Drilling Hazard Map Solution to Reduce Lost Time in Unconventional Wells

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Abstract

Objectives/Scope: Drilling hazard maps are a vital tool to communicate the type, intensity, and locations of hazards encountered during unconventional drilling operations. This paper will illustrate the methodology of mapping historical lost time reported on Daily Drilling Reports (DDRs) to support planning future wells in the same area for hydrocarbon wells. Better understanding of non-productive time events will help identify and eliminate root causes to improve rig performance and reduce well delivery time.

Methods, Procedures, Process: There are three important components to consider: 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 lost time events in a timely manner. For data logic, the tool maps lost time events with respect to a specific field, formation, type, company and object during a period defined by users. In business intelligence display, the organization can use features like drill down to realize efficiencies while maintaining well integrity standards.

Results, Observations, Conclusions: The drilling hazard map helps the organization identify the top lost time types that require more lessons learned and best practices that were communicated to both Engineering and Operational Teams to document and deploy in the field. During the period from 2017 to 2022, lost time percent of the organization have reduced consistently despite the increasing number of wells. In addition, data quality has improved because the team recognizes the value of data by ensuring that there are fewer missing or miscoded lost time events in the DDRs. Finally, the team has successfully published field best practices in development fields improving the learning curve of new engineers and foremen joining the fleet.

Novel/Additive Information: This paper will show the great potential of DDRs data in terms of lost time analysis in a novel approach as per literature review during the scoping phase of this project. Most importantly, it will show how similar tools can present data in the form of action items for the field personnel to operate more efficiently and safely.