

Increasing equipment uptime and reliability



How can a company install a comprehensive, preventive maintenance program and bolster operator care? The answer lies in Total Process Reliability (TPR).

By PRESTON INGALLS
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Companies can't change their culture or systems without complete, top-to-bottom buy-in which takes decisive leadership, efficient implementation and, most importantly, realistic, attainable goals.

For Western Drilling and Western Well Service Inc., the challenge to change their processes was greater than usual. How can a company install a comprehensive, preventive maintenance program and bolster operator care without first addressing the long-established mindset of the workplace? Since the philosophy

of widespread support and team dynamics is at the heart of Total Process Reliability (TPR), the company knew the best place to start was with its TPR Coordinator Randy Dill, a former rig supervisor with Western. Still, the changes weren't easy.

The way things were

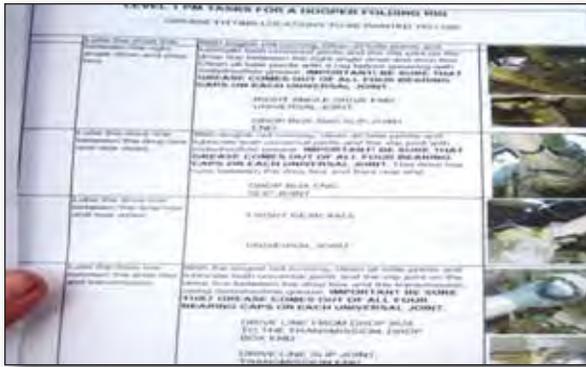
"Everyone was so used to doing [maintenance] the same way for so long they couldn't see the benefit to themselves or to the company," said Dill.

Western Drilling and Western Well Services Inc., provide well and

horizontal drilling services, operating more than 20 well service rigs and six 24-hour rigs. Founded in 1943 and located in Taft, California, the company conducts all its operations in the Golden State.

The company's CEO, Fred Holmes, believes that preventive maintenance on equipment and training of personnel fundamentally requires the same sort of system-wide coordination and discipline that its safety policies demonstrated.

"I could see we really needed TPR. I've seen much larger companies



Level One Preventive Maintenance tasks training material.

Supervisors and crew members handled maintenance on a rig-by-rig basis where each team's collective knowledge of machinery was utilized. This functional, but less than structured approach led to some rigs having more uptime than others due to the level of knowledge of each crew. According to Dill, the company "had relied on tribal knowledge" to check oil and complete lubrication tasks which was not consistent.

Now, through TPR, a uniform team approach emphasizing employee safety and efficiency is in place. Rig teams run high pressure flex hose through the equipment to target bearings and grease fittings in challenging locations. The hoses are then connected to lube manifolds on the outside of the equipment. As a result, they can lube up to 20 grease fittings without sending crewmembers into tight, often-dangerous equipment locations.

Additionally, since many vital oil check points on a rig are located within the equipment, teams now plumb these hard-to-reach oil check points to the outside of the rig's frame rails. This enables the checks to be made quickly and easily. Dill added, "These types of improvements on our equipment and the Level One Preventive Maintenance training we conduct

implement this type of program, and while we may not produce like that, we can certainly emulate an approach," stated Holmes.

As in many companies, the most tenured employees are often the most resistant to change. Although that opposition is not always rooted in skepticism or deliberate reluctance, more often it is the inability to break operational habits that for so long seemed to drive success. That same longevity, however, can sometimes lead to complacency; and when it comes to equipment management, indifference can become costly.

Therein lies the challenge. Dill said, "Overcoming the status quo is a huge hill to climb." Holmes concurred, "Buying into something doesn't just mean being willing to pay for it." He explained, "I was right in the trenches; I wanted to make sure I led by example." Holmes knew that for years the company needed a focused effort to continue to grow: "We didn't know what it was going to take until TPR came along."

