

# Intervention Mill and Thru-Tubing Turbodrill Deployed to Restore Interval Access in Pakistan

In a gas well where buildup had blocked access to a perforated interval, the operator successfully removed 206 ft of hard scale in the production liner

## CHALLENGE

Remove scale buildup to restore access to a perforated interval in a gas-producing well in Pakistan.

## SOLUTION

Run the i-MILL TT\* intervention mill powered by a Neyrfor TTT\* thru-tubing turbodrill to achieve the desired milling performance and remove hard scale.

## RESULTS

Milled 206 ft (63 m) of hard scale in a single trip with an average ROP of 0.7 ft/min.



## Remedy blocked interval access under harsh downhole conditions

In Pakistan, an operator needed to reestablish access to the perforated interval on a gas-producing well. The operator had determined previously that production from the well was being hindered by the buildup of hard scale on the 4½-in production liner, restricting access to the perforated interval.

Prior attempts to remove the scale with high-pressure jetting nozzles were unsuccessful. Due to conditions in the well, nitrified fluids were required to maintain returns during the millout job. The top of the scale buildup inside the liner was confirmed at an MD of 12,188 ft (3,715 m) and the bottomhole temperature was recorded at 266 degF.

## Deploy i-MILL TT mill and turbodrill for consistent milling performance

To restore access to the perforated interval, Schlumberger suggested using the i-MILL TT mill, which was designed using the IDEAS\* integrated drillbit design platform to provide a force-balanced and fit-for-purpose cutting structure capable of efficiently removing hard scales and cement.

It was also recommended to use a Neyrfor TTT turbodrill for high downhole mechanical power output in harsh milling conditions. The turbodrill's all-metallic design is ideal for applications where nitrified fluids are required, as was the case in this well.

## Restored production with reestablished access to perforated interval

A 3½-in-OD i-MILL TT mill powered by a 2½-in Neyrfor TTT turbodrill was deployed on 2½-in coiled tubing to remove scale from 12,188 ft to 12,398 ft (3,715 m to 3,779 m), pumping brine at 1.1 bbl/min and 2,000 ft<sup>3</sup>/min of nitrogen.

The high rotational speed of the turbodrill combined with the engineered cutting structure of the i-MILL TT mill enabled the operator to mill out the hard scale that had built up inside the production liner. The combination effectively cleaned 206 ft (63 m) of hard scale in a single trip with an average ROP of 0.7 ft/min.



*The i-MILL TT intervention mill provided superior milling performance in harsh downhole conditions.*