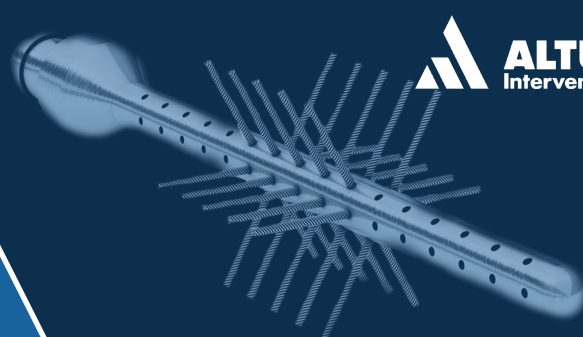


## PRECISION MECHANICAL APPLICATIONS

# WELLBORE CLEANOUT

Country: Norway  
 Year: 2019  
 Technologies: **PowerTrac 318** • **PrecisionBrush 5.9**



MAKING INTERVENTION  
**SMARTER**

Efficient e-line powered cleanout operation enables an injectivity rate increase of 100% in debris effected well.

- 30% increase in injectivity due to well cleaning
- Tubing access for e-line deployed perforation enabled

## CHALLENGE

The client had an old Produced Water Re-injection (PWRI) well which had a history of having Black Sticky Stuff (BSS) debris accumulation on the tubing sidewall. This debris had impacted the re-injectivity rate and caused access issues during past e-line intervention operations. It was suspected the BSS came from the PWRI, with accumulation on the sidewall from the surface down to the perforations.

The well in question had recently suffered a decrease in injectivity rates. In order to diagnose the well behavior, and to possibly increase the injectivity rate through re-perforation, the client wished to perform an injection diagnostic log in the well. To ensure safe tool access, it was required to remove any potential BSS prior to performing the injection PLT log and subsequent perforation runs.

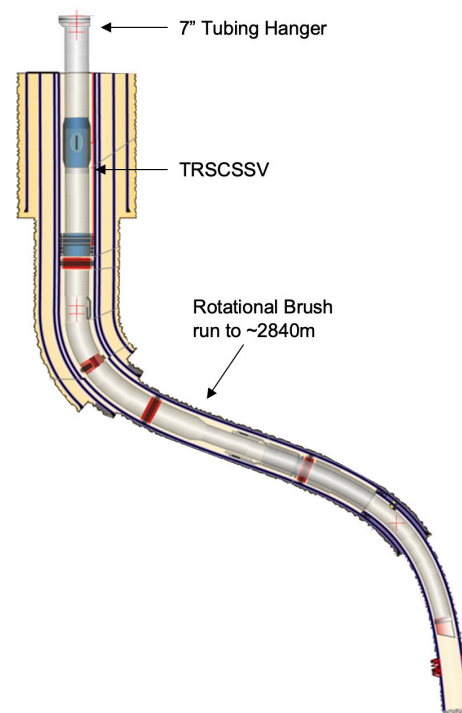


Example of BSS debris  
 (from a nearby well)

## SOLUTION

Based on past experience and knowledge, and the realization that pumping alone was not sufficient to remove the debris, it was recommended by Altus to run an e-line powered rotation brush in combination with injecting PWRI – the produced water temperature of circa 60 °C to soften the BSS and the brush to agitate and dislodge the debris while running in hole.

As the BSS accumulation was expected from surface, the cleaning operation would commence at the tubing hanger. Special standoff centralizers were added to the e-line toolstring to prevent unnecessary wear on the brush. The operation was executed via an integrated alliance and delivered by one team, with personnel dedicated to monitoring the injection rate and well head pressure throughout the operation.

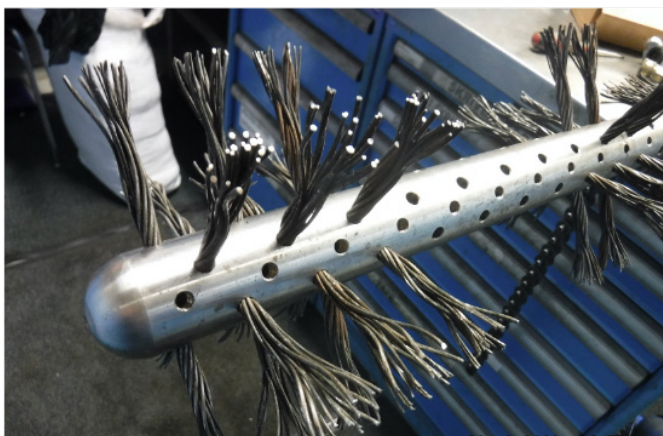


Well Completion Sketch

## RESULTS

The operation was executed with two e-line runs – the first from the tubing hanger to 1500m; the second from 1500m to 2840m. This was a precautionary measure, enabling the wear on the brush to be evaluated on surface during the operation. A new brush was used for the second run. Production logging acquisition was then carried out while injecting PWRI. There were no tool access issues, and it was found that the injectivity had increased by 30% as a result of the brushing/cleaning.

Two re-perforation runs were then carried out, again without any access issues. This resulted in a further 70% increase in injectivity rate.



Brush - before & after first run in hole



Brush - before & after second run in hole