



DEEP WATER



MATURE FIELDS

# GeoTech® Drill Bit and iCruise® Rotary Steerable System Combined to Achieve Operator’s Target in One Run in Offshore Deep Water Well

## INCREASED EFFICIENCY AND REQUIRED ROP ACHIEVED WITH PRECISE DIRECTIONAL CONTROL COMPARED TO COMPETITORS

CASPIAN SEA

### CHALLENGE

- » Drill and underream section in one run in challenging deep water conditions offshore the Caspian Sea
- » Fault planes and layers with unstable “green shale”

### SOLUTION

- » Deploy 12-1/4 in. GeoTech® GTi65WIMH PDC bit, competitor’s underreamer, and 8 in. iCruise® RSS tool in one run

### RESULT

- » All directional requirements were achieved with good bit performance
- » Section was drilled with little to no vibration
- » Maintained ROP
- » Zero NPT or drilling-related issues
- » Bit remained adequate for reuse in further applications at no additional cost to operator

### OVERVIEW

An operator of a deep water installation in the Caspian Sea at a depth of 175 meters enlisted Halliburton to drill and underream a 12-1/4 x 13-1/2 in. hole section in one run using a combination of a 12-1/4 in. GeoTech® GTi65WIMH PDC drill bit, competitor’s underreamer, and an 8 in. iCruise® rotary steerable system (RSS) tool.

### CHALLENGE

The section consists of fault planes and layers with unstable “green shale.” Thus, directional drilling is restricted in some areas because of the potential for stuck pipe, overpull, and pack offs. Another major challenge is adjusting the drilling parameters to minimize wellbore pressure and keep equivalent circulation density (ECD) as low as possible to achieve balance between wellbore instability and the risk of loss.

### SOLUTION

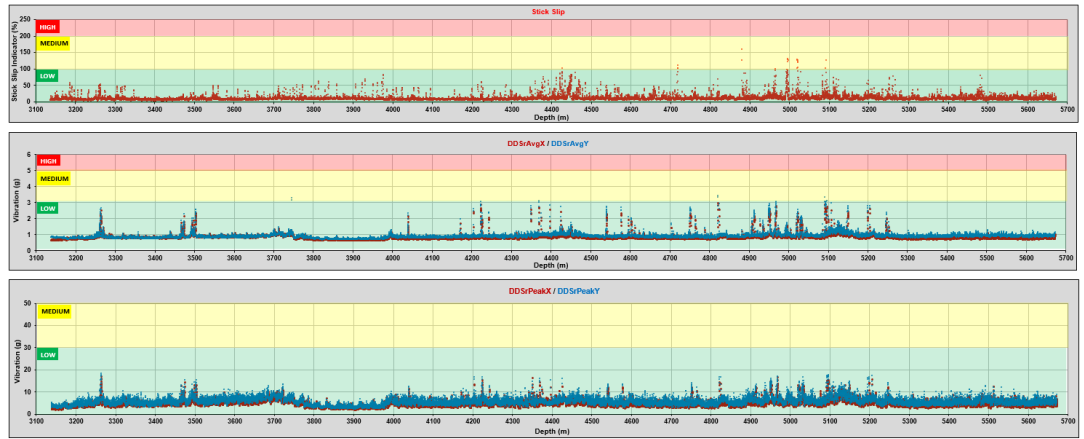
Using the 12-1/4 in. GeoTech® GTi65WIMH drill bit in combination with iCruise RSS technology, Halliburton developed a strategy to maintain 69° inclination and 268° azimuth to 3,980 meters measured depth (MD), and then build to 71° and turn right from 268.5 to 297° to 4,460 meters MD, keeping the tangent to the end of section.



**RESULT**

All directional requirements were achieved and the section was drilled smoothly in one run with little to no vibration. Bit performance was good with zero non-productive time (NPT) or issues encountered during drilling. Despite wellsite cuttings reinjection (CRI) system and wellbore ECD limitations, an average ROP of 20 m/hr was maintained on the longest section ever drilled with iCruise RSS in the Caspian Sea area. The operator was pleased with drill bit performance and the dull grade enabled the bit to be used for further applications at no additional cost.

**Vibration Data Plots**



Sperry Drilling Services DDSr™ Drillstring Dynamics Sensor measurements of X (average, peak) axis accelerometers mounted radially and Y (average, peak) axis accelerometers mounted tangentially. Stick Slip Indicator (SSI) defines the effect of torsional vibrations and stick slip severity on a drilling system.

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