Title Page

Report Title: Low Cost Methodologies to Analyze and Correct Abnormal Production Decline In Stripper Gas Wells

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Abstract

The goal of this research program is to develop and deliver a procedure guide of low cost methodologies to analyze and correct problems with stripper wells experiencing abnormal production declines.

A study group of wells will provide data to determine the historic frequency of the problem of abnormal production declines in stripper gas wells and the historic frequency of the causes of the production problems. Once the most frequently occurring causes of the production problems are determined, data collection forms and decision trees will be designed to cost-effectively diagnose these problems and suggest corrective action. Finally, economic techniques to solve the most frequently occurring problems will be researched and implemented. These systematic methodologies and techniques will increase the efficiency of problem assessment and implementation of solutions for stripper gas wells.

This sixth quarterly technical progress report further describes the data reduction and methodology to develop diagnostic tools to evaluate the cause of declines in problem wells, specifically addressing the development of data gathering forms for tubing plunger wells, casing plunger wells, pumping wells, and swab or flow wells. This report also further describes the methodology to select a group of wells for field review utilizing data gathering forms further developed during this quarter.
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Introduction

The goal of this research program is to develop and deliver a procedure guide of low cost methodologies to analyze and correct problems with stripper wells experiencing abnormal production declines.

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The following is the sixth quarterly technical progress report that further addresses the data reduction and methodology for each of the following tasks: 1.) Develop Diagnostic Tools to Evaluate the Cause of Declines in Problem Wells, 2) Apply Methodology to a Group of Wells Where Recent Problems have Developed. These tasks were addressed in the fifth technical report, however, additional research has yielded results that have modified the well candidates previously selected and improved the diagnostic tools developed.
Executive Summary

The goal of this research program is to develop and deliver a procedure guide of low-cost methodologies to analyze and correct problems with stripper wells experiencing abnormal production declines.

A study group of wells will provide data to determine the historic frequency of the problem of abnormal production declines in stripper gas wells and the historic frequency of the causes of the production problems. Once the most frequently occurring causes of the production problems are determined, data collection forms and decision trees will be designed to cost-effectively diagnose these problems and suggest corrective action. Finally, economic techniques to solve the most frequently occurring problems will be researched and implemented. These systematic methodologies and techniques will increase the efficiency of problem assessment and implementation of solutions for stripper gas wells.

The following is the sixth quarterly technical progress report that further addresses the data reduction and methodology for each of the following tasks: 1.) Develop Diagnostic Tools to Evaluate the Cause of Declines in Problem Wells, 2) Apply Methodology to a Group of Wells Where Recent Problems have Developed. These tasks were addressed in the fifth technical report, however, additional research has yielded results that have modified the well candidate selected for review and improved the diagnostic tools previously developed.

The data collection forms were previously divided into eight sections, three for field data collection and comment, and five sections for production manager analysis, recommendations, and comments. The forms provide for a logical review of data necessary for reviewing the cause of abnormal production decline. The data collection forms have been further modified to include an economic evaluation section based upon a ratio of M$ per MCFEQ and estimated payout. These two methods of analyzing the economic merit of a project provide production managers with a quick and easy to use method to rank various projects based upon limited capital availability.

Finally, further analysis was completed which resulted in a modified list of twenty-five wells of various artificial lift mechanisms were selected which recently experienced abnormal production decline. This modified list should provide information resulting in further improvements for decision tree analysis. The results of the field review utilizing the data collection forms and the well candidates selected for production enhancement will be provided in the next quarterly technical report.
Experimental

No experimental methods, materials, or equipment were used in this phase of the research.
Results and Discussion

This report addresses the following tasks:

1. Continued Development of Diagnostic Tools to Evaluate the Cause of Declines in Problem Wells.
2. Apply Methodology to a Group of Wells Where Recent Problems Have Developed

Each task identified above will be reviewed in detail and describe the methodology utilized.

Task 1 – Develop Diagnostic Tools to Evaluate the Cause of Declines in Problem Wells

“Develop diagnostic forms of pertinent information to assist in the analysis of problem wells. Well equipment will be analyzed for mechanical failure. Shut-in and producing pressure information will be gathered to analyze bottom hole producing pressures. Fluid levels and other information will be collected to determine the effects of fluid on bottom hole pressure. Fluid production histories will be confirmed to determine what effect gas/liquid ratios have on stripper gas well performance. Pressure drops from producing formation to the gas sales point will be analyzed.”

