

# OILMAN

Reprinted with permission from the November / December 2019 issue

## A CLOSER LOOK AT REMOTE OPERATIONS CENTERS

BY JOHN EVANS AND MATTHEW ROUTH

Operators go to great lengths to accurately position wells and avoid well collisions as they continue to search for ways to manage oilfield drilling operations effectively to maximize performance and production, while also lowering costs. As a result of these trends, operators and oilfield service providers (such as Gyrodata) have introduced new drilling technologies and services into the market that help make drilling operations more efficient. ROC (Remote Operations Centers) in particular have become employed on a more regular basis. These centers enable operators to apply continuous improvements in real time to address a wide range of problems so they can optimize drilling operations.

ROCs are multidisciplinary collaboration centers that strive to strike a balance between having the right people, technology and processes in place to monitor wells in real-time from off-site locations to maximize operational potential and better ensure service quality. Before ROCs were introduced into the industry, operators faced numerous challenges when drilling in crowded oilfields or in remote areas that had wellbore stability and service reliability issues.

Over the past ten years, ROCs have transformed dramatically, as their capabilities have expanded thanks to live data feeds, powerful data analytics, and increased computing capabilities. Drilling and well planning engineers are able to provide new solutions to issues that come with multi-well pad drilling by optimizing drilling performance and avoiding wellbore collisions through real-time correspondence with the rigs. ROCs have made de-manning onsite MWD (Measurement While Drilling) services and remote monitoring of operations possible, which has greatly reduced the overall safety liability on a rig location. This also allows subject matter experts to extend their knowledge and skills across several rigs for better performance and utilization. Streaming live data into analytical software solutions increases drilling efficiencies by providing optimization specialists the capabilities to make recommendations and adjust drilling parameters in real-time.

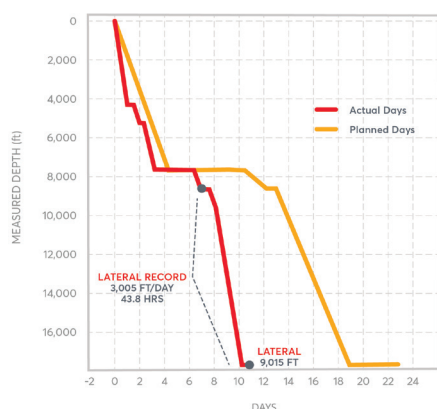
### What Remote Operations Centers Entail

At ROCs, drilling engineers monitor and try to determine what is occurring during drilling operations to ensure well plans are appropriately followed, risks are mitigated and challenges are effectively handled.

The centers can achieve the following:

- Reduce the likelihood of events that cause non-productive time
- Reduce costs by improving operational efficiency
- Help operators gain a better understanding of complex well sites
- Utilize advancements in technology to obtain 3D visualization and improved models
- Prevent wellbore collisions
- Increase the effectiveness of drilling operations

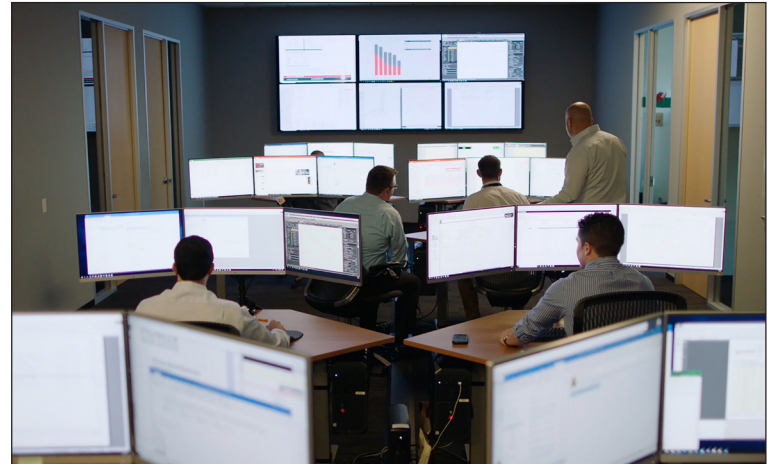
ROCs include data management, field communication as well as remote visualization services. They basically serve as an extension of a well site. Experts at the centers analyze real-time data streams of parameters that are measured



An operator drilled a 9,015-foot lateral in one run by adopting a total system approach utilizing Gyrodata's RSS, mud motor and MWD.



Guide Center - Matt Routh Working



Remote Operations Center

both on surface and downhole when drilling.

ROCs also provide KPI (Key Performance Indicator) solutions for visualizing, benchmarking and reporting. This allows operators to gain deep insights into their operations so they can do a better job of defining lost time and reduce nonproductive time. Experts at ROCs are well positioned to utilize advanced analytics and customizable alerts to help operators predict and prevent problematic events from occurring. With real-time predictive road maps that the centers offer, operators are able to optimize performance, correlating live and historical data that can help determine local best practices.

### How Remote Operating Centers are Contributing to the Drilling Industry's Transformation

Over recent years, the industry and technology has evolved, as oil and gas companies have been at the forefront of digital operations. ROCs are proof of the trending digital transformation that the industry is currently facing. Drilling processes have become more modernized with a broader variety of analytics being tracked and monitored. Dynamic, real-time alerts allow operators to make important decisions regarding their operations so they can avoid being unprepared for challenges. This is helping to lower overall well costs and shorten the number of drilling days.

