Wellbore Integrity
SOLUTIONS

RED BARON

TRACKMASTER OH-C

Openhole whipstock
and cementing system

TrackMaster OH-C

Openhole whipstock and cementing system

Applications

- Openhole sidetracking with isolation of the pilot hole in medium to hard formations
- Accurately controlling kickoff depth and direction
- Landing laterals with tight TVD tolerances
- Maximizing recovery with a horizontal lateral

Benefits

- Maximizes the chance of achieving a successful sidetrack on the first attempt
- Maximizes reservoir recovery with optimized horizontal lateral
- Eliminates time waiting for cement to cure
- Saves rig time by reducing interval drilling time
- Improves drilling efficiency by providing accurate control for precise kickoff depth and direction

Features

- Bit-friendly ramp that lowers bending stresses
- Elimination of packers for faster run-in speed
- Hydraulically set expandable anchor with triaxial steel slips that span multiple hole sizes and accurately set whipstock depth
- Large ID for higher rate of pumping
- Anchor design to allow flow around the anchor and protection from the bullheading cement
- Collet retention to enable running extended lengths of tailpipe below the whipstock for selective cement plug placement
- Torque transmission through running tool–whipstock interface

Circumvent cement plug obstacles. Achieve sidetracking assurance.

Hydraulically expandable anchor controls kickoff depth and orientation

An openhole sidetrack with a whipstock eliminates the time-consuming inefficiencies of traditional tools and methods. By setting a hydraulically expandable anchor, a whipstock system enables running, orienting, anchor setting, cementing, and stinger recovery to drill ahead in one trip.

Traditional tools and methods add extra rig time

Traditional openhole sidetracking starts with a trip to set a cement plug, followed by nonproductive time waiting for the cement to cure, and then tripping back in with a drill bit to dress off the plug at the kickoff point. This process can take up to 24 hours before the actual sidetracking operation begins.

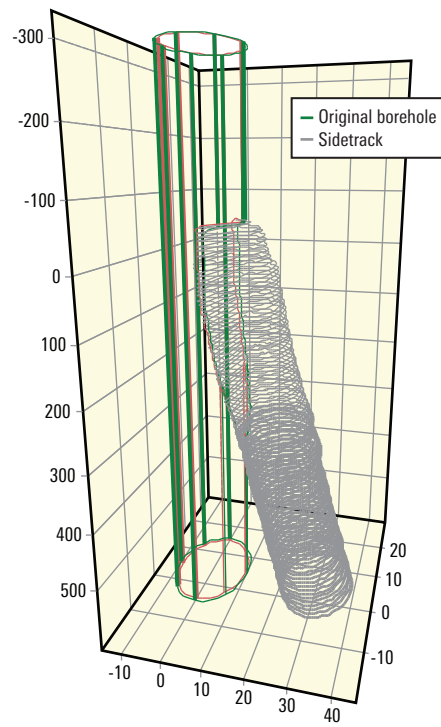
Prejob analyses match the technology with the application

For openhole sidetracking with isolation of the pilot hole, the TrackMaster OH-C* openhole whipstock and cementing system uses sophisticated dynamic modeling to match specific wellbore departure objectives, constraints, and physical characteristics.

The i-DRILL* engineered drilling system design uses predictive modeling to identify application-specific solutions that minimize vibrations and stick/slip and optimize milling assembly performance. Predictive modeling minimizes rathole and directional drilling vibrations. The i-DRILL design process quantifies vibrations and milling ROP, and each component of the assembly and drillstring is simulated and analyzed to optimize mill and whipstock design and configuration. Using offset data, surface and downhole measurements, and a thorough knowledge of products and applications, the i-DRILL design process creates a virtual milling and drilling environment.

WhipSim* whipstock simulation software provides a preview of the whipstock assembly's downhole behavior in a given application, helping ensure that subsequent drilling and completion strings are not affected by the dogleg across the whipstock.

In the execution phase, the Runner* drillstring analysis program provides a complete sidetracking model to help analyze surface parameters, torque and drag, setting operations for anchors and shear bolt activation, and contact forces and buckle states of the working string in the departure operation. Once the actual operation has begun, the Runner program provides a real-time analysis of the modeled parameters as compared with the actual parameters.



WhipSim whipstock simulation software helps ensure subsequent drilling and completion strings are not affected by the dogleg across the whipstock.