Data Reduction and Methodology

Further research was completed on the Triage Sheet as a practical step-wise methodology for the application of decision tree analysis in addition to further development of the data collection forms for problem well analysis to reflect economic analysis of proposed recommendations.

Triage Sheet – James Engineering, Inc previously reported on the development of a three-phase process to quickly and easily identify common production problems. The Triage Sheet, see Appendix 1, was developed to 1.) Identify the Problem Well, 2.) Measure the Problem, and 3.) Solve the Problem of the abnormal production decline. The overall philosophy of the triage form is to begin with the simplest analysis to eliminate the most common problems, and then to expand the analysis as necessary. Step 1 of identifying the problem well provides a step wise process to not only review existing data ensuring the problem is with the well but also if the problem still exists. No modifications were made to this phase of the process. Step 2 of measuring the problem was to review the data associated with bottom hole producing characteristics. A line was included to address wells that are swabbed for fluid removal. Finally, step 3 of solving the problem provides for an economic review depending on the recommendation of action required by the production manager. The order of review was modified to reflect a typical well review process.
Data Collection Forms for Problem Well Analysis – The comment section completed by the production manager was modified on all forms to include a easy to use economic analysis of the recommended corrective action. In reviewing methodologies to select well work-overs, it was necessary to determine the economic efficiency of the proposed work. We recognize that working over wells is very comparable to buying existing production and the economic calculation we often look at for buying wells is the amount of dollars spent per mcf a day of production increase. If the dollars to be invested, that is M$ or dollars divided by 1000, is divided by the mcf per day of production increase, typically the result is in the range of a ratio between one and four. Historically, companies have invested in purchasing production between the one to two ratio of invested dollars to production. In other words companies typically invest about one million to two million dollars per producing million. A ratio of this type should provide the production manager with one benchmark to rank the investment potential of the proposed recommendation.

A second method often utilized to determine the potential economic merit of proposed well-work is the time for the project to payout measured in months. Typically, any project with a payout period less than one year would proceed without much further analysis required while those projects with longer payouts should be reviewed closer. Payout provides a quick and second methodology to determine the economic viability of a proposed project.

Therefore, the production manager could then rank all of the investment opportunities available against the capital dollars available based upon the cost of the proposed project, the ratio of invested dollars to production increase, and the payout time of the project. This list of proposed projects and their economic ranking would provide a quick reference list for future proposals that come available.
Task 2 - Apply Methodology to a Group of Wells Where Recent Problems Have Developed

“From the study group, select a number of wells with recent abnormal declines. Evaluate the cause of the decline using the methodology and the diagnostic tools developed, and evaluate the potential for increase. Using the estimated cost, evaluate the group to select the most economical candidates. Remediation strategies may include equipment changes, well-bore clean-out, line pressure restriction reductions, and reservoir stimulation.”

Based upon further analysis and the definition for abnormal well production, i.e., three months of consecutive production less than 50% of forecasted production, twenty-one wells were identified from decline curve analysis as having recent abnormal production declines. The following wells will be field reviewed utilizing the data collection forms to analyze the potential source of the abnormal well decline.

