

Point and troubleshoot

Remote technical support has played a major role in slashing Noble Drilling's downtime from 10% to 4% in about a year. Jennifer Pallanich hears how new technology and equipment, collaboration, and a constantly updated archive have led to a "quantum leap" in troubleshooting.

Amid fierce competition and sinking oil prices, Noble Drilling cast about for ways to better support its rigs and increase uptime levels. Worldwide maintenance director Ron Swan saw an opportunity to improve uptime by using new communications technologies and grouping the company's top troubleshooters in a new Real-Time Technical Support Center.

The RTTSC, opened in the company's Sugar Land, Texas, headquarters last year, provides access to the maintenance, reliability and technical support teams, which are situated in an adjoining area of the Noble Drilling offices.

"When we work in isolation, we don't get things done, we don't get things fixed, and we don't share our info. When we collaborate, we're continually talking and getting things fixed and sharing our information," Swan says. "As technical people, we are very good at fixing things. That's what we're supposed to do, fix things. But from an administrative point of view, we weren't very good."

The RTTSC addresses those administrative shortcomings. The new system incorporates



Photo: Librestream

LOOKING UP: A technician uses the Librestream camera to troubleshoot a problem.

Cisco's Spark collaboration system, which serves as a focal point for all details, online conversations, documents and images relating to a specific problem. The resulting archive for each troubleshooting ticket is added into the drilling contractor's comprehensive library, which is available to workers on all the rigs.

The bonuses are two-fold, Swan says, as the automatic archival function helps Noble avoid losing institutional knowledge, and the available

information minimises the need for re-work.

"Let's not do the same thing time and time and time again. Let's just do it once and learn from that," he says.

According to Michael Ripley, an electrical superintendent and a troubleshooter in the RTTSC, the new approach is helping them "get better and better".

Traditionally, Ripley says, a ticket would come in, and an expert would be flown to a rig to make an eyes-on assessment of the problem and then work to solve it. Using the RTTSC and some new technology, the experts no longer have to fly out to the rig. This shift can save multiple days. In fact, the first use of the remote live-streaming repair system saved two days of downtime, Swan says.

"We can troubleshoot, fire-fight, support our rigs in any part of the world" with the RTTSC, he says.

The two chief components of the remote repair system now in place at Noble are speedy data transfer rates with video compression and Librestream's Onsite camera system.

"There are ways to compress and securely transfer video and audio through a satellite



Photo: Noble Drilling



"The events are still the same but we fix them quicker."

*Ron Swan,
Noble Drilling*



CLOSE-UP: An electrician onboard the ultra-deepwater drillship *Noble Don Taylor* uses the Onsite camera to help the RTTSC support staff troubleshoot a fault in an electrical cabinet.

connection. From the rig to shore, it is encrypted and compressed so we can send it through the smaller pipelines," Ripley explains.

In addition to the imagery, the troubleshooting department has direct access to data log files on the rigs.

"We're mostly tapping into data that's already sitting on the rig," he says. "They used to have to put that on a thumb drive and email it to us."

The key, though, is the ability to actually see what is going on with a piece of equipment on a rig, Ripley says. That is where the Onsite digital streaming camera comes in. Onsite has Class 1 Division 2 ratings, which means it can be used throughout the rig, including some hazardous areas. The images stream from the camera at a resolution of up to 1080p. Personnel can call the RTTSC from the Onsite camera, as long

as the camera is connected to the wireless network on the rig.

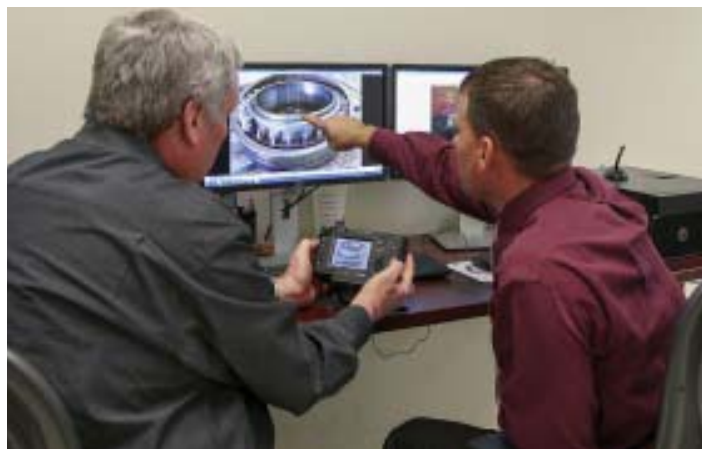
"Every working rig has one of these cameras onboard," Ripley says. "Now, within minutes we're diagnosing the problems."

The maintenance person on the rig can stream the video from the camera and take real-time instructions from troubleshooters in the RTTSC, such as capturing a close-up on a specific part of equipment.

