

Case study: DJ Basin, Colorado

VACS G2 system recovered 71 joints of sand, shale, enabled production, saved \$90,000 with no NPT

A customer in the DJ Basin near Brighton, Colorado, experienced production issues on one well. The well was fracked into, and the lateral filled with sand and debris. Prior to the frac operation, the operator produced 700 to 800 BOPD (83 to 95 m³/d). After the sand and shale clogged the wellbore, production plummeted to 60 BOPD (7 m³/d). In addition to lowered production, the debris risked wear on the pump. The objective was to clean out the lateral past ten frac sleeves to a depth of 10,000 ft (3048 m) and place the well back on artificial lift.

As a solution, Baker Hughes recommended the **vectored annular cleaning system (VACS™)** for the sand cleanout difficulty. The VACS G2 system is modular and composed primarily of a jet engine, a tubing debris chamber completed with screens to filter the sand, floats, junk catchers and a 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 inside diameter (ID) of the tubing and into the debris chamber.

Baker Hughes provided a bottomhole assembly (BHA) consisting of a bladed chevron bit, the VACS debris catch sub, 1,500 ft (457 m) of chamber tubing, the VACS G2 jet engine, and tubing back to the surface.

Field personnel deployed the BHA and retrieved 6 joints of produced sand in the first run. The second run captured 35 joints of sand and shale, and 22 joints were recovered in the third run. The final run claimed 8 joints.

A total of 71 joints of sand and shale were recovered in four runs. The well was successfully brought back online, and production jumped back up to approximately 710 BOPD (85 m³/d) and gas production to 3,500 mcfpd. After the pump installation, the customer's revenue increased from \$3,500 per day to \$37,000 USD.

By using the VACS system, the customer avoided multiple bailer runs, reducing overall rig time. Without the Baker Hughes solution, the customer would have had to run up to 10 conventional bailer runs, costing approximately \$30,000. Coupled with the rig charges, the customer would have had to pay upwards of \$110,000 USD. With the Baker Hughes VACS solution, the customer ended up saving \$90,000 USD, with no health, safety and environmental (HSE) issues and zero nonproduction time (NPT).

Challenges

- Clean out lateral past 10 frac sleeves to a depth of 10,000 ft (3048 m)
- Place well on pump
- Overcome decreased production

Results

- Cleared 71 joints of sand and shale in 4 runs
- Increased production from 60 to 710 BOPD (7 to 85 m³/d)
- Installed artificial lift, increasing daily revenue from approximately \$3,500 to \$37,000
- Saved \$90,000 using the VACS system over conventional technology
- Experienced no HSE issues or NPT