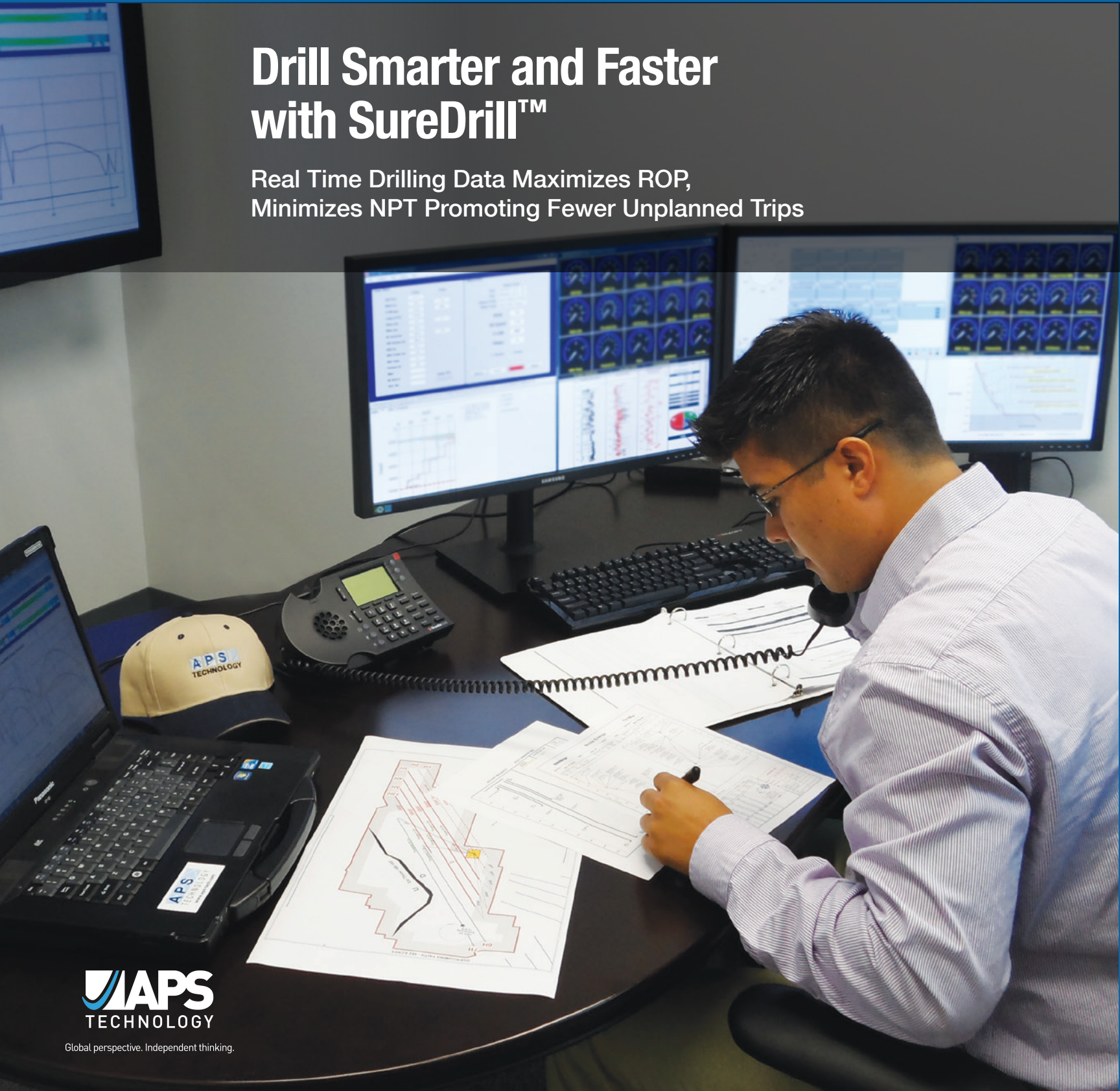




# Drill Smarter and Faster with SureDrill™

Real Time Drilling Data Maximizes ROP,  
Minimizes NPT Promoting Fewer Unplanned Trips





Global perspective. Independent thinking.

# Safely and Effectively Accelerate Well Construction and Production

APS was founded in 1993 by the oilfield pioneers who developed the first commercial Measurement While Drilling / Logging While Drilling (MWD/LWD) technologies. Today, we offer a complete range of innovative oil and gas solutions for a global customer base including: field proven MWD/LWD, vibration management, drilling and optimization products. APS's products and services are designed to make drilling operations run more smoothly and efficiently by safely accelerating well construction and production.



