

Well Testing 101

Successful Well Testing:

- DEFINE OBJECTIVES
- DESIGN THE TEST
- SELECT EQUIPMENT
- EXECUTE TEST PLAN



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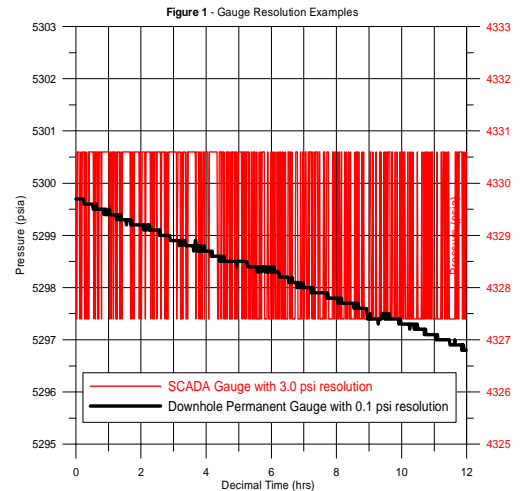
How to ensure a successful test.

Running a successful well test not only provides information about the reservoir, it also makes it easier to justify future well tests. To get meaningful results from a well test, it is essential to design and execute a test plan tailored to the test objectives including the selection of equipment adequate to acquire analyzable data.

When designing a test plan, it is important to know what is/are the principle objective(s) for the test. Typical test objectives are permeability, skin, reservoir pressure, distance to limits, reserves, and deliverability. Since all of this information cannot be determined from a single well test, the engineer must select the most important objectives. Numerous other factors also play a role in designing the test. Such as well deviation, liquid production, temperatures, pressures, and the phase behavior of the well fluids. Given this information, the engineer can specify or work with the testing company to design the test.

Equipment selection plays a critical role in the test. In general, it is important to use a thermally compensated, high resolution pressure gauge for well testing. Gauges such as this are able to more accurately detect reservoir response, especially in high permeability wells. The gauges used in SCADA well monitoring systems are generally not of sufficient quality to do this. {Figure 1}

Proper execution of the well test plan is also critical to success. If the well test is not properly performed, it increases the likelihood that no useful data will be gathered. The best test procedure minimizes the number of choke changes, thermal transients and phase changes. Procedures with minimal rate changes have two benefits, they provide better



results, and they are easier to execute in the field. One of the most effective test procedures for determining skin and near wellbore permeability is a build-up after an extended stable flowing period followed by a drawdown on a fixed choke. With this test the engineer can determine P^* , look for reservoir limits and get multiple confirmations of permeability and skin. {Figure 2}

