

Report Title/Type: Eleventh Quarterly Technical Progress Report for project entitled "Establishment of an Industry-Driven Consortium Focused on Improving the Production Performance of Domestic Stripper Wells"

Reporting Period: April 1, 2003 – June 30, 2003

Principal Authors: Joel L. Morrison

Report Issue Date: May 10, 2004

Doe Award Number: Grant No. DE-FC26-00NT41025

Submitting Organization:
The Pennsylvania State University
The Energy Institute
C-211 Coal Utilization Laboratory
University Park, Pennsylvania 16802-2323

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

ABSTRACT

The Pennsylvania State University, under contract to the U.S. Department of Energy, National Energy Technology Laboratory 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 eleventh quarterly technical progress report for the SWC. Key activities for this reporting period include: 1) organizing and hosting the Spring SWC meeting in Pearl River, New York, 2) working with successful applicants and Penn State's Office of Sponsored Research to get subcontracts in place, and 3) planning three SWC technology transfer meetings to take place in the fall of 2003.

TABLE OF CONTENTS

	<u>Page</u>
DISCLAIMER	i
ABSTRACT	ii
1.0 EXECUTIVE SUMMARY.....	1
2.0 EXPERIMENTAL.....	1
3.0 RESULTS AND DISCUSSION	1
3.1 SWC Spring Meeting.....	2
3.2 Upcoming Meetings	2
4.0 CONCLUSIONS.....	2
5.0 REFERENCES.....	2
6.0 APPENDICES	2

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 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) organized and hosted the 2003 Spring meeting in Pearl River to select 2003 projects for co-funding and then working with the successful applicants and Penn State's Office of Sponsored Research to get subcontracts in place, and 2) planning three SWC technology transfer meetings to take place in the fall of 2003.

3.1 SWC SPRING MEETING

The SWC organized and hosted its spring meeting on May 5-6, 2003 (agenda on Appendix A). The meeting was held in Pearl River, New York at the Hilton Pearl River. The meeting was dedicated to reviewing the proposals that were submitted to the SWC for co-funding consideration. Investigators of the proposed projects provided the SWC membership with a 20-minute presentation. Of the 27 proposals, the Executive Council selected 12 proposals for a total of \$1,026,000 in funding. Table 1 summarizes the projects that were approved for co-funding. Appendix contains a one page executive summary for these projects. The program breakdown for the approved projects is as follows:

Total Project Value: \$1,980,039

Amount Approved for DOE Co-Funding: \$1,026,000

% Cost Share: 48%

3.2 UPCOMING MEETINGS

In the fall of 2003, the SWC will host a technology transfer meetings in Casper, Wyoming on October 2-3, 2003, in Lubbock, Texas on October 30, 2003, and in DuBois, Pennsylvania on November 18, 2003.

4.0 CONCLUSIONS

During this reporting period, the efforts were focused primarily on the organizing and hosting the SWC Spring proposal meeting and organizing the fall technology transfer meetings.

5.0 REFERENCES

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

6.0 APPENDICES

Appendix A contains the meeting agenda for the 2003 SWC spring meeting.

TABLE 1: 2003 SWC FUNDED PROPOSALS

Project Title	Total Project Value	Funding Source			Project Participants
		DOE	NYSERDA	Applicant	
Field Testing of the Vortex Flow Downhole Unit	140,578	68,000	0	72,578	Vortex Flow, LLC
PVT Study of the Interaction of Nitrogen in Crude Oil	248,121	82,466	0	165,655	PSU - Watson
Low Cost Wireless Communications Based Upon Pressure and Temperature Gauge for Production Optimization Applications	162,300	104,000	0	58,300	Tubel Technologies, Inc.
Enhanced Real Time Propellant Activation During Downhole Mixed Fracture Stimulation Process for Low-Permeability Stripper Wells	142,767	99,937	0	42,830	Real Time Zone, Inc.
Sonication Stimulation of Stripper Well Production in East Gilbertown Field, Wes-Central Alabama	212,345	144,292	0	68,053	TechSavants, Inc.
Building and Testing a New Type of Compressor for Stripper Well Production Applications	150,000	100,000	0	50,000	W & W Vacuum and Compressors, Inc.
Gas Chamber Lift: Stage II	277,345	82,290	5,000	190,055	PSU - Watson
Locating the End of Tubing for Efficient Production of Gas	100,273	57,628	10,000	32,645	Colorado School of Mines
Plunger Conveyed Chemical System for Plunger Lift Wells	135,743	85,020	10,000	40,723	Composite Engineers, Inc.
Restimulation of Under-Stimulated Shallow Gas Wells Coupled with the Installation of Pumping Equipment to Dramatically Accelerate Post-Stimulation Fluid Removal	170,200	42,000	75,000	53,200	Lenape Resources, Inc.
Produced Water Treatment: Developing a Project to Market a Program to Allow the Sale of Treated Oil Field Produced Brine for Beneficial Use	157,167	102,167	5,000	50,000	Texas A&M University
Design and Construction of a Low-Cost Portable Oil/Water Production Testing Unit	83,200	58,200	0	25,000	Advanced Resources International
Summary	1,980,039	1,026,000	105,000	849,039	

