

Remote Monitoring of Pressure Transient Acoustic Tests

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Abstract

Data from acoustic fluid level and surface pressure measurements were acquired by a standalone programmable monitoring system that uses internet and cellphone communication with the Cloud for remote monitoring of pressure transient well performance. The system named Remote Asset Monitoring or RAM is described in detail in this paper that presents results from tests that lasted several weeks, beginning with well shut-in, continuing until pressure transient stabilization and afterwards during pump down until normal steady state production operation.

The progress of the buildup test was monitored remotely by downloading the acquired data and reviewing the pressure trend with additional measurements acquired manually as needed. After buildup stabilization the pumping system was activated and during pump-down the fluid level, dynamometer, pressure, and motor power measurements were acquired automatically based on a user defined schedule. The combined results of the analysis were used to estimate reservoir performance and well productivity.

In the past an operator was required to be at the wellsite to perform these tests. Once the portable RAM system was deployed at the well site and was programmed for standalone acquisition, the well performance trends were monitored wirelessly over extended periods of time without requiring an operator to return to the wellsite.

When connected via the cloud, the data acquisition schedule was adjusted remotely and the stored data was viewed and retrieved as needed. Additional measurements were performed and interpreted in real time so that the operator was able to troubleshoot and analyze the performance of the well from any location in the world.