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Optimizing Tubular Running Services through Digital Solutions – Doing more with Less!

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Abstract

Digital transformation is a term that continues to be popular with the oil and gas industry. The industry's historic opposition to the adoption of innovative technology seems to be fading as operators, contractors, and service providers alike continue to invest in innovative solutions around not only digital technologies, but also in process and system optimization techniques. However, while operators are more willing to adopt newer and automated technologies, the "proof of value" burden still falls on service companies. Perceived value to operators may vary slightly, but overall, the industry has focused on two core tenants of value:

- Increased safety and efficiency
- Personnel reduction

For widespread adoption of an enhanced digital solution, the technology must not only provide quantifiable value in at least one of the core tenants, but also must repeatably demonstrate the value in the field.

The case study presented demonstrates the value added by introducing a new proprietary Programmable Logic Controller (PLC) based solution into the tubular running process. This system allows for tong operation, elevator and slip function, and single joint elevator (SJE) operation to be performed by a single person, rather than three or four personnel crew, as traditionally employed during tubular running operations. All functions are intelligently executed from a triple certified hazardous zone rated wireless tablet by a single operator's command while located inside the driller's cabin.

Through the deployment of a new consolidated and intelligent control system, the rig was able to reduce the number of personnel typically required for casing run and rack back operations down to two operators per tower, which equates to as much as a 66% reduction in personnel needed for tubular running operations. Additionally, the system allowed the operator to control the equipment from inside the driller's cabin, which improved communications and reduced red zone exposure by 30% while increasing run time efficiency by as much as 11% on some connection strings.
