Abstract

Advanced Drilling Dashboard Solutions To Improve Rig Performance Unconventional Gas Drilling

A. Alhamed, I. AlShehri, N. Alghofaili, Saudi Aramco PE&D; H. Alyousif, A. Alhasan, Saudi Aramco UR

Abstract

Objectives/Scope: Dashboards are important part of everyday life to provide key decision-making information as we go through our normal routines. For drilling operations, meaningful Key Performance Indicators (KPIs) are established to ensure efficient, cost effective and safe drilling program. The paper will illustrate the methodology used to establish a drilling information dashboard and its impact on rig performance. This is particularly important in high cost unconventional drilling operations, where well profitability is determined by slim margins.

Methods, Procedures, Process: There are three components of the dashboard system which are critical to its utility. They are: Data Wrangling, Data Logic and Business Intelligence Display. In Data Wrangling, automating the process of standardizing relational data labels and merging data from different sources has helped engineers to easily benchmark specific operations in a timely manner. For data logic, the KPIs measured includes well delivery comparison, Rig Move, Bit Performance, Footage KPI, Flat Time KPI and Lost time analysis. In business intelligence display, the organization can use features like drill down to realize time and cost efficiencies while maintaining high well integrity standards.

Results, Observations, Conclusions: Today’s challenging rig operations environment requires the deployment of cutting-edge technologies and processes to ensure efficient and cost effective operations. With the introduction of the dashboard systems, data gathering and wrangling is automated for engineers. This includes standardizing relational data labels, merging data from different sources, grouping based on selected criteria for users to analyze. The drilling dashboard and its accompanying environment use the vast amount of static and real-time data, collected at the rig site, to inform, alert, compare and benchmark any of the KPIs for the operators. Business Intelligence application is used to present the data dynamically, where the user can drill down to finer details of the data that is displayed. The logic used to track each KPI is standardized to ensure consistency throughout the enterprise. The dashboard provides a concise display of KPI data in a standard and repeatable manner that all stakeholders can agree and benefit from. The purpose of the dashboard is to continuously improve performance, pinpoint the root cause of any indicated low performance and capturing the essence of high performance efforts to ensure the adoption of these practices across the enterprise.

Novel/Additive Information: Having a solution in place that serves as a one-stop-shop dashboard to track all departmental and operational KPIs will empower drilling engineers to perform what-if scenarios using filters that are based on several data points of interest as this is important in complex hydrocarbon drilling operations.