

SmartSet® Slurry Succeeds After Conventional Cement Can't Seal the Well

Deploying Innovative Technology in Challenging Well Abandonment

Objective: Achieve 0-psi Bradenhead Gas Pressure

While preparing a well for plug and abandonment in Weld County, Colorado, an operator was experiencing Bradenhead gas-migration pressures of 66 psi at surface through the 9 5/8-in. casing. While this sort of gas is very common in Denver Julesburg wells, the State of Colorado requires 0-psi Bradenhead pressure before cutting and capping a well. After pumping four conventional cement plugs without being able to control the Bradenhead gas pressure, the operator decided to investigate other systems to isolate the wellbore.

Employing a Brand-New Approach in the US Market

Our engineers proposed the SmartSet thermo-setting solution to isolate the wellbore. When mixed with water, this unique formulation of nontoxic, inorganic powders provides a controlled right-angle set and rapid compressive-strength development in downhole conditions. This was the first time SmartSet technology was used in the US.

Exceptional Results That Speak for Themselves

The job was pumped through a packer using 1 bbl of viscous spacer, 12 bbl of SmartSet slurry and 5 bbl of viscous spacer displacement. The plan was to squeeze 2 bbl of SmartSet slurry into the formation at an injection rate of 0.5 bpm, while leaving the remaining volume of slurry to cure in the wellbore.

- At job completion, a squeeze pressure of 800 psi was left below the packer. The well was then shut in until the following morning.
- When the well was opened, Bradenhead pressure was 0 psi.
- The operator observed the well for three days, and it maintained 0-psi Bradenhead pressure.

Providing Solid Value Under Difficult Conditions

The four unsuccessful conventional cement jobs were performed over a five-day span, at a combined cost exceeding \$30,000.* This cost does not reflect rig time and other associated well fees during those five days. In contrast, the SmartSet job successfully shut off the gas in a single day – and at a lower cost than the conventional cement jobs.

In an environment where traditional cement might have never sealed off the gas, the SmartSet thermo-setting solution was the right choice to reduce the customer's time, cost and frustration.

* No two reservoirs or wellbores are the same. Cost will vary, depending on a variety of factors. SmartSet is a registered trademark of Pluto Ground Technologies.

