

Raising the Bar in the Bakken

Bakken Drilling Rig H&P 294 Leaders in Speed, Efficiency and Safety

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The 55-member crew at the Hess Helmerich & Payne (H&P) Rig 294 has earned a strong reputation in Bakken, setting benchmarks for safety, speed and efficiency.

On two separate occasions in 2014 the H&P 294 team reduced by half the time it normally takes to drill a full horizontal Bakken well to a depth of 20,500 feet. They “made hole” in July in 10.4 days, which was better than their all-time best three months earlier of 12.77 days.

But the pinnacle came three months later when they raised the bar even higher by reducing their time to just 9.77 days, in spite of a 13-hour delay due to a Measurement While Drilling (MWD) equipment failure. Most important, H&P 294 set all its records safely; the rig hasn’t had a recordable or lost-time injury incident in more than 475 days.

By comparison, the average number of days it takes to drill a Bakken well this year is 20 days from start to total depth finish, according to Jozef Lieskovsky, a senior analyst at the Department of Energy.

H&P 294’s performance was 46 percent better than Hess’ current first-quartile fleet 2014 average of 18 days, according to Les Kelso, Director of Drilling, Bakken, who points out that 294 also set eight of the top 10 best Hess Bakken drilling times since the rig began operation in 2009.

In addition H&P 294, which has drilled 18 wells this year, has also established three other Hess efficiency all-Bakken or south-of-the-Missouri River records for individual drilling stages – the vertical, lateral and the curve portion of the J-shaped wells. (See “A Drilling Dynasty”)

“The reason 294’s records are important is they send out a clear expectation of what everybody should be shooting for,” says Kelso.

The Drilling team did a white-board analysis looking at every section of the hole 294 drilled during its most recent record performance. “We wanted to see exactly what they did and how they did it,” said Tom Stone, Manager Drilling Operations. “We then distributed our findings to all the other rigs so they could see how they compare to 294 and lessons-learned that can apply to their jobs.”

“We found that everybody on the rig was very, very tightly scripted and aligned around the plan and extremely aware of what exactly they were supposed to do, especially during critical drilling times,” explained Dave McKay, Vice President Bakken Well Factory.

One recent visitor saw the crew’s attention to critical times first hand – almost the entire crew was on deck at midnight watching and cheering on the directional team that was drilling the curve, the trickiest stage in the horizontal well process.

When asked about the formula for their success, 294 Drilling Supervisors Jeremy Brown and Brad Stancel, who share the role on a rotating two-week-on-two-week-off basis, and Drilling Engineer Britt Meador broke 294’s approach like this:

60 percent: Leadership, close teamwork and striving for continuous improvement, major components of lean production top-tier performance.

“Leadership on the rig trickles down to the tool pushers, the drilling crew (from Helmerich & Payne, Inc.) the directional contractor (Baker Hughes), the geology company (Neset Consulting) and the guys who do solid control (U.S. Solids Control),” said Brown.

That’s a great concept, but difficult to execute and achieve, according to Hess President and COO Greg Hill. “Lean production is easy to talk about but it’s really hard to do,” he has said. “Anybody can go buy a book on lean and learn some cool concepts, but it’s so about leaders being the teachers and coaches and enrolling and engaging the workforce in problem solving that’s kind of the secret sauce.”

“The 294 workforce is so enrolled and engaged there have been occasions when they’ve declined promotions because it would mean leaving the rig,” said Kelso. “How many people turn that down because of they’re so satisfied with being a part of a team?”

That level of cohesiveness is rare in the drilling business, he said. “But 294 has aligned a lot of the narrow objectives of the drilling, geology and steering groups into the overall objective of drilling the perfect well, so there are fewer conflicts and distractions that are on most rigs.”

You’d think all this high praise might go to the crew’s heads, but not so, said Kelso. “I don’t see these guys ever sticking their chests out and, saying “Wow, we’re at the pinnacle of our game. They’re very modestly striving for continuous improvement, trying to figure out ways to get better.”

So instead of sticking their chests out, the team is keeping their heads down. “Can we do better? Definitely,” says Stancel, “Our next goal is get under nine days and I know we can nail it.” Adds Brown: “Everybody was excited when we broke the 10-day mark and had a little dinner celebration, but now the attitude is ‘okay, how many more times can we do it?’”

25 percent: Tool reliability

They use the same equipment as other Hess rigs. “But you can control how to maintain it,” Brown said. “If your mud motors and downhole computer components keep breaking down you’re not going to be setting drilling records.”

15 percent: Pre-planning

“Everybody sits down and talks point-by-point how are they preparing for the work,” said Meador. “They plan their work ahead through POAs (Plans of Action) that lay out what needs to be done and also what is ahead. Part of the reason the rig drills so quickly is they have a really short dead time between finishing drilling and running cement.”

Setting drilling records is no parlor game or trivial pursuit, but an important cog in the company’s lean production push to meet its ultimate goal of being the lowest cost highest yielding producer in the Bakken.

Here’s why: The total Bakken drilling budget this year is \$1 billion with cost-per-well target cost of \$4.17 million of which about three quarters of that is the nipple up to total depth portion, said Kelso. “When you can drill in as little time as 9.77 days you cut costs, which means we can use the same budget to drill more wells. Thanks to the efforts like 294’s and the business as a whole, we’re under budget, averaging \$4.03 million per well this year.

“Their success and outstanding performance makes everybody look good and feel good about meeting our ultimate production performance goal in the Bakken.”