

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

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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:

- Compiled information and results of field activities that Oneok has conducted in relation to the project. Field activities have included performing six pressure transient tests, and implementing six workovers, four of which were Gas-Gun treatments.
- Results indicate that the candidate selection methodology was marginally successful based on the pressure transient test results, but highly successful based on the workovers. For the selected candidate wells that were worked over, incremental reserve costs were < \$ 0.10/Mcf. For the non-candidates, incremental reserve costs were +/- > \$1.00/Mcf.
- Based on the combined results, the accuracy of the candidate selection methodology tested under this project is unclear. Generally, however, the technique should provide better-than-average candidate selections.

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Experimental

For the subject period, the following activities were performed:

- Compiled information and results of field activities that Oneok has conducted in relation to the project. Field activities have included performing six pressure transient tests, and implementing six workovers, four of which were Gas-Gun treatments.

Results and Discussion

For the subject period, the following results were obtained:

- Results indicate that the candidate selection methodology was marginally successful based on the pressure transient test results, but highly successful based on the workovers. For the selected candidate wells that were worked over, incremental reserve costs were < \$ 0.10/Mcf. For the non-candidates, incremental reserve costs were +/- > \$1.00/Mcf.

Conclusions

For the subject period, the following conclusions were drawn:

- Based on the combined results, the accuracy of the candidate selection methodology tested under this project is unclear. Generally, however, the technique should provide better-than-average candidate selections.

References

None.