Max Ready™

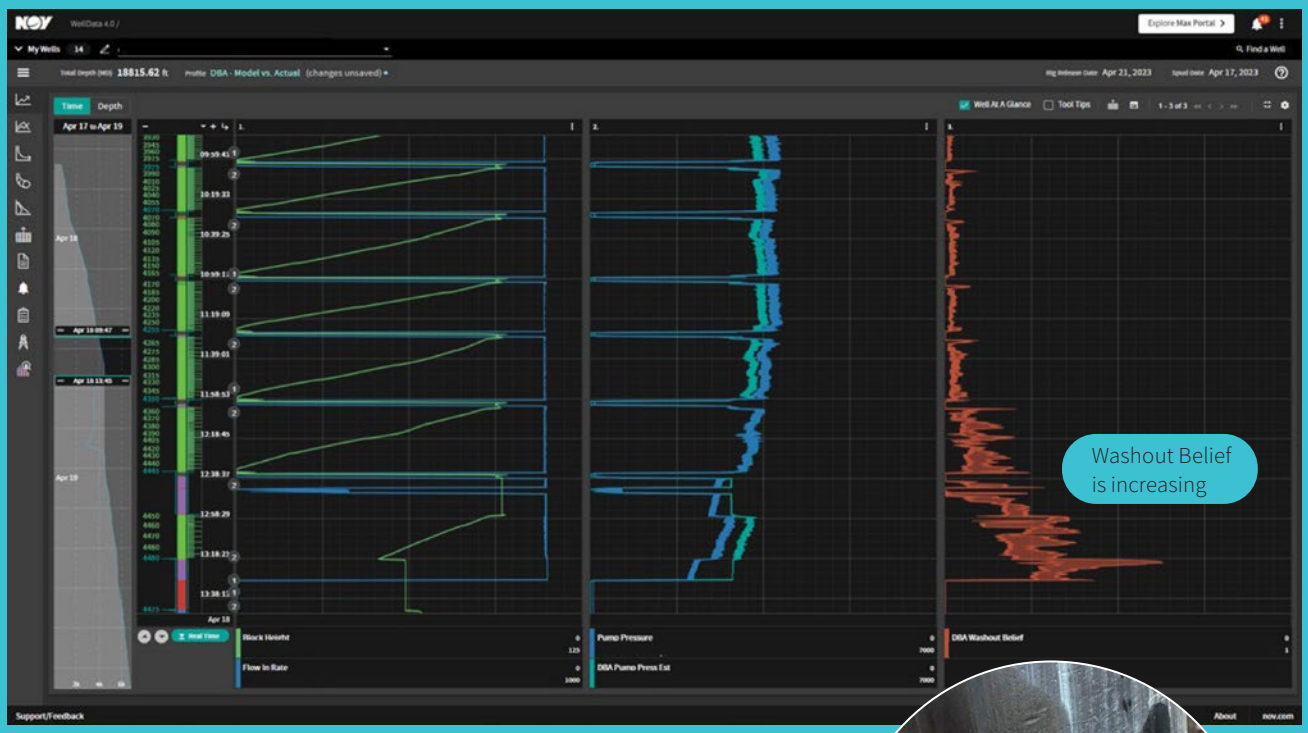
Drilling Beliefs & Analytics

Take action earlier using AI-backed insights to reduce drilling risks and improve well delivery results

“Analytics that deliver > **10%** improvement in well cost”

Major US Independent

Early washout detection prevented costly event

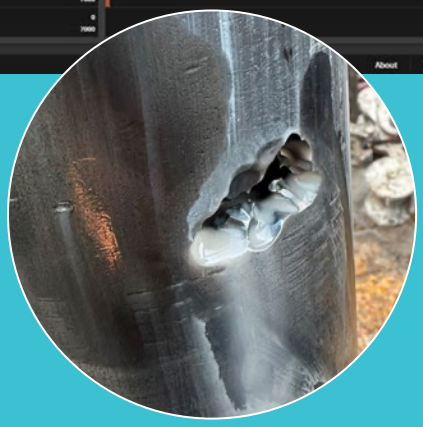


Onsite personnel observed the DBA Washout Belief was increasing after the weight-to-weight connection.

In the middle of drilling a stand, the Washout Belief spiked, and the rig team decided to trip out of the hole to assess the potential issue.

A bottle cap sized washout was found in the pipe body ~1,200 ft into the string.

DBA recognized the washout prior to notable pressure changes enabling early identification and prevention of a costly fishing operation.



Act earlier, with confidence

Drilling Beliefs & Analytics (DBA) employs artificial intelligence (AI) to provide valuable insights into critical well conditions. This enables wellsite and office personnel to make well-informed, real-time decisions that reduce risks and enhance well delivery results.

