

Case study: North Sea

# FTeX service acquired pressure data in variable formation permeability, saved 20 hours rig time

An operator of a major North Sea field development needed fluid type and contact information for a well drilled into a formation characterized by a wide variation of permeability—ranging from high to very low—and with a high overbalance pressure in several zones. The operator needed to conduct a formation pressure testing operation to obtain this information and plan a large number of pressure stations across the different zones. But with a tight timeline for execution, the operator had to measure formation pressure with as few trips as possible downhole.

The **FTeX™ advanced wireline formation pressure testing service** from Baker Hughes was selected for this operation, with the key objective of acquiring the required number of pressure measurements through varying formation permeability and in a timely manner. The system had to minimize the error in each pressure measurement to ensure an accurate understanding of the pressure distribution in the field and, consequently, improve the accuracy of the calculation of total hydrocarbon in place.

The FTeX service was deployed in conjunction with other openhole wireline services during the logging operation, with data from the first pass used to pick the pressure stations. More than 50 pressure stations were attempted.

Pressures were acquired through varying mobility formations ranging from 0.2 to 500 mD/cP. A stable pressure measurement was recorded at a permeability as low as 0.2 mD with 0.05 psi/min stability and repeat tests within 10 minutes. The average drawdown rate maintained at this station was 0.01 cc/sec, which was critical to acquiring the pressure measurement in such a short time.

The FTeX service acquired pressure data from a total of 51 pressure tests in an accurate and efficient manner, taking on average less than half the time that a traditional formation pressure tester would have taken per test. In addition, because it was combined with other openhole logging services, the FTeX service allowed the operator to avoid an additional trip, expediting data acquisition and saving a total of 20 hours of rig time in the process.

## Challenges

- Widely variable formation permeability with high overbalance pressure in several zones
- Large number of pressure stations across different zones within tight timeline

## Results

- Acquired accurate pressure data from a total of 51 tests in less than half the time than conventional pressure testing
- Saved 20 hours of rig time by avoiding an additional logging trip
- Obtained pressure data in varying mobility formation ranging from 0.2 to 500 mD/cP
- Recorded stable pressure measurement at permeability as low as 0.2 mD with 0.05 psi/min stability and repeated tests within 10 minutes
- Acquired pressure measurement in short timeframe by maintaining average drawdown rate of 0.01 cc/sec