<table>
<thead>
<tr>
<th>Lease Name</th>
<th>County</th>
<th>Township</th>
<th>Well Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. E Carrick #1</td>
<td>Noble</td>
<td>Brookfield</td>
<td>TPL</td>
</tr>
<tr>
<td>2. R Florence #1</td>
<td>Washington</td>
<td>Salem</td>
<td>TPL</td>
</tr>
<tr>
<td>3. R Krapps #1</td>
<td>Noble</td>
<td>Jackson</td>
<td>TPL</td>
</tr>
<tr>
<td>4. M Pickenpaugh #3</td>
<td>Noble</td>
<td>Sharon</td>
<td>TPL</td>
</tr>
<tr>
<td>5. OP Combs #4B</td>
<td>Noble</td>
<td>Brookfield</td>
<td>TPL</td>
</tr>
<tr>
<td>6. Reed #1</td>
<td>Noble</td>
<td>Jackson</td>
<td>SWB</td>
</tr>
<tr>
<td>7. W Fitzgerald #1</td>
<td>Guernsey</td>
<td>Westland</td>
<td>TPL</td>
</tr>
<tr>
<td>8. R McCall #1</td>
<td>Muskingum</td>
<td>Highland</td>
<td>TPL</td>
</tr>
<tr>
<td>9. R Krapps #2</td>
<td>Noble</td>
<td>Jackson</td>
<td>TPL</td>
</tr>
<tr>
<td>10. A Larrick #1</td>
<td>Noble</td>
<td>Brookfield</td>
<td>SWB</td>
</tr>
<tr>
<td>11. Richey Dunkle #1</td>
<td>Morgan</td>
<td>Bristol</td>
<td>SWB</td>
</tr>
<tr>
<td>12. Richey Lucille #1</td>
<td>Morgan</td>
<td>Bristol</td>
<td>SWB</td>
</tr>
<tr>
<td>13. JB Bigley #1</td>
<td>Morgan</td>
<td>Manchester</td>
<td>SWB</td>
</tr>
<tr>
<td>14. Dee D Dunkle #1</td>
<td>Morgan</td>
<td>Bristol</td>
<td>SWB</td>
</tr>
<tr>
<td>15. Richey Reed #1</td>
<td>Morgan</td>
<td>Bristol</td>
<td>SWB</td>
</tr>
<tr>
<td>16. Lusk #2</td>
<td>Guernsey</td>
<td>Knox</td>
<td>TPL</td>
</tr>
<tr>
<td>17. OP Christopher #26C</td>
<td>Guernsey</td>
<td>Spencer</td>
<td>TPL</td>
</tr>
<tr>
<td>17. Owen Reed #1</td>
<td>Morgan</td>
<td>Manchester</td>
<td>TPL</td>
</tr>
<tr>
<td>18. C Williams #1</td>
<td>Morgan</td>
<td>Bristol</td>
<td>TPL</td>
</tr>
<tr>
<td>19. Presdee #1</td>
<td>Guernsey</td>
<td>Adams</td>
<td>TPL</td>
</tr>
<tr>
<td>20. M Pickenpaugh #4</td>
<td>Noble</td>
<td>Sharon</td>
<td>TPL</td>
</tr>
<tr>
<td>21. John Jenkins #1</td>
<td>Noble</td>
<td>Noble</td>
<td>TPL</td>
</tr>
<tr>
<td>22. Ellis Miller #3</td>
<td>Morgan</td>
<td>Bristol</td>
<td>TPL</td>
</tr>
<tr>
<td>23. OP Brown #15B</td>
<td>Muskingum</td>
<td>Meigs</td>
<td>TPL</td>
</tr>
<tr>
<td>24. T Glass #2</td>
<td>Coshocton</td>
<td>Adams</td>
<td>TPL</td>
</tr>
<tr>
<td>25. Secrest #3</td>
<td>Noble</td>
<td>Brookfield</td>
<td>TPL</td>
</tr>
</tbody>
</table>
Conclusion

The goal of this research program is to develop and deliver a procedure guide of low cost methodologies to analyze and correct problems with stripper wells experiencing abnormal production declines.

This sixth quarterly technical progress report describes the data reduction and methodology to develop diagnostic tools to evaluate the cause of declines in problem wells, specifically the triage sheet (decision tree analysis) and the data collection forms for the gathering of pertinent data for analyzing wells with abnormal production decline. Further, this report describes the data reduction and methodology to select a group of wells that have recently experienced abnormal production decline and to review with the recently developed data collection forms.

The Triage sheet provides a three-phase methodology to identify the problem well, measure the problem, then solve the problem. Further developments were made to assist production managers to arrive at solutions to abnormal production decline in a methodical step-wise method. The triage sheet focuses on the identification of factors that would affect the flowing bottom hole pressure. The overall philosophy of the triage sheet is to begin with the simplest analysis to eliminate the most common problems, and then expand the analysis as necessary.

The data collection forms developed to measure the problem assimilate data to review and analyze abnormal production declines. In sections 1 – 3, the forms require field input and encourage comments and recommendations regarding the pumper’s thoughts for correcting the problem well. Sections 4 – 8 of the data collection forms require the production manager to assimilate, analyze, then determine the course of action to correct the abnormal production decline. In addition, an easy to use economic analysis of the proposed project was included to provide a methodology to rank the economic merit of the project.

