SMITH BITS
A Schlumberger Company

Bit Performance and Optimization Saves Rockcliff 40 h With Record-Setting Bit Design, Catapulting ROP 69%

Synapse service uses in-bit data to hone Haynesville Shale—specific bit

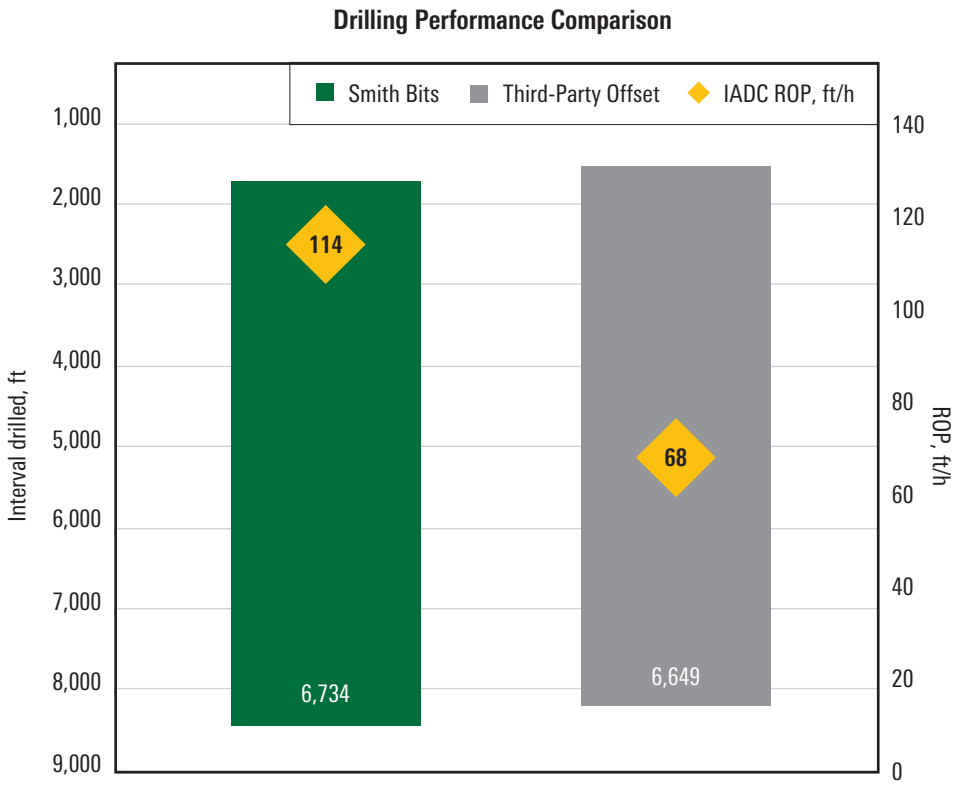
Based on downhole, in-bit drilling data acquired by Synapse* performance insights and optimization service, a specially designed bit delivers record-breaking 69% faster ROP, saving Rockcliff Energy nearly 40 h of drilling time in the East Texas Haynesville Shale.

Reduce drill days with better bit technology

Rockcliff Energy wants to reduce well days through faster ROP and considers the bit a primary factor. Indeed, Rockcliff set past drilling performance records with previous drillbit technologies from Smith Bits but continues to help drive design improvements specific to impact-prone formation characteristics of the Haynesville Shale, comprising interbedded limestone, anhydrite, shale, and sandstone.

Improve ROP with fit-for-basin bit design

Smith Bits recommended implementing in-bit data acquisition using Synapse performance insights and optimization service in a baseline bit design. Data is leveraged within the IDEAS* integrated dynamic design and analysis platform to build virtual formations and, subsequently, a fit-for-basin bit design. Using learnings captured with Synapse service and close customer engagement, a bit design was derived combining Stinger* conical diamond elements and Strata* concave diamond cutting elements. Both the Stinger and Strata elements would enable the bit to endure and better fail the higher unconfined compressive strength (UCS) areas of the formation, and Strata elements would also provide higher ROP in the medium-strength zones. Additionally, significant hydraulic modifications were made to increase shallow-hole ROP.



Synapse service designed a fit-for-basin bit that drilled 69% faster compared with the closest offset, drilling 6,734 ft at 114 ft/h vs. 6,649 ft at 68 ft/h.

Achieved record-setting drilling performance

Based on the data acquired by Synapse service, the bit designed specifically for the Rockcliff Energy application drilled 69% faster compared with the closest offset (within 2 miles), drilling 6,734 ft at 114 ft/h. A third-party bit used in the offset drilled less footage at an ROP of only 68 ft/h. Synapse service saved Rockcliff nearly 40 h of drilling time, setting a new ROP record. This performance gain demonstrated there was no longer a lag in shallow-hole ROP and also validated that there was a 55% reduction in vibrations compared with the baseline design.