US drillers scrambling to thwart OPEC threat

March 23 2015, byJonathan Fahey

This Monday, Jan. 26, 2015 photo shows a number of idle oil drilling rigs in Helmerich & Payne International Drilling Company's yard in Ector County, Texas. Companies are leaning on new techniques and technology to get more oil out of every well they drill, and furiously cutting costs in an effort to keep U.S. oil competitive with much lower-cost oil flowing out of the Middle East, Russia and elsewhere. (AP Photo/Odessa American, Courtney Sacco)

OPEC and lower global oil prices delivered a one-two punch to the drillers in North Dakota and Texas who brought the U.S. one of the

biggest booms in the history of the global oil industry.

Now they are fighting back.

Companies are leaning on new techniques and technology to get more oil out of every well they drill, and furiously cutting costs in an effort to keep U.S. oil competitive with much lower-cost oil flowing out of the Middle East, Russia and elsewhere.

"Everybody gets a little more imaginative, because they need to," says Hans-Christian Freitag, vice president of technology for the drilling services company Baker Hughes.

Spurred by rising global oil prices U.S. drillers learned to tap crude trapped in shale starting in the middle of last decade and brought about a surprising boom that made the U.S. the biggest oil and gas producer in the world. The increase alone in daily U.S. production since 2008—nearly 4.5 million barrels per day—is more than any OPEC country produces other than Saudi Arabia.

But as oil flowed out and revenue poured in, costs weren't the main concern. Drilling in shale, also known as "tight rock," is expensive because the rock must be fractured with high-pressure water and chemicals to get oil to flow. It became more expensive as the drilling frenzy pushed up costs for labor, material, equipment and services. In a dash to get to oil quickly, drillers didn't always take the time to use the best technology to analyze each well.

When oil collapsed from $100 to below $50, once-profitable projects turned into money losers. OPEC added to the pressure by keeping production high, saying it didn't want to lose customers to U.S. shale drillers. OPEC nations can still make good profits at low oil prices because their crude costs $10 or less per barrel to produce.

Now drillers and service companies are laying off tens of thousands of workers, smaller companies are looking for larger, more stable companies to buy them, and fears are rising of widespread loan defaults. OPEC said in a recent report that it expects U.S. production to begin to fall later this year, echoing the prediction of the U.S. Energy Department.

To compete, drillers have to find ways to get more oil out of each well, pushing down the cost for each barrel. Experts estimate that shale drillers pull up just 5 percent to 8 percent of the oil in place.

"We're leaving behind a large amount of hydrocarbons, and that's quite unacceptable," Freitag says. "It requires different thinking now."

Engineers have adapted some of the best sensor technology and mathematical models, developed first for deep offshore drilling, to see into the rock better. As they drill, they use imaging technology to find natural cracks in the rock that they can then use as a target when they fracture the rock, to leverage natural highways for oil and gas.

After they fracture the rock, they can map the new cracks. That way they can know how close they can drill another well to target more oil without sapping production from the first well. EOG Resources, one of the pioneers of shale oil drilling, has reduced the space between wells in an area called the Leonard Shale, in Texas, to 560 feet from 1,030 in 2012.

Drillers are finding they can back into wells drilled only a few years ago to re-frack them or inject specially tailored fluids to get oil flowing again. That can return a well in some cases to peak output, without the expense of drilling a new well.

The companies are also getting much faster.

Exxon says it has cut the time it takes to drill a well in North Dakota's Bakken formation by one-third over the past four years. It has also cut by half the cost of fracturing the rock and preparing the well for production. Exxon will run 13 rigs in the Bakken this year, the same number it did last year, despite the low prices.

Companies will save money in the coming months because service companies, rig operators and other suppliers to the industry will lower rates to keep business. Oil companies have been telling investors in recent weeks they expect to see cost reductions of 10 percent to 40 percent, depending on location and type of service.

Drillers are also focusing on the wells in the parts of formations that they know to be the most prolific, and cutting back drilling in places where they aren't quite sure what's below. That reduces overall spending without dramatically decreasing production.

U.S. shale drillers will never push costs as low as OPEC countries. But the U.S. industry may be able to survive—or even thrive—if drillers can learn to quickly adapt.

"There is a significant portion of this that is competitive on a global basis," says Exxon Mobil CEO Rex Tillerson at an annual investor meeting earlier this month. "North American tight oil supply is more resilient than some people think it is."

Citation: US drillers scrambling to thwart OPEC threat (2015, March 23) retrieved 19 April 2024 from https://phys.org/news/2015-03-drillers-scrambling-thwart-opec-threat.html