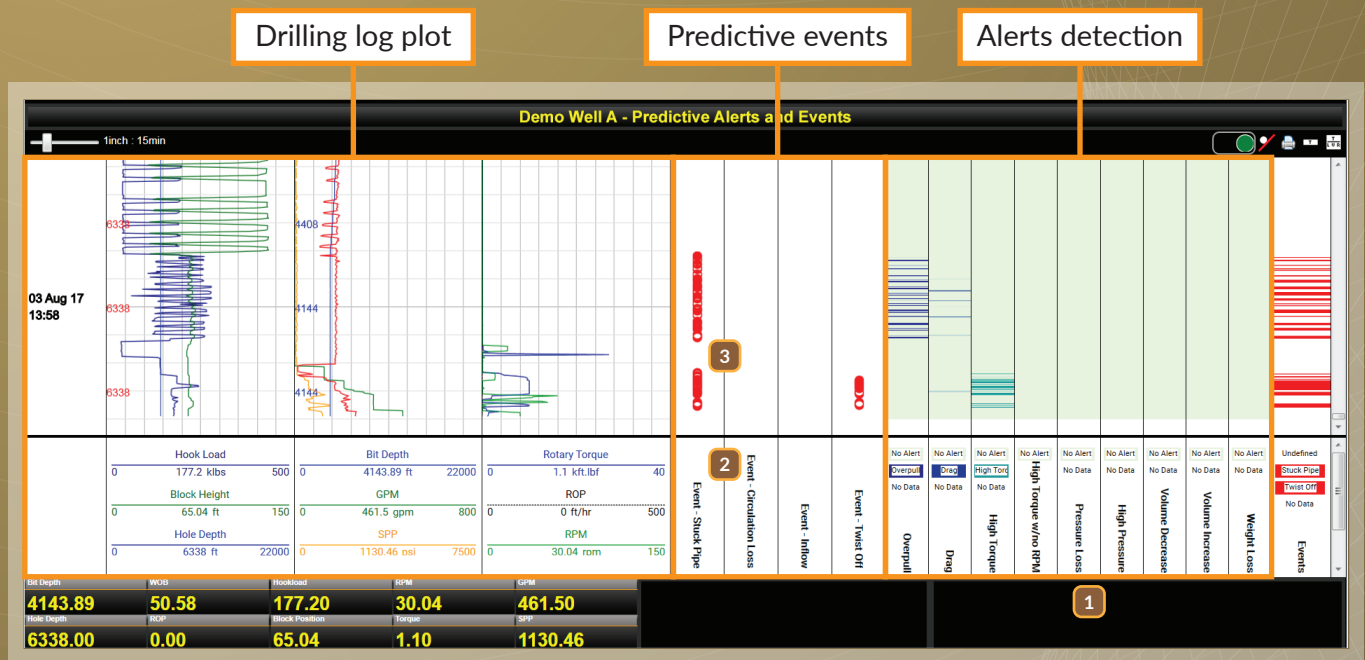# Predictive Alerts & Events

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.

Drilling log plot   Predictive events   Alerts detection

Demo Well A - Predictive Alerts and Events

1inch : 15min

03 Aug 17
13:58

Hook Load			Bit Depth			Rotary Torque		
0	177.2 klbs	500	0	4143.89 ft	22000	0	1.1 kft.lbf	40
	Block Height			GPM			ROP	
0	65.04 ft	150	0	461.5 gpm	800	0	0 ft/hr	500
	Hole Depth			SPP			RPM	
0	6338 ft	22000	0	1130.46 psi	7500	0	30.04 rpm	150

Event - Stuck Pipe · Event - Circulation Loss · Event - Inflow · Event - Twist Off

No Alert / Overpull / No Data — Overpull
No Alert / Drag / No Data — Drag
No Alert / High Torq / No Data — High Torque
No Alert — High Torque w/no RPM
No Alert — Pressure Loss
No Alert — High Pressure
No Data — Volume Decrease
No Data — Volume Increase
No Data — Weight Loss
Undefined / Stuck Pipe / Twist Off / No Data — Events

Bit Depth	WOB	Hookload	RPM	GPM
4143.89	**50.58**	**177.20**	**30.04**	**461.50**

Hole Depth	ROP	Block Position	Torque	SPP
6338.00	**0.00**	**65.04**	**1.10**	**1130.46**

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.

Export → LAS

Export → CSV

◈ 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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