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AN INNOVATED CONVERSION OF A BRINE PRODUCTION WELL TO GAS STORAGE

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Abstract

High deliverable gas storage in salt dome caverns has significantly higher commercial value when compared to reservoir or aquifer storage fields. There have been many brine production wells converted to gas storage wells and each have had there special challenge. Seldom are such caverns ideally suited for gas storage applications. However, the value of salt dome gas storage is such that innovative methods have been developed to allow the necessary conversions.

This paper provides a description of such a project at Pierce Junction salt dome in Houston, Texas, USA. The cavern chosen for conversion was the Taylor #11 well which has approximately 4.8 million barrels (763,000 cubic meters) of brine with the casing seat set at 1821 feet (555 meters). As finally configured the cavern will have 2.85 Bcf (80.6 million cubic meters) working gas capacity with 590 million cubic feet (16.7 cubic meters) of pad gas requirement. This paper will include the following:

- Description of water injection system to reclaim lost volume due to creep
- Well description including emergency shut down system
- State of Texas permits
- City of Houston permits
- Brine handling
- Contractor selection and project execution

Detail engineering started on 5 July, 2005 and the first injection of gas occurred on 22 September, 2006.

Key words: Caverns for Gas Storage, Cavern Operation, Gas Storage, Regulations, Instrumentation and Monitoring, Safety, Texas