

NOV's Real-time Torque and Drag Service Provides Automated Casing Monitoring in West Texas Drilling Operation

Innovation in action

A client operating in West Texas needed to acquire and evaluate accurate torque and drag data in real time to automatically monitor casing and quickly identify operational dysfunctions. NOV worked with the client, using the cerT&D real-time torque and drag service, to address drag issues related to casing stiffness and provide an enhanced overview of the operation.

In addition, the cerT&D service can enable several other key advantages during casing runs, such as:

- Ensuring equipment and casing integrity to minimize AFE
- Minimizing early casing setting due to stuck issues
- Adding extra bottomhole assembly runs
- Reducing potential surge formations
- Avoiding the casing passing the tensile limit capacity of rigsite or pipe equipment

Technology

NOV's cerT&D™ real-time torque and drag service provides real-time information on downhole friction and hole issues as well as automatic casing monitoring. The service works in conjunction with rigsite instrumentation, providing torque and drag data that helps make necessary adjustments to reduce the chances of getting stuck, lower the risk of damaged equipment, and ensure casing integrity. A dedicated team of eVolve™ drilling experts at our Real-Time Technology Center (RTTC) provides advisory services to enhance the software.

Performance

Our cerT&D service was deployed to monitor, troubleshoot, and observe the client's casing run during ongoing drilling operations in West Texas. The cerT&D service allowed the client to identify overpulls, tight spots, and other drag issues in real time, enabling swift and efficient corrective action and ensuring that equipment integrity remained intact. In addition, using the cerT&D service allowed the client to automatically capture data, create a casing roadmap, and minimize early casing setting due to stuck issues.

Results

The eVolve team designed a casing model in our finite element analysis software using the technical specifications provided by the customer, then compared the model and data captures in real time using the cerT&D service to observe torque and drag trends and mitigate any issues. The client was casing the hole up to 6,400 ft (1951 m) and filling up the liner every 10 stands. The client was notified of changes in tripping speed from 50 to 30 ft/min (15 to 9.1 m/min) around 3,537 ft (1078 m) during the operation. At approximately 5,681 ft (1732 m) the hole became tight where the real-time data captures approached the helical buckling limit, with RTTC personnel notifying the client immediately. At that point the rig began washing and reaming down to make the casing operation successful.

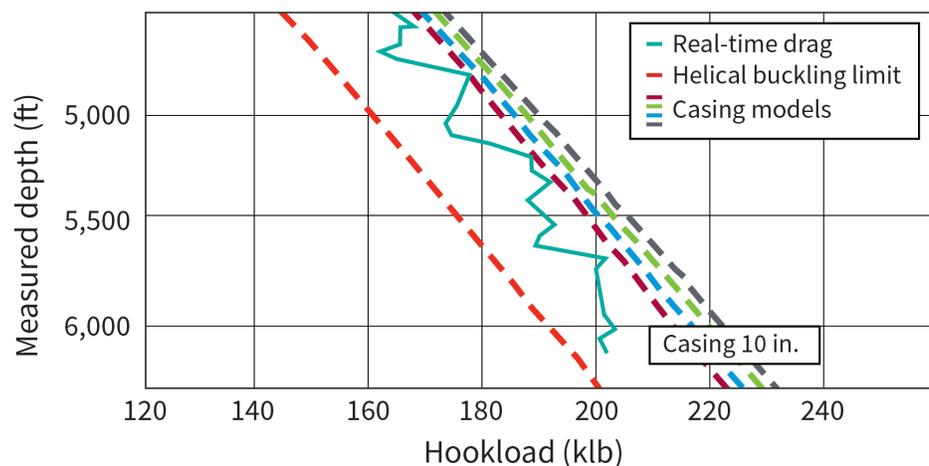


Figure 1 – This graph shows a casing run in West Texas for a client where increased drag was observed around 5,681 ft (1732 m), near the end of the run. As the client approached total depth (TD), real-time drag drew critically close to the helical buckling limit. Our rapid action to prevent exceeding this limit, including a gradual decrease of tripping speed, allowed the client to reach TD without damage to the equipment or casing.

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