

## CASE STUDY

# QUEST GWD REPLACES MAGNETICS AS THE DEFINITIVE SURVEY SYSTEM, SAVING RIG TIME AND IMPROVING WELLBORE PLACEMENT

### ▶ TECHNOLOGY

- Quest™ gyro-while-drilling (GWD) system
- SPEAR™ solid-state sensors
- Gamma ray

### ▶ APPLICATION

- Directional drilling
- Wellbore placement
- Collision risk mitigation
- Formation identification

### ▶ LOCATION

- Latin America

### INDUSTRY CHALLENGE + OBJECTIVE

An operator in Latin America initiated a pad-drilling campaign and required fast, efficient drilling operations without any incremental time consumption relative to wellbore surveying. In addition, the operator wanted to improve wellbore placement and mitigate the risk of wellbore collision.

Based on previous experience in this field, the operator and Gyrodata were aware of downhole dynamics that required live inclination throughout the entire well, which improved directional control and ultimately improved the chances of landing the well based on plan. In addition, gamma ray LWD was requested to identify the formations, primarily to optimize the bottom hole location.

## TECHNOLOGY + SERVICE SOLUTION

- We suggested implementing our Quest GWD system, powered by SPEAR solid-state sensors.
- SPEAR sensors are able to handle harsher downhole environments when compared to conventional GWD systems. This is the first system in the world that is capable of fully replacing magnetic MWD tools because of its reliability and rugged shock and vibration capability.
- The shorter SPEAR sensor package, loaded into a compact collar, allowed greater steerability and sensor placement closer to the bit, all without the need for non-magnetic collars or other expensive monel components.
- Three-axis accelerometers integrated into the Quest GWD system provided live inclination while drilling.
- Integrated gamma ray in the string allowed identification of formation tops and bases.

## RESULTS + VALUE DELIVERED

- The Quest GWD system was the only surveying technology run throughout the well to TD. This was the first well in the world ever drilled to TD using exclusively gyro survey technologies; no other system is capable of this achievement.
- The system accomplished similar time-saving and shock and vibration reliability results when compared to a typical MWD tool while no additional time was required for survey transmission.
- The system provided real-time inclination information throughout the well, which enabled better control of the BHA through a difficult formation.
- Due to the inherent efficiency of the Quest GWD system and eliminating the need for conventional gyros on wireline, the operator saved 12 hours of rig time versus the original drilling plan.
- Integrated gamma ray measurements helped the operator to accurately identify the tops and bases of the formations, allowing better geosteering into the production sweet spot.
- The Quest GWD system reduced the ellipse of uncertainty by 54% versus the MWD tool.

	Magnetics	Legacy GWD	SPEAR™
Wellbore Placement Accuracy	✓	✓	✓
Wellbore Collision Risk Mitigation	✓	✓	✓
Near-Bit Measurement Capability	✓	✓	✓
Standalone Data Quality <sup>1</sup>	✓	✓	✓
Operating Efficiency <sup>2</sup>	✓	✓	✓
Ability To Withstand Shock And Vibration	✓	✓	✓
Eliminates Need For Wireline Gyro	✓	✓	✓

<sup>1</sup> Magnetics often require additional, expensive services or algorithms to correct for known inaccuracies.

<sup>2</sup> Refers to key wellbore positioning operating metrics, including survey time, battery consumption, calibration stability, etc.