PENNSTATE

Establishment of an Industry-Driven Consortium Focused on Improving the Production Performance of Domestic Stripper Wells

Eighth Quarterly Technical Progress Report for the Period 07/01/02 to 09/30/2002

By

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ABSTRACT

The Pennsylvania State University, under contract to the U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), will establish, promote, and manage a national industry-driven Stripper Well Consortium (SWC) that will be focused on improving the production performance of domestic petroleum and/or natural gas stripper wells. The consortium creates a partnership with the U.S. petroleum and natural gas industries and trade associations, state funding agencies, academia, and the National Energy Technology Laboratory.

This report serves as the eighth quarterly technical progress report for the SWC. Key activities for this reporting period include: 1) issuing subcontracts, 2) SWC membership class expansion, 3) planning SWC technology transfer meetings, and 4) extending selected 2001 project periods of performance.

In addition, a literature search that focuses on the use of lasers, microwaves, and acoustics for potential stripper well applications continued.

TABLE OF CONTENTS

1.0 INTRODUCTION

The Pennsylvania State University, under contract to the U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), is in the process of establishing an industry-driven stripper well consortium that will be focused on improving the production performance of domestic petroleum and/or natural gas stripper wells. Industry-driven consortia provide a cost-efficient vehicle for developing, transferring, and deploying new technologies into the private sector. The Stripper Well Consortium (SWC) will create a partnership with the U.S. petroleum and natural gas industries and trade associations, state funding agencies, academia, the National Energy Technology Laboratory, and the National Petroleum Technology Office.

Consortium technology development research will be conducted in the areas of reservoir remediation, wellbore clean up, and surface system optimization. Consortium members have elected an Executive Council that will be charged with reviewing projects for consortium co-funding. Proposals must address improving the production performance of stripper wells and must provide significant cost share. The process of having industry develop, review, and select projects for funding will ensure that the consortium conducts research that is relevant and timely to industry. Co-funding of projects using external sources of funding will be sought to ensure that consortium funds are highly leveraged.

2.0 EXPERIMENTAL

A description of experimental methods is required by the DOE for all quarterly technical progress reports. In this program, Penn State is responsible for establishing and managing an industry-driven stripper well consortium. Technology development research awards are made on a competitive basis. Therefore, this section is not applicable to the Penn State contracted activities. Technical reports from the individual researchers will be required to contain an experimental discussion section and will be submitted to consortium members and DOE for their review.

3.0 RESULTS AND DISCUSSION

During the last reporting period, the SWC focused the following: 1) issuing subcontracts for the 2002 SWC projects, 2) SWC membership class expansion, 3) planning upcoming

SWC technology transfer meetings, and 4) extending selected 2001 project periods of performance. These activities continued from the last reporting period.

3.1 SWC Contracts

During this reporting period, Penn State's College of Earth and Mineral Sciences and Penn State's Office of Sponsored Programs successfully processed all of the SWC subcontracts with the exception of the following project:

Project Title: Desalting Production Water
Company Name: T&G Technologies, Inc.
Award Amount: $79,559

Penn State has contacted T&G Technologies and indicated that the subcontract needed to be executed expeditiously. Upon discussion, T&G Technologies indicated that they are moving into production of the desalination units and at this point are unsure at this point whether they are going to accept the award, since the funding was contingent upon a demonstration that the unit would function in a controlled laboratory environment prior to full-scale production.

All of the subcontracts have a period of performance from May 15, 2002 to May 14, 2003. A total of 13 subcontracts have been processed.

3.2 SWC Membership Class Expansion

The SWC is committed to growing and diversifying its membership base. The Consortium has worked very hard during its first year to build a membership that would serve as a core from which further strategic alliances with industrial, state, and governmental entities would be constructed.

During this reporting period, the Consortium continued its efforts to expand its membership class base. Executive Council approval will be sought to make the necessary changes to the SWC Constitution & Bylaws as needed to enact these membership class changes. At present, the Consortium is actively pursuing the following:

Endorsing agency membership. The Consortium recognizes the importance of building strategic alliances with federal agencies that want to support the Consortium, but are

precluded from doing so because federal monies cannot be used to pay their membership fees. The endorsing agency membership will be reserved for federal agencies that wish to formally support the Consortium with in-kind services. This membership class will not be entitled to receive the final technical reports nor receive funding from the Consortium. The endorsing agency will be encouraged to attend the meetings. This membership class is initially being established to formalize relations between the Consortium and the Rocky Mountain Oil Field Testing Center (RMOTC). Under this arrangement RMOTC will be required simply to submit a letter of endorsement and list the in-kind services they can provide the Consortium. The Consortium will work with RMOTC to develop SWC at their facilities whenever appropriate. Additional agencies will be recruited for the endorsing agency membership class.

