

Drilling Vibration Analysis

Ref: SI02

Objectives

- Avoid vibration induced failures and poor ROP by utilizing an advanced frequency domain analysis
- Suggest safe operating windows to avoid critical rotation speeds during a complete bit run
- Ensure proper placement of sensitive measurement tools in the BHA
- Determine if vibrations are a root cause of drill-string failure in a post-analysis
- Improve hole quality by avoiding hole snaking induced by lateral vibration

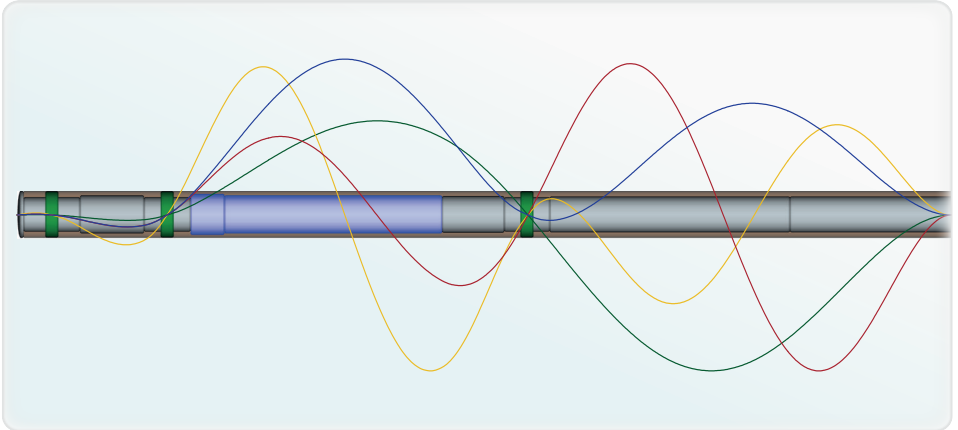
Benefits /

Pre-Well

Real Time

Post-Well

- Reduce NPT caused by vibration induced drill-string failure
- Optimise ROP by reducing vibrations of the BHA (such as: Bit bouncing, stick-slip and whirling)
- Reduce number of trips by prolonging bit life
- Increase mean time between failure of sensitive downhole equipment
- Ease operations and save time by reducing borehole tortuosity



Modal shapes and amplitudes of critical lateral vibrations

Includes

- System frequencies response and vibrations analysis (Axial, Torsional and Lateral)
- Modal shape determination accounting for vibrations amplitude and damping effect
- Sensitivity to operating parameters and downhole conditions (such as WOB and hole overgauge)
- Boundary condition based on geometry or contact force, including drill pipe contact point
- Various excitation sources such as drill string and mud motor imbalance

Deliverables and Timing

- Earliest result delivery within 4 days after reception of full and usable set of data
- Delivery of final PowerPoint® or written report within 2 weeks, intermediate reports on demand
- Result support from our most experienced Drilling Champions, upon request
- Result presentation in client's office (optional)
- Real-time support available onsite or remotely (optional)