Precision DRILLING

HIGH PERFORMANCE HIGH VALUE®

HAYNESVILLE
USA - ONSHORE
CASE STUDY

Leveraging Predictive Analytics to Optimize Mud Pump Reliability with Our Digital Twin Solution

CHALLENGE

Mud pump showed early abnormal vibration, risking costly failure, unplanned downtime, and lost productivity.

SOLUTION

Digital Twin detected anomalies, issued smart alerts, and enabled proactive motor replacement during tripping.

RESULTS

Failure averted, downtime cut 50%+, efficiency sustained.

OVERVIEW OF CASE STUDY

As drilling operations grow increasingly complex, Precision's Super Triple fleet must continue delivering high performance while withstanding elevated mechanical and electrical stresses. This case study highlights an event on one of our rigs, where proactive monitoring enabled by our Digital Twin Solution helped prevent a costly equipment failure and reduced downtime.

The Digital Twin Solution provides continuous visibility into equipment performance by detecting anomalies in real time. Leveraging hundreds of thousands of data points, it diagnoses potential issues and generates smart alerts for field personnel. Powered by robust machine learning models, the system enables crews to act early, address problems before they escalate, and coordinate maintenance without interrupting drilling operations.

This event showcases how predictive intelligence and real-time insights enabled decisive action transforming a potentially major disruption into a controlled, efficient maintenance event.

CHALLENGE

During continuous operations, a mud pump began exhibiting early signs of abnormal vibration. Left unaddressed, the issue had the potential to escalate into a critical equipment failure, leading to:

- Unplanned downtime
- Expensive repairs
- Lost drilling productivity

SOLUTION

The Digital Twin Solution continuously monitored equipment health and detected abnormal vibration patterns against predetermined models. Real-time smart alerts prompted the rig crew to investigate immediately and begin planning corrective action, without halting drilling operations.

Suspecting a traction motor failure, the crew proactively arranged delivery of a replacement motor ahead of the maintenance team's arrival. During tripping operations, the maintenance teams confirmed excessive bearing end play, validating the decision to replace the motor.

Proactive mobilization allowed the crew to execute an immediate change-out, during a tripping operation and limiting downtime hours by greater than 50%, averting what could have been a significant non-productive time (NPT) event.

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DOWNTIME HRS LIMITED BY

50%

DUE TO PREDICTIVE INTELLIGENCE

CONCLUSION

The incident underscores the value of digital twin solution and real-time monitoring in demanding drilling environments. By identifying early warning signs and enabling proactive maintenance, the Digital Twin Solution:

- Prevented equipment failure
- Minimized downtime
- Preserved operational efficiency

This case highlights the power of data-driven decision-making in sustaining performance and reliability across Precision's fleet.

FIGURE 1.

24hr time line of alerts in red populated showing that component was beginning to fail.

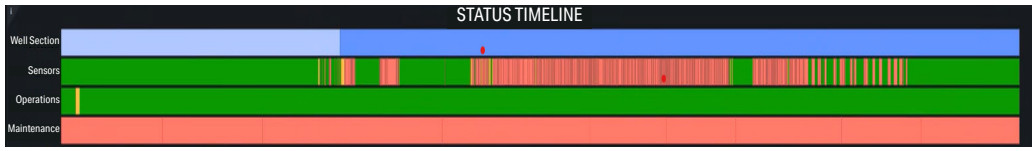

FIGURE 2.

Smart alerts populating to the field that showing a component failure is occurring.

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