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## **Sidetracking into a high-pressure Cavern to re-establish brine production**

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### **Abstract**

In the South of France, near the village of Vauvert, rock salt is solution mined by KEM ONE. This is done at a depth of between 2,500 and 3,000 meters making it one of the deepest salt mines in the world. This extreme depth combined with a mixed geology has a major influence on the mining process.

In 2012 one of the production wells of a doublet was plugged by insolubles. An operation was setup with the objective to re-establish a sustainable and high-rate brine production from the plugged doublet.

As a result of the project the existing 7" liner was sidetracked by using a whipstock system. A 300m long 6" hole was drilled into the top of the cavern at high, lithostatic brine pressure. Once communication with the cavern was restored, a 5" liner was run up to the cavern.

A Snubbing Unit was chosen to do the drilling operation under constant, high wellhead pressure (approx. 150 bar backpressure). One of the main requirements was that the unit could withstand pressure communication with the cavern during the drilling of the sidetrack. An additional requirement was that the entire equipment (e.g. BHA's, Liner Hanger and Liner) was able to be run and installed in the well under the same, constant high pressure.

This paper discusses the design and operation of this highly unique project, including the identification of the required services, equipment and materials. The operation itself is presented according to the different steps that were taken. Finally the paper reviews the actual performed operation and the learning points will be presented.

**Key words:** Cavern Operation, High Brine Pressure, Well Design, Snubbing Operation, Drilling and Completion, Sidetrack, France

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