

Driving and Drilling Your Way to the Top of Salt — An Innovative Approach to Drilling Bay Gas Storage Well No. 2 at McIntosh, Alabama

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ABSTRACT

Bay Gas Storage Company, Ltd. owns and operates the only natural gas salt cavern storage facility in Alabama. The original facility, located near McIntosh, Alabama, was installed in 1992 and consisted of one gas storage cavern, one bank of compressors, the associated plant piping, and interconnects to off-site pipelines. In February 2001, drilling activities began on Bay Gas Storage Well No. 2 as part of an expansion plan that would also include adding a second bank of compressors.

McIntosh salt dome provides an interesting drilling environment for large-diameter storage well installation. The top of salt is fairly shallow at approximately 400 feet below surface, and the portion of the dome where the Bay Gas storage wells were drilled has little or no caprock over the salt. The shallow sediments above the salt are unconsolidated and are subject to lost circulation. During the drilling of Bay Gas Storage Well No. 1 in 1992, lost circulation in the shallow sediments resulted in the formation of a sinkhole at the surface and the rig had to be moved and the well restarted.

Design and construction of Bay Gas Storage Well No. 2 incorporated the innovative technique of driving and drilling the 36-inch-diameter conductor casing all the way to the salt at 400 feet, which is much deeper than is typically done on Gulf Coast cavern storage wells. This effectively sealed off the unconsolidated shallow sediments and permitted completion of the drilling with little chance of further geological impact on the wellbore. The details of the design and construction of Bay Gas Storage Well No. 2 are presented in the paper.

Key Words: Storage Well Drilling, Caverns for Gas Storage, Gulf Coast Salt Dome