

# CASE STUDY

## Oil & Gas Advanced Analytics

*Gaining cost efficiencies while increasing drilling operations*



### OVERVIEW

An independent oil and gas operator reduces costs and safety incidents while increasing visibility through the use of advanced analytics.

### THE BUSINESS CHALLENGE:

With increasing drilling operations in the Permian Basin, a large independent oil and gas operator needed to reduce costs as they continued to develop and extract hydrocarbons from their top-tier acreage. To reduce overall drill time and decrease operations costs, a continuous review of drilling efficiency must occur. One of the many components of drilling cost optimization is reducing the number of bottom hole assemblies (BHAs) necessary to drill the production lateral of the wellbore of horizontal wells. Finding the optimal time to replace the current BHA was crucial. There is tremendous variation in the rate of penetration (ROP) during the drilling operation. It is dependent upon many factors, such as the combination of drill bit and motors, and the formation type, which should be considered to better model the ROP and build a real time predictive solution.

### THE BAKER TILLY APPROACH:

The Baker Tilly team first analyzed the historical data already stored to determine if models were able to predict when a BHA was going to fail and needed to be replaced. After validating the data and building the models, we created the resilient edge data streaming from the drilling rig to the established cloud solution workspace where the models and historical data resided. The “near real-time” data was run through the models for scoring to recommend the optimal time to replace the current BHA given the drilling plan for the well. Combining the current data with the historical data, along with end user feedback helped to retrain and improve the models. Throughout this process, Baker Tilly collaborated with the end users to ensure we built a solution that addressed their needs and the UI/UX helped promote adoption of the solution.

### THE BUSINESS IMPACT:

By implementing these solutions, the oil and gas operator was able to:

- Reduce BHA replacement per well on 80% of wells due to this program. This achieved reductions in cost and nonproductive time (NPT)
- Increase visibility to high-resolution down-hole data to provide stronger well construction planning
- Increase visibility and accountability of drilling rig performance
- Decrease safety incidents and exposure due to improved planning and the reduction in high-risk operational activities

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