Objectives/background

- A new multi-lateral oil and gas well in East Texas was producing over 1,000 barrels of water a day.
- The client sought a solution to isolate the water source downhole, which in turn would optimise production and reduce expensive water disposal costs.

Expro Excellence

- Expro proposed a custom production logging tool string to ascertain which lateral section was the source of the water – the well was flowing at 40% water cut (mainly from one lateral), when only 5-10% was expected.
- Produced in-house, it was critical that the custom production logging tool string’s sensors were capable of passing through small restrictions in tubing, while simultaneously running a fluid density inertia (FDI) tool to help water/oil phase identification – the toolstring was able to pass through a 2 3/8” x-nipple with an internal diameter of 1.865”.
- Combined with the FDI tool, the pressure and temperature sensors allowed Expro to characterise each phase type within the well, and their point of entry to the wellbore.

The main wellbore plus one additional lateral were successfully logged; the well was entered twice, over two days.

- The liner top was 9,500 ft (vertical); the wells went horizontal after entering the lateral sections; running e-line in surface read out (SRO) Expro were able to enter the lateral sections to about 70 degrees deviation – this was sufficient to ascertain if there was water production in each lateral.
- Expro log interpretation specialists provided the appropriate onsite analysis for where water shut off should happen.

Value to client

- Tailored solution: modifications and collaboration with the client to find the solution followed by some temporary patch and packer options to isolate the water producing zones.
- Enhanced data: wealth of data collated allowed the client to identify the water source and plan for future remediation; real-time SRO facilitated faster decision making.
- Efficiency: running the custom logging string (with multiple sensors) in tandem with the FDI on one string saved two full days crew time as well as avoiding use of a rig as an e-line unit and picker were used instead.
- Final water cut reduced to between 5-10%.

Contact

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