WELL TESTING ROD PUMPING OIL WELLS

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ABSTRACT

To assess the importance and "best practices" method to acquire, record and report the production characteristics of a mature (Spraberry Trend) rod pumping oil well. Where pump down condition is desired for best results and the importance of recognizing and controlling outside production interference of a rod pumping oil well before and during the test process.

Always follow your company test policy and safety practices.

INTRODUCTION

Acquiring a well test representing the daily production from a rod pumping oil well can be very difficult or as simple as reading a gauge line. Some well tests are not representative of the well bore production due to outside interference. Some of which will be reviewed and discussed during this presentation.

A WELL TEST DEFINITON

A well test is performed on a rod pumping oil well to determine its production characteristics to be expressed in barrel(s) of oil, barrel(s) of water and mcf of gas for a 24 hour period.

Well test reporting is the proper submission of the data recorded, detailed results of a well test that represents all test data, the calculations drawn from the data, and conclusions pertaining to the well's production potential.

Below are some reasons for well testing:

- Provide a basis for periodic reports to corporate level, legal & regulatory groups (TRRC)
- Allocations
- Drilling Program
- Acquisitions and Divestures
- Verify total field or lease production by wells
- Provide baseline for all equipment design and remedial work
- Identify trends that signal a need to change operating parameters, for example; runtime on wells controlled by a timer or set points on the POC
- Better control of lease daily operations
- Accurate well test reporting
- Decrease failure rate
- Maximum production w/minimum operation costs
- Greater confidence to operate the lease
- Flow line leaks
- Does what goes thru a tester always verify well production?

A well test should be accompanied with a complete rod pumping well analysis whenever possible. From this analysis, data can be drawn to calculate pump capacity of the pumping system such as strokes per minute, surface stroke length (inches) or downhole stroke (inches), pump bore and runtime. Within the analysis report indications of any additional production potential may also be considered.

Preparing for a well test should include the selection and confirmation that the well to be tested is indeed in the test vessel. At battery headers where multiple well production is collected, the possibility of the incorrect well name selected can be made.

Always install a "Well On Test" tag to control any outside interference of well output such as chemical treatment, well bore treatment, production equipment maintenance, etc. See **Figure #1**.

Confirming proper tester operations can be made by a wellhead sample comparison to the percent of oil and water cut at the tester outlets. See **Figure #2**. Tester gas volumes can be compared to total at gas sales point. With proper instructions and training many tester operations can be compared to or verified by a "SAM" pump off controller (POC).

Other tools are a "view thru nipple" incorporated into the testing system such as the oil, water and gas outlets of the tester for readily visual observance of fluid contents.

Suggested minimum well test data should be:

- Oil, water, gas to two decimal places
- Strokes Per Minute (SPM)
- Measured surface stroke length
- Pump diameter
- Percent of runtime
- If wells test 100% water and Zero Oil, submit wellhead sample report
- Fluid level over pump
- Comments i.e., fluid pound, tagging etc.

SUMMARY

Good operational observations of well activity before and during entire test procedure are necessary to acquire accurate production values. A well producing thru the test vessel at all times makes for better and more reliable tester operations. Outside interference can lead to mistaken well performance.

Always follow company operating procedures and safety policies.

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Figure 1 - Well On Test Tag

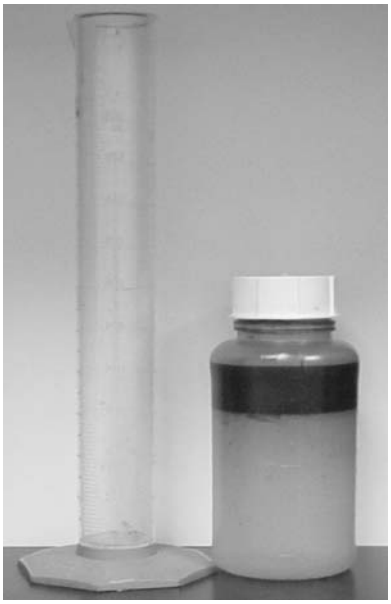

Figure 2 - Well Head Sample