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President & CEO*

Gyrodata

A Holistic
Approach To
Smarter, More
Dynamic
Directional
Drilling

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Gyrodata

A Holistic Approach To Smarter, More Dynamic Directional Drilling

Operators must have accurate and precise measurements for directional guidance to deliver a well to the correct reservoir location at an optimized cost, and to avoid costly collisions with offset wells. Proper placement of wells is also critical for safe operations and maximizing oil production. Historically, operators have relied heavily upon measurement-while-drilling (MWD) surveying technology driven by magnetic sensors to determine the well path as well as its position in three-dimensional space.

MWD tools use a magnetometer to determine true vertical depth which, establishes the bottom-hole location as well as the orientation of directional drilling systems. Over time, there have been many improvements in MWD technology that have helped drillers increase drilling efficiency by allowing them to steer the bit with real-time formation evaluation

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IF YOU FAST FORWARD 40 YEARS FROM OUR INCEPTION IN 1980 TO 2019, YOU WILL SEE THAT WE HAVE EMERGED AS A LEADER IN THE DRILLING SERVICES MARKET WITH OUR SUIT OF DRILLING, LOGGING, AND HIGH-PRECISION WELLBORE PLACEMENT TECHNOLOGIES," STATES ROBERT TRAINER, PRESIDENT AND CEO OF GYRODATA.



measurements. However, the MWD process has inherent technical weaknesses, given that the measurements can have errors that require mathematical corrections, which often still have discrepancies.

Due to the complexity of subsurface geology, directional drilling requires a wide range of dynamic solutions. Operators have the challenge of drilling through various types of rock formations and completing operations in a timely, efficient and cost-effective manner. Achieving all of this requires an accurate measurement of true north, which is a cornerstone of effective directional guidance and drilling. It is also imperative to have the true north measurement in order to accurately position a well or bottom hole assembly (BHA). Thus, 40 years ago, when experts at Gyrodata developed a gyrosensor that could precisely measure true north, it became a game-changer for the industry. In terms of inclination, azimuth and tool face, the Gyrodata technology created decades ago has been the leading directional drilling solution when it comes to the accuracy of measurements. "If you fast forward 40 years from our inception in 1980 to 2019, you will see that we have emerged as a leader in the drilling services market with our suit of drilling, logging, and high-precision wellbore placement technologies," states Robert Trainer, President and CEO of Gyrodata.

Why Precision Drilling Matters

The stakes are high for the drilling industry in the U.S. and across the globe. In the U.S. alone, there are more than a million active oil and gas wells. Since the downturn, operators have been focusing on achieving greater drilling efficiency and precision while also staying on budget. Operators also strive to drill wells as quickly as possible, while also ensuring safe drilling operations. To achieve all of this, operators have increasingly required and demanded accurate directional knowledge and calculations. Operators calculate the well path coordinates by using measurements of depth, inclination and azimuth at a series of points along the wellbore. These measurements, however, can at times be prone to errors that can cause problems for operators and service companies. For example, errors in azimuth and inclination could lead to environmental disasters, such as a well blowout or incidents resulting in collisions between wells. More commonly, these errors result in the placement of a wellbore that is materially different than the well plan as requested by the reservoir groups within the operators, and consequently result

in sub-optimal production and overall lifecycle economics. Accordingly, operators need to work proactively to ensure that measurements are as accurate as possible to ensure safe and efficient drilling operations.

This is where Gyrodata comes in. Gyrodata is equipped with efficient and innovative gyro surveying tools and technologies that help operators achieve an extremely accurate wellbore location so costly collisions can be avoided and production can be maximized.

Inception and Growth

Gyrodata offers comprehensive drilling solutions that were historically not available on the market. The company was founded as a privately owned oil field service company nearly four decades ago in 1980. The first technology that it developed was a mechanical gyro (known otherwise as a "spinning mass" gyro), which was very accurate despite some inherent limitations related to how rugged the sensor was to the downhole environment. In 1983, the company ran its first commercial gyroscopic survey. By 1992, it had introduced a gyroscopic steering tool into the market. This tool allowed for real-time gyro tool face on wireline while-drilling and sliding. Over the years, experts from Gyrodata perfected and created gyro sensors that were greatly reduced in size and materially more robust to address the realities of the rugged environment downhole. The ruggedness of the gyro sensors improved significantly to the point where they were capable of withstanding harsh downhole environments while drilling a concept that had been previously impossible for technologists in the industry to overcome. Through its gyro surveying services, Gyrodata has delivered the most accurate and precise survey data to operators for their drilling operations all over the world.

Today, Gyrodata operates from a base of 36 offices located around the world in virtually every energy market globally. The company continues to drive growth in all of its regions around the world, with the goal of being one of the largest integrated drilling services providers.

High-Accuracy Survey Data Is To Key to Well Optimization & Lifecycle Economics

Gyrodata has a full-service drilling services business that includes gyroscopic surveying tools, MWD tools, mud motors, rotary steerable systems, logging services as well as real-time operation monitoring services. All of Gyrodata's products are provided as a packaged service.

