

DrilSaver™ III Vibration Monitoring System

INCREASE DRILLING EFFICIENCY AND PROTECT THE DRILLSTRING AND WELLBORE

OVERVIEW

Drillstring vibration and high shock loads are major factors in downhole tool failures, and can also cause rig repair and hole issues. Timely detection of downhole drillstring vibration is crucial to improving performance, avoiding non-productive time (NPT), and preventing equipment damage. In most cases, vibration is only recognized by drillers during extreme events, when the rig rotary drive system begins to stall and restart or the hoisting equipment begins to shake. Prior to this, the driller has difficulty identifying damaging levels of downhole vibration. Rig-floor instrumentation is rarely accurate enough to identify the oscillations of torque and RPM, hookload, or standpipe pressure caused by vibration until they become extreme.

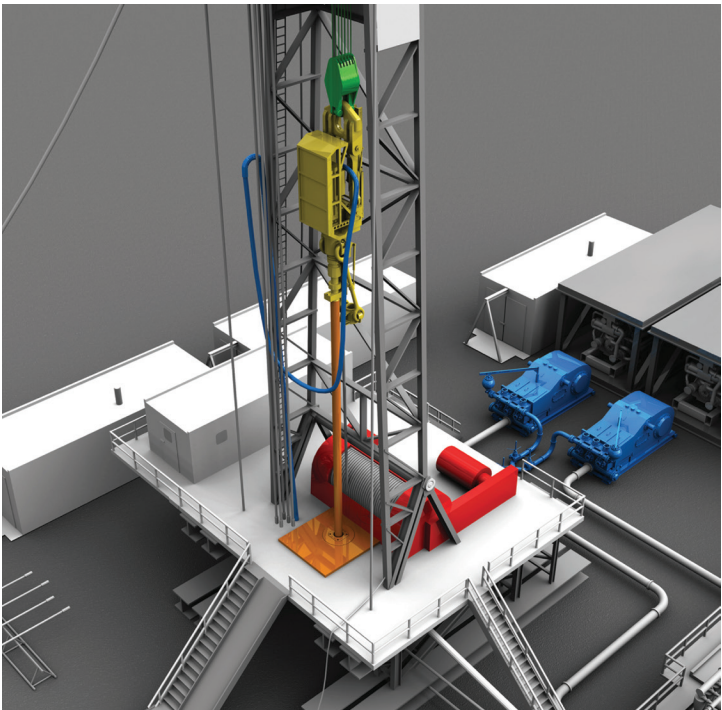
The DrillFact® real-time monitoring service's DrilSaver™ III torsional vibration monitoring system from Halliburton Sperry Drilling both identifies and measures the magnitude of drilling torsional vibrations through the high-speed sampling and analysis of surface drilling parameters to help you maximize the value of your asset.

BENEFITS

- » Reduces bottomhole assembly (BHA) and tubular failures
- » Decreases bit damage and increases bit life
- » Reduces the number of tool failures
- » Avoids unnecessary trips for premature bit failure or fishing
- » Determines optimum rotational speed
- » Monitors vibration levels, even when the mud pulse is disrupted or when operating in a high-pressure/high-temperature (HP/HT) environment

FEATURES

- » High-frequency data acquisition for the true picture of drilling conditions
- » Fast Fourier analysis of torque, RPM, hookload, and standpipe pressure
- » Rig-floor display for rapidly reacting to changing conditions and measuring the effects of altering drilling parameters
- » A waterfall plot in the software for identifying any shifts in vibration frequency over time
- » Easy installation, using standard rig sensors
- » Fully configurable for all possible installation options and rig types



DrilSaver™ III system measurement capabilities: torque, RPM, hookload, standpipe pressure, depth, and pump strokes

To control vibration effectively, the DrillSaver III torsional vibration system displays a constantly updated vibration magnitude chart showing changes in the severity of the vibration. The magnitude is used to determine the effectiveness of the actions taken to reduce the vibration levels.

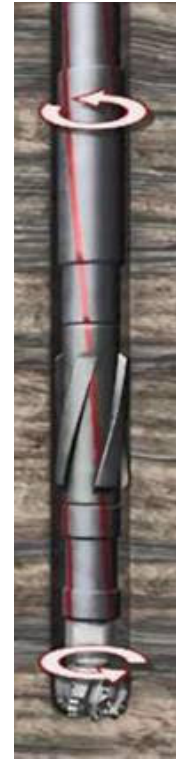
The high-frequency data can be automatically stored for playback at a later point to assist in post-run analysis and to serve as a training aid in order to:

- » Assess drilling conditions and develop recommendations
- » Identify the cause of drilling problems
- » Identify the optimum drilling parameters

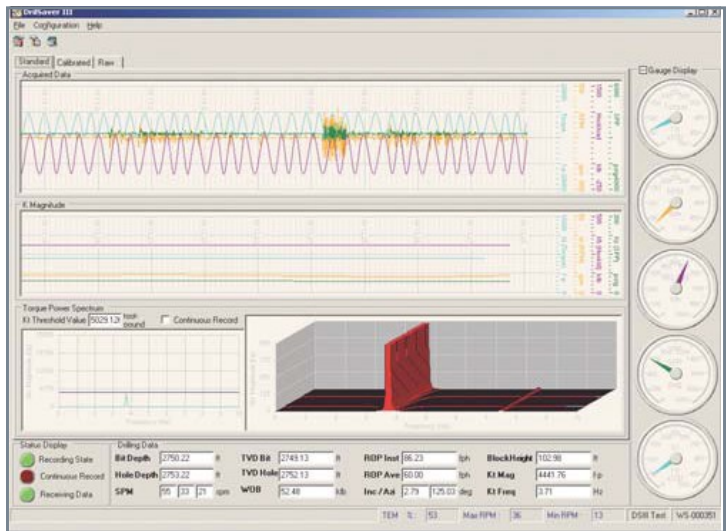
DrillSaver III analysis complements downhole vibration measurements by providing a greater sensitivity to torsional vibration with second-by-second updates. It can be coupled with downhole vibration measurements.

REDUCE WELL TIME WITH REAL-TIME VIBRATION ANALYSIS

The DrillSaver III system overcomes the limitations of conventional monitoring systems by combining the ability to acquire and store surface drilling information at high data rates with the ability to perform fast Fourier analysis on torque, RPM, hookload, and standpipe pressure. High-speed sampling of data provides the true picture of conditions that can be otherwise obscured by lower sample rates, data averaging, or data smoothing. Fast Fourier analysis measures the frequency and magnitude of signal oscillations caused by vibration. Analysis of the torque allows the measurement of the magnitude of torsional vibration generated by stick-slip. Analysis of the standpipe pressure is used to identify torsional vibration in mud motors. Analysis of the hookload can identify fluctuations caused by axial vibration.



Torsional stick-slip vibration



DrillSaver™ III interface – 100-Hz data acquisition and display, multiple-channel fast Fourier analysis, power spectrum, waterfall power spectrum plot, and drilling parameters

For more information, contact us at sperry@halliburton.com or visit us on the web at www.halliburton.com

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