Tech support

"When you're trying to troubleshoot something or explain to someone on the other side of the world what it's doing or what it's not doing — not torquing, or not fitting on the pipe right — you can show them," says Perry Moore, electrical maintenance superintendent, who has been on Noble Drilling's mobile technology support team for about a year.

With the video system, support



VIRTUAL PRESENCE: Noble Drilling's Real-time Technical Support Center.

staff in the RTTSC can see exactly what maintenance personnel are looking at, Ripley says. "I can say, 'hey, time out, I want you to look at this'. And I can take a snapshot of what they're looking at and analyse it."

From his chair in the RTTSC,

Ripley has access to a visual of the equipment in question, along with the company's archives and the ability to chat on-screen or carry on a live conversation.

In one instance he had rig personnel video a wiring cabinet, which is full of



PERMANENT RECORD: A technician uses the camera to document corrosion.

» hundreds of tags. Ripley was able to read the tag legends in the resulting high-resolution image and help troubleshoot that particular problem within minutes, for a job that ordinarily would have taken hours.

“It really reduces the amount of time to give beneficial information to the guy,” he says.

The company has not stopped sending technicians to the rigs entirely, but those instances tend to be where an equipment manufacturer or third party physical verification is necessary. Additionally, Noble Drilling is still sending its own teams to the rigs for support, follow-up, investigation and preparation to complete key activities, as well as for rig moves.

Culture shift

It took some time to get the RTTSC concept in place, Swan says. In late 2015, Noble Drilling started rolling out the cameras and “tele-repair” method to the regions. But gaining acceptance

from rig personnel took a mindset change. Swan says he expected some territorial resistance, such as why a rig in the Middle East should have to call Sugar Land for a problem, as well as reluctance by the older workers to embrace the new technology.

“It’s a quantum leap in cultural change in the industry,” Swan says. “Our time to react and fix the problem has dropped from three, four, five days to 50 minutes.”

Ripley adds: “Once they started seeing... the immediate response, word started spreading, and they were onboard with it.”

Not long ago on the drillship *Noble Bob Douglas*, which was working in the Gulf of Mexico, there was a problem during some software upgrades.

“The person they needed was sitting in the Gulf of Mexico probably 100 miles away (on the *Noble Bully I*), but it would have taken two days to travel,” Swan says.

Rather than flying the technician from one drillship to

Photo: Noble Drilling



“Within minutes we’re diagnosing the problems.”

*Michael Ripley,
Noble Drilling*

the other, the team set up a live streaming session. What could have taken several days of travel time was sorted out with several hours of digital consultation.

The technology extends to factory acceptance tests (FATs) as well. Recently, Ripley says, an expert remotely viewed a test of drilling equipment in Huisman’s yard in the Netherlands from the RTTSC. The FAT took the same amount of time — about three hours — but no travel was required, saving several days.

“We don’t have hands on. We’re just witnessing,” Swan says. “We’re seeing everything we would normally see, just through the camera.”

“And everything is documented,” Ripley adds.

Notably, key performance indicators are improving. “We’re improving our maintenance, time to react to problems, and reducing downtime,” Swan says.

A year ago, drilling systems in general and top drives in particular accounted for the

majority of Noble Drilling's down time. Those same systems still account for most of the down time, although the percentage has dropped from 10% to 4%.

"The events are still the same but we fix them quicker," Swan says. "Today, the first thing they do is pick up the cameras."

After every troubleshooting ticket is closed, lessons learned are shared.

"It's not just a paperwork exercise. They're seeing the value," Swan says. "We need an archive of lessons learned that we can share, not just today but for the future. We want them to be able to fix the problem for themselves."

Noble Drilling is also sharing information about downtime events and equipment failures with its vendors. According to Swan, the vendors "are fully engaged" and have "no hesitation at all" about using remote technology.

For about a year, Noble focused mainly on the maintenance side, striving to improve uptime rates

and move away from the need to be reactive.

"As we see the maintenance getting better and better and better, our downtime goes down," Swan says. "Phase one for us was always the money side. We want to save the company money. Our uptime is the most important thing to us."

Dovetailing with that is phase two, which aims for predictive and proactive maintenance. Phase three will focus on continuous improvement and reliability, dropping downtime from 4% to 3%, and Swan says the only way to get there is with new technology.

"We've had the same problems for 25 to 30 years, and now we're using new technology to reduce the problems and make our equipment more reliable and share the knowledge across 32 rigs," he says.

"As technology evolves, we have to evolve with it. That's where we're going. We're trying to get there before it actually happens." □

Photo: Noble Drilling



SYSTEMS CHECK: Noble Drilling technicians use live-streaming technology to collaborate with shore while reviewing blowout preventor test procedures in the Gulf of Mexico.

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