- MWD/LWD
- Vibration Management
- Drilling & Optimization
- Rotary Steerable Systems
- Active Vibration Dampening
- Custom Solutions

## Optimize Drilling Performance and Mitigate Risk On-Site or from a Remote Location

APS Technology designs and manufactures advanced electromechanical, instrumentation, sensor and software products that help operators and drilling companies save time and money on well construction and operation. We are the only mid-sized provider to offer a comprehensive well drilling optimization solution, the industry-leading SureDrill™ system.

SureDrill is a drilling optimization service that combines:

- Drill string modeling and analysis (pre-well and real time)
- Drilling optimization based on real time surface and downhole data
- Pre-well offset analysis of previously drilled wells. Can identify known drilling issues and select the best drilling setpoints for each formation
- Post well analysis

SureDrill can be set up either as an on-site service or as a remote service. As a remote service the data is transmitted back to a technology center or customer's office.

For wells drilled in new regions, where there is little or no history, SureDrill quickly identifies the best drilling practices. SureDrill helps avoid and mitigate drilling dysfunction that can lead to unplanned trips.





# Actionable, Real Time Data Keeps Drilling On Plan

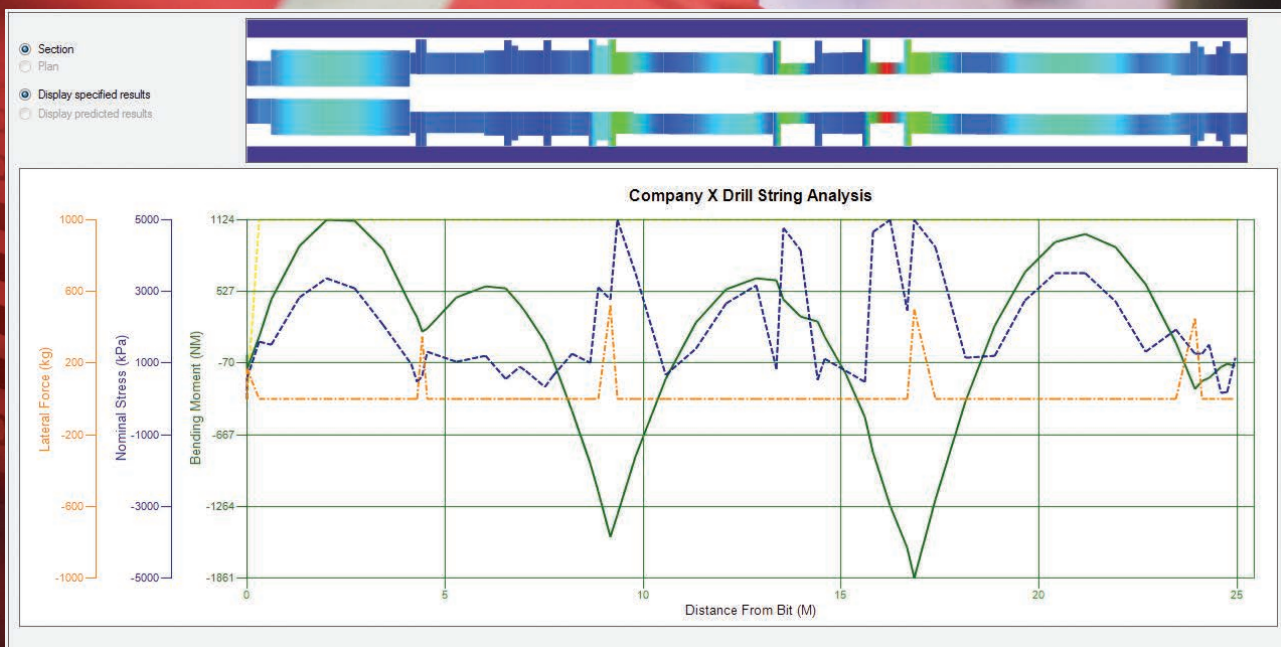
## Identifying the Variables that Can Impact Your Drilling Costs

In drilling, the only constant is change. APS develops technologies that help accurately predict and measure the variables that can negatively impact drilling. Our systems are used to identify high temperatures, pressures and vibration. We measure subsurface formation properties and drilling parameters. In any environment, keep your drilling operation running on plan and on budget with SureDrill.



