



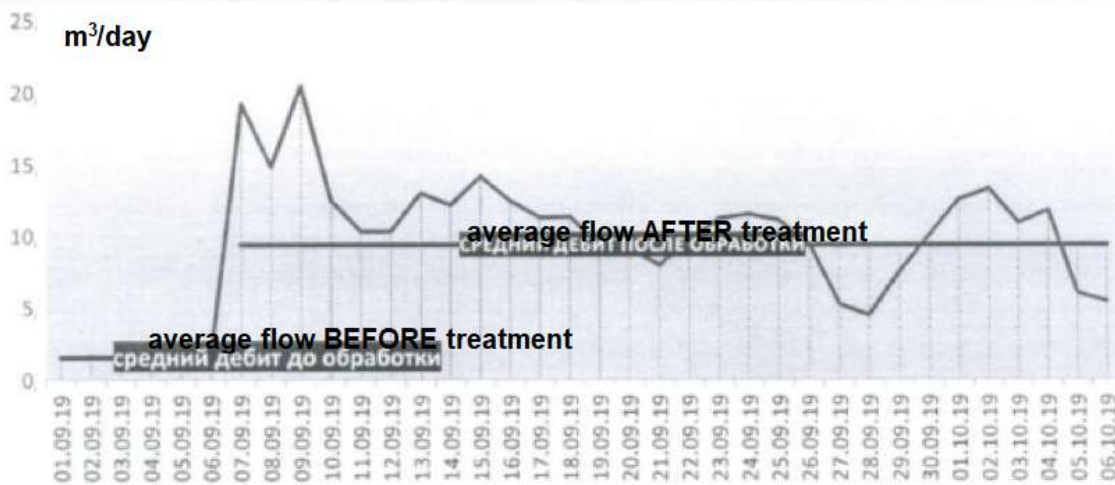
HK-54 pumped well

Problems in the well

Well Hayr-Keldy 54 (HK-54) is located in Kyzylorda area of Southern Kazakhstan. Organic deposition accelerated right after the well was converted from flowing into pumped production mechanism. Even though carbonate formation temperature relatively hot, 75°C, organic deposition takes place in the formation, perforations and tubing. Producing intervals are located only few meters above the water-oil contact (WOC) line. Wax inhibitors solve somewhat deposition issues in tubing, flowlines and production facilities, but below the pump – in the perforations near wellbore matrix, it is treated conventionally by batch treatments of aromatic solvents. Solvents work good in removing asphaltenes and resins from the rock face, but:

- Deposition starts right after 2-3 days of restarting production and production declines
- Due to plugging of the formation pores well is underperforming, that was observed by falling annulus fluid levels.
- Due to plugging of the formation pores and proximity of WOC line the well immediately starts sucking water from below
- Previous acidizing have resulted in plugged lower interval with acid-oil sludge, which was confirmed by API RP42 test done during investigation and indicated Acid-Oil Incompatibility problem.

PARALAX® treatment done on this well targeted more at squeezing into the formation to clear asphaltenes and resins in the critical matrix, opening flow channels for much higher production. As a result, production increased from 1.5 to 9 m³/day (9.5 to 56 BOPD), by enormous 493% because the well was underperforming so bad.



Monitoring period was agreed upon to be 45 days as a break even point. However, PARALAX job paid back in 3-4 days of incremental oil production. In fact, PARALAX effect on the production lasted for 4.5 months before production started to decline.

Treatment Facts & Results

- Oil production increased from 1.5 to 9 m³/day (9.5 to 56 BOPD), by 493%
- Water cut decreased from 83% down to 9%, as the operator took additional oil preflush before PARALAX and longer shut-in time to force water to recede down to WOC
- PARALAX effect lasts 4.5 months before it starts showing firsts signs of asphaltene plugging
- Acid-Oil Sludge has been dissolved in the lower perforation interval