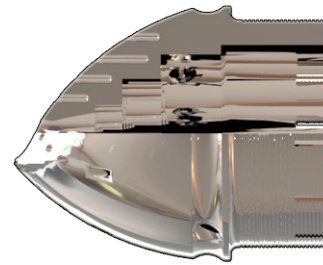


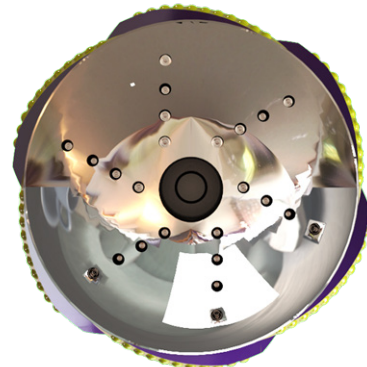
DOWNHOLE
PRODUCTS

EZI-DRILL® ALUMINIUM NOSE REDUCES DRILL OUT TIMES

TECHNOLOGY: Downhole Products Ezi-Drill aluminium nose comes as standard on all DHP Pen-O-Trator® and pilot guide shoes 6 5/8" and above. The Ezi-Drill nose feature removes around 30% of the internal nose material coupled with strategically placed "breakup" voids to encourage aluminium breakup into manageable pieces. As the shoe is drilled the aluminium will break-up into pieces either small enough to be circulated back to surface or of a size that will inbed into the side wall of the new section below.

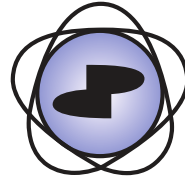


PERFORMANCE: A North Sea operator successfully ran their 9 5/8" Casing to TD at 4,504ft through a 12 1/4" openhole and cemented in place as per program. The 8 1/2" BHA was made up c/w PDC bit/ rotary steerable assembly and run in hole to drill out the 9 5/8" shoe track. TOC was located at 4,408ft and drilling out of the shoe track components/cement was undertaken with the following parameters being adhered to.



- 5-25 KLBS - W.O.B.
- 80 RPM - BIT SPEED
- 300-450 GPM – FLOW RATE
- 2-18 K FT. /LBS. TORQUE RECORDED DURING SHOE TRACK DRILL OUT

For further information on this tool and proposed applications, please contact your local DHP representative. Specifications may be liable to change without prior notice.



Progress through the float collar and wiper plugs was very slow with torque spikes up to 18 kft-lbs being recorded during drillout. Conversely the Pen-O-Trator reamer shoe was located at 4,502ft and drilled through in 20 minutes.

Extract from Drilling report

06:45-11:00 hrs. - Continued drilling out float, plugs, cement and reamer shoe from 4411 ft. to 4504ft. Progress drilling the float, was slow. Parameters varied to make progress. 5- 25 klbs WOB, 300- 450, 5- 80 rpm, 1360- 1578 psi, 2- 18 kft-lbs. Torque spikes of 18 kft-lbs. recorded as the float plugs drilled through.

Drilled cement to tag shoe at 10:40 hrs. at 4,502ft. Drilled out reamer shoe from 4,502 to 4,504ft. with 10 k WOB – 410 gpm = 1,380 psi – 3.5 – 4.0 k ft. lbs torque at 60 rpm. Exited shoe at 11:00

The client was very impressed with the quick drill out of the Pen-O-Trator reamer shoe Ezi-Drill aluminium nose, as they had experienced, troublesome drillouts previously with a competitor's product.

In these challenging times shoe track drillouts are where many operators experience unforeseen additional time lost on drill up of now redundant float equipment. Phenolic/Plastic noses are seen by some as the answer but they are inherently flawed by compromised allowable set down weight when running in hole coupled with poor resistance to knocks taken during transportation to the rig site.

- DOWNHOLE PRODUCTS PILOT GUIDE SHOES ARE CUSTOM BUILT TO THE CUSTOMERS SPECIFIC REQUIREMENT.
- CAN BE MADE TO MATCH ANY CASING GRADE OR PREMIUM THREAD
- AVAILABLE IN SIZES 3 ½" – 20" (EZI-DRILL NOSE AS STANDARD ON 6 5/8" AND ABOVE)
- API CAT III C VALVE SUPPLIED EITHER SINGLE, DOUBLE OR AUTO-FILL OPTIONS



For further information on this tool and proposed applications, please contact your local DHP representative. Specifications may be liable to change without prior notice.