Wireless Telemetry with Real-Time Data Transmission Optimizes Reservoir Testing

Real-time data allows operator to verify well performance and manage unexpected downhole events

**CHALLENGE**
Obtain accurate, reliable downhole measurements in real time from a low-permeability Middle East reservoir and transmit test data to offsite offices for remote monitoring and interpretation.

**SOLUTION**
Use EnACT* wireless downhole reservoir testing system to transmit downhole data to the surface for performance verification, nitrogen-lift monitoring, and acidizing performance evaluation; monitor and analyze downhole pressure measurements in real time using the InterACT* connectivity, collaboration, and information service.

**RESULTS**
Quickly assessed unexpected downhole events for more efficient testing operations, and discovered the most profitable zones as well as those with limited productivity.

**Expedite downhole reservoir testing using wireless telemetry**
To optimize downhole testing operations for its wells in the Middle East, an operator needed bidirectional transmission of data in real time between downhole and surface. The information transmitted would have to be as reliable as standard memory gauges commonly used to ensure that quality was not sacrificed for the sake of saving time. In addition, the real-time data had to be visible in the operator’s offsite offices to allow instant communication between the operator and field personnel.

Testing would be performed in low-permeability zones, making the confirmation of perforation and tester valve operation particularly challenging. Because the well was nitrogen lifted, accurately measuring its performance would be somewhat difficult.

**Optimize decision making using real-time data transmission**
The operator opted to use the EnACT testing system with the real-time data viewing capabilities of the InterACT service to enable more efficient decision making during testing operations. The combination would provide reliable real-time data transmission from downhole to the surface instead of relying on surface data and waiting for downhole sensor retrieval at the end of the test.

The operator’s goal was to successfully test in various conditions and configurations. With real-time access to downhole pressure data, the operator could verify tool operation, manage any unexpected events and monitor nitrogen lift and evaluate acidizing performance.

*The EnACT system wirelessly transmitted data from downhole to the surface, and the InterACT service enabled the operator to monitor and analyze this data remotely in real time.*
CASE STUDY: Real-time verification of downhole events optimizes testing, Middle East

The EnACT system enabled the interpretation of buildup data in real time without having to run wire downhole.

Simplify operations while ensuring complete, validated data capture
The bottomhole data verified valve operation and ensured complete pressure integrity. Preliminary transmissions indicated a pressure increase in the wellbore, which was quickly confirmed by cross-checking surface data. The operator and Schlumberger personnel quickly assessed the situation and determined that the increase originated from communication between the wellbore and the reservoir prior to perforating.

After verifying the data with surface measurements, the operator decided to flow the well and determine if the existing perforations in the well were connected. Conventional methods used for this issue would have taken more troubleshooting time because full evaluation of data sets would entail retrieving the downhole tool string.

In subsequent testing, the operator accurately measured well performance during nitrogen lift and acidizing operations. Wireless telemetry and real-time transmission were used to indicate flow from the reservoir as well as limited productivity from certain zones within the wellbore that needed treatment.