Cobalt International Energy, Inc., working in the Green Canyon area of the Gulf of Mexico (GoM), deployed a full suite of Baker Hughes technologies to drill the deepest high-pressure GoM well to date. With a total depth (TD) of 36,552 ft (11,141 m), successfully drilling this ultra-deepwater well required a combination of formation evaluation and drilling services.

Exposure to high pressures often results in tool failures, so Baker Hughes recommended a bottomhole assembly (BHA) incorporating both directional and formation evaluation tools rated at a safe maximum hydrostatic pressure of 30,000 psi (206.84 MPa). The BHA included the AutoTrak™ rotary steerable system (RSS), the TesTrak™ formation pressure testing service, the OnTrak™ integrated MWD/LWD service, and the SoundTrak™ acoustic LWD service.

The AutoTrak RSS drilled the J-shaped well to TD, minimizing borehole rugosity for straightforward casing runs. Despite formation pressures in excess of 25,000 psi (172.37 MPa), the AutoTrak RSS drilled 8,800 ft (2,682 m) with an average rate of penetration of 49.7 ft/hr (15.15 m/h) in the 12½-in. hole section, and 26.6 ft/hr (8.11 m/hr) in the 8½-in. hole section.

When drilling high-pressure formations, preserving wellbore integrity and stability depends upon maintaining a safe, effective hydrostatic pressure magnitude. During this operation, the associated risks were mitigated using the TesTrak, SoundTrak and OnTrak services: The TesTrak service provided real-time formation pressure data for accurate pore pressure evaluation; the SoundTrak service provided accurate real-time wellbore integrity predictions from compressional and shear slowness; and the downhole pressure measurements from the OnTrak service enabled drilling fluid adjustments in real time, ensuring a consistently safe hydrostatic pressure level.

The Baker Hughes combination of formation evaluation and advanced drilling services set an industry benchmark, helping Cobalt successfully drill to TD in a challenging downhole environment.