

REViT® Integrated Soft Torque System improves Rate of Penetration (ROP) by 29% while reducing severe stick-slip by half

Challenge

An operator in DeWitt County, TX was searching for a way to improve drilling performance in the 9-7/8" intermediate section by mitigating the damaging effects of stick-slip. The severe stick-slip was reducing ROP and contributing to inefficient drilling.

Solution

Four wells were drilled within one mile of each other – two without stick-slip mitigation and two utilizing the Nabors REViT Integrated Soft Torque System. A drilling data assessment of the two non-REViT offset wells revealed severe stick-slip throughout the interval. Continued increases in WOB throughout the interval resulted in increased stick-slip with no corresponding improvement to ROP.

The REViT system was utilized in the subject wells to mitigate stick-slip, allow the use of higher drilling parameters, and extend the bit life. Well performance data for the intervals drilled is summarized in Table 1.

Results

Drilled 9-7/8" sections to KOP in 71 rotary hours for a total reduction of 21 hours vs. the non-REViT offsets, with a 29% increase in ROP and a 50% reduction in severe stick-slip (Table 1).

Case Study Facts

LOCATION: Eagle Ford Basin, DeWitt County, TX

CUSTOMER: Confidential Operator

TIMEFRAME: Q4 2019

CUSTOMER VALUE:

After implementing REViT, the operator drilled the sections to interval TD with substantially reduced severe stick-slip and higher ROP. The ROP improvement was dramatic past 5500 ft MD, indicating that the bit retained its cutting structure for longer.

Overall, subject wells running REViT system had a 29% faster ROP with a lower WOB versus the offset wells.

Well Performance Summary

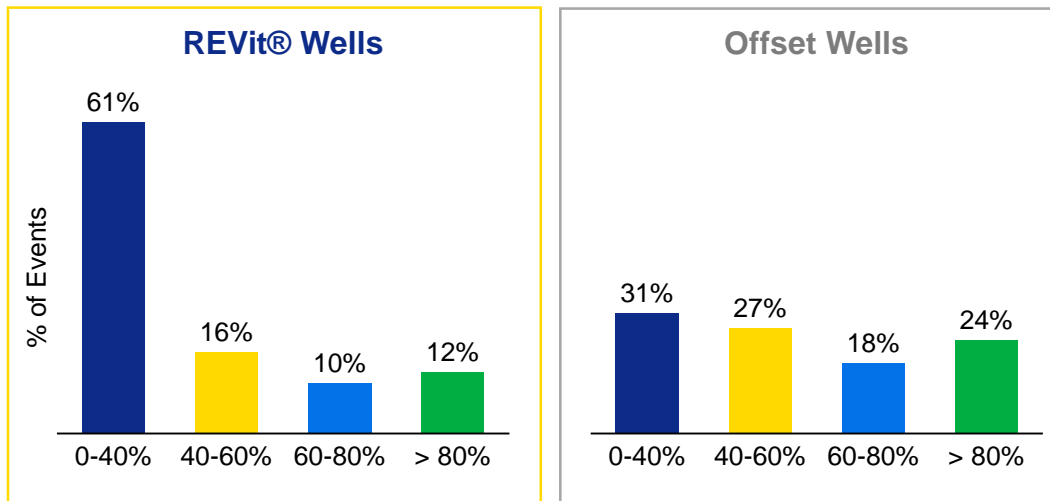
Table 1

Well Name	Interval (ft MD)	Rotary Interval (ft)	Rotary ROP (ft/hr)	Rotary Hours	Severe SS (%)
Offset A	941-12,258	10,693	271	39.4	35%
Offset B	942-12,196	10,894	205	53.1	49%
Offset Avg.		10,794	233	46.3	42%
REVit® Well A	939-12,218	10,679	293	36.4	14%
REVit® Well B	933-12,188	10,774	309	34.9	28%
REVit® Avg.		10,727	300	35.7	21%

