

**SPIRO-TORQ® CASE HISTORY #2**  
**Deviated Well Profile**  
**Location :North Africa**

This well was drilled with a deviation of 40 degrees. Problems for the client included hole cleaning and hole conditioning issues. As you will note on the side force graph, the initial build section generated quite substantial side forces. However, as the 13-3/8" Casing was not going to be used for production purposes, and predicted Torque levels were not excessive, use of the Non Rotating Sleeve Type *Spiro-Torq®* was deemed not to be necessary.

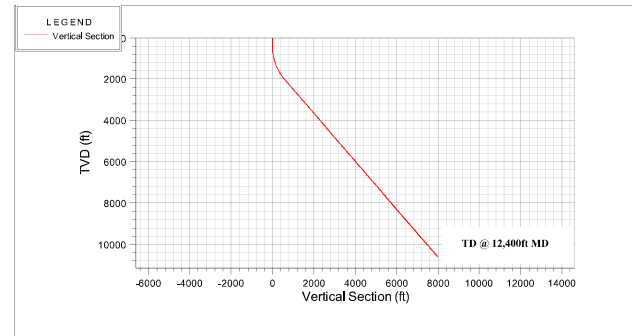
For hole cleaning purposes, and to help maintain the wellbore in good condition, the Integral Type (IT) *Spiro-Torq®* were run. The IT tools were placed at one tool every two stands of drillpipe (every 186ft) above the BHA and at one tool every stand (93ft) within the hevi-wate section of the string.

An unforeseen benefit to the client on this occasion was the drastically reduced back reaming time required to achieve normal drag while tripping out of the well. On average, a time saving on each trip of 85% was noted, amounting to half a days rig time per trip. Extended back reaming times were generally attributed to the effect of salt layers in the formation causing tight spots in the wellbore. The IT *Spiro-Torq®* kept these salts under control, hence minimizing back reaming operations.

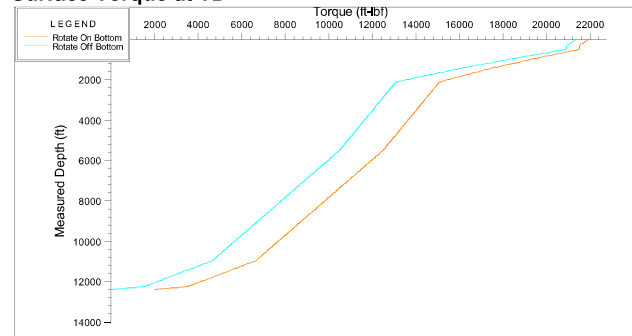
The net results included significant cost savings to the operator, and an optimized hole condition.

In total 44 IT *Spiro-Torq®* were deployed.

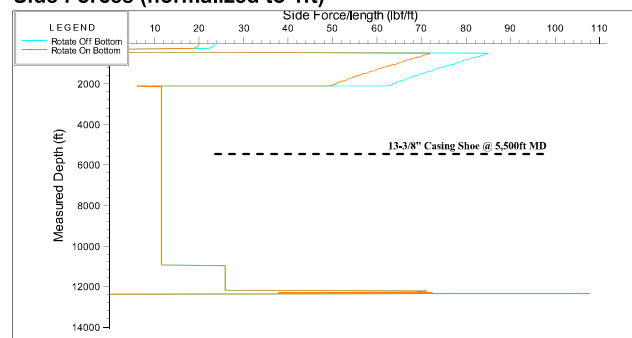
**Well Profile : Vertical Section**



**Surface Torque at TD**



**Side Forces (normalized to 1ft)**



**Integral Type (IT) Spiro-Torq®**