



Non Stop Driller™ System

**Maintain true constant bottom
hole pressure, equivalent
circulating density and drilling
performance optimization**



Nabors Non Stop Driller™ System is a sub-based system which enables the continuous circulation of drilling fluids downhole while making or breaking drill pipe connections. The system has been designed to address operator concerns including drilling efficiency, safety performance, and rig integration.

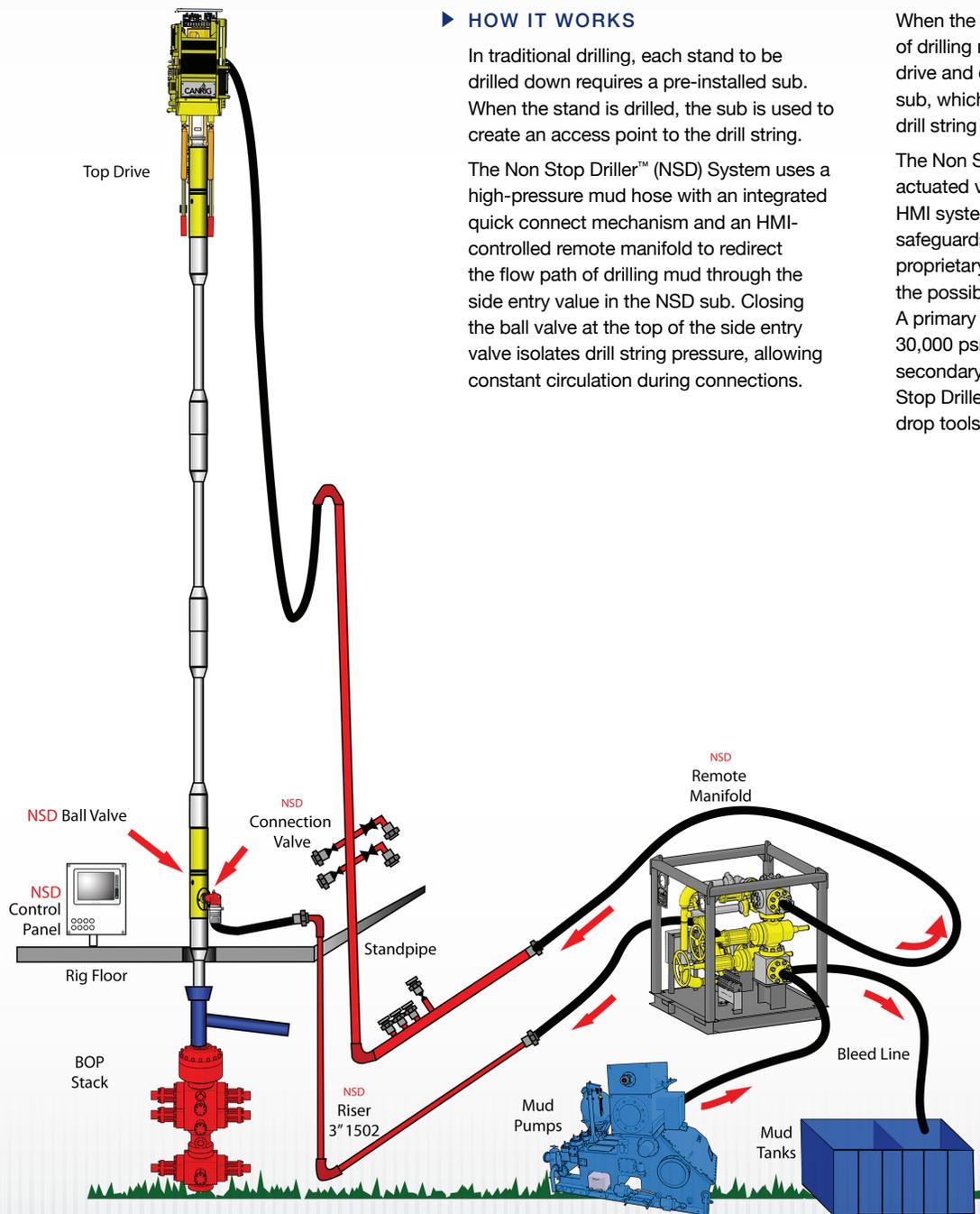
▶ HOW IT WORKS

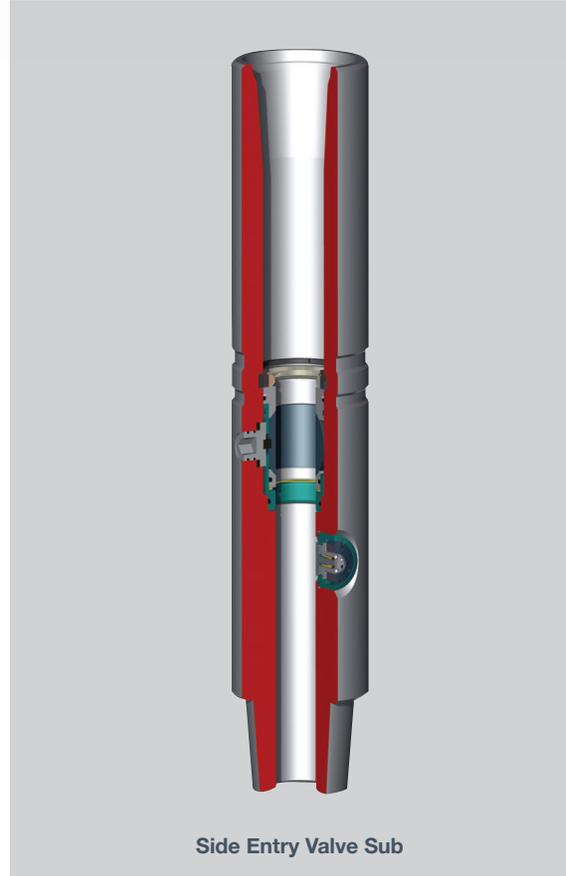
In traditional drilling, each stand to be drilled down requires a pre-installed sub. When the stand is drilled, the sub is used to create an access point to the drill string.

