ThunderCloud™ Frac Plugs Success In Pre-Acid Treatment Application

ThunderCloud™ PROVIDES ZONAL ISOLATION IN PRE-ACID TREATMENT APPLICATION AT CONTROLLED DISSOLUTION RATE

INNER MONGOLIA, NORTH, CHINA

WELL PROFILE

- Gas well
- MD 12,169 Ft
- 2,631 Ft Hor. Interval
- 4-1/2" 11.6-13.5# Csg.
- DHT 200.3 F
- Frac Fluid CL- 3,000mg/l, Formation Fluid CL- 60,000mg/l
- 8,702 psi pressure rated

CHALLENGES

- Pre-acid application
- 20 hours interval from setting to frac

SOLUTIONS

- Lab test for the selection of correct grade of dissolving materials in acidic conditions

RESULTS

- Packer Set and Ball Seated with no issues
- Pressure held up when fracturing
- All 4 ThunderCloud™ dissolvable frac plugs fully dissolved and CT wipe thru at no time vs. 1.2 days milling out 4 composite plugs at toe section

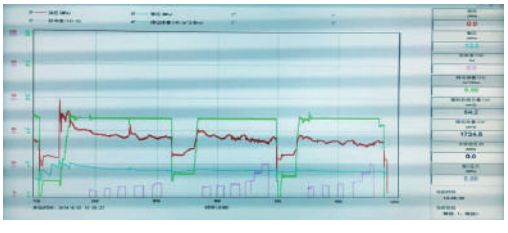


OVERVIEW

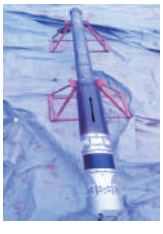
SinoPec one of the largest Chinese operators wanted to test dissolvable frac plugs with direct comparison of composite plugs in a pre-acid treatment application. Total 8 plugs which consists of 4 composite plugs in the toe section and 4 ThunderCloud™ dissolvable frac plugs were pumped down with 8x30m3 HF Acid+12% sulfuric acid completion fluids due to anticipating high formation fracture breaking point. Application with pre-acid treatment is known to decrease the integrity of dissolving materials, which sometimes results in failed zonal isolation. Petrostar conducted lab test for the selection of correct grade of dissolving materials in acidic conditions ensuring reliable integrity of the plugs at controlled dissolution rate.

OPERATIONS

4 composite plugs were first set in toe section, and then 4 ThunderCloud™ dissolvable frac plugs were pumped down with HF Acid+12% sulfuric acid. There was an operational interruption from setting the #3 and #5 ThunderCloud™ plugs and plugs were soaked for 20.5 hours. Fracturing went smoothly with max. pressure recorded at 8,702 psi and pressure held up without any issues. A CT clean up and mill-out operation was performed 8 days later, the first 4 ThunderCloud™ dissolvable frac plugs wipe thru with no restriction encountered, and the following mill-out of composite plugs took 1.2 days.







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