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An Innovative and Economical Approach to the Drilling of Salt Dome Storage Wells

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Abstract

By August of 2010 a Houston gas storage company, had drilled two salt dome gas storage wells in Northern Louisiana. Both wells had encountered major difficulties during the drilling operations which resulted in prolonged time (over 100 days for each well resulting in enormous cost overruns).

Dissatisfied with their experience using traditional salt dome drilling technology, the company contacted Irani Engineering to formulate a new and unconventional drilling program for their next salt dome project. The drilling objectives set forth for this project are listed below

1) Eliminate under-reaming for the entire well.

2) Minimize the hole opening operations during the drilling of the surface hole and eliminate hole opening operations after the surface casing is set.

3) Drill large diameter well bores to expedite the drilling operation and reduce cost.

4) Drill the well to TD (~5300' (1615 m)) without setting the intermediate or the production casing strings.

5) Run the electric logs in the hole only twice, once to log the surface hole, and the second time to log the hole below the surface casing to the total depth.

6) Set and cement the intermediate casing, and the production casing, after the well has reached total depth.

7) Achieve all the above objectives in less than 66 days and with the less than $8,000,000 budget. This technical paper will detail the unique drilling techniques used in achieving all the forgoing objectives.

Key Words: Salt dome storage, Drilling method, Drilling mud, Louisiana, Well design, Conventional drilling