Overall, the improvements made to the triage sheet and the data collection forms provide for a consistent methodology to review, analyze, and correct abnormal production declines.
References:
Not applicable.

Bibliography:
Not applicable

List of Acronyms and Abbreviations:
Not applicable.

Appendices:
Appendix 1 Triage Sheet for Abnormal Production Decline Review
Appendix 2 Tubing Plunger Data Collection Form
Appendix 3 Casing Plunger Data Collection Form
Appendix 4 Pumping Unit Data Collection Form
Appendix 5 Swab or Flow Well Data Collection Form
Appendix 1

Stripper Gas Well
Decision Tree Analysis
Abnormal Production Decline
Triage Sheet

<table>
<thead>
<tr>
<th>Date of Analysis</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well ID Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artificial Lift Mechanism</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Phase I: Identify the Problem Well

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>If Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Identify Abnormal Production Decline from “Priority”</td>
<td></td>
<td></td>
<td>Go to Step 2</td>
</tr>
<tr>
<td>2.</td>
<td>Review Production Decline Curve and Forecast</td>
<td></td>
<td></td>
<td>Go to Step 3</td>
</tr>
<tr>
<td>3.</td>
<td>Check with Pumper to Verify Problem Still Exists</td>
<td></td>
<td></td>
<td>Go to Step 4</td>
</tr>
<tr>
<td>4.</td>
<td>Check for Metering Inaccuracy</td>
<td></td>
<td></td>
<td>Go to Step 5</td>
</tr>
<tr>
<td>5.</td>
<td>Check Integrity of Gas Gathering System</td>
<td></td>
<td></td>
<td>Go to Step 5</td>
</tr>
</tbody>
</table>

### Phase II: Measure the Problem

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>If Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Check for Change in Sales Line Pressure</td>
<td></td>
<td></td>
<td>Go to Step 7</td>
</tr>
<tr>
<td>7.</td>
<td>Check for Change in Fluid Production</td>
<td></td>
<td></td>
<td>Go to Step 8</td>
</tr>
<tr>
<td>8.</td>
<td>Check for Flowing Bottom Hole Pressure</td>
<td></td>
<td></td>
<td>Go to Step 9</td>
</tr>
<tr>
<td>9.</td>
<td>Check Flow Performance Chart: Vogel IPR Curve</td>
<td></td>
<td></td>
<td>Go to Step 10</td>
</tr>
<tr>
<td>10.</td>
<td>Is Well Producing at Optimum Production Rate?</td>
<td></td>
<td></td>
<td>Yes,18: No,11</td>
</tr>
<tr>
<td>11.</td>
<td>Is Well a Swab Well?</td>
<td></td>
<td></td>
<td>Yes,13: No,12</td>
</tr>
<tr>
<td>12.</td>
<td>Is Well on Artificial Lift?</td>
<td></td>
<td></td>
<td>Yes,14: No,15</td>
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</tbody>
</table>

### Phase III: Solve the Problem

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>13.</td>
<td>Go to Swab Well Analysis Sheet</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Go to Artificial Lift Detail Sheet</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Go to Artificial Lift Determination Sheet</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Go to Compression Determination Sheet</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Shut In for Bottom Hole Pressure Analysis</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Review to Shut In to Sell or Plug and Abandon</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>No further Analysis Required, Continue to Produce</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2

