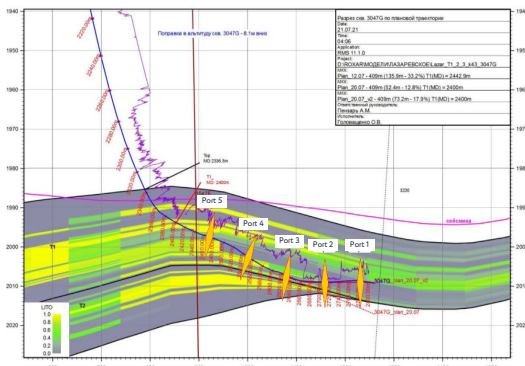


Customer value

Diagnostic data is obtained to perform selective bottom-hole zone acidising of ports with declining productivity dynamics

+5.1 t/day

average monthly increment in oil production



Summary

Due to the measures taken, the total inflow from ports No. 2–4 has increased from 31 to 48%. Oil production grew by +5.1 t/day within 4 months after the well interventions. The effect is still observed today.