TrackMaster Nexus™

Cased hole hydraulic anchor whipstock running procedure

PRIOR TO RUNNING IN THE HOLE

It is recommended to run a CBL and CCL to best determine the setting depth for the TrackMaster Nexus Expandable Anchor system.

Ensure a Job Safety Analysis (JSA) has been performed and a lifting plan has been organized with the rig crew for the TrackMaster whipstock operation. Ensure a "toolbox talk" is held with all crews prior to any operations.

MCBPV TEST ASSEMBLY

- Test Cap or Kelly Cock Valve
- MCBPV
- MWD or UBHO
- Joint of Drill Pipe

WHIPSTOCK ASSEMBLY

- Integral TrackMaster Nexus Casing Scraper
- ASR, Retrievable Packer, Permanent Packer or Expandable Anchor
- TrackMaster Nexus Whipstock Assembly
- TrackMaster Nexus Integral Mill
- Running Tool
- HWDP or Flex Joint
- MCBPV
- Float Sub[1]
- UBHO or MWD
- DC or HWDP
- Drill Pipe to Surface

COMPONENTS NOT SUPPLIED BY WIS

- DC, HWDP, or DP
- UBHO or Gyro
- MWD

Job Site Preparation

1. Measure all BHA components.
2. Remove the protective cover and ensure that no cracks, breaks, or other damage to the slip segments, packer, or TrackMaster Nexus casing scraper have occurred during transit.
3. Remove piston from the running tool and check condition of the piston and O-ring.
4. Verify the optimal setting depth and align it with the client

Surface Testing the Multi-Cycle Bypass Valve (MCBPV)

1. Pick up the MWD with one joint of drill pipe on top and torque all necessary connections. If MWD is not used, skip this step and proceed to step 2.
2. Make up MCBPV and test cap to the bottom of the MWD. If MWD is not used, make up MCBPV and test cap to bottom on drill pipe stand.
3. Run assembly into the drill pipe and set in the slips.
4. Start circulation and steadily increase the pumps to achieve the pre-determined MCBPV flow rate. Whipstock supervisor may change flow rate based on MWD need.
5. When the directional representatives are satisfied that the MWD is functioning properly and the signals are verified, record parameters.
6. Continue with cycling the MCBPV.
7. On the sixth cycle, the pressure will suddenly increase.[2] Stop pumps immediately and allow the pressure to settle. Observe the pressure is stable. Record the flow rate required to close the valve.
8. Once the test has been completed, bleed off all pressure.
9. POOH and reset the MCBPV to the first cycle.[3]
10. Remove the test cap and the drill pipe if it is not going to be part of the whipstock BHA.
11. Stand back the assembly clear of rotary table.

Picking Up Whipstock Assembly

1. Pick up and make up the mill and running tool.
2. Lower assembly through the rotary and secure with slips and collar clamp.
3. Pick up the previously stood back MCPBV and MWD (if used), and soft torque it to the running tool.
4. Pick up and stand back the assembly clear of rotary table.
5. Pick up the TrackMaster Nexus whipstock assembly and move to the rig floor either by hydraulic catwalk or air hoist.
6. Remove the anchor's and TrackMaster Nexus Casing Scraper protective cover and check the anchor visually or any defects.
7. Make up the scraper to the anchor. The anchor is pre-torqued to the whipstock at the shop.

8. Run in hole and stop at the hinge connector. Remove the two T-bar hinge pins.[4]
9. Continue running in hole until the hook slot is level with the rotary, slide the false rotary table into position and install the support pin and then gently lower the assembly onto the pin. If a false rotary is not used, set whipstock on slips with drill collar clamp around the whipstock.
10. Pick up the mill assembly and connect break bolt to mill, ensuring locking pin is flush against mill.
11. Install hydraulic hose and break-off plug.
12. Have the driller pick up slowly and take the complete weight of the assembly with the blocks.[5]
13. Remove the false rotary table (or slips) and run the assembly down until the running tool is in the rotary, and secure running tool with slips and a drill collar clamp.
14. Back out the soft torqued connection and stand the assembly to the side.
15. Fill up the whipstock assembly, mill, and running tool with clean oil.
16. Fill fluid to within one foot of the top of the running tool bore. Allow any air to percolate out and then install the running tool piston. Install the blank cap on the piston stem.
17. Pick back up on the stood back assembly and make up the connection to the running tool.
18. Scribe whipstock by pulling assembly out of hole until whipstock face is visible. Scribe the line between the whipstock face and MWD/UBHO sub.
19. Check the MWD/UBHO sub for the offset correction and record this information. Run in hole with the rest of assembly.
20. Make up the remainder of BHA and trip in the hole with controlled parameters. Check the load rating for trip in hole (refer to Table 1).[6]