Stripper Gas Well
Data Collection Form for Problem Well Analysis

Lease Name and Well No: ____________________ Date: ___/___/___

Tubing Plunger, TPL

<table>
<thead>
<tr>
<th>I. Field – Well Information</th>
<th>IV. Analytical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing Formation</td>
<td>Perforated Interval(s)</td>
</tr>
<tr>
<td>Tubing Pressure: Begin/End</td>
<td>Casing Size ___________ In</td>
</tr>
<tr>
<td>Casing Pressure: Begin/End</td>
<td>Tubing Size ___________ In</td>
</tr>
<tr>
<td>Tubing Plunger System style</td>
<td>Depth of Tubing _________ Ft</td>
</tr>
<tr>
<td>Cycles per Day/Min On</td>
<td>Sales Line Size ___________ In</td>
</tr>
<tr>
<td>Date Cycles Last Adjusted</td>
<td>Sales Line Length _________ Ft</td>
</tr>
<tr>
<td>Previous Cycles per Day/ Min On</td>
<td>Flowing Bottom Hole Pressure(FBHP)________Psi</td>
</tr>
<tr>
<td>Domestic Gas Usage</td>
<td>Last Shut In date and Pressure(SIBHP)________Psi</td>
</tr>
<tr>
<td>Gas Gathering System Operating Psi</td>
<td>V. Vogel Chart Analysis</td>
</tr>
<tr>
<td>Additional Cycling in Gathering System</td>
<td>Ratio of FBHP/SIBHP __________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Field – Current Daily Production Rate</th>
<th>VI. Forecasted Rates of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil, Bbl Oil per Week / Day</td>
<td>Oil, Bbl Oil per Week / Day</td>
</tr>
<tr>
<td>Gas, Mcf per Week / Day</td>
<td>Gas, Mcf per Week / Day</td>
</tr>
<tr>
<td>Water, Bbl Water per Week</td>
<td>Water, Bbl Water per Week</td>
</tr>
<tr>
<td>____BOPW/ ____BOPD</td>
<td>____BOPW/ ____BOPD</td>
</tr>
<tr>
<td>____MCFW/ ____MCFD</td>
<td>____MCFW/ ____MCFD</td>
</tr>
<tr>
<td>____BWPW/ ____BWPD</td>
<td>____BWPW/ ____BWPD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Field – Comments and Recommendations</th>
<th>VIII. Comments and Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>_________________________________________</td>
<td>_________________________________</td>
</tr>
<tr>
<td>_________________________________________</td>
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<td>_________________________________________</td>
<td>_________________________________</td>
</tr>
<tr>
<td>_________________________________________</td>
<td>_________________________________</td>
</tr>
<tr>
<td>Estimated Cost of Recommendation $________</td>
<td></td>
</tr>
<tr>
<td>Estimated Daily MCFEQ Increase $________</td>
<td></td>
</tr>
<tr>
<td>M$ per MCFDEQ $________</td>
<td></td>
</tr>
<tr>
<td>Estimated Payout, Months ________</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3

Stripper Gas Well
Data Collection Form for Problem Well Analysis

Lease Name and Well No:___________________
Date: ___/___/___

Casing Plunger, CPL

I. Field – Well Information
Producing Formation_____________
Flowing Casing Pressure_____________Psi
Casing Plunger Style_____________
Trips per Week_____________
Cycles per Day/Min On_____________/______Min
Domestic Gas UsageYes/No
Gas Gathering System Operating Psi ___________Psi
Additional Cycling in Gathering System_________
Last Fluid Level Shot: Date/Depth_______/______Ft

IV. Analytical Data
Perforated Interval(s)_____________
Casing Size_________In
FlowIntermittent/Continuous
Stand Depth_________Ft
Sales Line Size_________In
Sales Line Length_________Ft
Flowing Bottom Hole Pressure(FBHP)__________Psi
Last Shut In date and Pressure(SIBHP)__________Psi

V. Vogel Chart Analysis

Ratio of FBHP/SIBHP________
Estimated Maximum Production Rate
_______ BOPD _______MCFD

II. Field – Current Daily Production Rate
Oil, Bbl Oil per Week/Day ___BOPW/___BOPD
Gas, Mcf per Week/Day ____MCFW/____MCFD
Water, Bbl Water per Week ____BWPW/____BWPD

VI. Forecasted Rates of Production
Oil, Bbl Oil per Week/Day ___BOPW/___BOPD
Gas, Mcf per Week/Day ____MCFW/____MCFD

VII. Date and Description of Last Well Work
__________________________________________
__________________________________________
__________________________________________

III. Field – Comments and Recommendations
__________________________________________
__________________________________________
__________________________________________
__________________________________________

VIII. Comments and Recommendations

Estimated Cost of Recommendation $________
Estimated Daily MCFEQ Increase $________
M$ per MCFDEQ $________
Estimated Payout, Months ________
Appendix 4

