

Case study: Middle East

VACS system cleared debris from PBR, maintained lower completion in wellbore, saved over \$300,000 USD

A customer in the Middle East was unable to stab a seal assembly into a 20-ft (6-m) section of a polished bore receptacle (PBR). Repeated attempts to perform the operation proved unsuccessful, and the customer accrued over 200 hours of nonproductive time. Assuming the inside diameter (ID) of the PBR was blocked by debris and needed to be cleared, the customer pulled the entire upper completion out of the wellbore.

The customer contacted Baker Hughes for a field-proven solution to clean the well in one trip, minimize the cost, and save rig time. Based on previous experiences, Baker Hughes suggested 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, a skirted bit, 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 debris chamber.

The Baker Hughes team deployed the VACS G2 system into the wellbore but faced an immediate challenge: the outside diameter (OD) of the VACS equipment was larger than the ID of the PBR. Nevertheless, the team ran the entire bottomhole assembly (BHA) to 1 ft (0.3 m) above the PBR and circulated. An analysis of the recovered debris revealed large chunks of annular rubber and fiber flakes had clogged the diverter tube.

After re-evaluating the downhole situation, onsite personnel removed the diverter tube from the BHA for the second run but included a globe junk basket in order to collect the larger rubber chunks and clear the ID of the PBR. This run yielded additional pieces ranging from 6 in. to 3-1/2 in. The third run returned the diverter tube to the BHA and recovered only small pieces of rubber and fiber flakes. To verify the wellbore was clear of all debris and ready for stabbing, the customer tripped in a successful dummy run.

As a result of the flawless execution of the VACS G2 system, the customer easily deployed the upper completion and stabbed the seal assembly into the PBR with no issues. The customer no longer needed to pull the lower completion out of the wellbore, saving more than \$250,000 USD. In addition, by unclogging the existing junk in the wellbore and the PBR, Baker Hughes improved the well's overall productivity.



Retrieved pieces of rubber and fiber flakes from the first run proved ID of PBR clogged with debris.

Challenges

- Clear debris from ID of PBR
- Minimize runs, nonproductive time (NPT), and costs
- Avoid having to remove lower completion

Results

- Cleaned wellbore in two runs, saving \$30,000 USD
- Eliminated possibility of having to pull out the lower completion, saving \$250,000 USD
- Saved additional customer NPT, equating to \$50,000 USD
- Experienced zero health, safety and environmental (HSE) issues



In the second run, larger rubber pieces (up to 6 in.) were pulled from the PBR via the VACS G2 system.



Small pieces of rubber and fiber flakes retrieved in the third run prompted the Baker Hughes team to perform a dummy run to determine if ID was free from debris and ready for the upper completion stabbing.

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