**TDReam™ Tool enlarges wellbore and reduces rathole length in one trip, saves rig time and costs**

Multiple reaming trips to reduce rathole length are a thing of the past

### OVERVIEW

Conventional reaming technology involves multiple trips to enlarge the wellbore. Combined with the traditional challenges of downhole steerability, creating an enlarged borehole at total depth (TD) usually left the operator with an overlong rathole. New Halliburton reaming-while-drilling technology helps eliminate the long rathole without concern for steerability. The short, integrated TDReam™ tool is placed between the bit and the rotary steerable system (RSS), enabling rathole reduction to as little as 3 feet and optimizing borehole size at TD. The innovative solution makes drilling and reaming in one trip possible, economically vital as the industry probes greater water depths and extreme environments. Recently, an operator in offshore Norway used the TDReam Tool as the key component to drill and enlarge a wellbore from 12 1/4-in. to 13 1/2-in. in one trip, enabling the successful installation of a 10 3/4-in. casing at TD.

### CHALLENGES | SOLUTION
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Excessive rathole length | Rathole reduction with optimum steerability
In traditional reaming-while-drilling bottomhole assemblies (BHA), the reamer is placed above the RSS and logging-while-drilling (LWD) tools, creating a long rathole and requiring an extra trip to enlarge the hole to TD. | The rugged TDReam tool is positioned between the drill bit and the RSS, enabling the rathole length to be reduced to less than 3 feet without requiring an extra trip. The tool remains dormant during drilling of the section without sacrificing precise steerability of the RSS. The tool is activated at TD to enlarge the rathole left below the reamer.

Improve operational efficiency | Rig time savings
Depending on the well depth, when an operator has to pull a string and trip in a dedicated reaming/cleanout run, significant rig time and costs can occur against the production value of the well. | This innovative Halliburton solution achieved all operator objectives that not only saved rig time but also reduced rathole length while enabling the liner to be run in the last 50 feet of hole. In this case, time savings resulted in an estimated $300,000 savings to the customer.
A CASE STUDY: Enlarging a wellbore while reducing rathole length

Halliburton’s TDReam™ tool, XR™ reamer combined to reduce rathole length to 20 feet in one run

TDReam tool is based on the field proven NBR® reamer technology
Hydraulic shear pins are used to maintain the TDReam tool in a dormant position during the drilling of the section. A minimal increase in internal pressure breaks the shear pins and forces the pistons to move radially. A pressure drop through the bit maintains the tool in the open position while the return springs close the pistons when flow decreases.

MaxBHA™ software provides state-of-the-art steerability
The diameter and length of the TDReam Tool helps ensure optimal steerability. Halliburton’s MaxBHA™ software models BHA behavior and steerability, improving well placement, drilling performance, and tool reliability.

Bit/reamer hydraulics have been optimized to improve tool cleaning efficiency
Extensive computational fluid dynamics (CFD) enhance bit/reamer hydraulics for improved tool-cleaning efficiency. No hydraulics are compromised from the internal workings of the tools. SelectCutter™ PDC Technology includes abrasion resistance that enables cutters to stay sharper longer and deteriorate slower than other cutters, producing more footage and higher rates of penetration (ROP).

Balanced, concentric tool substantially reduces BHA vibration, improving steerability and stability.

Micro nozzles improve the fluid flow across the cutting structure.

Reducing Rathole Length

With the TDReam tool, you can reduce rathole length from upwards of 120 ft down to less than 3 ft.

The operator deployed both the TDReam and XR tools in combination and resulted in time savings of an estimated $300,000.

Challenged to design a tool to increase efficiency, Halliburton has responded with a solution that has the added benefits of optimized steerability and fluid flow, and reduced tool length, based on the field-proven reliability of the NBR® reamer technology.

Award-winning Halliburton technology.
Saves time.
Saves money.

NBR® reamer technology added benefits:
• Optimized steerability and fluid flow
• Reduced tool length based on the field-proven reliability of the NBR® reamer technology.