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REVit® Stick-Slip Severity

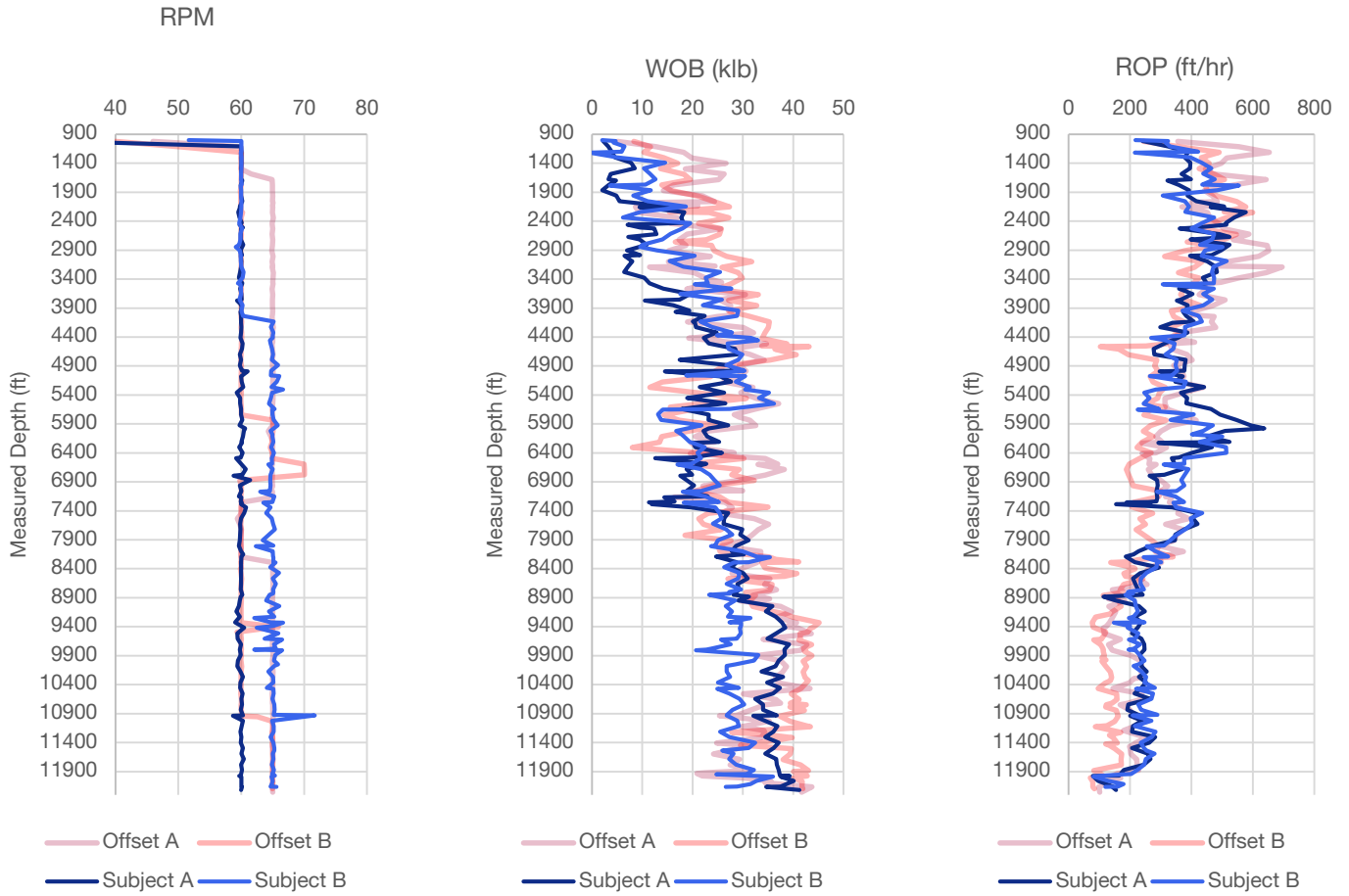
Figure 1



Stick-slip severity is grouped into four levels, with “severe” stick-slip typically referring to a value of > 60%. The use of REVit is demonstrated through the reduction in overall stick-slip severity.

Drilling Parameters Summary

Figure 2



REViT lets the top drive manage stick-slip, enabling the driller to focus on drilling parameters and ROP optimization. As a result of managed stick-slip, REViT ON wells show improved ROP when running lower WOB versus the offsets.