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***Drilltech Services (USA) INC***

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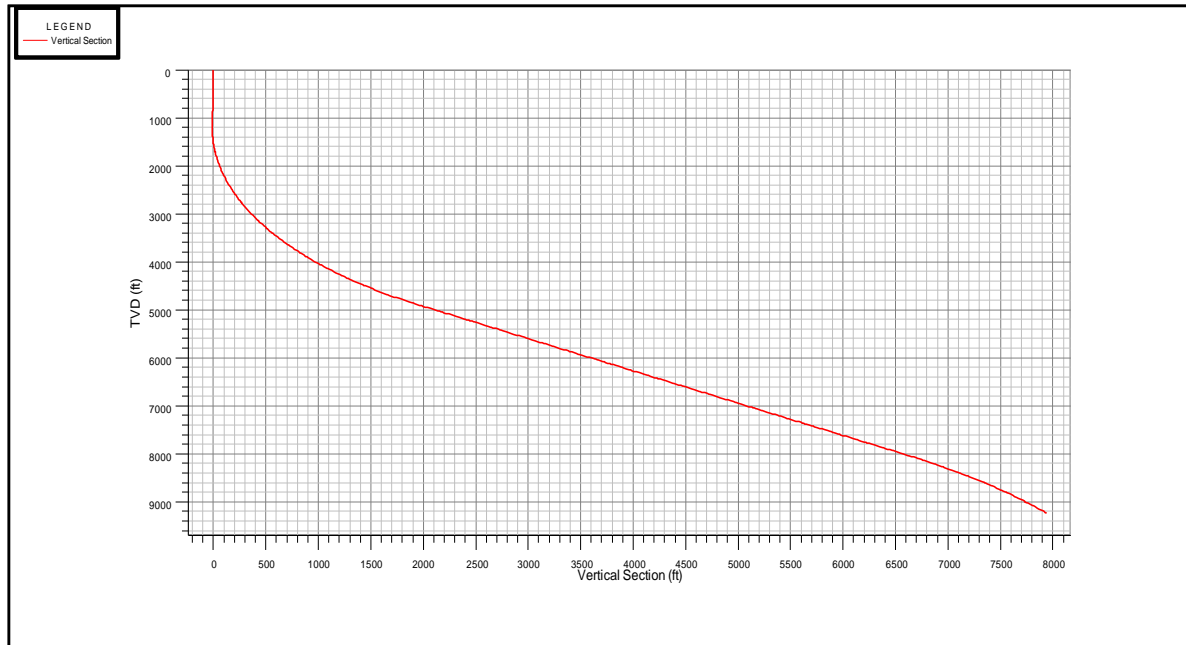
***T&D ANALYSIS FOR WELL***  
***JOHANNA 6***



