FIELD APPLICATION OF ACCURATE, LOW-COST, PORTABLE PRODUCTION WELL TESTERS

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Secondary Recovery methods, primarily waterflooding, provide approximately 50% of the oil production in Oklahoma. Much of this secondary production is in the northeast and the southern areas of Oklahoma. Secondary and Tertiary Recovery methods also provide a significant amount of production in other states. These type operations typically handle large volumes of water, small volumes of oil and natural gas. In addition, the Hunton, Bartlesville and Arbuckle formations also produce large amounts of water with smaller amounts of oil and gas under primary production. Accurate testing of such wells is important to determine reserves, the economics of continued operations and to evaluate projects (recompletion, gel polymers, horizontal laterals, other actions) to improve oil and gas production and/or reduce water production, i.e., methods to increase well profitability and reserves. There is no substitute for good accurate data on which to base these decisions and actions. A single incorrect decision to treat (acid stimulate, frac, workover) a given well based on bad data can cost tens of thousands of dollars, which could be used more efficiently on other wells.

Such production well testing is currently done by a centralized separation and metering stations (utilizing standard oilfield equipment or expensive electronic testing equipment) or by portable testers (standard oilfield equipment or expensive electronic testing equipment). Centralized systems require extra lines to be installed and maintained over their entire lives. This results in increased cost and risks. Portable systems allow testing at the individual well and do not require additional lines to be installed and maintained. Current low cost portable testers ($10,000) are not accurate enough, due to sampling frequency and gas interference. First generation portable electronic test units were about $125,000 (after prototyping and proving). Second generation electronic testing units, such as designed /constructed in the current 2004-2005 SWC Project, are about $80,000 but are designed to cover the full range of well conditions. That project was initiated to achieve next generation testers in the $20,000 price range.

This proposed project will take the earlier designed and constructed tester into the field for additional testing of wells/fields so that ten (10) field/area specific testers can be designed and constructed at these lower costs. This proposed project includes target identification, field testing, specific unit designs and construction, monitoring of units in the field, evaluation of obtained data and reporting of results. The knowledge of these lower cost units being used in the field will have a ‘snowball’ effect on the market- with operators, vendors and manufacturers increasing demand and lowering cost further.

The anticipated results from this work are: driving the cost of well /field specific testers down to the $25,000 price range, getting these highly portable and accurate testers to stripper well operators, driving the market price of next generation testers down to the $15,000 price range. However, the most important and lasting result will be more accurate testing results and better decisions made on the stripper wells. This will hopefully result in increased production and more reserves for the nation and consumers.