TABLE 1. TRACKMASTER NEXUS ADVANCED CONNECTION

Load Type (While Tripping in Hole)	Rating
13⅜	
Slack-Off Limit	150,000 lbs.
Max Torque	15,000 ft-lbs.
Overpull Limit	60% Break Bolt Rating
9⅝"	
Slack-Off Limit	110,000 lbs.
Max Torque	10,000 ft-lbs.
Overpull Limit	60% Break Bolt Rating
7"	
Slack-Off Limit	70,000 lbs.
Max Torque	5,000 ft-lbs.
Overpull Limit	60% Break Bolt Rating

Setting Sequence

1. Once at the required setting depth check pipe tally, record the pick up and slack off weights, and mark pipe at the required setting depth.
2. Run the string 10–15 ft. down past the mark and then come back up to the reference mark.
3. Reciprocate the string using the scraper at the desired anchor setting depth. No circulation is required during this operation. Once completed, position the anchor at the desired setting depth.
4. Break circulation slowly, less than 50 gpm, and increase the flow rate steadily to the upper end of MWD flow rate. Keep the pumps running during the orientation process to obtain continuous tool face readings and to avoid unnecessarily cycling the bypass valve.
5. Obtain a reading and record the direction of whipstock face. To achieve the desired orientation, turn the string as required and then work the torque through the string by first slacking off then picking up. Work the string up and down as required to ensure the torque is transmitted to the whipstock and then re-survey. Patience is required at this time.
6. When the whipstock is at the required orientation, slack the string down past the setting depth mark and then pick back up to it.
7. Cycle the pumps off and on and re-check the orientation. If the orientation is acceptable, continue to cycle the MCBPV to the closed position.
8. On the last cycle (6th cycle) switch off the pumps and allow pressure to settle, then slowly pressure up to 3,000 psi. Hold this pressure for 3 minutes and maintain it while progressing through the shearing processes.
9. Verify anchor is set by slacking off 20–25 klbs as a push test.

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10. After setting the anchor, a tension load is applied (overpull) to shear the break bolt between the mill and whipstock. On the TrackMaster Nexus system, the bolt will not shear downward, like the standard TrackMaster system does. Pick up, then come back to neutral 3–5 times at approximately ½ of the break bolt shear value (see Table 2). Hold each strain for 1 minute. Finally, pickup and apply overpull until the break bolt shears.
11. When the mill has sheared from the whip, pull up at least 5' to rupture the hydraulic hose. Monitor for the pressure drop as confirmation.

Milling the Window

1. Use light weight (<2 klb) during the initial drill out process.
2. Mill window per WIS supervisor's recommendation.
3. When TD is reached, ream window several times to dress window until less than 5 klb of drag is observed.
4. Circulate bottoms up and pull out of hole.

TABLE 2.

Break Bolt Shear Value	
System Size, in.	**Shear Value, lbs.**
7	45,000
9⅝	55,000
13⅜	75,000

Together with engineering, the shear value can be modified to meet the requirements of a specific planned scenario.

Milling Parameters	
System Size, in.	**Weight on Mill, klb**
7	2–12
9⅝	2–15
13⅜	2–20



The scraper, featuring a unibody design with 360° coverage, facilitates integrated cleaning during the trip and attaches to the bottom of the packer or anchors.



The hydraulically set retrievable anchor enables kickoff at a specific depth and allows immediate sidetracking without waiting for cement to cure.

Notes:

1. If there is a possibility that settled drilling solids may be present while tripping in hole, a float valve can be included between the bypass valve and the MWD.
2. The valve will close and pressure up suddenly on the sixth cycle. To prevent blowing the pop-off valve, stage the pump up to the valve closing flow rate then increase flow rate slowly until the valve closes.
3. It is recommended to not burn the first cycle as we will need all cycles to enable us to circulate the hole on the trip in.
4. Cover any holes around the rotary with a cover or tarp when attaching or removing attachments to the whipstock assembly
5. The blind rams have been closed previously but a check may be required on the available length as the whipstock and anchor are longer. If the assembly tags the rams before the support pin can be installed then the rams should be opened. Closing the rams is purely an additional safety measure and not critical to the operation.
6. Use the load rating for the trip in. Proceed to fill every 20–30 stands until setting depth is reached. Extra caution should be observed when at the BOP, casing crossovers, etc.
7. This procedure should be used as a guideline only, not to take the place of critical thought and open discussion between WIS whipstock representatives and the client on a case-by-case basis, preferably discussed during the planning phase of the sidetrack. It is critical that all operations are performed in a safe manner, maintaining full environmental and regulatory compliance. All involved personnel have the obligation to stop the job and discuss at any time if there is any question with the upcoming or ongoing operation!

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