3M™ Ceramic Sand Screen deployed on coiled tubing assured fast return on investment

Gaining incremental production from existing well paying back within 5 days

Customer challenge

Reservoir depletion reached the point when sand production started to occur, and the operator had to restrict the flow rate to achieve sand-free production. The well had no sand control in place. Operator was looking for a cost-effective sand control solution which could offer the possibility to increase production rate in high flux and impingement velocities environment. Another challenge was poorly sorted sand with a high content of fines.

The cased hole gravel pack option was rejected due to the high cost and increased complexity.

Challenge

Operator was looking for a cost-effective sand control solution which could offer the possibility to increase production rate in high flux and impingement velocities environment.

Solution

The screen with 2 3/8” base pipe and 3.6” max OD was selected to assure a smooth deployment through minimum well restriction.

Key Features

- Deployment on coiled tubing
- Screens straddled across the perforations
- Erosion & Hot spotting resistance
- Maintain slot opening
- Corrosion resistant filter media

Application Reservoir PSD

- Uc (d40/d90)= 8 to 16
- Sc (d10/d95)= 40 to 72
- Fines (<44µm) = 16% to 29%

Location

Caspian Sea
**Solution offered**
3M™ Ceramic Sand Screens previously had a successful track record with this operator in another location and were chosen to address the given challenges. The screen with 2 3/8" base pipe and 3.6” max OD was selected to assure a smooth deployment through minimum well restriction. Total BHA assembly of 376ft with actual screen length of 203 ft was run through 5 ½” tubing and set inside 9 5/8” casing with high expansion gauge at the bottom.

Deployment was performed with coiled tubing unit over 2 runs. The high expansion gauge was set at the required depth following with Ceramic Sand Screens landed on it and set across the perforations.

**Customer value**
Operator fulfilled the goal of increased production through a cost-effective retrofit solution deployed on coiled tubing

Well producing at 7800 BOPD with ca. 14 MMSCFD Gas. Ca. 2000 BOPD production increase from initial rate

3M Ceramic Sand Screens pay-back in 5 days based on incremental oil production

Sand control maintained at higher drawdown

**Technical references**
SPE-176225-MS: Cased Hole Ceramic Screen Cutting Completion Cost for Marginal Reservoir: Application in Tunu Field
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 Down-Hole 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

**Why Ceramics?**
Metallic sand screens tend to fail rapidly in highly erosive environments. Changing filter media material to ceramics (non-oxide silicon carbide) provides extreme resistance to erosion leading to increased production rates and period.

3M Technical Ceramics
Zweigniederlassung der 3M Deutschland GmbH
Max-Schaidhauf-Str. 25, 87437
Kempten, Germany
3m.com/ceramicsandscreens

3M Advanced Materials Division
3M Center
St. Paul, MN 55144 USA
3m.com/advancedmaterials

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