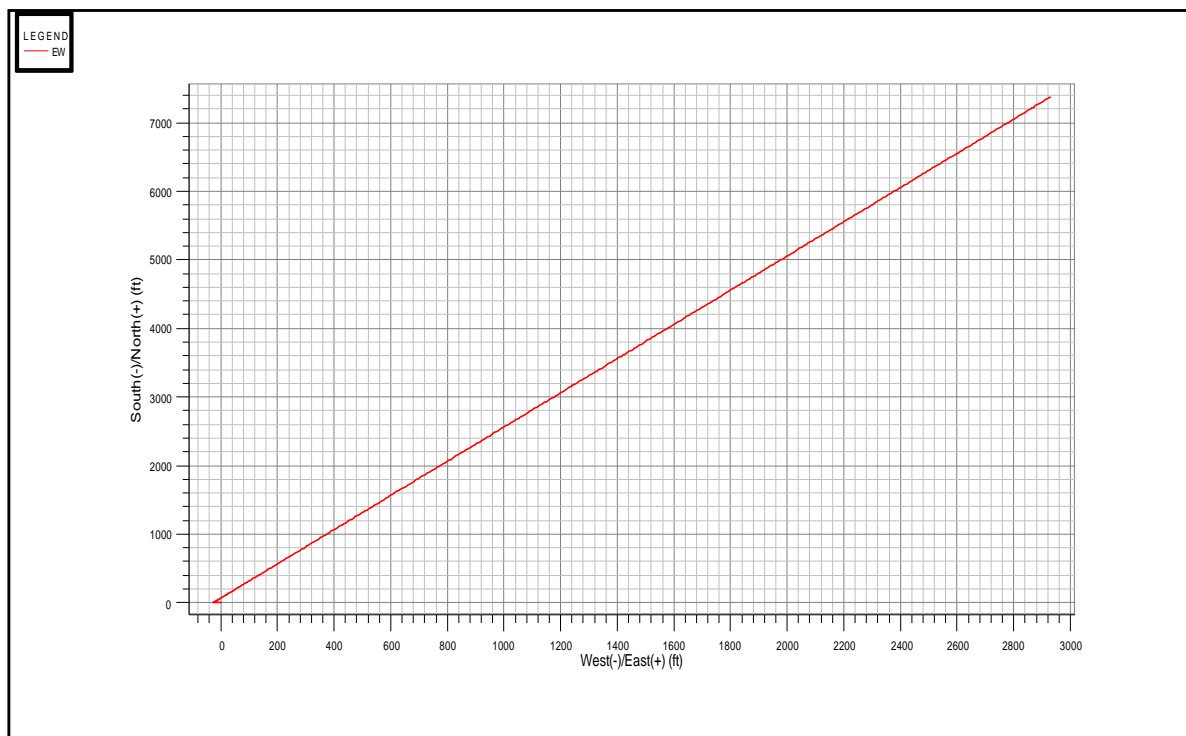
# Andes Petroleum Ecuador LTD

## JOHANNA 6

9-5/8" Casing - 8-1/2" Open Hole



Plot 1 : Vertical Section (from Azimuth 21,84 deg)

