Developing a Business Intelligence Tool for Management of Oil and Gas Well Inventory

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Abstract

This paper describes a new business intelligent tool that has added huge value to the company in terms of efficient management of drilled oil and gas wells, production contribution, reserves additions, decline management, well spacing and capital efficiency. The tool assess value from current inventory of oil and gas wells and uncover actionable insights for decisions making at different levels.The project has been created with data analytics software, having capability of handling huge volumes of data from different databases with visualization, archiving and user-friendly features. This tool utilizes data extracted from number of databases and having around 30 interactive dashboards to carry out analysis at well, reservoir, field, asset and at company level. It is flexible, dynamic and more databases can be added and customized. Preliminary results shows huge value for assurance activities, can look into insights of key performance parameters, monitor trends, identify gaps and help improve capital efficiency.This initiative consists of several workflows to integrate and link databases into one corporate single data source by restructuring and modelling the data. A few stunning interactive reports have been created for visualization and each individual user can use this tool to discover new insights from these dashboards, predict performance, develop strategies, identify gaps and take remedial steps ahead of time.

Several engineering analyses have been carried out with this tool like assessing locked up potential, analyzing the EUR per well and the decline trend decline, reservoir performance, sick well monitoring etc. Also a review well utilization efficiency, drilling and workover contribution, economic analysis and capital efficiency etc. can be performed. These results of the analysis have shown oil well utilization efficiency has decreased by 10% during last 5 years. Also, the historical Capex trend has led to improvements in future well planning and the capital efficiency has increased by 20% to 30% in recent years. The reserves additions and well decline analysis has led to better future planning of well spacing and number of wells required. Optimization of drilling and workover activity has been identified based on their cost benefit analysis.

The novelty of this workflow has been tremendous as huge volume of data can be accessed efficiently, quickly and analysis can be visualized, and report can be generated for different studies. This workflow can be easily adopted by any oil companies for their assurance activities, annual planning exercise and performance review and identify any gaps for improvement.