

Bakken – Three Forks
Formation, North Dakota

Operators maximize economic value of their assets with CoreVault® system

Regional collaboration enables better planning for drilling, production, and completion of unconventional

CHALLENGE

- Estimating hydrocarbon reserves, while addressing tough economic times to make the most cost-effective decisions

SOLUTION

- The Halliburton CoreVault™ system locates profitable zones by identifying volume of hydrocarbons in the reservoir and preserves 100% of the fluids during core retrieval and transport

RESULT

- CoreVault system allowed operators to analyze and share the acquired core data and create a better map of the basin, resulting in reduced time and costs for drilling and completing

Overview

Unconventional reservoir well production performance varies widely, even among wells in the same field. To improve drilling efficiency and reduce costs, operators need to acquire and conduct analysis of accurate reservoir information. In the Williston Basin, operators who collectively deployed the Halliburton CoreVault® system were able to measure reservoir fluids more accurately and to leverage the regional value of this information, resulting in better production prediction, optimized oil recovery, and maximized economic value of their unconventional assets.

Challenge

In today's challenging economic conditions, oil and gas operators are relying on technology to mitigate and reduce risk for their projects. Many operators are engaged in innovative solutions to address the economic climate within the marketplace. To better understand this technical cooperation among operators, a look at both regulations and reservoir properties within the Bakken-Three Forks formation is necessary. In recent years, the North Dakota Industrial Commission enacted increased regulation for natural gas production and flaring.

In addition, operators acknowledged the critical importance of gas and oil property variations vertically between distinct reservoir horizons, and laterally within the field's extent. Tighter regulations and economic constraints challenge operators to focus where they are drilling and accurately predict reservoir oil and gas production rates and volumes. Environmental and transportation safety of crude oils from North Dakota provided additional emphasis to the regional understanding of both oil and gas production practices and volumes.



HAL41857

Halliburton CoreVault® technology is the only system today to combine downhole fluid sampling and coring for a safer, more reliable measurement of downhole reserves.

Solution

The Halliburton CoreVault® system integrates fluid sampling with rock coring, enabling fluid samples to be obtained from low-permeability reservoirs, while preventing fluids from escaping during the acquisition of high-quality, rotary sidewall cores. This unique solution provides a more accurate volumetric picture of the oil and gas trapped in unconventional reservoir rocks.

Unlike traditional logging and coring services that can allow 50 to 70% of fluids in the core to escape as they depressurize, the CoreVault tool utilizes pressure-tight containers to lock in 100% of the hydrocarbons in the core. This enables direct measurement of reservoir fluids so operators can avoid dry holes and accurately predict production.

In an unconventional field, operators can know a lot more – a lot sooner – about the size of the prize. The samples taken with the CoreVault system often reveal dramatically more oil and gas in place than previous estimates would indicate. The information obtained can significantly enhance economic value, and reduce exploration and development risks for operators.

Result

Halliburton collaborated with Bakken operators, who understand the value the CoreVault tool provides. They realized that, instead of each operator running its own coring operations, it would be more cost-effective to collectively run these operations and to share the acquired data to more thoroughly map the Williston Basin region. The value of one well's information is small in comparison to the knowledge gained from an understanding of the field.

By using CoreVault technology to gather cores strategically, operators are more informed regarding their own wells and have a clearer picture of what is occurring regionally. Operators have used this knowledge to optimize their production, drilling, and completion practices to maximize oil recovery, handle the gas properly, and maximize the oil that is shipped. While this arrangement is atypical, this sharing of knowledge and expertise to lower finding and development costs is reflective of the collaborative spirit necessary to achieve lower costs per BOE and succeed in these difficult times for the industry.



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