Wellbore understanding has traditionally relied on human interpretation of numerous data points, but the demands of rig operations often make it challenging to dedicate sufficient attention to these correlations. This can result in delayed recognition and response to issues such as pack offs, cuttings build up, or washouts.

DBA offers a solution by providing real-time understanding through a probability index or belief system that assesses the likelihood of such situations occurring. This allows personnel to prioritize their focus on critical matters, precisely when it is required.

The solution provides beliefs in four core categories:

- Drilling Efficiency
- Directional Effectiveness
- Hole Cleaning
- Well Stability

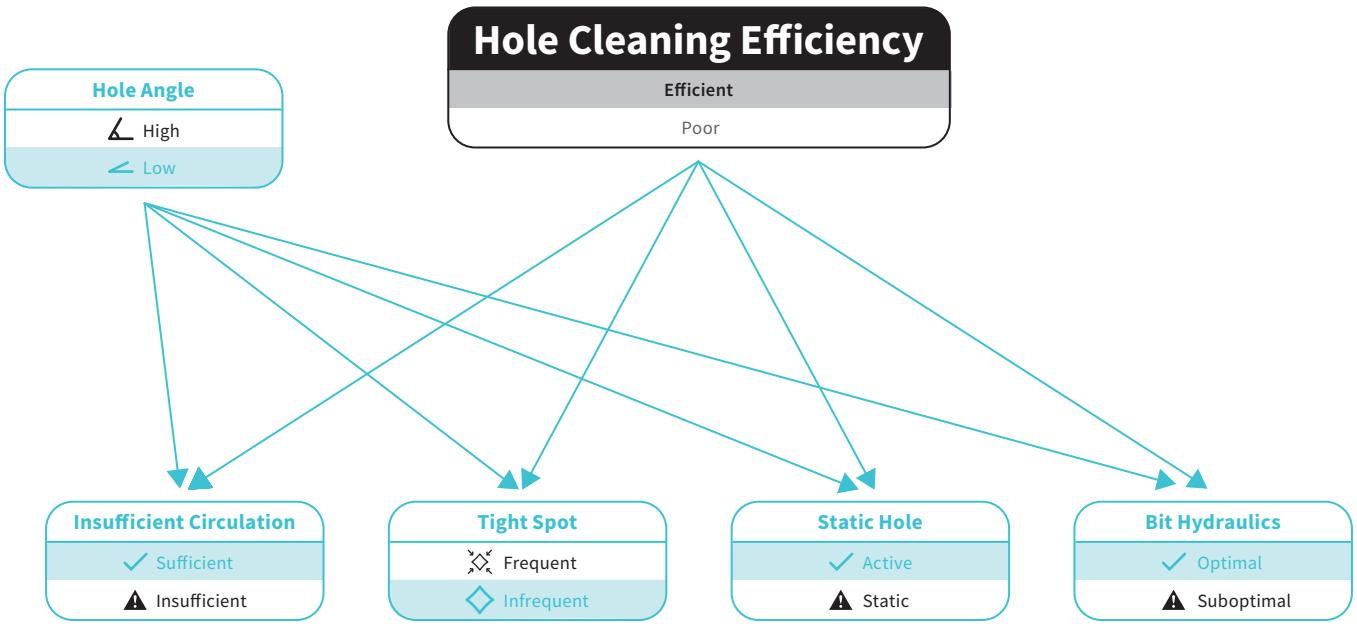
Extending and supporting the belief network are real-time models that provide automated Torque & Drag and Swab & Surge removing manual steps and ensuring you have up-to-date information to protect the wellbore and reduce stuck pipe events. Using both beliefs and models, our Cone Drilling module provides an on-screen advisor for optimal parameters to improve ROP while minimizing dysfunction.

Backed by a Bayesian Belief Network, digital twin and real-time hydraulics model and trained on over 1,000 wells and 700,000 hours of operations, its proven intelligence you can trust. The decision tree is fully exposed so you can understand findings and have confidence in its results.

With its edge-first approach, analytics are run at the edge so there is no lag and insights are available regardless of cloud connectivity. As an integrated application on NOV's Max Platform, access DBA directly from existing primary visualization solutions in the field with RigSense 4.0 and in the cloud with WellData 4.0. Utilizing the same toolkit provides a single version of the truth and seamless collaboration from rig to office to drive operational efficiency.

Bayesian Belief Network

Probabilistic model that understands variables, their relationships and calculates uncertainties to determine a belief that a condition is true.