When it comes to wellbore placement and placement intelligence, Gyrodata offers surveying services during drilling and after a well has been drilled. One of Gyrodata's flagship services is the gyro-while-drilling ("GWD™") service, which as the name implies provides drillers and operators with real-time gyro information while drilling

the well. In addition, for certain applications, operators may determine that a survey immediately after the well is drilled is sufficient. This type of survey is typically conducted by dropping a gyrosensor and tool into the drill pipe when the BHA is at total depth. Without consuming any incremental rig-time, Gyrodata's drop technologies take a set of measurements that can be captured as a client is tripping drill pipe out of the well. Gyrodata is also able to utilize its surveying tools with other types of tools, including Gyrodata-owned or third-party logging equipment, such as cement bond logs and casing logging tools. These combination services provide clients with multiple sets of data and great information on one run, rather than multiple runs from different service providers. After wells have been brought online, operators have turned to Gyrodata for assistance for a range of technical challenges. For example, Gyrodata is often called out because a client experiences rapidly declining production or even cases where production stops altogether. Oftentimes in these examples, clients do not have sufficient information to determine the root cause for why production has decreased/ceased. Gyrodata can help define the issues by running a gyro combined with other equipment, which can provide very high-density data. In many cases, clients may not have collected high resolution tortuosity data before Gyrodata became involved, as drilling surveys commonly provide only low-resolution data. Because of the higher density and more accurate data provided by Gyrodata, clients may realize the well is much more tortuous than previously identified by MWD surveys. After Gyrodata provides these tortuosity logs, clients typically are able to make changes to their well completion and production plan, including setting an electrical submersible pump at a certain depth or implementing various well intervention programs. Overall, Gyrodata's precise and accurate survey data helps clients make informed decisions regarding their drilling and completion operations, and this equates to optimized wells and maximum production.

Continuing the Innovation in Directional Drilling Solutions

Gyrodata continues to offer expertise in well drilling and provide top-notch service quality that contributes to effective operations. In 2018, Gyrodata added a remote operations center, called Guide Center. Within the Guide Center, a team of professionals including well planners, drilling optimization specialists, and other drilling engineers, deliver 24/7 real-time monitoring services so operators can make well-informed decisions regarding their drilling operations. These experts gather critical data and consolidate it into a database so they can analyze it and then offer clients recommendations for ways to


avoid offset wells or potential hazards. Additionally, through the Guide Center's Gyrodata Magnetic Accuracy Solutions ("GMAS") software, experts utilize solutions that improve MWD survey accuracy by providing BHA magnetic corrections and end-of-well survey analysis. Also, the Guide Center's real-time optimization of drilling parameters helps maximize drilling rates while also reducing drilling cost. Overall, Gyrodata works closely with operators to provide effective well engineering consultancy services to protect drilling operations and reduce a wide range of risks.

Gyrodata Continues To Innovate Next Generation Technologies

In late 2018, Gyrodata introduced its next-generation platform for high accuracy gyro survey services, called SPEAR technology. SPEAR stands for: Speed, Precision, Efficiency, Accuracy, and Reliability. Simply put, Gyrodata believes SPEAR is a game-changer for the industry. It provides improved accuracy compared to Gyrodata's other gyro surveying services and technologies, which are already considered the most accurate systems in the market. SPEAR is the most robust and readily deployable sensor that Gyrodata has ever produced. It has unique features, such as its low-battery consumption and compact footprint; the latter which will enable placement of sensors closer to the bit. In summary, SPEAR technology is rugged, precise and accurate.

Gyrodata's first service offering within the SPEAR family of tools is Omega^x™, which is a drop tool incorporating redundant sensors to maximize accuracy while mitigating the risk of mis-runs or failures.

Omega^x™ has already had numerous commercial successes, including a recent run with a third-party cement bond logging and casing logging tools for a client who was operating in the Utica Shale. Omega^x™ operated without using incremental rig time while it was being tripped out of the well from a total depth of 25,634 feet. It provided high-accuracy, high-speed surveys every 32 seconds. The operator was able to visualize tortuosity and casing damage, and determine if there was good cement isolation outside of the casing while saving 36 hours of rig time. Furthermore, Gyrodata was able to provide directional survey certainty that differed significantly with the MWD survey data, "ultimately assisting the client in gaining a better understanding of the location of their well.

Overall, Gyrodata's products and services have helped improve the accuracy and precision of wellbore placement. It will be interesting to see what new products and services the company comes up with next. Gyrodata will surely continue to refine revolutionary survey technologies and drilling tools that contribute to safer drilling operations and greater operational efficiency. 

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Top 10 Onshore and Offshore Technology Consulting/ Services Companies - 2019

Although the onshore and offshore companies aim to maximize operational efficiency and control costs, they lack in fully trained crew, process expertise, infrastructure and systems knowledge, and innovative tools to determine the root cause for unplanned downtime and other challenges. Moreover, the political developments in different countries compel these companies to focus on regulatory and legal matters and ensure that business objectives and contracts are well integrated and aligned. Most importantly, the companies must recognize the unique needs of the onshore and offshore processes in terms of human resources to achieve their business and operational goals, including customer satisfaction, and cost benefits.

The onshore and offshore companies can effectively execute all their operations with support from the well-planning and drilling optimization professionals who deliver 24/7 real-time monitoring services to aid operators in making

informed decisions. These companies need service/consulting teams comprising talented domain experts to reimagine their future and create sustainable and lasting business value. Most of the service providers have access to platforms such as SAP and other advanced management solutions. The domain experts design and implement apt technology platform to help the onshore and offshore companies in their transformation journey for more visibility into planning and quality of service.

To help CIOs navigate through the list of onshore and offshore technology consulting/services companies, our distinguished selection panel, comprising CEOs, CIOs and VCs, industry analysts and the editorial board of Energy CIO Insights narrowed the top 10 onshore and offshore technology consulting/services companies 2019 that exhibit competence in delivering robust solutions and services.

We present to you Energy CIO Insights's "Top 10 Onshore and Offshore Technology Consulting/Services Companies - 2019."



Company:
Gyrodata

Description:
Gyrodata is the leading provider of high-accuracy wellbore placement technology for the global oil and gas industry

Key Person:
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