

Reducing Gas Production from a Lower Zone with a High Delta Pressure

Date: June 2021
Region: Norwegian North Sea



Key Capabilities

- 1.6m long plug successfully installed inside a gravel packed annulus.
- Highly viscous and particle-free epoxy penetrates micro gaps whilst remaining 'self-carrying' in large voids.
- Accurate, pin-point injection of our annular sealant.
- Run on e-line.

Challenge

As part of the well completion, our client needed to set an annular restriction to reduce the gas production from a lower reservoir section with a high delta pressure. Conventional sealing methods offered inadequate chances of success for placing an annular restriction while still installing a gravel pack completion to the entire open hole section, so an alternative approach was required.

Solution

A 6-meter-long blank pipe was first installed between screen sections to create a restriction between the two reservoir zones. Then, following the completion of the gravel pack operation, our CannSeal wireline tool was run downhole on a standard E-line to locate the blank pipe.

Once the target depth was located using the tool's CCL, our CannSeal ZonalSeal annular plug was installed by perforating the pipe and injecting our 3 million cP epoxy sealant through the perforation and into the annulus. Our highly viscous and particle-free epoxy has the ability to penetrate micro gaps while still being self-carrying in large voids.

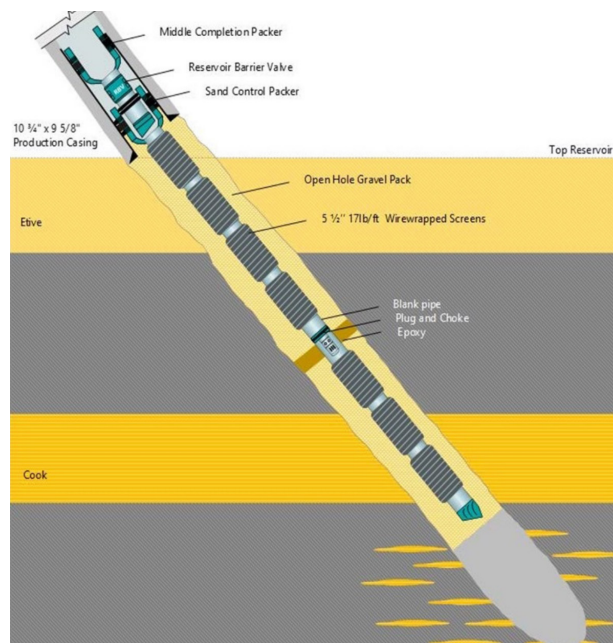
Approximately 13 litres of epoxy at a maximum injection pressure of 132 bar was injected to create an estimated 1,6m long plug in the annulus.

Value Created

Using our CannSeal ZonalSeal technology, the epoxy plug was successfully placed in a gravel-packed annulus between a 5,5" blank pipe and an 8,5" open hole.

The operation was completed according to plan and the tool was retrieved to surface in a clean condition, proving the operational success of the plug placement. A choke was subsequently installed inside the pipe to complete the solution and reduce the gas production from the lower zone.

The successful completion of this intervention is an industry first, using an electric W/L tool to place an epoxy sealant in a gravel packed annulus.



A basic schematic showing where the CannSeal ZonalSeal annular plug was created.