Case study: Bustuchin, Southwest Romania

EZCase casing bit system saved operator more than $40,000 USD in southwest Romania

An operator in the Bustuchin area of Romania encountered severe lost circulation issues while drilling a 12 1/4-in. section through an interbedded shale and sandstone interval on offset wells. The challenging formation made it difficult to run casing to total depth (TD) on the first attempt. Dedicated wiper trips and extensive reaming were required to condition the hole, increasing time and cost to complete the well.

Baker Hughes recommended a casing-while-drilling solution using its EZCase™ casing bit system. This system combined drilling and casing in one run to reduce flat time and help mitigate problems associated with lost circulation.

A 12 1/4-in. EZCase bit with four blades, 16-mm PDC cutters, and four interchangeable nozzles was selected to ensure optimized cutting and hydraulics for the application. The bit is constructed from a specialized steel alloy with PDC cutters brazed directly to the one-piece bit crown. A 2,500-psi rated rupture disc was installed in the patented secondary bypass, which helps ensure fail-safe cementing and circulation operations in the event of plugged nozzles. A casing rotating tool was rigged up to the top drive. The EZCase bit system drilled 9 5/8-in. casing from 367 ft (112 m) to total depth at 2,487 ft (758 m) in 39.5 hr with an average rate of penetration (ROP) of 54 ft/hr (16.4 m/hr). The system drilled through the interbedded shale and sandstone interval without any losses to the formation.

The EZCase bit system and casing string were cemented in place after reaching section TD. An 8½-in. PDC bit with five blades and 16 mm cutting structure drilled out the EZCase bit in approximately 10 minutes without any issues. Drillout parameters were limited to 7 klb (3 t) weight on bit and 110 RPM. The 8 1/2-in. bit continued drilling ahead for 4,075 ft (1,242 m) in. the next section to TD, reaching 6,562 ft (2,000 m) measured depth. The combination of a drillable steel body and patented internal profile enabled drillout of the EZCase bit with minimal risk of damage to the drillout bit and bottomhole assembly.

All objectives were fully met. The operator saved an estimated USD 40,000 because one trip was eliminated, and problems associated with the lost circulation zone were avoided.

Challenges

- Manage severe lost circulation in an interbedded shale and sandstone interval
- Run casing to TD in a single trip

Results

- 12 1/4-in. EZCase Casing Bit System on 9 5/8-in. casing
- Drilled 2.119 ft (646 m) to TD at an average ROP of 54 ft/hr (16.4 m/hr) with no losses
- EZCase Bit System and casing successfully cemented in place
- 8 1/2-in. PDC bit drilled out the EZCase system in approximately 10 minutes and continued drilling 4,075 ft (1, 242 m) to TD in a single trip