

Arlington Well is 'Monster' The Chesapeake Gusher is by Far the Biggest Producer in the Barnett Shale

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ENERGY NATURAL GAS Yes, seven can be quite a lucky number.

A natural gas well with the nondescript name "Day Kimball Hill #A1" was the seventh Barnett Shale well drilled by Chesapeake Energy at a site in Arlington in far southeast Tarrant County.

The first six wells drilled there have been average or above average in production, said Dave Leopold, Chesapeake's operations manager for the Barnett Shale. But Chesapeake CEO Aubrey McClendon has a more dramatic description for the seventh well.

"It's a monster!" he told the Star-Telegram in a recent telephone conversation.

The well is the biggest of the approximately 14,000 producing wells in the Barnett Shale, based on average daily production for a one-month period, according to Gene Powell, publisher of the authoritative Powell Barnett Shale Newsletter.

The well produced an average of nearly 13 million cubic feet of natural gas per day in October -- or 12.97 million, to be precise. That's 35.6 percent higher than the peak rate of 9.56 million cubic feet for the heretofore-biggest Barnett producer, the Donna Ray #1H, also a Chesapeake well, drilled near Briar Oaks in northern Johnson County.

According to the American Gas Association, a group of U.S. natural gas utilities, the average U.S. residence uses about 73,000 cubic feet of natural gas a year to heat and cook. That means Chesapeake's big well, during October alone, produced enough gas for about 5,500 homes for an entire year.

Well among Texas' biggest

The Arlington well is producing about 6.7 million cubic feet of gas per day. Texas Railroad Commission records show that, as of Nov. 26, there were 125 of 92,950 active gas wells in Texas -- or 0.1 percent -- producing more than 5 million cubic feet daily. The commission does not compile an individual well-by-well ranking of the top producers, spokeswoman Ramona Nye said.

The Arlington well's average daily output of 12.97 million cubic feet in October was more than 71 times the average daily production of 179,500 cubic feet per active Texas gas well.

The Arlington well produced at an average daily rate of 8.66 million cubic feet in November and 6.79 million in December, Chesapeake said. Barnett wells that produce at 4 million to 5 million cubic feet per day are considered excellent.

Leopold said the Arlington well's producing life will be "probably greater than 50 years."

In terms of the total gas output over that period, "we think the thing is going to come in at greater than 10 bcf [billion cubic feet]," he said. That would be nearly four times the typical estimated ultimate recovery of about 2.65 billion cubic feet for a Barnett well, he said.

Multimillion-dollar gusher

If the well eventually produces 10 billion cubic feet of gas and fetches an average price of, say, \$6 per 1,000 cubic feet (a level close to today's prices on the gas futures market), it would generate \$60 million in revenue.

It cost about \$2.6 million for drilling and completion (which includes fracturing) of the well, Leopold said.

McClendon said the exceptional gas gusher is "a great comment on the advance in technology" that has occurred in Barnett Shale drilling. The geological zone, which underlies 22 North Texas counties, became lucrative for energy companies to tap as a result of advances in horizontal drilling and hydraulic fracturing (dubbed "fracking"), which greatly increase the volume of gas produced.

As a result of those advances, Tarrant County is No. 1 in natural gas production among Texas' 254 counties, and neighboring Johnson County is No. 2. Both counties historically had little or no gas production before the Barnett Shale drilling boom that peaked in October 2008 with 214 rigs drilling new wells.

Technological progress

Leopold said Chesapeake first drilled the Arlington well vertically for 8,333 feet, or more than a mile and a half down. It then drilled a horizontal "lateral" for 7,501 feet, or about 1.3 miles, to tap into more gas deposits.

The lateral was twice as long as that of a typical Chesapeake Barnett well, Leopold said. It also had an exceptional number of "frack stages" -- 16, spaced nearly 500 feet apart -- where the hydraulic fracturing was targeted. In that process, huge volumes of water and sand, plus some chemicals, are pumped into tight underground rock formations under extremely high pressure to create and prop open small fractures, allowing gas to rush into the wellbore.

The longer laterals and increased number of frack stages represent a technological advancement and "new style" for Chesapeake that could boost production from future Barnett wells, said Leopold, a petroleum engineer who also has an MBA from Texas Christian University.

"For every [additional] foot that we're drilling, we are increasing the [production] rate and the [natural gas] reserves for us," Leopold said. "We do think the longer laterals are better, and where we can drill them, we'll drill them all day."

He noted, however, that the length of the lateral can be limited by the size of a lease. "We've had wells that we could have drilled much longer laterals on, but if we don't have the lease, we can't drill on it," he said.

Early disappointment

The record-producing Arlington well appeared at one point to be a bust, Leopold said.

"The well died early on . . . it stopped producing. And we thought boy, this isn't going to be a good well," he said.

Some fracturing sand apparently had "plugged up" equipment, known as flow-through bridge plugs, which are used during fracturing, Leopold said. "Then after we cleaned that out . . . we weren't really expecting that monster well, and here it came."

Other than the clogged bridge plugs, "things went real smoothly on the drilling and completion," Leopold said. "I have to pat our drilling crew on the back."

Chesapeake hasn't finished drilling wells at the Arlington drilling site, which is just west of Texas 360 and south of the intersection of Debbie Lane and Ragland Road.

"We've got one more that is planned, and we're evaluating a couple of others," Leopold said.

That approach is symbolic of another technological advancement being employed extensively in the Barnett Shale -- the drilling of multiple wells, sometimes in the range of 10 to 15 -- from a single pad site. That lowers costs and shortens the drilling process for energy companies.

It also reduces the number of locations required for drilling and the environmental "footprint" -- a significant benefit in the Barnett Shale, where there has been an unprecedented level of urban drilling that has raised sensitive issues about noise, truck traffic, air

pollution, safety, tree-cutting and blight.

Pleased property owner

Among those who are happy with the "monster" well is Glenn Day of Arlington, a real estate appraiser who, along with 13 relatives, leased Chesapeake 128 acres site that had been acquired by his great-grandfather, probably in the late 1800s.

The family property is zoned commercial, and Day said he expects eventually to sell it for commercial development. Other property owners in the area will also receive royalties from gas recovered by Chesapeake from under their land.

The natural gas industry has environmental challenges to meet in urban drilling, "and I think they will meet them," Day said, adding that Chesapeake has "been good to work with."

Exxon connection

The lease on which the record-producing well sits once was held by Harding Energy Partners and oil giant Exxon Mobil Corp. but was sold to Chesapeake in 2008. Ironically, Irving-based Exxon is now moving heavily into increasingly promising shale-gas exploration, as evidenced by its pending \$31 billion acquisition of Fort Worth-based XTO Energy, a leader in the Barnett and other shale-gas plays.

As Chesapeake and other energy companies drill thousands of additional Barnett wells in 2010 and years beyond, there will be more technological advances that help produce more "monster" wells, McClendon predicts.

Chesapeake "continues to learn more about the rock that underlies the Fort Worth area," while also refining and improving its drilling techniques, he said. Chesapeake probably is "recovering about 30 percent of the gas" in place, but McClendon said he is confident that percentage can be increased significantly in coming years.

As a result, he doubts that the Arlington monster well will be Chesapeake's last record for peak production.

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image: MAP: Well site

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