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Surface Logging while Drilling (SLWD) Improves Reservoir Characterization and Capital Efficiency

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ABSTRACT

Automation, data science, and artificial intelligence are rapidly evolving. The fourth industrial revolution or industry 4.0 is the ongoing automation of traditional manufacturing and industrial practices using modern smart technology. Large scale machine to machine communications (M2M) and the Internet of things (IoT) are integrated for increased automation, improved communication, and self-monitoring and production of smart machines that can analyze and diagnose issues without the need for human intervention. With the current backdrop of a global pandemic, pressure pricing on fossil fuel commodities, focused spotlight on sustainable environmental governance, and increased capital efficiency, innovation is required. The status quo of formation evaluation either through service logging or downhole logging introduces significant cost and risk. An automated sample collection system coupled with quantitative rock and gas composition analysis and further combined with data science and artificial intelligence produces a set of logs that create an alternative to this status quo and a yet unseen window into the subsurface. The data outputs are used to improve critical wellbore construction decisions such as casing point picks and geosteering in addition provides key data inputs for optimal well placement, improved spacing, improved drilling performance, and ultimately optimized completion and production. The presentation will present case studies and datasets from recent field deployments.

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