

Brine Production: Hydraulic Fracturation Using Seismic Monitoring in the Treatment Well - Case History

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Abstract

A hydraulic fracturation operation was carried out on a brine production facility, in order to connect two wells at around 1950 m depth to initiate the leaching of a salt layer. To optimise this injection test, seismic acoustic emissions were monitored with a tool located below the perforation in the treatment well.

Several injection pumping tests were realised before the main fracturing. We recorded seismic acoustic emissions during these tests to determine fracture direction. Derived from the polarisation analysis of the incoming seismic signals, fracture propagation direction knowledge allowed an increase in pumping rate on the treatment well during the operation, and to achieve hydraulic connection between the two wells.

This experiment confirms that seismicity can be induced at the interface between salt and insoluble during an hydraulic stimulation used to connect wells. This experiment shows that micro-seismicity can be clearly associated to fluid flow. This experiment also demonstrates that the microseismic monitoring carried out with one downhole triaxis tool from the treatment well is reliable.

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