TrackMaster OH-C

Openhole whipstock and cementing system

For contingency planning of openhole sidetrack applications requiring isolation of the original borehole with a cement plug below the kickoff point, the TrackMaster OH-C system circumvents the obstacles encountered with conventional cement plug sidetracking. By initiating a sidetrack while allowing cementing of the lower zones, it eliminates the uncertainty of kicking off with a cement plug and the need for expensive, repeat attempts.

Single-trip whipstock setting and cementing

A number of downhole factors affect the success of traditional cement plug setting operations, and multiple attempts are frequently required before a successful plug is obtained.

With the TrackMaster OH-C system, setting the whipstock and cementing are accomplished in a single trip, saving the costs of extra trips, additional cement plugs, loss of drilling days, and reconfiguration of the drilling trajectory.

Triaxial expandable anchor.

Faster trip-in speeds

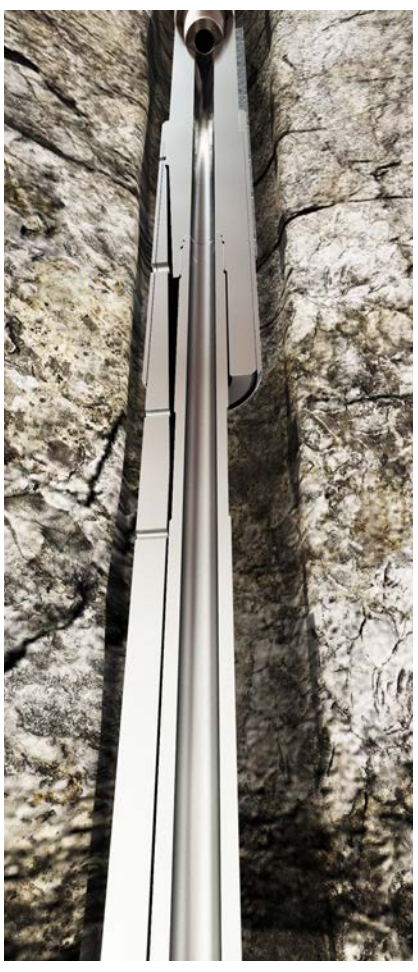
The process starts by running the whipstock and expandable anchor in hole. Faster trip-in speeds are attainable with the all-mechanical anchor design that eliminates packer elements.

Once the whipstock slide is oriented, an activation ball is dropped, and the anchor is hydraulically set at the optimal depth, firmly gripping the borehole. Then the burst barrel is ruptured to establish communication with the annulus.

Selective cement plug placement

A retention collet secures the cementing stinger to the anchor and whipstock assembly until an activation ball is dropped. The collet allows the whipstock to support extended lengths of tailpipe below the anchor for precise cement plug placement. The collet also provides push and pull capabilities for working in tight hole conditions. Once the collet is released, cement is pumped through the whipstock, and the running assembly is tripped out of the hole.

Retention collet.



Running tool assembly.

Ruggedized connection for running through tight holes

For torque transmission while running through open holes, the running tool assembly is mated to the top of the whipstock ramp. The ruggedized assembly enables working the system through poor hole conditions while allowing a quick release once the triaxial anchor is set.

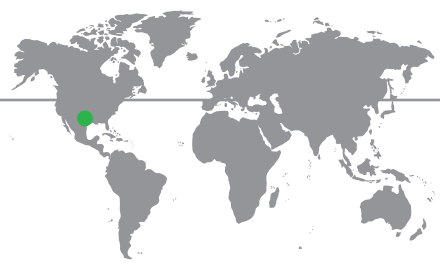
Isolation of the original borehole and elimination of time waiting for cement to cure

Cement is pumped above the top of the whipstock, allowing isolation of the original borehole at the kickoff point. The directional drilling BHA is run in immediately to establish the desired borehole trajectory and drill ahead. Immediate sidetracking eliminates the time spent waiting for cement to cure.

Bit-friendly ramp.

CASE STUDY

TrackMaster OH-C system saves 1.5 rig days on 19 runs in Eagle Ford shale



Openhole sidetracking with whipstock eliminates cement curing time and dressing run

An operator drilling unconventional wells in the Eagle Ford shale saved an average of 1.5 days on 19 runs using the TrackMaster OH-C system to sidetrack from pilot holes to land the laterals. The average time for the top-performing sidetracking operations in offset wells using conventional cement plug methods was 8.3 days to land the curve. Using the TrackMaster OH-C system, the average time for the top-performing openhole whipstock sidetracks was 6.8 days, with the fastest well landing the curve in 5 days.

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