Block Memberships. The Consortium recognizes that certain stripper well operators may be precluded from participating in the Consortium based upon their finances. In an effort to attract stripper well operators and assist state agencies that wish to support the Consortium and their in-state operators, the Consortium will make use of a limited block membership structure. Under this arrangement, affiliate members and/or program sponsors, will be entitled to purchase a limited block of full memberships. The block memberships will be provided on an annual basis. Block memberships will be structured as following:

Minimum block size: 5
Maximum block size: 10
Annual membership fee: $800/ year
Membership type: Full members

Under this structure, the designated companies that are to become full members must apply for full membership and accept the SWC governing Constitution & By-Laws.

3.3 UPCOMING TECHNOLOGY TRANSFER MEETINGS

During this reporting period, the Consortium worked to finalize the logistics of the upcoming fall SWC technology transfer meetings. Unlike last year, during which the consortium held a single, centralized technology transfer meeting, the Consortium will host two regional meetings this year to ensure that local producers are aware of the technologies being developed by the Consortium. As the SWC membership becomes more geographically diverse, the Consortium will need to host regional technology transfer

meetings rather than a single centralized one. This year, the Consortium will host the following technology transfer meetings:

Oklahoma City Meeting. The SWC will host a technology transfer meeting in Oklahoma City, OK on October 17-18, 2002. The agenda for this meeting is provided in Appendix A. The Consortium is working with the Oklahoma Marginal Well Commission to plan and market this meeting. The Commission developed and distributed the meeting announcement. In addition, the Consortium worked with the Petroleum Technology Transfer Council to announce the meeting.

Pittsburgh Meeting. The SWC will host its second technology transfer meeting in Pittsburgh, PA on November 12-13, 2002. The agenda for this meeting is in the final stage of development. The Consortium is working with the Independent Oil and Gas Association (IOGA) of Pennsylvania to coordinate the SWC meeting with their 5-state IOGA. The five-state IOGA meeting will be held from Nov 14-15, 2002. There will be a one-day overlap between meetings. The Consortium is working with IOGA-PA to develop a one-page meeting announcement insert that they will include in the IOGA meeting announcement. The Consortium will provide IOGA with 2,400 copies of this insert by early October. The IOGA meeting will involve the marketing and the environmental working groups from the IOGAs of the following states:

- Kentucky
- New York
- Ohio
- Pennsylvania
- West Virginia

3.4 SUBCONTRACT EXTENSIONS

During this reporting period the Consortium extended the period of performance for several SWC 2001 project subcontracts. The 2-month extension was granted until November 30, 2002 to allow the 2001 investigators to travel and present their project findings at the fall technology transfer meetings.

4.0 CONCLUSIONS

During this reporting period, the Consortium completed execution of all of the SWC subcontracts, except one. The remaining outstanding subcontract is in negotiation, as discussed in Section 3.1. The Consortium has worked with the Oklahoma Marginal Well Commission and the IOGA-PA to plan and market the two fall technology transfer meetings. Both of these organizations are active affiliate members of the Consortium.

The Consortium is poised very well to begin its third year of activities. The Consortium has a membership core that continues to grow and diversify. Final reports for the 2001 co-funded projects will be completed and distributed to the SWC membership in December 2002.

5.0 REFERENCES

A listing of referenced materials is required by the DOE for each quarterly technical progress report. This technical progress for the SWC did not utilize any reference material.