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Team efforts to increase operator involvement. Cross-functional teams are brought together to restore equipment to an “as-designed” state. These workshops are usually one week long and include training

and hands-on activities. Through cleaning and inspecting, crews learn more about their equipment and anticipate its needs, then begin repairing defects and making improvements called *countermeasures*.

Another team focus is called “Five S” (5S). One responsibility of a 5S team is to plan and execute 5S events focused on organization and orderliness. During these seminars, members “*sort, set in order, shine, standardize, and sustain*” specified equipment or work areas. This strategy establishes critical cleanliness and organization in the physical workplace. Teams are formed and asked to choose a piece of equipment on which to perform a 5S event. To measure 5S effectiveness and maintain consistent practices, monthly audits are performed.

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The TPR process is guided by a Steering Council, made up of senior leadership and certain staff members. An Implementation Team, responsible for implementation and direct oversight of the process, consists of rig supervisors, well pullers, department managers and the shop supervisor.

The company uses open discussion and encourages suggestions to help drive training programs which foster a sense of

involvement in policy creation from operators. Maintenance request forms and work orders have also found their place and are being used during daily inspections to document defects in equipment.

In the past, work orders were processed by hand. When Shafer received a call, the request ended up on paper. “People would call and I would write down the requests on a notepad. They would pile up, and some would get overlooked.” Once work orders became systemized and a planner was assigned to coordinate activities, the equipment simply ran smoother.

Shafer said that with a specific individual in charge of processing the orders, the whole process runs better. “We created 1,400 work orders. We only have 200 outstanding work orders still open. That’s within a six or seven months time of having work orders. The system is more streamlined now.” Operators also use work orders as a vehicle to suggest equipment improvements and modifications.

Still, formalizing the inspections and work order policies was not without its challenges. The

with the work force greatly increase the probability that these checks will be performed.”

Today, accessibility and ease of repair are concepts that drive equipment decisions even during the fabrication process. According to Dill, “Improvements in accessibility, serviceability, and improvements for operational effectiveness make our equipment easy to service and easy to use.” Changes and improvements are made in the shop before equipment is moved to the field.

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Shop supervisor Gary Shafer is very pleased with the reforms as well, having seen a dramatic decrease in lubrication-triggered emergency maintenance issues. “We have mechanics on call 24/7 who were being called, on average, 3 to 4 times per week. Now, we’ve knocked it down to roughly once a week, maybe.” Shafer said, “The guy on call is getting more family time because he’s not called out all the time which is a tremendous benefit to him.”

Involving Everyone

The company also established ongoing Equipment Improvement

company found that scheduling Level Two PM inspections (the major components of the rigs performed by mechanics) was difficult because of the coordination between 24-hour rigs and those that shut down daily.

Shafer sees a light at the end of the tunnel as the teams continue to adapt to new work habits that hinge on what has been implemented. “We still have to stay up on the process; we’re still



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climbing that hill. Once at the top, we'll be pretty much maintaining equipment and staying up to par." He has been extremely pleased with the progress of TPR.

There is an overwhelming consensus that equipment management procedures are changing the way the company runs. "We can see already it was the right thing to do," added Holmes. Goals and objectives are measured using Key Performance Indicators (KPIs), and the company has been successfully hitting those goals.

The benefits of the TPR programs have been widespread. Namely, departments that were once distant are more communicative and working toward common goals. Dill believes attitudes have improved and that frustrations are diminishing. Moreover, the skill level of mechanics has increased, enabling repairs to be done quickly and better, significantly minimizing downtime.

Through team interaction and a dedication to safer and better operat-

ing equipment, the company's ongoing efforts to change its culture have been strengthened substantially as operators come to appreciate that their jobs — and their equipment — are considered an indispensable part of the company's success. 📖

AUTHOR'S NOTE: *Western was recently acquired by Key Energy Services, and Key's management has not only asked that TPR be continued at Western, but that it be expanded throughout Key's California Division.*

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