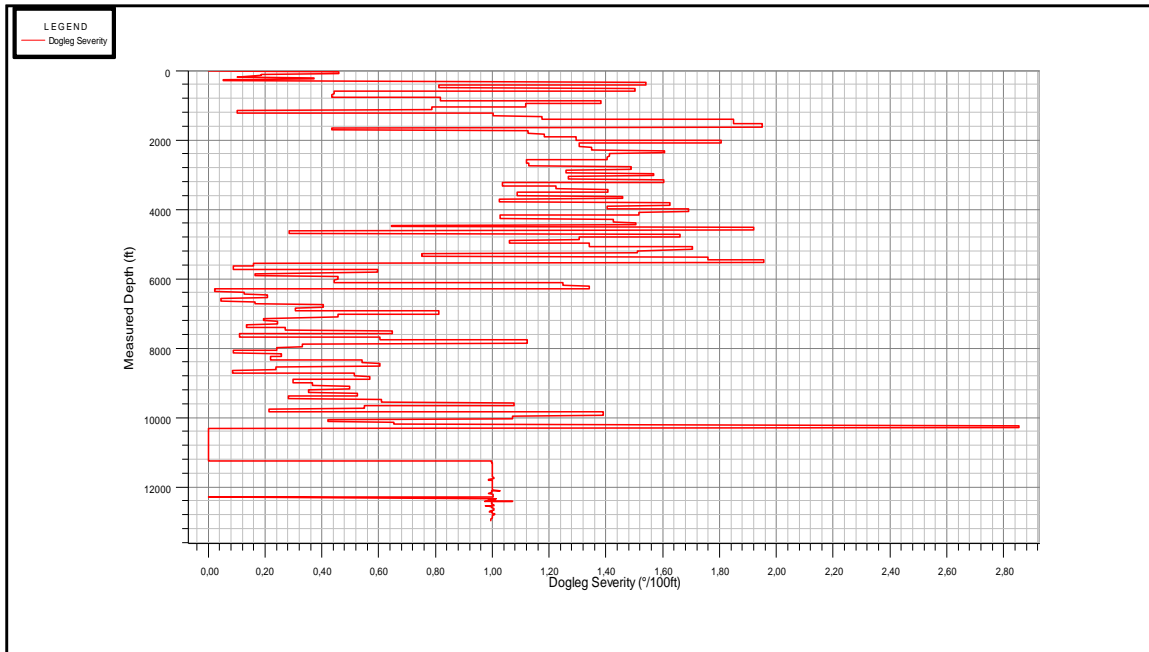


Plot 2 : Plan View

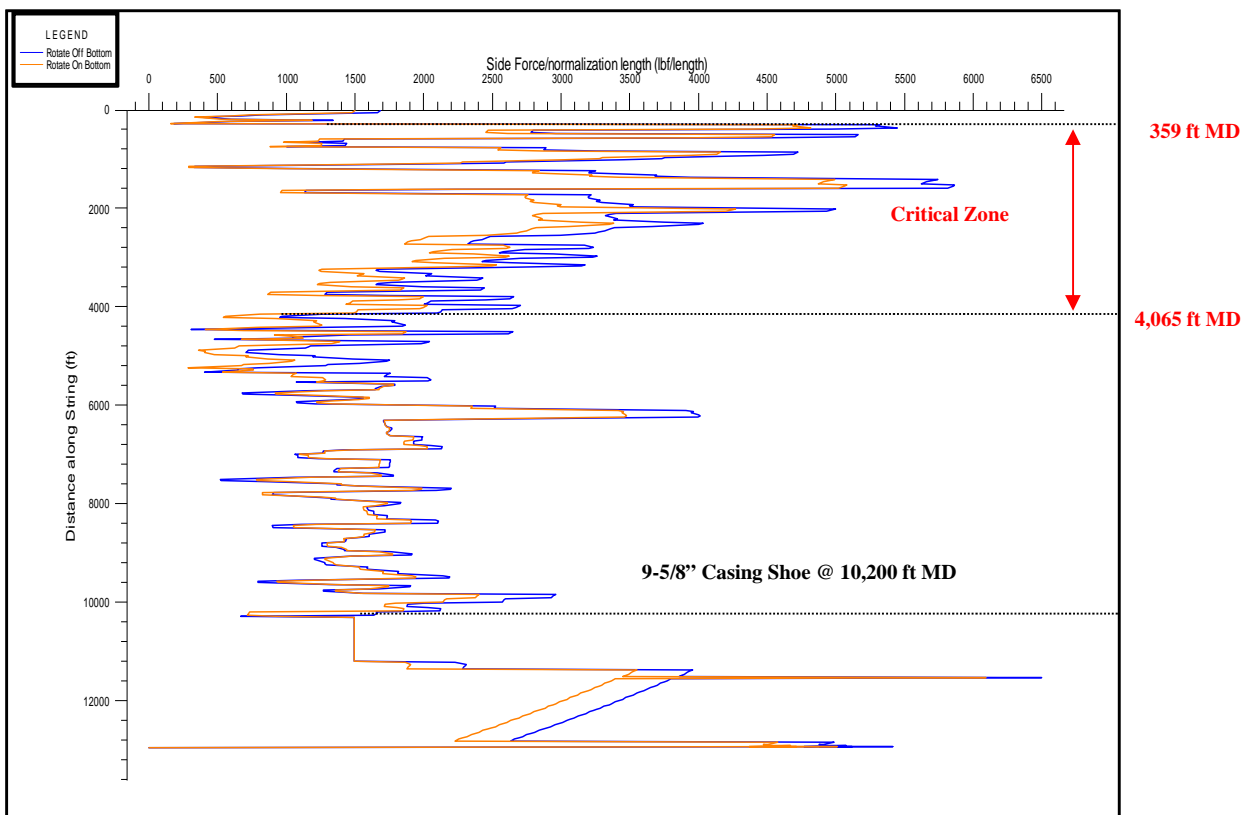
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### 9-5/8" Casing - 8-1/2" Open Hole



