

VACS G2 services clean wellbore, improves production by 700 B/D

A prominent Permian Basin customer experienced a combination of declining bottomhole pressure and a corresponding drop in production in an aging well in west Texas. The initial attempt to boost production involved a coiled-tubing clean out of the 4 ½-in., 11.6 lb/ft. liner. Low bottomhole pressure made conventional circulation a real challenge, and despite the use of energized fluid (nitrogen), the customer was unable to circulate when the coiled tubing reached the top of the liner.

Based on previous experiences, the customer contacted Baker Hughes, a GE company (BHGE) to run the **vectored annular cleaning system (VACS™) G2** to clean out this well. The VACS G2 system is a modular system composed primarily of a jet engine, a tubing debris cavity, a mill, skirted bit, or wash pipe shoe. The optimized jet engine incorporates an internal nozzle that creates a significant pressure drop inside the tool, inducing a vacuum effect which forces debris into the debris chamber.

Initially, the BHGE team did not know what types of debris were present in the wellbore. To maximize efficiency, BHGE deployed the 2 7/8-in. VACS G2 system

with 2,293 ft (699 m) of 2 3/8-in. premium-connection tubing to collect samples. Analysis of the recovered debris revealed the primary deposits in the wellbore were calcium carbonate (near the heel) and iron sulfide (at the toe).

Clean-out operations began at a measured depth (MD) of 8,831 ft (2691 m) and continued to 16,045 ft (4890 m) MD, effectively cleaning 7,214 ft (2198 m) of the lateral section. In total, 7.8 barrels of scale were recovered from the wellbore. In the first five runs, 3.73 barrels were recovered with the skirted roller cone bit. In the final run, the VACS G2 system successfully recovered 4.0 barrels (38 joints) of iron sulfide, calcium carbonate, and frac sand.

In the weeks following deployment of the VACS G2 system, the customer reported a 700 B/D increase in production. The VACS G2 system successfully overcame the challenge of low bottomhole pressure and the associated circulation challenges. The BHGE team was able to aid in the recovery of lost production through innovative technology and succeed where conventional methods fell short.

Challenges

- Recover lost production
- Overcome low bottomhole pressure to clean out wellbore to improve circulation

Results

- Cleaned 7,214 ft (2198 m) of lateral section
- Removed 7.8 barrels of scale
- Increased production by 700 B/D





With the VACS G2 system, 7.8 barrels of scale (iron sulfide, calcium carbonate, and frac sand) was recovered from the wellbore in six runs, resulting in a production increase of 700 B/D.

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