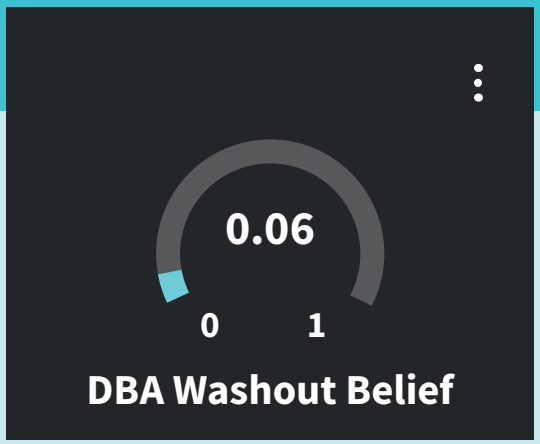


DBA Belief Index

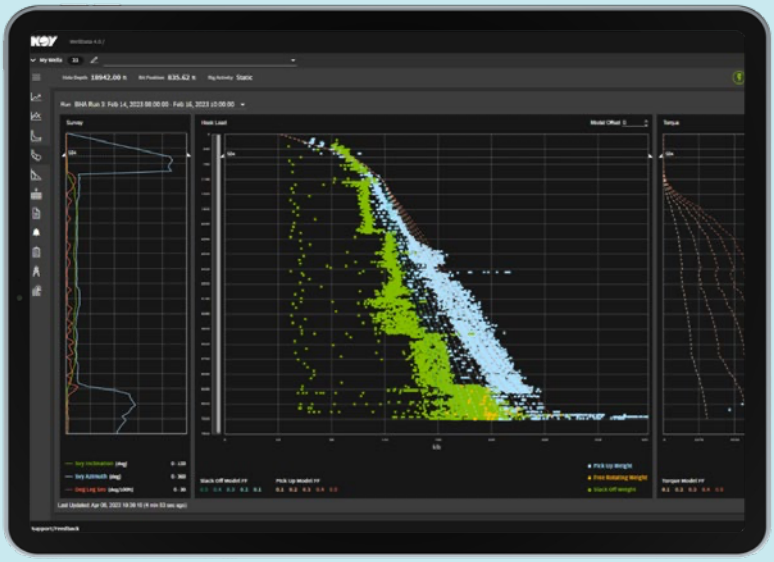
Probability index that an event is imminent and requires attention.

Over 30 beliefs for critical insights including:

Hole cleaning efficiency
Lost circulation
Pack off
Washout
Well influx
Overpull / underpull
Stick slip / bit whirl / bit bounce / bit balling



Real-time automated models to improve efficiency and reduce risks



Torque & Drag

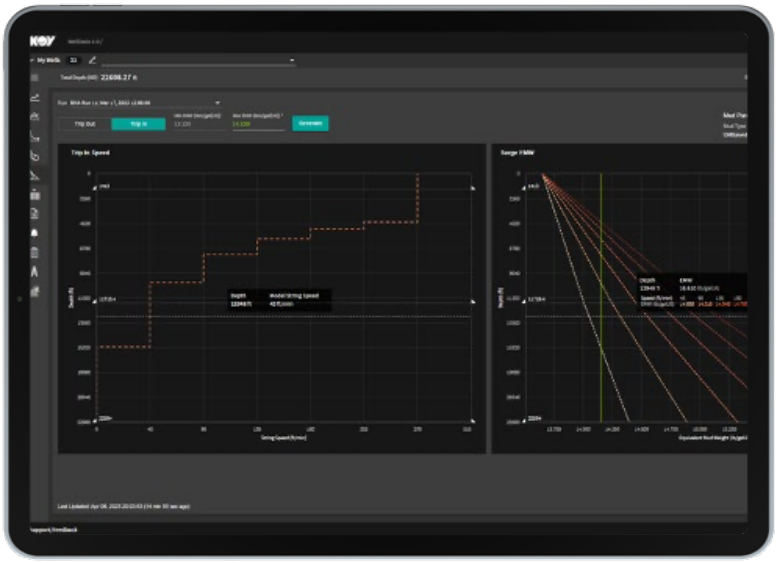
Determine potential tight spots and avoid stuck pipe incidents with dynamically generated models and real-time data

- Intelligent data capture of pick up, slack off and rotating weights
- Compare side-by-side with real time surveys
- Automatically assigns BHA & casing events
- Removes manual data loading, model generation and import

Swab & Surge

Trip at the maximum safe speed with automated modelling and visibility of recommended trip speed.

- Automated modelling removes manual efforts, improving efficiency and accuracy
- Real-time tracking of drill string speed vs the modelled thresholds
- Shows the optimal tripping speed based on user provided mud weight limit to avoid formation damage.
- Removes manual data loading, model generation and import



JIG 23-NOV-MAX-0799

Corporate Headquarters
10353 Richmond Ave.
Houston, Texas 77042
USA

max@nov.com

nov.com/novdigital