Reducing the frequency of sand screen replacements in challenging environments

Failure prevention using 3M™ Ceramic Sand Screens

Customer challenge

- Site was a depleted oil well with high gas-to-oil ratio and very low reservoir pressure.
- The maximum drawdown led to high velocities and hot spotting issues in the metallic sand screen. A workover was not commercially viable.
- Metallic through-tubing sand screens had to be replaced every 4 months on average.
- There was a need for a reliable solution to prevent failure at a reasonable cost while reducing the number of interventions.

Why ceramic sand screens?

- Optimize productivity at maximum topside choke setting without sand production
- Unlock wells where sand failure has occurred
- Retrofit failed wells by setting screens above failed sand control completion
- Simplify deployment in logistically challenging environments

Results

One well was equipped with 3M™ Ceramic Sand Screens in May 2016 and continues to produce.

- The screen was easily deployed on a slick line hanging from a landing nipple.
- Average production rates achieved:
  - 970 bbl fluid
  - 6.2 MMSCFD gas
- There has been no significant sand production to date even in an extremely erosive environment.
- There has been no well intervention required to date.
- The 3M ceramic sand screen has lasted 3x longer than the average lifetime of metallic screens, and is still working.

Customer key decision drivers

- Simplicity of intervention
- Erosion resistance of the screen helps avoid the need for frequent and expensive intervention
- 3M ceramic sand screens offered an economical alternative to other options, including:
  - Metallic screens
  - Sand management
  - Well workover
Technical references

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OTC-25106-MS: An Innovative Approach of Revival for Damaged Wells in High Erosive Environment Using Ceramic Sand Screens – BG Group

SPE 146721: An Innovative Milestone in Sand Control – Maersk Oil & Gas

SPE 160327: Ceramic Sand Screens for Sand Control in Unconsolidated Reservoirs (with Fines Content) – RAG

SPE 166092-MS: Ceramic Sand Screen: Ceramic Sand Screen - An Innovative Downhole Sand Control Solution for Old and Challenging Cased Holes – BG Group

MOC-Egypt-April 2016: Ceramic Sand Screen Systems - A Unique Downhole Solution for Sand Control

Sand Control with Ceramic Screens in Unconsolidated Reservoirs Demonstrated in the Mature Gaiselberg Oilfield. OIL GAS European Magazine, 2/2012, p. 74-78.

SPE-182278-MS: Sand Control in Corrosive and Erosive Downhole Conditions at High Temperatures – 3M Technical Ceramics

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