

# TurboForce™ Diamond Impregnated Bits Power through Conglomerate to Deliver Record Runs in Congo



TurboForce™ Drill Bits

## OPERATORS CHALLENGE

In the M'Boundi field, one of ENI Congo's main challenges is drilling through a conglomerate interval that presents a very hard and abrasive formation. Diamond impregnated bits run on turbine motors have been proved to be a valid approach in offset wells, drilling as much as 172 m, and achieving ROP as high as 2.5m/h. Against these established benchmarks, Halliburton Drill Bits and Services (DBS) was challenged to propose a comparable bit that could drill similar footage at a higher rate of penetration.

## HALLIBURTON SOLUTION

Based on demonstrated durability that reduced bit trips in the Zingali field, Halliburton recommended a new TurboForce™ TF616D diamond-impregnated bit design for this application in the M'Boundi field.

TurboForce bits feature advanced design technology that includes uniform distribution of cutting-structure material to lower imbalance forces and increase stability, plus an advanced active gauge geometry that reduces differential sticking for more efficient drilling. The extended-gauge designs incorporate increased diamond content on the continuous shoulder to further promote bit stability, while hydro-dynamic bridges on the cutting structure redirect fluid and boost cleaning and cooling, improving performance even in high RPM applications.

In Well 04, a new 8 1/2-in. TF616D TurboForce design bit drilled 481 m through the heavy conglomerate, achieving an average ROP of 4.1m/h and logging 118.2 bit hours before being pulled with a dull grade: 3-2-CR-N-X-0-CT-PR. A second TF616D then drilled 548 m (from 1815 m to 2363 m), which comprises 30% to 65% conglomerates, with some conglomerate and some clay and sandstone. In this field record- footage run, the bit averaged 2.4 m/h with 230.18 hr total on bottom time and was pulled with a dull grade: 4-3-CR-N-X-I-CT-PR.

## ECONOMIC VALUE CREATED

This outstanding performance by the TF616D TurboForce diamond-impregnated bit design from Halliburton impressed the client by exhibiting exceptional durability while establishing new benchmark footage performance in the hard-to-drill conglomerate of the M'Boundi field. In addition to delivering greater footage than the offset bit runs combined, the TurboForce bits achieved comparable penetration rates over the significantly longer runs, reducing cost per meter.

Well	Bit Type	Serial Number	Footage (m)	ROP (m/h)	Bit Hours	Dull Condition
ZNGL4	TF616D	12467688	481	4.1	118.2	3-2-CR-N-X-0-CT-PR
ZNGL4	TF616D	12482923	548	2.1	230	4-3-CR-N-X-I-CT-PR

Performance table used in the well: ZNGL4