

Gas Channeling in Cement behind Casing.

Stop Gas Migration behind 20" Casing using ThermaSet® Sealant.

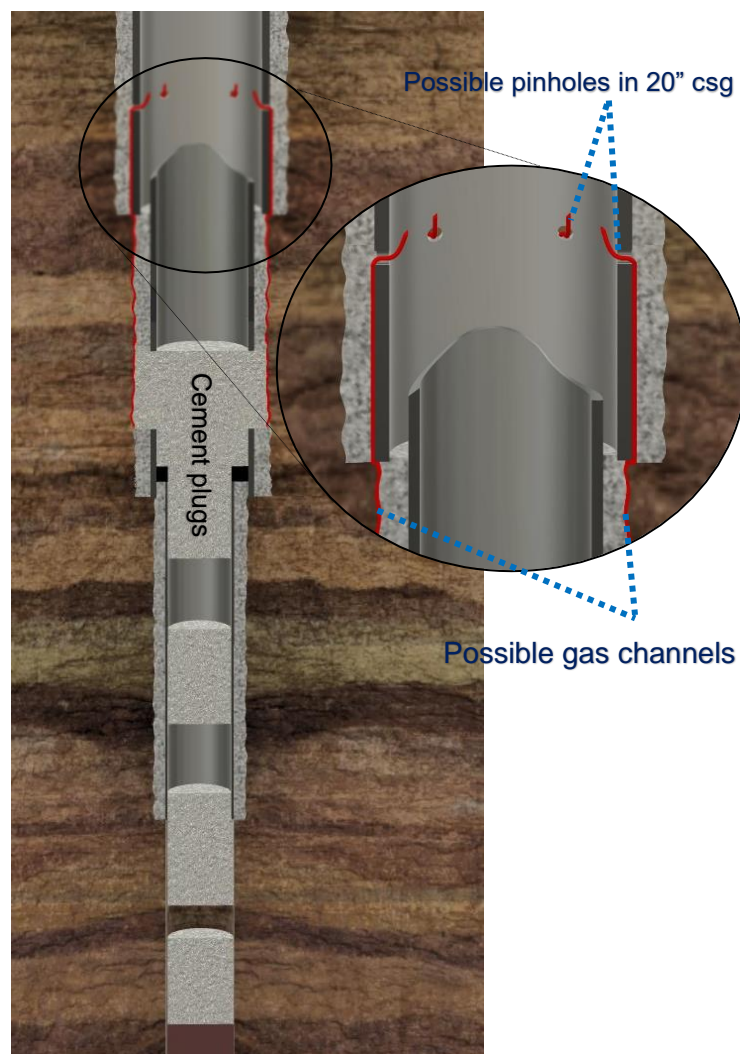
CHALLENGES

The well was a candidate for P&A but had developed gas channeling problems:

- Gas observed in the mud return - peak @ 26 % by gas detector
- Gas observed on seabed around BOP by ROV cameras.
- The well was already plugged from TD - up to 646 m MD with several cement plugs, each 200 m MD long.
- 13 3/8" casing was cut at 500 m MD and the 20" casing shoe was at 555 m MD.
- It was believed that the gas was coming up along the well behind 20" casing and then entering the well through a possible connection leak in the 20" casing.

SOLUTION

- Perforated 13 3/8" casing at 570 – 572 m MD (20" CSG shoe at 555 m MD).
- RIH with 13 3/8" cement retainer on 5 1/2" drill pipe and set it at 562 m MD. Replaced the mud (1.3 SG) with sea water in the drill string and sting into retainer.
- Conducted injectivity test with sea water. Observed injection of 50 liter/min within allowable pressure limits (26-28 bar)
- Stung out and pumped 2.5 m³ ThermaSet® into drill string and displaced it with sea water.
- Once ThermaSet® was at the end of DP, sting into the retainer and squeezed the pill through the retainer and in to the perforations @ 50 liter/min continuously. Over displaced the pill with ca. 300 liters of sea water to make sure that the DP is clear. Total 2 m³ of ThermaSet was squeezed while approximately 0.5 m³ remained in the casing below the retainer.
- Sting out of the cement retainer - monitor the well and wait on ThermaSet® curing.



Well status before ThermaSet® treatment

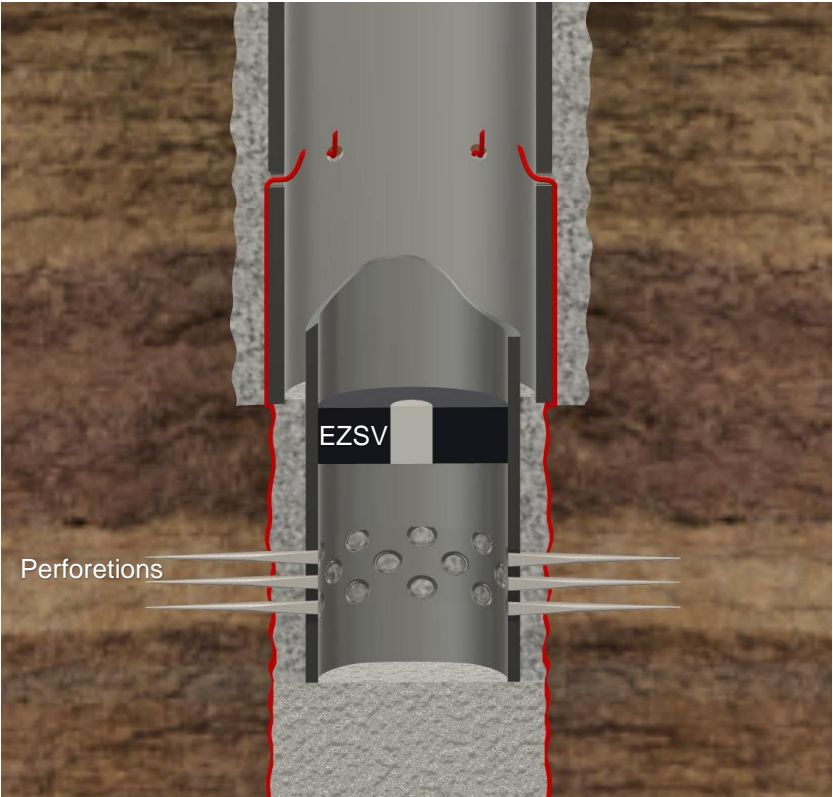
RESULT

Circulated the well (bottoms up) - observed no gas in mud return/channel plugged.



Sequence of Operation

1- Perforated 13-3/8" casing and installed EZSV inside 13-3/8" casing



2- Pumped ThermaSet® pill and displaced it with sea water.

3- Squeezed ThermaSet® pill into the perforations and the leak paths

