WELL SCAVANGER Tool Enables Successful Dual-Zone Recompletion with Gravel Pack

Thorough cleanup through extended tailpipe saves runs and expenses

CHALLENGE
Clean out debris in gravel-pack recompletion through extended tubing tailpipe without exceeding equivalent circulating density (ECD), offshore Malaysia.

SOLUTION
Use WELL SCAVANGER† vacuum debris removal tool to remove debris and ensure a successful recompletion.

RESULTS
Saved time and reduced costs by removing 35.25 lbm [16 kg] of heavy sand and mud and 8.16 lbm [3.7 kg] of ferrous metal with the WELL SCAVANGER tool and an additional 8.8 lbm [4 kg] with the magnet tools in the string.

Facing challenging debris cleanout in gravel-pack recompletion
An operator planned to recomplete a producing horizontal well with a dual-zone gravel pack in place of a single packer with a 5½-in preperforated liner. After recompletion, debris cleanout was planned through the gravel-pack screen up to the sealbore extension located below the packer at 7,297 ft. Cleanout with a 1,500-ft 3½-in tubing tailpipe was required without exceeding the ECD of the open well.

Choosing WELL SCAVANGER for exceptional debris recovery
The WELL SCAVANGER tool was selected to achieve the operator’s objectives. The tool is a modular system that facilitates increased volume recovery where and when necessary and is specifically designed to collect and capture debris from targeted areas. The tool engine module creates a localized reverse circulation flow that lifts the debris through the tailpipe below the tool, carrying it into specially designed internal debris chambers for removal and inspection at the surface. An internal screen and magnet module below the engine module and above the debris chambers removes and collects debris. Additional debris chambers can be added for larger volumes.

A bottomhole assembly was selected and hydraulic modeling was conducted using proprietary M-I SWACO software, including simulating 1,500 ft of 3½-in tubing tailpipe below the tool. Last-minute changes in operational parameters required over 1,800 ft of tailpipe.

Providing exceptional debris recovery
The WELL SCAVANGER tool used a low pump rate of 330- to 350-galUS/min throughout the operation, with 32.25 lbm of heavy sand and mud retrieved in the debris chambers along with 8.16 lbm of ferrous metal on the internal high-power magnets. Additional ferrous metal was recovered higher in the well from the MAGNOSWEEP II† wellbore cleanup magnet.

The cleanup was verified by zero recovery in the WELL PATROLLER validation tool at the surface with the casing wiped clean after it was pulled out of hole. This ultimately saved additional runs with the validation of the well and the surface recovery of debris that would otherwise have impeded the completion success and diminished the well life span at a major cost to the operator.

Optimal pumping rates were designed to exceed cutting slip velocity and recover higher-gravity solids and lighter-weight particulates.