Plot 3 : Dogleg Severity

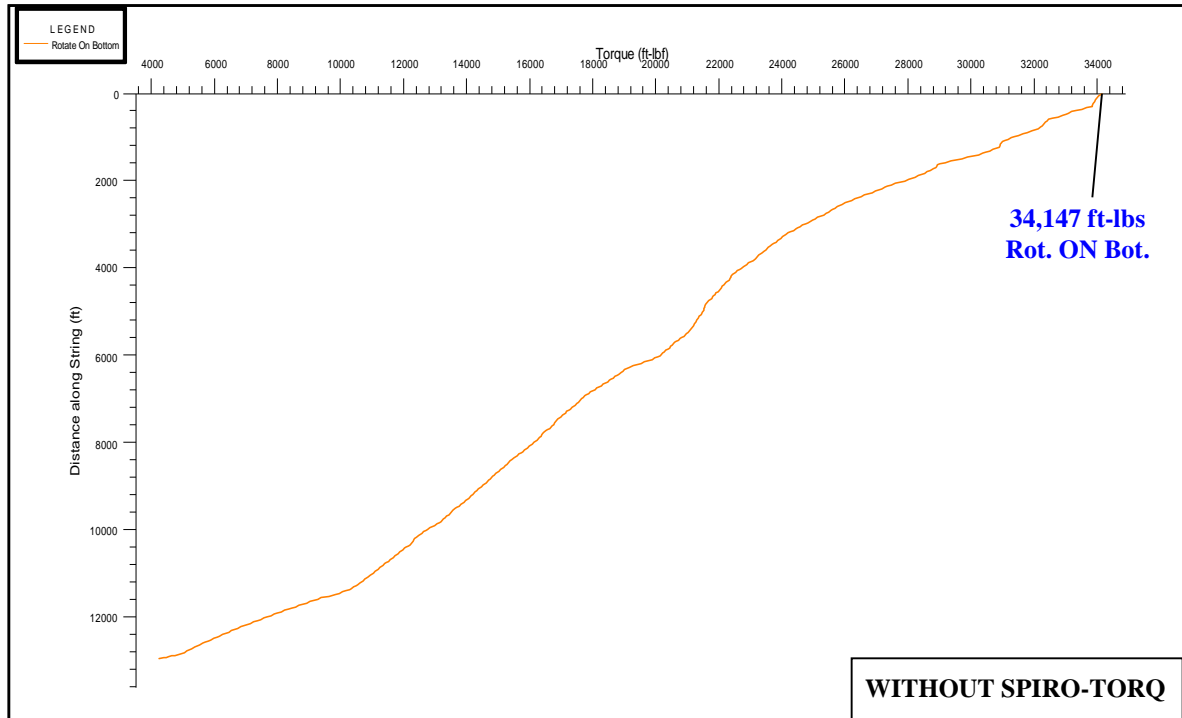


Plot 4 : Sideloads at Section TD – 12,970.40 ft MD (normalised to one stand length – 93ft)

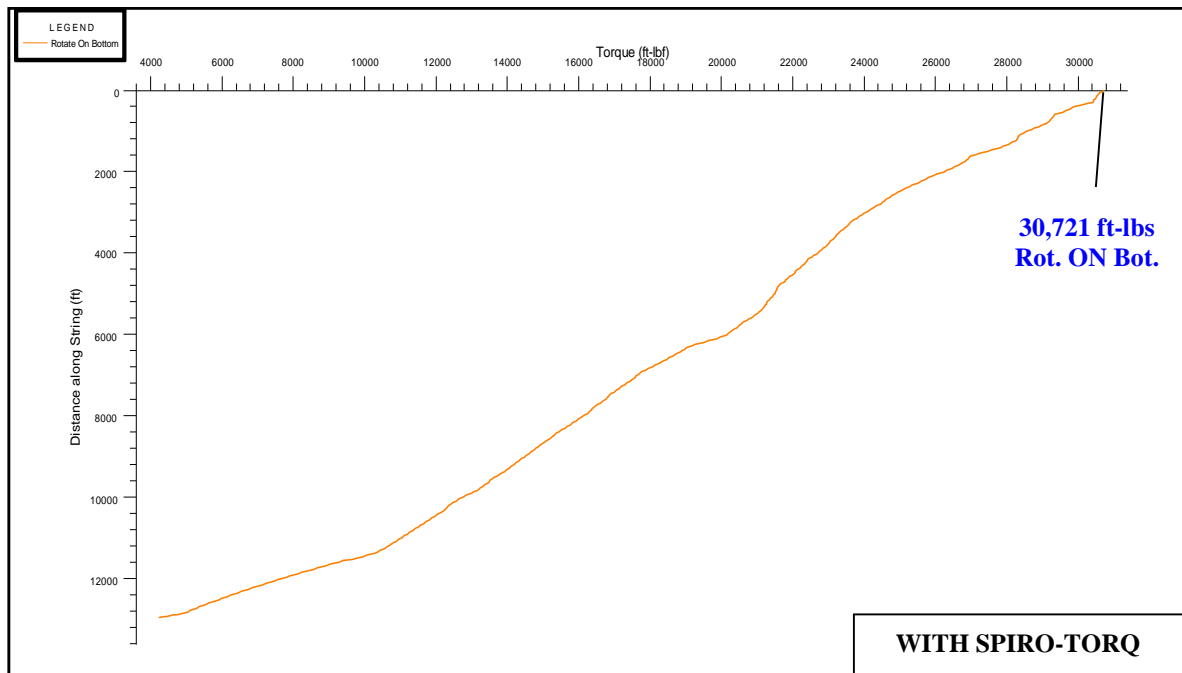
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9-5/8" Casing - 8-1/2" Open Hole



Plot 5 : Torque Distribution at Section TD – 12,970.40 ft MD (COF C/H 0.38, O/H 0.42)

