

CASE STUDY

GYROGUIDE GWD70 REDUCES EOU BY 75% WHILE DRILLING, AND 88% USING MEMORY GYRO MULTISHOT

▶ TECHNOLOGY

- GyroGuide GWD70™
with Memory Gyro Multishot

▶ APPLICATION

- Relief Well Planning
- EOU Reduction
- Real-Time Gross Error Detection
- Precision Wellbore Placement

▶ LOCATION

- Santos, Brazil

INDUSTRY CHALLENGE + OBJECTIVE

A major operator is development drilling in the deepwater Atlantic through a thick salt zone (~2,000 m) - adding a considerable level of complexity to their offshore project.

In the event of a blow out, the traditional method of using an active ranging technology to detect metal from the last casing shoe or drill pipe is not effective due to the high resistivity of the salt.

A comprehensive contingency relief well plan with a stringent survey management component was required to safely drill each well with minimal risk, in addition to placing the pre-salt wells with extreme accuracy.

TECHNOLOGY + SERVICE SOLUTION

- Gyrodata recommended **running both the GyroGuide GWD70 along with the existing directional company's MWD system**. With both magnetic and gyroscopic sensors run at the same time, all safety and contingency relief well requirements would be met and any gross errors could be detected. (Refer to SPE Paper 105558 for details).
- A **Relative Instrument Performance** test was conducted. This is a quantitative method of assessing the validity of two directional surveys run in the same hole section, while also presenting real-time qualitative results allowing for visual identification of discrepancies.
- An **Overlap Error Ellipses Method** was also implemented which provides further evaluation of survey quality. Checking for the overlap of error ellipses is a simple and easily understood method of survey data comparison. Error Ellipses defined at two standard deviations, are plotted around the well positions as determined by two or more surveys. The degree of ellipse overlap is a semi-quantitative measure of the surveys' agreement.

RESULT + VALUE DELIVERED

- The well was successfully placed with superior precision and accuracy using the GWD70 and several surveying validation techniques
- The EOU was reduced by 75% and up to 88% via memory gyro multishot mode compared to the conventional MWD Error Models. This provided the customer with a high level of confidence in the wellbore's actual position - which is especially crucial should any incident occur
- The customer will be utilizing the GWD system in future projects for proactive risk mitigation and contingency operational measures should an issue arise in any of the wells of this campaign.

