

# Significant Torque Reduction in Miller

The 12 - 1/4" section of Miller A20 (03) was drilled during August and September 1995. Initial predictions using DSS indicated that torques would rise cumulatively to the end of the section. However a combination of torque reduction techniques resulted in a remarkable decrease in observed surface torque. This result has significant implications for other wells that had previously been considered impractical.

The initial DSS predictions ranged from 11kft.lbs to 32kft.lbs and assumed OBM cased/open hole friction factors of 0.17/0.21. This compares with average surface torque values of 10kft.lbs at the start of the section (10000ft MD), peaking at 17kft.lbs (14000ft MD) before falling back to 10kft.lbs at the end of the section (21150ft MD). The results can be seen in the Figure [below].

It is believed that a combination of low torque drillpipe (LTDP), torque reducing bearing

subs (DSTR) and the addition of LCM material are responsible for this marked reduction.

Further data analysis shows a good correlation between the use of torque reduction techniques with actual decreases in surface torque.

The Figure below also records equivalent friction factor values that would be required in order to maintain the observed low torque values. In particular, very low friction factor values of 0.05 were coincident with placement of mechanical torque reduction tools in cased hole only in BHAs 14, 15 and 16.

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**MILLER A20(03) 12-1/4" HOLE SECTION**