Stripper Gas Well
Data Collection Form for Problem Well Analysis

Lease Name and Well No: ____________________
Date: ___/___/___

Pumping Unit Well, PJEM or PJGE

I. Field – Well Information
Prime Mover _____________
Producing Formation(s) _____________
Flowing Tubing Pressure _____________ Psi
Flowing Casing Pressure _____________ Psi
Pump Schedule _____________
Stroke Length _____________ In
Unit Speed _____________ SPM
Date Cycles Last Adjusted ___/___/___
Previous Cycles _____________
Domestic Gas Usage Yes / No
Gas Gathering System Operating Psi _____________ Psi
Last Fluid Level Shot Date / Depth _______ / _______ Ft

IV. Analytical Data
Perforated Interval(s) _____________
Casing Size _____________ In
Tubing Size _____________ In
Rod Size _____________ In
Pump Description _____________
Flowing Bottom Hole Pressure (FBHP) _____________ Psi
Last Shut In date and Pressure (SIBHP) ___/___/___ Psi

V. Vogel Chart Analysis
Ratio of FBHP/SIBHP _____________
Estimated Maximum Production Rate
___________ BOPD _________ MCFD
___________ BOPD _________ MCFD

II. Field – Current Daily Production Rate
Oil, Bbl Oil per Week / Day ___BOPW/ ___BOPD
Gas, Mcf per Week / Day ___MCFW/ ___MCFD
Water, Bbl Water per Week ___BWPW/ ___BWPD

VI. Forecasted Rates of Production
Oil, Bbl Oil per Week / Day ___BOPW/ ___BOPD
Gas, Mcf per Week / Day ___MCFW/ ___MCFD

VII. Date and Description of Last Well Work
________________________________________
________________________________________
________________________________________

III. Field – Comments and Recommendations
________________________________________
________________________________________
________________________________________

VIII. Comments and Recommendations
________________________________________
Estimated Cost of Recommendation $_________
Estimated Daily MCFEQ Increase $_________
M$ per MCFDEQ $_________
Estimated Payout, Months ________

________________________________________
________________________________________
________________________________________
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**Stripper Gas Well**

Data Collection Form for Problem Well Analysis

**Lease Name and Well No:**

Date: ___/___/____

**Swab Well, SWB or Flowing Well, FLW**

### I. Field – Well Information

- **Producing Formation:**
- **Flowing Tubing Pressure:** _______ Psi
- **Flowing Casing Pressure:** _______ Psi
- **Date Last Swabbed:** ___ / ___ / _____
- **Fluid Recovered:** _______ Bbls
- **Domestic Gas Usage:** Yes / No
- **Gas Gathering System Operating Psi:** _______ Psi
- **Last Fluid Level shot Date / Depth:** _____ / ______ Ft

### IV. Analytical Data

- **Perforated Interval(s):** ___________
- **Casing Size:** _______ In
- **Tubing Size:** _______ In
- **Depth of Tubing:** _______ Ft
- **Sales Line Size:** _______ In
- **Sales Line Length:** _______ Ft
- **Flowing Bottom Hole Pressure (FBHP):** _______ Psi
- **Last Shut In date and Pressure (SIBHP):** _______ Psi

### V. Vogel Chart Analysis

- **Ratio of FBHP/SIBHP:** _______ Psi
- **Estimated Maximum Production Rate:**
  - __________ BOPD
  - __________ MCFD

### II. Field – Current Daily Production Rate

- **Oil, Bbl Oil per Week / Day:** _______ BOPW / _______ BOPD
- **Gas, Mcf per Week / Day:** _______ MCFW / _______ MCFD
- **Water, Bbl Water per Week:** _______ BWPW / _______ BWPD

### VI. Forecasted Rates of Production

- **Oil, Bbl Oil per Week / Day:** _______ BOPW / _______ BOPD
- **Gas, Mcf per Week / Day:** _______ MCFW / _______ MCFD

### VII. Date and Description of Last Well Work

__________________________________________
__________________________________________
__________________________________________
__________________________________________

### III. Field – Comments and Recommendations

__________________________________________
__________________________________________
__________________________________________
__________________________________________

**Estimated Cost of Recommendation:** $_________

**Estimated Daily MCFEQ Increase:** $_________

**M$ per MCFDEQ:** $_________

**Estimated Payout, Months:** ________