

Physics-Based Gas Lift Surveillance & Optimization

Developed an integrate-able tool for the operator to proactively monitor well operations in real-time

An onshore operator requested GATE Energy to develop a tool to allow them to quickly perform surveillance of their gas lift program to support the operations. The operator needed to proactively monitor well operations in real-time to identify the potential causes of suboptimal production and possible well integrity issues based on the field specific reservoir fluids, well configurations, artificial lift methods and operating philosophy.

GATE Energy developed a integrate-able tool for the operator that identifies the underperforming wells and ultimately leads to the field's overall production optimization. The tool was designed to require minimum input data with allowing some missing data to be estimated, but ultimately provide a comprehensive screening of the well performance and potential risks which may disrupt the production of the wells.

GATE Energy developed the comprehensive well operations tool utilizing GATE's proprietary simulator GATE Prho™ engine that, with one simulation run, allows the operator to:

- Evaluate underperforming wells
- Quantify potential production enhancement through gas lift optimization
- Determine the operating gas lift valve
- Evaluate liquid loading risk, Perform Rate Transient Analysis (RTA)
- Generate the gas lift performance curve
- List the potential well issues and provide the recommendations, Detect potential flow restriction

It is important to note, prior to delivering the surveillance tool, GATE Energy conducted an extensive benchmarking study between the tool and the available field data to ensure it is representative of the actual field conditions.

TECHNICAL ACHIEVEMENTS & BENEFITS

- Turn-key, physics-based well operations surveillance tool which allows the operator to closely monitor potential production enhancement real time.
- Simple to operate and takes less than approximately one man-hour to input minimal requirements and a current 'snap-shot' of any potential well issues and deliver the initial recommendations.
- In future, easy to share with GATE engineers to further support with more thorough analysis, mitigation and remediation efforts.

LOCATION

Permian Basin, West Texas

CHALLENGE

- No real-time gas lift optimization is implemented
- No means to detect which gas lift valve is operating
- No permanent downhole gauge is installed
- No oil composition is available for some wells
- No means to detect any liquid loading potential
- No active monitoring of the fracture and reservoir performance

SOLUTION

GATE Energy developed a comprehensive well operations tool utilizing GATE's proprietary simulator GATE Prho™ engine.