SureDrill provides:

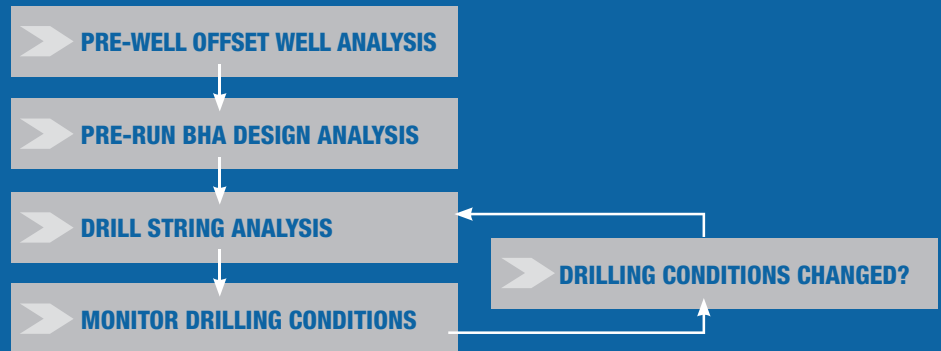
- Increased ROP
- Reduced vibration
- Increased bit life
- Longer bit runs
- Reduced bit trips



WellDrill™

## SureDrill is a Continuous Process

SureDrill continuously analyzes drilling conditions to search for the optimized setpoints, maximizing the cost savings. As drilling conditions change SureDrill updates the setpoints.



## The Return on Investment (ROI) of Tapping Into Big Data

Drilling measurement and logging data is constantly being collected from various sensors, software and surface systems. The challenge is making large volumes of data accessible and digestible to allow for real time collaboration and decision-making – at the rigsite or from an operations center thousands of miles away. SureDrill aggregates modeling, downhole and surface data for real time predictive, iterative drilling optimization. The SureDrill System consists of:

### WellDrill™

APS's software that performs structural, directional and critical speed analysis for optimal bottomhole assembly (BHA) design. Analyzing the BHA data helps to set tool build rate limits and analyze failures in minutes

### SureShot™ MWD System

APS's advanced MWD system with rotary pulser provides real time and recorded shock and vibration data from downhole. Vibration measurements include axial (up and down), lateral (sideways) and torsional or rotational, which identifies stick-slip.

### Real Time Surface Data

Surface data is provided by the rig's electronic data recorder (EDR) via wellsite information transfer standard (WITS) protocol that allows communication and data sharing through a common data network for wellsite users.



## CASE STUDY: SureDrill Saves Drilling Time in the Field

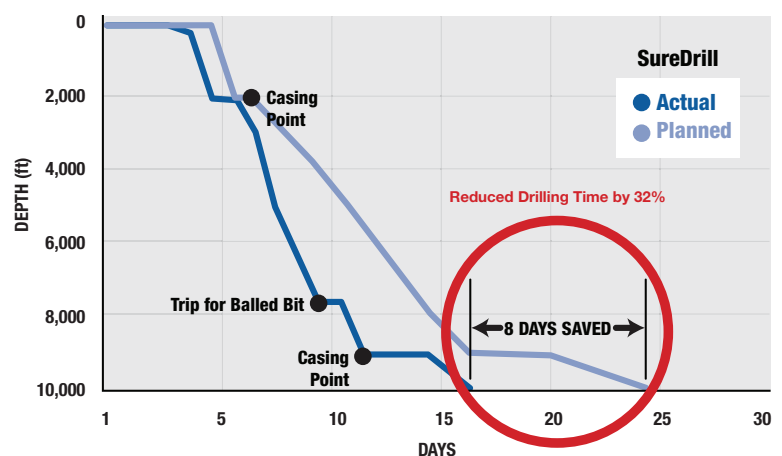
To date, SureDrill has been field tested in complex and extreme environments where drilling can be problematic. SureDrill users were able to demonstrate significant improvements in rate of penetration (ROP) and bit life relative to comparable wells drilled in the same areas. In this case study, the original drilling plan called for 25 days and 2 unplanned trips. By implementing SureDrill data analysis and APS's engineering services, this customer reduced their drilling time by nearly one-third.

- Saved eight drilling days
- Correctly identified balled bit trips
- Correctly recommended against bit run

In addition to cutting drilling time, SureDrill also improves hole quality and reduces wear and tear on drill string components, minimizing redress charges.