APPENDIX A: MEETING AGENDA



MEETING AGENDA Hilton Pearl River Pearl River, New York

May 5, 2003	
8:30 – 9:30	Meeting Registration
9:30 – 10:00	Welcoming Comments Presenters: <i>Joel Morrison, Director, Stripper Well Consortium</i> <i>John Martin, NYSERDA</i>
	Technical Session I Presentations
10:00 – 10:20	
10:00 – 10:20	Field Testing of the Vortex Oil and Gas Unit for Downhole Applications Presenter: <i>Vortex Flow LLC</i>
10:20 – 10:40	Low Cost Surface Compression/Pressure Boosting Options Presenter: <i>Texas A&M University</i>
10:40 – 11:00	Gas Chamber Lift, Stage II Presenter: <i>Robert Watson, The Pennsylvania State University</i>
11:00 – 11:20	Low Cost Wireless Communications-Based Pressure and Temperatures Gauge for Production Optimization Applications Presenter: <i>Tubel Technologies</i>
11:20 – 11:40	Modifying the Gelled-Oil-CO₂ System for Stimulating Gas Reservoirs Presenter: <i>Colorado School of Mines</i>
11:40 – 12:00	Design and Construction of a Low-Cost Portable Oil/Water Production Testing Unit Presenter: <i>Advanced Resources International</i>
12:00 - 1:00	SWC Luncheon
	Technical Session II Presentations
1:00 – 1:15	RMOTC
1:15 – 1:35	New Stimulation Techniques for Stripper Wells with High Water Production Presenter: <i>Louisiana State University</i>
1:35 – 1:55	Restimulation of Three Under-Stimulated Shallow Ga. Wells Coupled with the Installation of Pumping Equip. to Accelerate Post-Stimulation Fluid Removal Presenter: <i>Lenape Resources</i>
1:55 – 2:15	Locating the End of Tubing for Efficient Production of Gas Presenter: <i>Colorado School of Mines</i>

2:15 – 2:35	Improving Diagnostics for Stripper Wells Presenter: Schlumberger-Holditch
2:35 – 2:55	Produced Water Treatment: Developing a Project to Market a Program to Allow the Sale of Treated Oil Field Produced Brine for Beneficial Use Presenter: Texas A&M University
2:55 – 3:20	Break
	Technical Session III Presentations
3:20 – 3:40	Retrofit Three Stripper Wells with Open Hole Completions to Accept GOAL PetroPumps to Enhance Performance Presenter: Brandywine Energy Development Co. (BEDCO)
3:40 – 4:00	Building and Testing a New Type of Compressor for Stripper Well Production Application Presenter: W&W Vacuum & Compression Inc.
4:00 – 4:20	Plunger Conveyed Chemical System for Plunger Lift Wells Presenter: Composite Engineers
4:20 – 4:40	Field Testing of the Vortex Oil and Gas Unit for Organizing Multi-Phase Flow in Flowlines Presenter: Vortex Flow LLC
4:40 – 5:00	Geomechanical Aspects of Stripper Oil Well Activity Presenter: Colorado School of Mines
5:00 – 5:30	Day One Wrap-Up Presenter: Joel Morrison, Director, SWC
5:30 – 7:30	SWC Reception / Exhibits

May 6, 2003	
7:00-8:00	Breakfast
	Technical Session IV Presentations
8:00-8:20	A Study to Evaluate the Effect of Completion and Production Procedures on the Ultimate Recoverable Reserves from Knox Formation Wells: Rose Run Sandstone and Beekmantown Dolomite Presenter: James Engineering
8:20 – 8:40	Improving Production in the Jacobs Field Presenter: Colorado School of Mines
8:40 – 9:00	Recognition of Remediation of Bypassed and Severely Damaged Pay Zones in Wyoming Gas Stripper Wells Presenter: Innovative Discovery Technologies
9:00 – 9:20	Field Testing of the Vortex Oil and Gas Unit for Controlling Paraffin Buildup Presenter: Vortex Flow LLC
9:20 – 9:40	Long-Term Testing of Plunger Lift Optimization in Stripper Gas Wells Presenter: Colorado School of Mines
9:40 – 10:00	Enhancing Production Data Analysis Software and Developing Criteria to Identify Remediation Opportunities in Stripper Oil and Gas Wells Presenter: Schlumberger-Holditch
10:00 - 10:15	Break
	Technical Session V Presentations
10:15 – 10:35	Enhanced Real-Time Propellant Activation during Downhole-Mixed Fracture Stimulation Process for Low-Permeability Stripper Wells Presenter: Realtimezone, Inc.
10:35 – 10:55	PVT Study of the Interaction of Nitrogen and Crude Oil Presenter: The Pennsylvania State University
10:55 – 11:15	Oil Recovery Enhancement of a Fractured Shale Reservoir East Puerto Chiquito Mancos Unit Rio Arriba County, New Mexico Presenter: Benson, Monti & Greer
11:15 – 11:35	Prediction of Improved Gas Recovery from Refractured Gas Wells Presenter: Colorado School of Mines
11:35 – 11:55	Sonication Stimulation of Stripper Well Production in E. Gilbertown Field, West-Central Alabama Presenter: Tech Savants
11:55 – 12:15	SWC Meeting Wrap-Up Presenter: Joel Morrison, Director, SWC
12:15 - 1:15	Lunch