

VAREL Pilot Guide Shoe LRL

The Trusted Leader in Well Construction Equipment

APPLICATION

18-5/8" x 22" OH Section @ 3446' MD
Casing Deployment

TECHNOLOGY

Pilot Guide Shoe (LRL – Lock Rotate Lock)

LOCATION

Saudi Arabia

CUSTOMER CHALLENGE

During casing operations of the 18-5/8" section, the casing string was required to navigate tight hole conditions and sloughing stringers, which had caused severe restrictions, erratic torque, and vibrations during drilling of 22" open hole. Rotation of the casing string was not an option due to thread limitations, and budget constraints excluded the use of casing while drilling (CWD). Historically, the customer faced significant challenges in running 18-5/8" casing to TD, as rotation was not feasible and only reciprocation into the hole was possible. Current cemented nose options could handle constant hammering as the nose starts to erode.

VAREL SOLUTION

Following challenges encountered during previous 18-5/8" casing runs, the Pilot Guide Shoe Lock-Rotate-Lock (LRL) was selected for this operation due to its ability to freely rotate when encountering obstructions and automatically lock when off-bottom, ensuring a smooth and risk-free drill-out.

The shoe track, incorporating the LRL Pilot Guide Shoe, was made up, function tested at surface, and run in hole. At 3,290 ft, the casing string encountered a restriction; however, through a combination of reciprocation and circulation, it was successfully freed and continued to reach the planned total depth (T.D.) of 3,446 ft.

Cementing operations were carried out as planned. After pressure release, no fluid backflow was observed, confirming that the float valve in the shoe was holding effectively. The subsequent drill-out of the shoe track proceeded smoothly, with a total of 80 ft drilled out — including conventional plugs, float collar, cement, and the LRL Pilot Guide Shoe.

The successful deployment and performance of the LRL design in this operation demonstrated its reliability and effectiveness under challenging downhole conditions. Based on these results, the same configuration has been approved for use in the next well, where similar conditions are anticipated.

CUSTOMER VALUE

- PGS-LRL slick design effectively navigated ledges and tight formations without becoming stuck.
- Faster casing deployment, resulting in rig time and cost savings.
- Smooth shoe track drill-out with no issues, providing peace of mind to the customer.
- LRL technology minimizes the risk of nose rotation during drill-out.
- Allows for active nose movement with minimal applied weight.
- Enables precise downhole front-end manipulation without the need for full string rotation.

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