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Through Good Times And Bad, Operators Still Dig The Eagle Ford

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Statoil has about 71,000 net acres in the Eagle Ford, producing about 43,000 boe/d. (Source: Ole Jørgen Bratland/Statoil)



SAN ANTONIO—The potential to boost oil and gas production and profits lured non U.S.-based companies to U.S. shale plays such as the Eagle Ford about five to six years ago.

Not even a downturn marked by lower commodity prices and lures of the almighty Permian have prompted them to leave—at least not Norway-based Statoil ASA (NYSE: [STO](#)) and Australia’s BHP Billiton, which both entered the play at the beginning of the decade.

Both share a common trait: a drive to improve.

A study unveiled by the University of Texas at Austin’s Bureau of Economic Geology on Sept. 14 at Hart Energy’s DUG Eagle Ford conference showed about 93,000 potential wells in the Eagle Ford. They could collectively hold about 10 billion barrels of technically recoverable oil. So far, less than 20% of that has been recovered.

Meanwhile, Eagle Ford operators are adjusting and fine-tuning processes and techniques as they cope with market realities. The efforts, which have already led to drilling performance improvements and production efficiencies, continue.

“Currently, we are using diversion techniques to improve the frack distribution along the horizontal length,” Cesar Alvarez, head of the Eagle Ford asset for Statoil, said during the conference. “We are preparing a test of a superfrack where we are going to pump between two to three times what we normally pump in a well.”

Plans are to work with another company to map the frack overlap and interference.

Statoil gained operatorship of and acquired a 13% interest in its Eagle Ford joint venture with partner Repsol in December after entering the play five years ago.

Alvarez said a single operator makes the company more nimble and less vulnerable to drops in commodity prices.

“We will be able to act faster and adjust activity as needed,” Alvarez said, pointing to the company’s goal of lowering onshore breakevens by cutting capex and opex by 25%. “In addition, the operations will be more efficient.”

‘Perfect Well’

Optimizing is something Statoil is doing daily with a concept it calls the “perfect well.”

Along the lines of a perpetual motion machine, it seems slightly impossible. But Statoil apparently prefers it that way.

“With the perfect well technique we analyze every single activity that is related to drilling a well. We identify [and keep] those activities that are highly efficient and we fix those that need improvement and we get rid of those that don’t have value or are not essential for the well.”

Since implementing the process in 2013 after taking over the eastern part of the asset, Alvarez said the results have been great.

- The average number of days to drill a well dropped to an average of 15 days from 26.
- The cost per lateral foot dropped by 37%.
- Well recoveries improved by nearly 30%.
- Minimizing well cycle time, optimizing artificial lift and reducing downtime contributed to a 20% production

increase.

“Keep in mind, we are in the deepest [about 13,000 ft], hottest and high-pressure area of the Eagle Ford,” he said. He later added, “The perfect well is never perfect. Once you achieve your targets, you have to reevaluate the process and establish a new one.”

Statoil is gearing up for the third cycle of the perfect well technique as it continues optimizing fracture designs and techniques, focusing on well spacing, fracture size and cluster spacing.

“Finding the balance between well spacing/well staggering and fracture size is key to maximizing drainage, and it has been a day-to-day task for Statoil since the beginning of our operations,” Alvarez said. “We have achieved good results, but to create resilience we continue ... tweaking our designs.”

Statoil is not alone in its quest to fine-tune completion designs. Alvarez pointed out he has seen operators testing various completion techniques, some moving from slickwater to crosslinked gel to hybrid and back to slickwater. He said he has witnessed the same with sand as some operators switch from sand to ceramic to resin-coated sand and back to sand.

Data-Driven

Data is the catalyst for continuous improvement in shale for BHP Billiton, which aims to find and develop large-scale, long-term, low-cost upstream assets that are expandable, according to Jon Krome, head of continuous improvement for BHP.

“Ultimately, it’s about being able to gather information, evaluate it and then act on it in a better and improved way,” Krome said. “Shale gives us an increased opportunity to do that over and above conventional assets. Part of that is because of the access to information and data.”

In the Eagle Ford alone, BHP was running 42 rigs in late 2012 and 2013, a period Krome said he calls “good times” and others call “crazy times.” Today, BHP’s rig count is down to one or two operating in DeWitt and Karnes counties because of the downturn.

“Now it’s time to reflect. We’ve got a little bit of breathing space to do a little more analysis,” Krome said. “Ultimately, continuous improvement is around executing the cycle of plan, do, check, act.”

Planning can involve analyzing data such as drilling time and cost, production and equipment failures. Additional analyzing can be carried out in checks, looking to reduce waste, improve cycle times and design-out premature failures. It involves idea generation from employees to decipher what yields the best

results, how to get there and execution.

The steps, part of BHP's transformation program, helped to reduce North American shale opex 12.5%. In addition, shale unit and drilling costs each fell by about 40% in the last two years, he said.

Clear direction, empowering the organization and using a rigorous execution are key to the transformation program, Krome added.

BHP, which also produces iron ore, metallurgical coal, copper and uranium in addition to conventional and unconventional oil and gas and coal, bought Petrohawk Energy in 2011 for \$15 billion and gained positions the Eagle Ford, Haynesville and Permian. BHP's Shenzi' Platform in the U.S. Gulf of Mexico has 18-20 wells, while the company operates about 500 wells in the Eagle Ford alone, Krome said.

"The shale assets profoundly changed our company," Krome said—not only in terms of production but also processes.

Velda Addison can be reached at vaddison@hartenergy.com.

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