The Non Stop Driller™ (NSD) System uses a high-pressure mud hose with an integrated quick connect mechanism and an HMI-controlled remote manifold to redirect the flow path of drilling mud through the side entry valve in the NSD sub. Closing the ball valve at the top of the side entry valve isolates drill string pressure, allowing constant circulation during connections.

When the connection is completed, the flow of drilling mud is redirected through the top drive and drilling continues with the NSD sub, which is now an integral part of the drill string downhole.

The Non Stop Driller™ System features fully actuated valves controlled by a dedicated HMI system incorporating multiple safeguards and system interlocks. Its proprietary locking mechanism eliminates the possibility of release during operations. A primary metal-metal seal is rated for 30,000 psi and a protective cap provides secondary barrier to wellbore fluid. Non Stop Driller™ sub retains access for ball drop tools and wireline services.





Side Entry Valve Sub

► **BENEFITS OF NON STOP DRILLER™ SYSTEM**

Nabors' Non Stop Driller™ System is designed to address operator concerns, including drilling efficiency, operational safety, hole condition and equipment integration. It enables:

Wellbore Improvements:

- Enhanced cleaning and continuous solids transport
- Maintains a consistent annular pressure profile across the entire wellbore, eliminating stability problems
- Minimizes bottom-hole pressure fluctuations in narrow pore pressure/fracture gradient applications
- Minimizes connection gas and reduces risk of kicks on connections

Underbalanced Drilling (UBD) and Managed Pressure Drilling (MPD)

Utilization:

- Provides seamless integration to UBD/MPD operations, offering unprecedented bottom-hole pressure control on connections

- Improves operational safety by eliminating surface pressure increases during connections
- Eliminates post-connection stabilization time during multiphase drilling on air, foam and two-phase wells

Reduced Non-Productive Time:

Non Stop Driller™ System helps reduce NPT by mitigating:

- Stuck pipe incidents
- Extended wellbore conditioning and nuisance gas circulation
- Casing running problems related to hole condition
- Excessive bottom hole temperatures and bottom-hole assembly heat soak damage
- Time required to re-establish two-phase circulation

► **CASE STUDY**

The Non Stop Driller™ System Difference

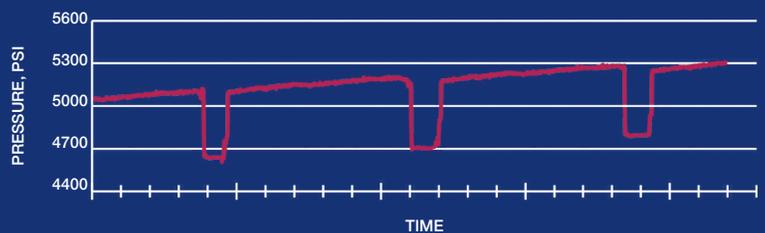
Without Non Stop Driller™

Typical conventional connection profile showing significant drops in bottom-hole pressure (BHP) during connections

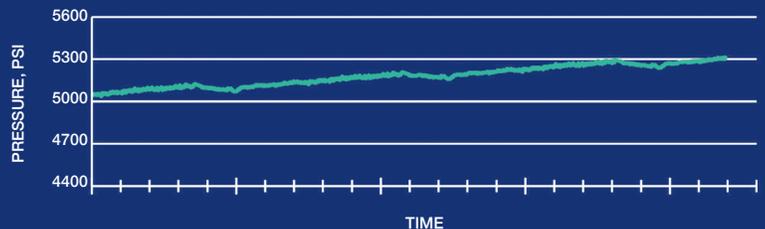
With Non Stop Driller™

Typical NSD connection profile characterized by minor drops (<25 psi) in bottom-hole pressure and a gradual decline in BHP due to reduced solids content in mud while making a connection

BHP Response During Conventional Connections



BHP Response During Connections Utilizing Non Stop Driller



Why choose Nabors' Non Stop Driller™ System over the competition?

- ▶ Fastest and simplest operational system on the market
 - ▶ Sub design with two barriers against the wellbore
 - ▶ Seamless rig integration
 - ▶ Rig crew handles the service
 - ▶ Sub have access for ball drop tools, and wireline access
 - ▶ Eliminate stuck pipe events during drill pipe connections
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Why choose Nabors?

With operations in more than 20 countries, Nabors is one of the world's largest oil and gas drilling contractors. Our vision is to be the driller of choice for customers, investors and employees by focusing on technology, safety and performance.

We not only provide global drilling services for both land and offshore, but we're also a leading provider of drilling equipment, software and technology. Combined with the experience of our people, we continue to transform the global drilling industry by providing RigtelligenceSM for the Future.

Our goal is to provide our customers with the highest level of excellence and performance – on every rig and well. Every time.