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Feasibility Study for the Dry Recompletion of Caverns at

Atwick, East Yorkshire

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Abstract

The Atwick gas cavern storage facility in the UK has been in development and operation since 1973. An asset integrity review has shown that several of the caverns may require recompletion due to corrosion fatigue of the completion tubulars.

To date two recompletions have been carried out on Atwick wells. Atwick 1 was recompleted due to a sub-surface safety valve failure and Atwick 2 as part of an asset life review. Each of these recompletions took over two years to complete as the cavities were displaced to brine prior to the recompletions and displaced back to gas after the workovers were finished.

These “wet” recompletion projects, requiring gas displacement, resulted in the caverns containing a large volume of gas in solution. This was due to the high gas pressure that had to be maintained to prevent cavern convergence during the process and meant that pressure control equipment had to be in place at all times. As a result the cavern and wells were at no time in passive brine filled condition.

A feasibility study was carried out in order to develop a generic dry recompletion operations process for the Atwick gas storage wells to be carried out with a cavity full of gas. The results of this feasibility study and associated review of the relevant legislation and policies concluded that the likelihood of an uncontrolled gas release from a well during a dry recompletion should be no higher than for a wet recompletion.

Furthermore a dry recompletion will significantly reduce the operational time required on the well from approximately 12 months to about 6 weeks as re-brining and de-brining of the cavity would not be required.

The feasibility study concluded that a dry-recompletion is considered possible but would be subject to further detailed procedural and equipment review plus hazard and risk analysis on a well-by-well basis.

The purpose of this paper is to present the recent FEED work involving the development of a dry recompletion programme for the Atwick wells. The caverns will remain gas filled, at minimum pressure, and all operations will be carried out under well pressure control. It is planned to leave the existing permanent packer and tailpipe in place.

Key Words: Atwick, Completion Programme, Dry Recompletion, Feasibility, FEED, Risk Register

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