Baker Hughes

i-Trak automation reduces ILT, accelerates trip speeds on first Middle East deployment

A Middle East customer operating onshore wanted to improve operational efficiency by increasing the speed and consistency of the rig's tripping operations. Baker Hughes proposed the **i-Trak™ drilling automation service** that incorporated the **JewelSuite™ drilling engineering software**.

Leveraged digital twins for advanced advisory services

As part of the i-Trak service, Baker Hughes deployed a real-time digital twin that was pre-loaded with earth-model-derived boundary conditions including pore, collapse, and fracture pressures. The software also incorporated the rig equipment's mechanical constraints in order to be able to automatically deliver the optimum tripping velocity based on the current bit depth. The optimum value was dynamic, adapting to operational states such as pumps-off tripping, pumps-on tripping, or reaming operations. The i-Trak service provided the Baker Hughes engineers with this optimum speed and automatically alerted them if tripping speeds dropped below the optimum via an intuitive user interface.

Improved tripping operations across multiple sections

Across 13 separate operations, spanning four hole section sizes, Baker Hughes eliminated significant invisible lost time (ILT) by increasing gross tripping speeds for drillpipe and casing runs an average of 13%. This equated to 8.4 hours of rig time as compared to the plan. In addition to these quantifiable ILT savings, all tripping operations were performed within the safety margins and without any swab or surge incidents.

Challenges
- Increase gross tripping performance
- Avoid swab and surge
- Minimize health, safety and environmental (HSE) risks

Results
- Saved >8 hours vs. offsets
- Increased tripping speeds 13% across all well sections
- Kept all tripping operations within the safety margins
- Experienced no swab/surge incidents
- Reduced ILT
- Delivered superior HSE performance

Tripping speeds

Average tripping speed (ft/hr)

■ Without i-Trak automation ■ With i-Trak automation
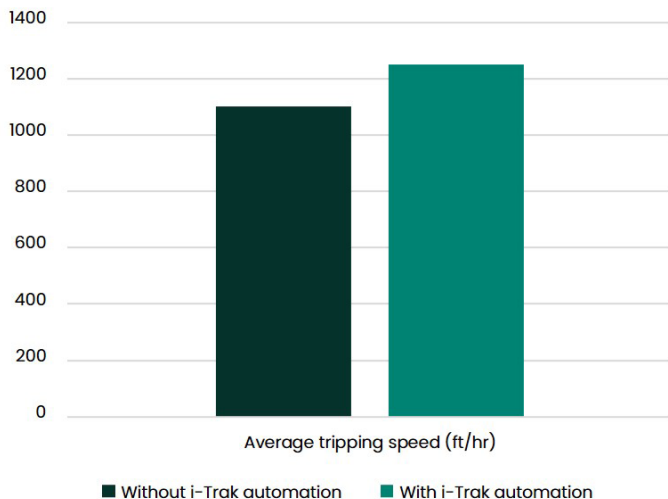
After implementing the i-Trak drilling automation service, the operator more than doubled tripping speeds in some hole sizes while improving overall tripping speeds by an average of 13% across all of the sections.