

Can chalk reservoir be sealed off with polymers?

A solution to ease the abandonment process.

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A lot of wells will need to be abandoned in the North Sea. We are developing a solution that will allow for sealing off a chalk reservoir, so that abandonment operations will be easier and safer.

We have designed and synthesized a new polymer that can penetrate the chalk matrix and solidify within the pore network, thus closing pathways for oil, water and gas into the well. Core flooding tests on chalk reservoir core plug at reservoir conditions have been done and we were able to seal the core off after polymer injection (Fig. 1).

A new high-pressure cell has been built to be able to observe in 3D via CT scanning the penetration of the polymer in the matrix. This will allow us to optimize the polymer composition and concentration to obtain a complete seal off the chalk. The final goal is to have a water soluble polymer that can be injected into the chalk matrix before abandonment of a well.

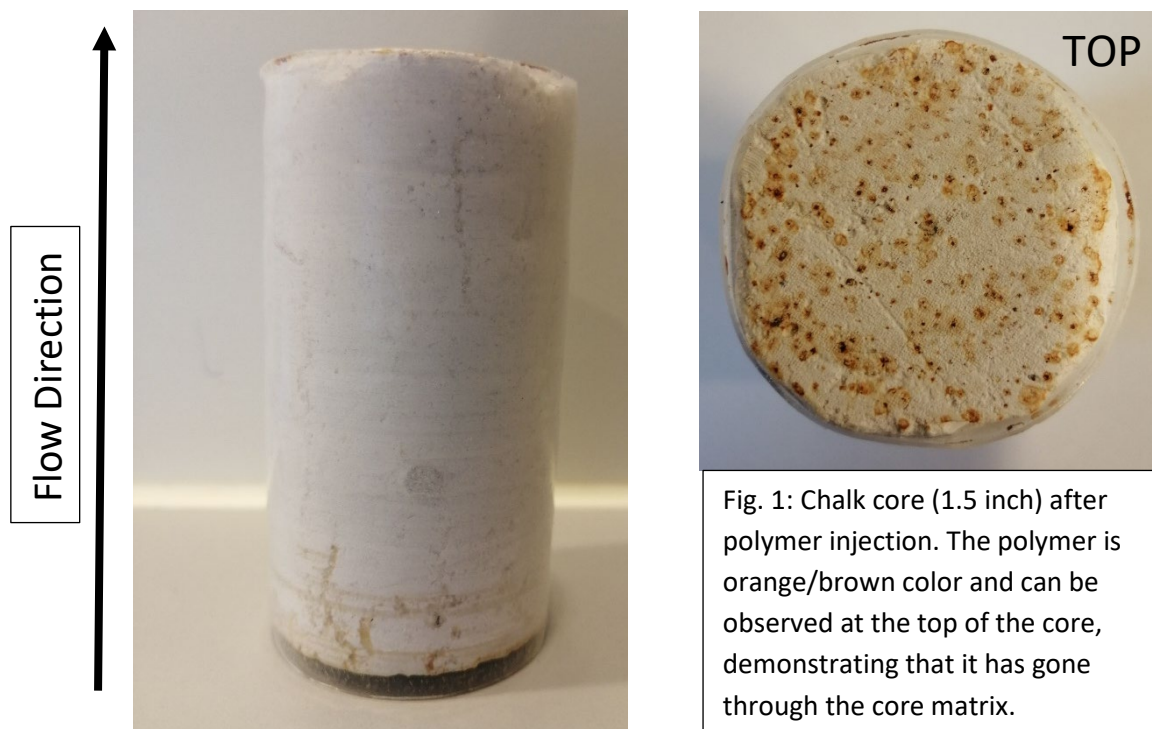


Fig. 1: Chalk core (1.5 inch) after polymer injection. The polymer is orange/brown color and can be observed at the top of the core, demonstrating that it has gone through the core matrix.