

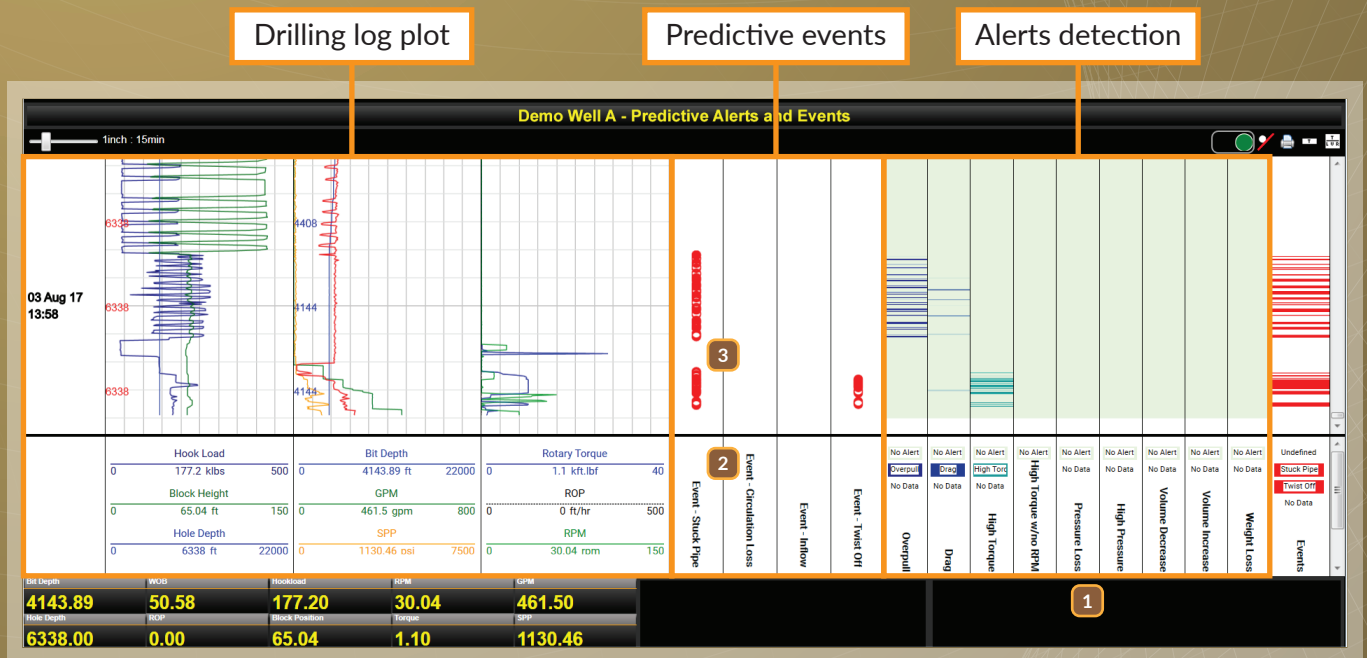
Predictive Alerts & Events

Real-Time Events with Advance Notice

The Predictive Alerts and Events (PAE) Display brings an extensive base of drilling knowledge to the rigsite to help avoid unplanned events. Based on historical drilling data comprised of hundreds of wells, the PAE Display provides a digital complement to the company driller's expertise.

The system monitors key event indicators that occur before issues arise, and then generates alerts. Essentially, the PAE puts a "second pair of eyes" on every well 24/7 to help ensure drilling success.

The PAE combines three displays to provide a snapshot of the current drilling activity including a drilling log plot, predictive event window and an alert detection window.



How it Works

The PAE Display monitors nine predefined algorithm event fields that are generated in real-time. **1**

An algorithm calculates the alert activity and predicts potential drill string issues such as stuck pipe and twist off **2**. Circle plots in the event stream indicate predictive events. **3**

The more predictive events, the more circles in the event stream.

As the predictive events increase in frequency, the circles will turn white or hollow.



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Predictive Alerts & Events

⬡ Predictive Event Indicators

- **Single predictive instance**
Not a significant event
- **Multiple predictive instances**
Stand-alone multiple events, not significant
- ⋮ **Multiple predictive instances over time**
Attention encouraged
The longer the event string, the more significant the alert
- ▬ **Significant predictive instances over time**
Attention recommended
The longer the event string, the more significant the alert

⬡ Post-Event Analysis

In the event that a post analysis is necessary, the PAE provides an export option in .LAS or .CSV file format.



⬡ Benefits:

- ⬡ Provides a quick snapshot of the drilling activity
- ⬡ Generates advance notice of significant events
- ⬡ User-friendly display
- ⬡ 24/7 Support
- ⬡ Enables drilling optimization
- ⬡ Monitors data quality



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