

Fluid Distribution Analysis Supports Field Development Planning

HALLIBURTON CONSULTING TEAM SOLVES COMPLEX FLUID DISTRIBUTION CHALLENGE

MIDDLE EAST

CHALLENGES

- » Develop an innovative fluid distribution model to provide a better understanding of the existing condensate and oil segregation in the field
- » Create a new methodology to tune an equation-of-state model that can predict the producing GOR and CGR
- » Analyze data from multiple sources, and correlate it appropriately to create a new, improved fluid distribution and PVT characterization

SOLUTIONS

- » MDT, PVT, and log integrated analysis
- » Studies of available PVT data and integrated well tests of producing GOR
- » New methodology for equation-of-state tuning to achieve a match on the producing GOR

RESULTS

- » Provided more accurate reservoir fluid prediction, better infill drilling targets, and more accurate reserves
- » Developed a new fluid distribution model that allowed the client to book new reserve numbers and plan a future field development study
- » Created a PVT model that helped match the well test GOR
- » Devised future planning guidelines for PVT sample collection and testing

OVERVIEW

Seeking to better understand fluid distribution in a field for reserve booking and future field development planning, a client in the Middle East approached the Halliburton Consulting team for an integrated analysis. The aim was to aerially identify the existing condensate and oil segregation in the field and to understand compartmentalization in the reservoir. Numerous previously collected pressure/volume/temperature (PVT) samples had not been able to predict the producing gas/oil ratio (GOR).

CHALLENGES

To better understand the fluid behavior and distribution throughout the reservoir, the Halliburton Consulting team would need to develop an innovative fluid distribution model. Additionally, a new methodology would be necessary to tune an equation-of-state model that could predict the producing GOR and the condensate/gas ratio (CGR), using well test data and available production data (including existing PVT samples).

SOLUTIONS

The Halliburton team analyzed the data, including modular dynamic testing (MDT) data, and was able to use proprietary analog reservoir information to better calibrate a model that could explain the fluid distribution. The team also used well test data to decide the fluid type being produced from the well, along with pressure and seismic data to see any structural isolations. Fault reinterpretation was completed for compartmentalization. The Halliburton team also devised a new methodology that integrated production and well test production data in an equation-of-state tuning and implemented equations-of-state tuning techniques and methods that helped match the producing GOR.

RESULTS

The Halliburton team's analysis provided increased confidence in the field's fluid distribution. Additionally, accurate PVT characterization assisted the operator in deciding future infill locations and in achieving more accurate production targets for oil and gas. The Halliburton analysis also led to accurate reserve booking. Key to the Halliburton team's evaluation was the ability to analyze data from multiple sources and to correlate it appropriately to create a new, improved fluid distribution and PVT characterization.

HALLIBURTON
developed a new fluid
distribution model to support
a **BETTER FIELD
DEVELOPMENT
PLAN.**

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