

Pressure Maintenance Case Study in Wara Reservoir Development Greater Burgan Field Impact of Surveillance Data

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Abstract

Wara reservoir water-flood pressure maintenance project was initiated in 2008 to improve wells productivity and enhance reservoir performance, which was then deployed at reservoir scale in 2016 as a peripheral water flood. Key success parameters of this development scheme are to understand water movement by mapping the Wara heterogeneous sand connectivity and evaluate pressure response. Surveillance is a key enabler. This paper will highlight the impact of surveillance data required for decision making for completions - especially in cases of producer well which is located in a depleted area subject to water-flood. This approach avoided of delaying the production optimization opportunities in Wara water flood and as a lesson learnt the need to have appropriate and timely surveillance jobs After water injection started late 2016 in the area, the well showed an increase in the pump intake pressure. As a result, the team recommended first to upsize the pump, then to add perforations since there is a nearby injector supporting the well, which is located several hundred meters away. However, the delay in taking the action caused the well to water out. As a lesson learnt, the team decided to initiate a full sector surveillance campaign to have better understanding and monitoring of the sweep. This strategy enabled the team to be proactive and optimize the producers and injectors performance. Surveillance campaign during water injection is crucial for optimizing the production and water injection. This results in better reservoir management, maintaining pressure and reducing risk of early water breakthrough. Another example of reservoir management was the drilling of source wells down dip to compensate for shortfalls in injection vs produced water requirement. The water from deeper Burgan reservoir was then injected in Wara to support the water flood progression.