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Field of dreams: Technology brings hope for OKC oil patch

By Tom Lindley
The Journal Record
Posted: 07:42 PM Friday, January 29, 2010



Contractors work with New Dominion to recomplete a well in the company's south Oklahoma City field. (Courtesy Photo)

OKLAHOMA CITY – Southeast Oklahoma City's long-gone oil patch has become a twice-dreamed field of dreams.

And, if it can happen here, said David Chernicky, an oil and gas man with a healthy unconventional streak in him, it can happen in a lot of places.

"You can't fathom the amount of oil and gas left to be recovered in Oklahoma alone," said Chernicky, chairman of New Dominion LLC of Tulsa.

There is a catch.

Chernicky's strategy of targeting previously produced reserves and restoring them to life with his perfected saltwater extraction method

involves substantial infrastructure costs that won't be recouped overnight, which has made him stand out in an industry of mavericks.

"If you graded me as a textbook geologist, I am a complete and utter failure," Chernicky said. "That's because the only appreciable amount of oil and gas I've found the way the textbooks say to find it is by an accidental blowout."

Yet, if he is measured by the 100 million barrels of oil and 2 trillion cubic feet of natural gas his dewatering process has produced, well, textbook authors might revise their thinking.

When Chernicky started New Dominion in 2002, it had 16 employees and operated fewer than 20 wells. Today, his company has eight officers, 75 employees and operates about 300 wells. In 2009, the company drilled a total of 437,277 feet or about 83 miles, and completed 27 wells.

While its Prague/Seminole field is its largest project, New Dominion's foray into the all but abandoned legendary Oklahoma City field has set conventional wisdom on its ear.

A neighborhood, a whole city even, had grown up around the spot where the Oklahoma City No. 1 original discovery well struck oil on Dec. 4, 1928.

Hundreds of wells dotted the landscape in the early days. In all, the field produced more than 735 million barrels of oil and more than 2 trillion cubic feet of natural gas until 1969, when most were of the wells were plugged.

As a student of history, Chernicky knew the field wasn't dried up. It simply fell victim to the times and extraction methods of the day.

"The original discovery zone was in the Arbuckle formation in 1928," Chernicky said. "What happened not long after that? Well, the stock market collapsed, everybody ran out of money and oil went from \$1.50 to 15 cents a barrel," Chernicky said.

To stifle the flow in hopes of stabilizing price, the state shut down the field.

"When they closed the valves, the water in the reservoir filled the pore spaces and killed the

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well," he said. "Instead of having a case pipe full of oil and gas, it was full of saltwater, and it didn't make economic sense to pump oil and water out of those zones when other zones produced better flows."

Seventy-five years later, Chernicky is dreaming the dream in the same old field, only he's got the technology and the conviction of his beliefs to put everything on the line.

Typically, Chernicky looks for areas in and around conventional reservoirs, but he was attracted to the Oklahoma City field because the Arbuckle reservoir had produced only a fraction of its reserves.

Chernicky has spent most of his career perfecting a nonconventional approach that he first saw put into practice in a field in Pawnee in 1982 by someone who didn't "revere the textbooks."

"I said, wait, this is counter to everything I've learned, but I also thought it was so intuitively simple," he said. "I've spent 28 years trying to figure how it works, why it works, whether it's a singular application or can be turned into a niche. It's not like I invented it, but I think by intuition was correct."

New Dominion's process uses high-volume, electric submersible pumps in its wells to pull water, gas and oil from rock formations in a way that enables them to be producing high-quality oil and natural gas once again. And, unlike conventional reservoirs, the production in New Dominion's wells tends to improve over time as more water is extracted.

The projects also require specially designed separators installed on production pad sites to separate out water, natural gas and oil. From there, the water is sent to disposal wells through an elaborate underground pipe system the company installed in the middle of an urban area. The oil is stored in tanks for pickup by trucks and natural gas flows into a gathering system and then to a processing plant constructed at the site.

Because the upfront costs are daunting, Chernicky compares dewatering to offshore drilling and the high costs of putting up platforms and pipelines.

With 20 wells now operating in his Southern Dome Field in southeast Oklahoma City, his investment is only now beginning to come to fruition as average daily production has hit about 1,000 barrels of oil and about 12 million cubic feet of gas.

"Hey, it's like going to the moon," he said. "You do the best you can, but sometimes you have a hiccup."

However, he has no doubts about the big picture.

"What we are seeing in southeast Oklahoma City is applicable in many reservoirs around the world as the global need for oil continues to grow and conventional methods get tougher," he said.

He also said success is more about empirical evidence and understanding the nature of the investment than it is luck.

"I don't rely on luck. I rely on science because I've never been lucky in my life," he said. "I never won a raffle. The only thing I got was out of a Cracker Jack box but then everybody gets something out of that box."

He does think it would be a lucky day for consumers if geology students have an opportunity to get something out of a college textbook about nonconventional production techniques.

"Basically, we are redefining the levels of economic productivity that have been set forth in textbooks that were written when there were so many conventional reserves that people didn't have to think a little bit outside the box," Chernicky said.



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