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Geological Exploration for Storage Cavern Construction in the Zuidwending Salt Dome, the Netherlands

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Abstract

In order to realise the first cavern storage for natural gas in the Netherlands, N.V. Nederlandse Gasunie and NUON Storage B.V. are each building caverns in the north-western part of the Zuidwending salt dome structure east of Veendam (province of Groningen), where Akzo Nobel Industrial Chemicals B.V. holds a salt mining concession.

After having started out the project with little information about the Zuidwending salt dome, the knowledge about the stratigraphy and the internal structural style of the deposit increased tremendously with every cavern well drilled. In the second phase of the project (2009/2010), it was already possible to provide a reliable geological model for each location due to a comprehensive geological exploration programme. The level of knowledge reached allowed to make safe predictions and to forecast the geological section in some detail from one well to the other. Cavern layouts were optimized for the particular location and cavern shapes were exactly fit into the specific geological situation. Today, four caverns have been successfully leached while another three caverns are in the leaching phase, and one location has been prepared for cavern construction.

The following paper presents in detail the different methods of geological exploration and how the combination of these methods led to an optimized understanding of the internal geology of the Zuidwending salt dome.

Key words: domal salt; Zechstein; geology; drilling; GPR (ground penetrating radar); caverns for gas storage; the Netherlands.

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