APPENDIX A:

Oklahoma City Meeting Agenda

Oklahoma City Technology Transfer Meeting Agenda
Westin Hotel
Oklahoma City, Oklahoma

October 17, 2002	
9:00-10:00	**Meeting Registration**
10:00-10:30	**Welcome I Status of SWC** *Presenter: Joel Morrison, Director, Stripper Well Consortium*
	Technical Session I Presentations ***Moderator: Liz Fajen, Oklahoma Marginal Well Commission***
10:30-11:00	**Development of Diagnostic Techniques to Identify By-Passed Gas Reserves and Badly Damaged Production Zones in Gas Stripper Wells in the Rocky Mountains** *Presenter: Ron Surdam, Innovative Discovery Technologies LLC*
11:00-11:30	**Identification of Effective Fluid Removal Technologies for Stripper Wells** *Presenter: Timothy Knobloch, James Engineering*
11:30-12:00	**Chamber-Lift — A Technology for Producing Stripper Oil Wells** *Presenter: Bob Watson, Penn State University*
12:00-1:00	**SWC Luncheon**
	Technical Session II Presentations ***Moderator: Dan Ferguson, National Petroleum Technology Office***
1:00-1:30	**Advanced Decline Curve Model for Stripper Well Production Analysis** *Presenter: Larry Pekot, Advanced Resources International*
1:30-2:00	**Environmental and Regulatory Issues Relating to the Utilization of Produced Water from Oil & Gas Operations** Presenter: Dave Burnett, Texas A&M University
2:00-2:30	**Optimization of Plunger Lift Performance in Stripper Gas Wells** *Presenter: Erdal Ozkan, Colorado School of Mines*
2:30-3:00	**Quantification of By-Passed Gas Reserves & Badly Damaged Production Zones in Gas Stripper Wells in the River Basin** *Presenter: Presenter: Ron Surdam, Innovative Discovery Technologies LLC*

3:00-3:20	**Break**
	Technical Session III Presentations ***Moderator: Peter Bastian, Quicksilver Resources***
3:20-3:50	**Analysis of the Wileyville Waterflood** *Presenter: Bob Watson, Penn State University*
3:50-4:20	**Reservoir Characterization of the Wileyville Oil Field** *Presenter: Doug Patchen, West Virginia Geological Society*
4:20-4:50	**Injectivity Improvement of Low Permeability Reservoirs Big Sinking Field, Lee County, Kentucky** *Presenter: Malcolm Pitts, Surtek, Inc.*
4:50-5:20	**Construct, Install and Test GOAL Pumps in One Oil and Six Gas Wells** *Presenter: Gerald Swoyer, Brandywine Energy Development Co.*
5:30-7:00	**SWC Reception I Exhibits**

October 18, 2002	
	Technical Session IV Presentations ***Moderator: Sam Farris, Oklahoma Marginal Well Commission***
8:00-9:00	**A Low Cost Oil Water Separator for Stripper Wells / A Method of Using the Production Pump to Continuously Clean Stripper Wells** *Presenter: Leland Traylor, Pumping Solutions*
9:00-10:00	**Field Test of the Vortex Oil and Gas Unit in Stripper Well Flowlines / Development of the Vortex Oil and Gas Unit for Downhole Applications / Field Test of the Vortex Oil and Gas Unit in Gas Gathering Systems** *Presenter: Brad Fehn, Vortex Flow LLC*
10:00-10:30	**Break**
	Technical Session V Presentations *Moderator: Rodney Reynolds, PTTC/ Univ. of Kansas*
10:30-11:00	**Developing Methods to Identify Unstimulated and/or Ineffectively Stimulated Reservoirs Resulting from Multi-Stage Hydraulic Fracture Treatments** *Presenter: Gerry Merriam, Schlumberger Holditch Reservoir Technologies*
11:00-11:30	**Production & Research-based Approaches for Maximizing Recovery in the Barnett Shale** *Presenter: Jason Lacewell, Chief Oil and Gas, LLC.*
11:30-12:00	**Review and Selection of Velocity Tubing Strings for Efficient Liquid Lifting in Stripper Gas Wells** *Presenter: Larry Pekot, Advanced Resources International*
12:00-1:00	**Lunch**

	Technical Session IV Presentations *Moderator: Larry Pekot, Advanced Resources International*
1:00-1:30	**Field Testing of New Technologies for Lifting Liquids from Gas Wells** *Presenter: Richard Christiansen, Colorado School of Mines*
1:30-2:00	**Advanced Technology for Infill and Recompletion Candidate Well Selection** *Presenter: Duane McVay, Texas A&M University*
2:00-2:30	**Identification of the Effects of Corrosion on Stripper Wells** *Presenter: Timothy Knobloch, James Engineering, Inc.*
2:30-2:45	**Closing Remarks** *Joel Morrison, SWC Director* *Liz Fajen, Oklahoma Marginal Well Commission*