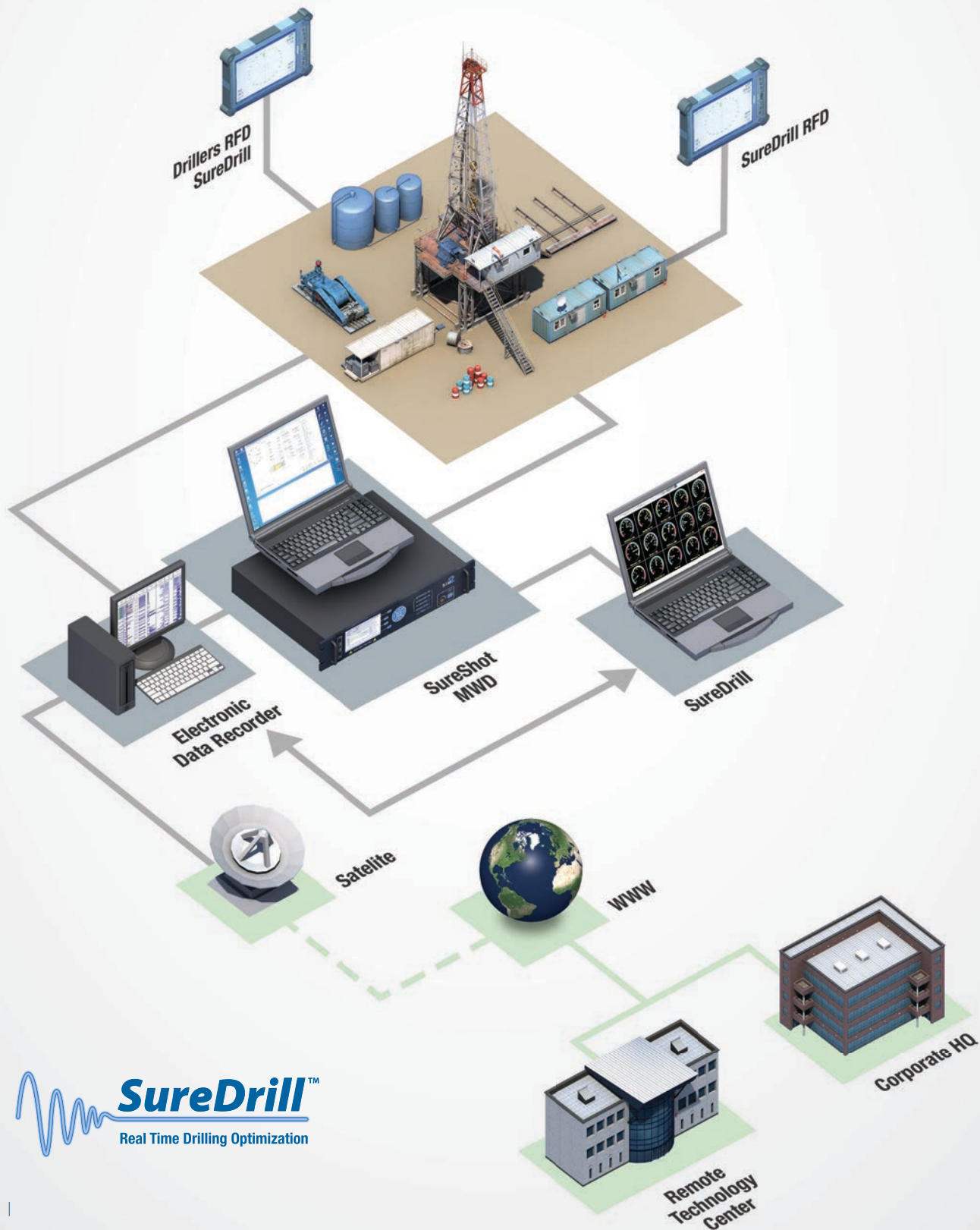
SureDrill dashboard



# SureDrill Enables Remote Collaboration and Cost Savings

SureDrill integrates data from disparate systems, including LWD/MWD measurements and surface data, to enable effective communication and collaboration for multiple well operations. With remote access to a wide range of relevant wellsite data, key stakeholders and drilling optimization consultants can access the data necessary to make critical decisions off-site, saving time and money on travel, personnel and adverse events at the wellsite.

SureDrill is a robust, web-based data delivery system that can securely transmit real time data via satellite or other network to remote users with access. The system is easy to install, with no disruption in wellsite workflow.





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