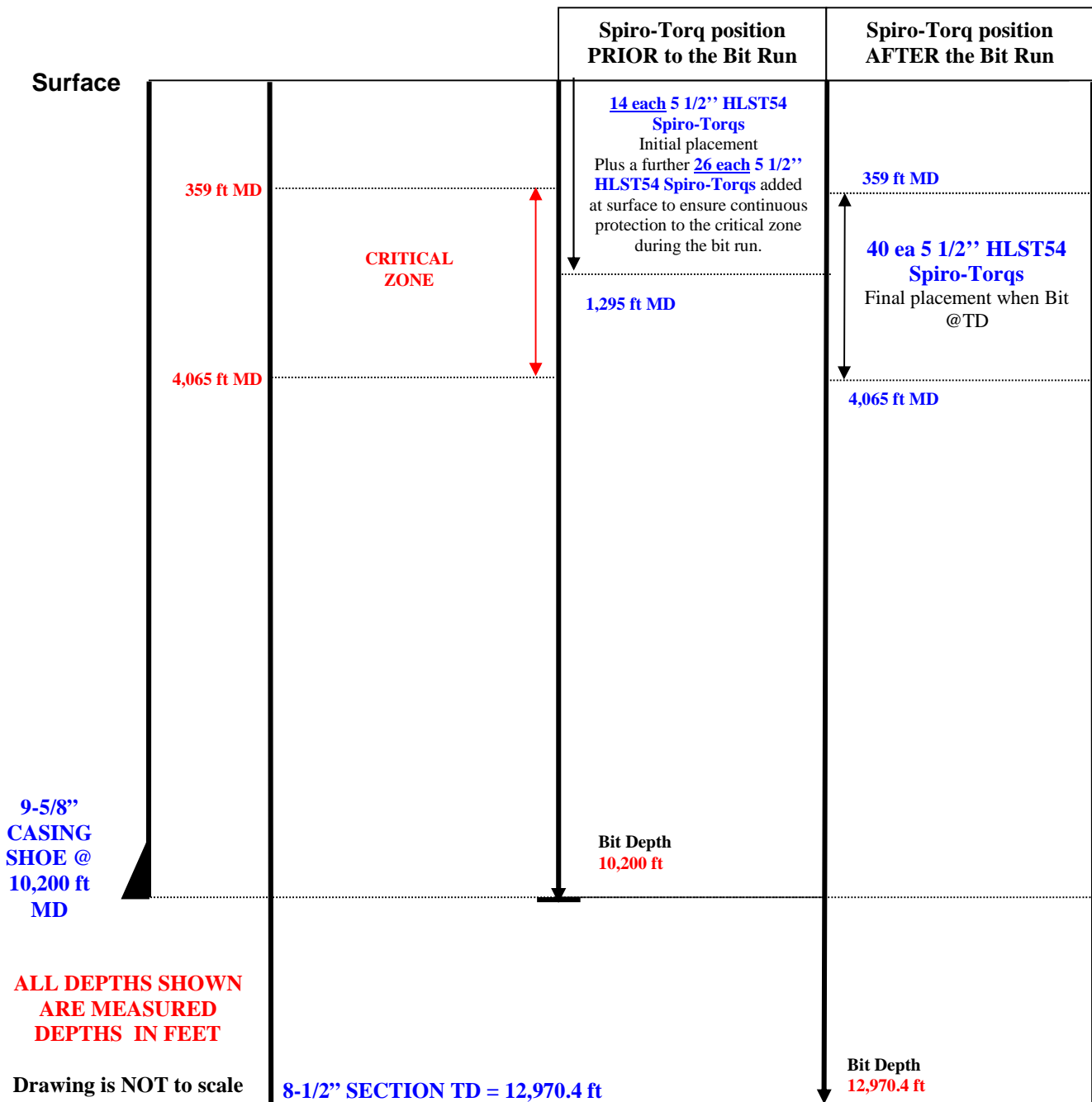


Plot 6 : Torque Distribution at Section TD – 12,970.40 ft MD (COF C/H 0.36, O/H 0.40)

*Preliminary*  
**Spiro-Torq® Placement Schematic**

[ Assumes One Bit Run to TD – 2,770 ft / Bit Run ]

[ Spiro-Torqs are placed at one tool every stand (93ft) of Drillpipe unless otherwise stated ]



**TOTAL SPIRO-TORQ REQUIREMENT**  
**40 EACH 5 1/2" HLST54 NRST SPIRO-TORQS**