Delaware Basin

A well-established publicly traded operator in the Delaware Basin (Permian Basin) with continuous drilling operations faced numerous engineering challenges with pressure from investors to reduce cycle time and cut cost of a multi-rig program. Failure to meet objectives would result in lost faith in the drilling operations team and increased feelings of stress and inadequacy of employees. In Ql of 2018, H&J was hired and tasked with teaming up to reevaluate and ultimately re-engineer all aspects of the drilling operations. The acreage position is uniquely positioned in one of the most challenging parts of the Delaware Basin. Some of the obstacles to achieving desired performance were water and H2S flows, weak depleted zones, consistent 30-70% chert encounters, an unstable reactive clay zone, pore pressures requiring under-balanced drilling, faulting, and unpredictable carbonate debri flows. Many project management and engineering challenges had to be addressed simultaneously and promptly, including root-cause analysis of previous failures, well construction redesign, on-site personnel training, service provider evaluation, and changes, and innovative advances in execution.

Over the next two years, H&J utilized the iterative to research, design, execute, and redesign. Some of the solutions included the redesign of BHA's, (bits, motors, stabilizer area, stabilizer placement, motor selection, etc.), geo-steering to stay in the best drilling rock, physics-based drilling parameter select ion (utilizing MSE, real-time downhole vibration data, drilling parameter step test, etc.), changes to well construction (elimination of casing string and liner replaced with long string), increased sim-ops, implemented wellbore strengthening material in drilling Fluids. With the guidance of a methodical engineering workflow process took shape. The operator achieved on average a 12% reduction in days each quarter for 2 years straight. This led to an increased lateral ft/day by 154%, a decrease in flat time by 65%, and an overall 27-day reduction in cycle time in less than 2 years' time. Trust increased in the drilling engineering and operations team's ability to execute and outpace peers. This is why we do what we do.

H&J Petroleum
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