Selection and Treatment of Stripper Gas Wells for Production Enhancement in the Mid-Continent

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Quarterly Technical Report

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Abstract

Stripper gas wells are an important source of domestic energy supply and under constant threat of permanent loss (shut-in) due to marginal economics. In 1998, 192 thousand stripper gas wells produced over a Tcf of gas, at an average rate of less than 16 Mcfd. This represents about 57% of all producing gas wells in the onshore lower-48 states, yet only 8% of production. Reserves of stripper gas wells are estimated to be only 1.6 Tcf, or slightly over 1% of the onshore lower-48 total (end of year 1996 data). Obviously, stripper gas wells are at the very margin of economic sustenance. As the demand for natural gas in the U.S. grows to the forecasted estimate of over 30 Tcf annually by the year 2010, supply from current conventional sources is expected to decline. Therefore, an important need exists to fully exploit known domestic resources of natural gas, including those represented by stripper gas wells.

The overall objectives of this project are to develop an efficient and low-cost methodology to broadly categorize the well performance characteristics for a stripper gas field, identify the high-potential candidate wells for remediation, and diagnose the specific causes for well underperformance. With this capability, stripper gas well operators can more efficiently and economically produce these resources and maximize these gas reserves. A further objective is to identify/develop, evaluate and test "new and novel," economically viable remediation options. Finally, it is the objective of this project that all the methods and technologies developed in this project, while being tested in the Mid-Continent, be widely applicable to stripper gas wells of all types across the country.

The project activities during the reporting period were:

- Prepared various materials to describe the project for promotional purposes and to attract potential industry partners. Materials included slides for DOE's displays at the SPE Eastern Regional and Annual Technical Conference, and a project description prospectus and accompanying presentation.

- Identified the significant stripper gas plays in the Mid-Continent region. In Texas, where most Mid-Continent stripper gas wells and production exist, we obtained this information from the Railroad Commission. We identified three high-priority plays – the Canyon sands of West Texas, the Bend Conglomerate in North Texas, and the Hugoton field in the Panhandle area (the field also extends into Oklahoma and Kansas).

- Solicited industry research partners in these areas to provide test sites. We had originally reached an agreement with Union Pacific Resources to utilize their Ozona (Canyon) field in West Texas, but that arrangement eventually fell through in December as a result of their merger with Anadarko. In the meantime, we have contacted the following people or organizations in an attempt to secure test sites:

    » Phillips Petroleum (largest operator in the Texas Hugoton field), never received a call back after two attempts.

  - » Made a presentation to Mitchell Energy in Fort Worth (the largest operator in the Bend Conglomerate). They declined to participate – already performing similar studies.

  - » Anadarko in the Kansas Hugoton. Similar to the West Texas team, they declined to become involved.

  - » St. Mary Operating and Cheasapeake Energy, both of whom showed an interest in such studies at the GTI workshop on restimulation (held on Oct 25 in Houston). Never received call backs. Also contacted Ocean Energy based on a similar lead, but they do not have enough wells for the project.

  - » Oneok, who have indicated an interest in participating using the Mocane-Laverne field in Oklahoma. Discussions are ongoing.

  - » Harrison Interests, one of the second-tier operators in the Ozona Canyon play, but who have shown some interest in participating. Discussions are ongoing.

- We have also contacted the Mid-Continent representative of the PTTC, and the Stripper Well Consortium contact at the University of Tulsa, to request their assistance in our partner acquisition process.

- We have begun developing the database that will serve as the data template for project analysis. This will ultimately serve to achieve the proposed batch processing capability for type curve matching.

- Over the next quarter we intend to acquire industry partners and two test sites, execute the Cooperative Research Agreements, and proceed with the field studies.

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Results and Discussion

It is becoming clear that partner acquisition will be a challenge. This will remain the focus of the project in the upcoming months.

Conclusions

There are no technical conclusions for the reporting period.

References

None.