

Case study: Offshore, North Sea

i-Trak drilling automation cuts liner tripping time by nearly 50%

A European operator working in the North Sea’s continental shelf was looking for new ways to add incremental value to a development campaign that was already operating at a high level of efficiency. The **Baker Hughes Integrated Well Services Team** partnering with the operator on the well construction program proposed the **i-Trak™ drilling automation service** that incorporated the **JewelSuite™ 3D Geomechanics software**.

Deployed digital twins to optimize tripping speeds

As part of the i-Trak service, the Baker Hughes team deployed a real-time digital twin that was pre-loaded with the JewelSuite

software’s earth-model-derived boundary conditions including pore, collapse, and fracture pressures. The software drilling engineering package 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, via an intuitive user interface, if the actual the observed speeds dropped below the optimum tripping speeds.

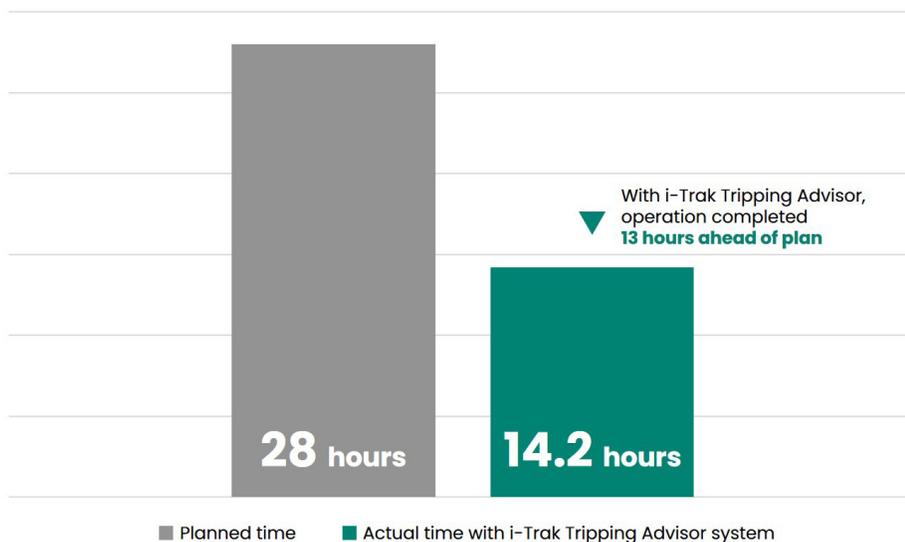
Challenges

- Increase gross tripping performance in an already highly optimized operation
- Avoid swab and surge
- Minimize health, safety and environmental (HSE) risks

Results

- Saved 13.8 hours vs. plan for section
- Increased openhole running speed from 414 to 889 m/hr (1,358 to 2,916 ft/hr)
- Saved >\$180,000 USD for the operator
- Experienced zero swab/surge incidents
- Delivered superior HSE performance

9⁵/₈-in. liner operation: Planned time vs. actual



Using the i-Trak Tripping Advisor system, the operator saved nearly 14 hours versus plan during the installation of the 9⁵/₈-in. liner.

Increased liner running performance

Baker Hughes engineers, situated in an onshore remote operations center, were continually and automatically alerted by the **i-Trak Tripping Advisor system** when liner running speeds were deemed sub-optimal in both the cased-hole and openhole running operations for the 9⁷/₈-in. liner. These remote engineers advised the offshore personal on necessary parameters to optimize the tripping speeds.

In the openhole section, the i-Trak service achieved an average running speed of 889.8 m/hr (2,919 ft/hr) that was more than 2X the rig's historical average for the same operation in the field. In total, the operations managed using the i-Trak service saved more than 13.8 hours as compared to the plan—saving the operator more than \$180,000 USD based on the rig-rate alone.

In addition to these quantifiable invisible lost time (ILT) savings, all tripping operations were performed within the safety margins and without any swab or surge incidents.



The user interface for the i-Trak Tripping Advisor adapts dynamically and automatically to current operational conditions—allowing simple, intuitive parameter identification to alleviate ILT and ensure borehole integrity.