Modern technology and equipment has given the industry the ability to remote into equipment and gain a better understanding of operations. ROCs help operators escalate different issues and communicate more effectively. These centers are also driving more standardization in the industry so operators can really measure their performance. They allow operators to see how they are performing against best practices and indeed, local best practices.

ROCs have also helped push drilling performance to the next level. Now the industry is having more asset, field and data management in place. Data is also coming in from multiple sources, including surface equipment, downhole drilling equipment, manual reports as well as asset management software. This helps drive effective all-encompassing operations -thus helping operators understand and execute best practices to improve operating performance.

As new technologies continue to evolve, so do technicians' skill sets. Field engineers are being utilized in remote centers - not just technicians and mechanics out in the field. Field engineers have been required to learn about drilling automation, coding, and programming. This has changed the role of the technician. As a result, oilfield service companies that have ROCs have been required to have training programs that truly support the changing dynamics of the industry. Technicians and field engineers have been required to become more competent and develop new areas of expertise.

By leveraging the strengths of experts, ROCs have caused the drilling industry to more effectively reach oilfields' true potential by improving operational efficiency and lowering costs. This valuable service is saving the

industry millions while also promoting safer and more effective drilling operations. Overall, integrated operations at the centers is causing significant improvements in reserve recovery.

### About Gyrodata's Guide Center

When you first step into Gyrodata's ROC, the Guide Center, you feel like you have entered a smaller version of a NASA control room. Wall-to-wall screens (with data displayed in a clean and sharp way) gives the center a futuristic vibe. In a shared office space, drilling engineers are busy at several work stations where they carefully evaluate data and drilling performance so they can develop effective strategies and procedures that will help make drilling processes more efficient. Real-time models (which are vital tools for planning a well) are constantly updated with data from wells. At the 24/7 center (which opened in 2018), multi-disciplinary teams deliver real-time monitoring services and support for well planning, well engineering and optimization services.

The Well Planning Operational Technical Support group applies their expertise regarding various types of well geometry and fields to optimize solutions for wellbore/pad design and well permitting. The company's anti-collision and real-time monitoring services provide clients with the safest recommended path to avoid offset wells or other potential hazards. Engineers specifically leverage their expertise in tool error modeling to aid operators in reducing the ellipses of uncertainty. This allows operators to safely navigate through highly populated pads or fields without having collisions.

Gyrodata survey management experts at the Guide Center also utilize software solutions that improve MWD accuracy by providing BHA (Bottom Hole Assemble) magnetic corrections and survey analysis, which also ensures accurate wellbore placement.

Well engineering consultancy services help protect drilling operations. They involve torque and drag modeling, hydraulics modeling, critical speed as well as BHA analysis. The center also offers real-time optimization. Experts at Gyrodata define pace-setter wells with optimized BHAs and drilling parameters for each section of the well that serve as a roadmap for directional drillers to follow.

Experts at the Guide Center are involved in data acquisition, modeling, performance optimization as well as local best practice validation. Their workflows involve managing a massive amount of data, scenario modeling, field target planning as well as risk analysis. All of these factors help them determine what exactly is going on with a well, which also helps operators make vital decisions regarding their drilling operations.

The Guide Center also serves as a data center, where experts store information on how wells perform for future reference and KPI analysis. The data allows experts to analyze operational parameters to identify trends, which in turn allows them to determine techniques that enhance drilling performance.

At the center, experts also examine groups

of customer specific wells that are in a close proximity of each other to determine if they are illustrating similar characteristics. Experts strive to expand on the successes of the pace-setter wells and focus on the limitations of the slower, more challenging ones. This data helps them with future planning and drilling. Previous knowledge allows experts to create an effective road map for operators.

### Case Study

A major operator planned to drill a Wolf Camp, A well in the Permian Basin. Experts from Gyrodata obtained customer offset data from the Permian Basin and reviewed it for the planned work. Based on the expert's historical data of conventionally drilled wells in this formation, they were able to apply the knowledge to select the proper configuration for motor assisted RSS (Rotary Steerable System) and MWD tool selection. A directional drilling team applied the derived road maps and parameter recommendations when drilling the entire well.

Because of what was learned from the study of the historical data that lead to proper configurations, the customer was able to successfully drill a 9,015-foot lateral in one run with the GyroDrill Motor assisted WellGuide RSS in 43.84 drilling hours at an average rate of penetration of 205.8 feet/hour. Due to these measures, the operator saved about 9 days of rig time and almost half a million dollars in drilling costs.

### Conclusion

Overall, ROCs offer modelling and drilling performance analysis, which helps improve the safety and quality of both ongoing and future operations. They also offer an opportunity for improved decision-making in the context of real-time asset management. The centers are improving drilling times significantly for peak performance while also reducing non-productive time. They have a circular loop of obtaining and reviewing data and utilizing it to aid effective decision making so operators can run profitable and efficient drilling operations.



John Evans has over 30 years of experience in the oil and gas industry. He is the Gyrodata Product Line Manager for rotary steerable system (RSS) and measurement-while-drilling (MWD) services. John manages the technology portfolio and operations technical support (OTS) plus the remote operations Guide Center that provides well planning, well engineering and drilling optimization. John's primary areas of expertise include RSS, drill bits and drilling technologies, MWD, logging-while-drilling, as well as drilling engineering and optimization.



Matthew Routh has been involved in the oil industry for almost 24 years. He has spent the last 7 years with Gyrodata, with his most recent role being the Guide Center manager. Matthew graduated with a mechanical engineering degree from the University of Louisiana and has been involved in several aspects of the oil industry, including surveying, directional drilling, well planning, well engineering, and drilling optimization. ☑