

# Data Mediated Detection, Prediction and Remedies of Stuck Pipe Events in Oil and Gas Drilling Operations

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## COMMENTARY

Stranded piping incidents are considered a very common challenge during the drilling phase, which may lead to increased unproductive time. Recommended standard practices are used to prevent or reduce the severity of these occurrences. Accounting for billions of bucks annually and up to 1/2 the whole well price, stuck pipe events are one amongst the foremost pricey drilling issues within the trade. It's additionally a significant contributor to Non-Productive Time (NPT) that continues to comprise 20-25% of annual rig operational time. So, then, however do stuck pipe events occur.

There are typically 2 differing types of stuck pipe: differential pipe projected and mechanical pipe projected. Each variety will bring operations to an entire halt, however their causes are immensely totally different – and still end in pricey repairs. Differential projected happens once the hydraulics pressure of mud is larger than the formation pressure, pushing the drill string into a filter cake of pervious formation. Once differential projected happens, it's just about not possible to maneuver the drill string in AN upward or downward direction, requiring operators to cut back the hydraulics pressure by circulation.

Mechanical projected refers to different stuck pipe things that are caused by factors apart from differential pressure, like wellbore instability and inadequate whole improvement. A machine learning-based prophetic analytics resolution helps drilling operators higher perceive the state of their operations by unlocking opportunities inside the information in real time. The premise of this resolution is applying prophetic machine learning algorithms

to historical sensing element knowledge from assets utilized in drilling operations to create a baseline model of what traditional operations seem like.

The traditional behavior model is then wont to analyze quality sensing element knowledge in real time, distinguishing and drooping any values that deviate from the established norm. These deviating values indicate abnormal behaviors that are probably to precede a production-impacting event like stuck pipe. We've leveraged this resolution in previous deployments across the oil and gas trade to discover abnormal behaviors and forestall production-impacting events from occurring. One oil and gas super major turned to U.S to assist maximize production potential and improve overall safety for its fleet of high-volume offshore platforms.

Our machine learning-based prophetic analytics resolution helped the super major forestall surprising failures in their fleet's essential assets, together with multiple glycol systems and export compressors that contributed to concerning eightieth of the period on one amongst their marquee platforms. Overall, our resolution improved production by up to four-dimensional or up to USD \$30 million annually per platform, by increasing quality handiness and period.

In the case of stuck pipe, interference is arguably much more economical than even the most effective releasing procedures. During an advanced industrial sector like oil and gas, drilling operations are already outfitted with sensors that generate large volumes of knowledge. Machine learning-powered prophetic analytics is that the missing piece that permits operators to remain previous close at hand stuck pipe failures before it's too late.

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