

San Juan Operators: Basin Ripe For New Horizontal Drilling

Horizontal drilling has already increased New Mexico's gas production by 30% since 2011, with plenty of Cretaceous zones to be explored.

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Jack Rosenthal, vice president of geoscience, DJR Energy, speaks the DUG Rockies Conference and Exhibition in Denver. (Source: Hart Energy)

DENVER—DJR Energy's vice president of geoscience, Jack Rosenthal, said that working in the San Juan Basin "can be a blessing or a curse, depending on your perspective,

because historically 99% of the assets in the basin are held by production because it necessitates acquisition by other operators such as our company.”

DJR has several years of experience in the Denver-Julesberg (D-J) Basin and decided to expand its area by using the knowledge it gained to grow into another area. “We see geologic similarities between the Codell in the D-J and the Powder River Basin in the San Juan Basin with a Cretaceous sand package, the Gallup Sands,” Rosenthal said while speaking at Hart Energy’s recently held DUG Rockies conference and exhibition.

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The San Juan Basin is a geologic structural basin located near the Four Corners region of the southwestern United States. The basin covers about 7,500 square miles in northwestern New Mexico, southwestern Colorado, and parts of Utah and Arizona. Gas and oil production began in the 19th century. There are more than 300 oil and gas fields and more than 40,000 drilled wells throughout the area, with about 52,000 wells drilled in the basin since 1921 and more than 24,000 active wells.

Increased production in the basin is from shales, low permeability sands and coal beds. New Mexico's natural gas production from shale gas wells has quadrupled in the past five years—it accounted for 10% of state natural gas production in 2012 and increased to about 40% state production in 2017. New Mexico is also the second-largest coalbed methane producing state, after Colorado, even though coalbed methane production has fallen to almost 30% of its 2007 peak.

According to Rosenthal, the basin only has about 280 horizontal wells that are currently on production and it puts it in a very early stage of development.

“With the purchase of assets from Elm Ridge in 2017, we got the capacity and geologic potential to extend the core from what has historically been the core of the Mancos horizontal development further to the west and east.” The purchase also gave DJR access to the gathering system already in place.



QUICK STATS: San Juan Basin

- Located near Four Corners region of the U.S.;
- Geologic structural basin;
- Covers about 7,500 square miles;
- More than 300 oil and gas fields;
- More than 40,000 drilled wells; and
- Approximately 24,000 active wells.

In 2018, DJR purchased about 182,000 net acres in the basin from Encana Corp. in San Juan County, N.M. The Denver-based company now has about 350,000 net acres with 150 miles of gathering network and they are looking to expand that amount.

“You can look at this as kind of a reverse bolt-on—we were able to fill in the core of the basin, the area that has been proved-up with horizontal drilling.”

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DJR plans to have a one-rig development program in 2019 a two-rig program in 2020. According to Rosenthal, it will take about eight or nine days to drill a 1.5-mile long lateral and they should be able to complete approximately 20 wells this year.

The DJR vertical wells in the basin were drilled between the 1920 and the early 2000s and they were focused on a number of different targets but DLR plans to focus on the Mancos.

"However, we've found historically prolific zones above the Mancos including the Fruitland Coals, different zones within Mesaverde. And even looking below the Mancos are zones like the Dakota and these were mainly gas producers," Rosenthal said. "As you move farther south, with the Mancos in the basin, you begin a prolific oil window, which is the area DLR will focus on."

Rosenthal said that a current stratigraphic chart indicates other zones that could be horizontally targeted including Mancos Silt as well as the Gallup A and B sands. He noted that as of today, there has only been one horizontal Mancos Silt producer brought online and it produced about 800 barrels of oil per day.

DJR also plans to test the Gallup B and said that they have about 20 wells online that produce from Gallup B and they believe that there is a lot of potential for oil development and delineation in the southern portion of the basin. Below the Gallup B is the Gallup C zone, where the bulk of the horizontal development has been.

Rosenthal said that the company plans to continue testing new completion techniques. Most recently, operators are using plug-and-perf with 1,000 lbs to 1,500 lbs of sand per foot.

"While these volumes are small compared to the D-J Basin or the Gulf Coast, I think that's there's a lot of room for improvement in completion techniques. We plan to test some wells with 2,000 pounds of sand per foot, increase proppant concentrations and possibly change fracking fluid including nitrogen foam and slickwater and to see how that impacts production out of the sands we're targeting in the southern part of the basin and how that impacts productivity in the gassier Mancos to the north," he said.

DJR is also planning to build additional strategic advantage by using pipeline to move produced gas, oil and water, along with source frack water to locations via existing pipelines. "This allows us to improve our efficiency and take trucks off the road and being more environmentally conscious for our area's residents."

Jerry McHugh, president and founder of San Juan Resources, noted that to date, the basin has produced about 54 trillion cubic feet (Tcf) equivalent since it first went into production in 1921.

“What’s interesting is that there are several new entrants, with three of them exclusively San Juan in the basin including Enduring Resources, Logos and DJR.”

“When comparing Colorado to New Mexico, New Mexico does not have a voter initiative like Colorado does now. Oil and gas is 10% of Colorado’s economy and it’s 35% of New Mexico’s economy.”

San Juan Resources has been operating in the basin for 29 years. They have 38 operated wells, interest in more than 300 non-operated wells and have accumulated more than 45,000 acres accumulated in the basin since 2011. They are currently working on two projects, the McSimms project, which, according to McHugh, has a huge Mancos potential with 32 wells with planned 10,000 laterals—half will penetrate the lower Mancos Niobrara Olive interval, and half will penetrate the Mancos Niobrara Black interval. The prospect is in Rio Arriba County in New Mexico.

The company’s Lindrith prospect spans New Mexico’s Rio Arriba and Sandoval counties and will focus on three unconventional oil Mancos zones, two conventional and unconventional Dakota zones and unconventional Pictured Cliffs gas zones.



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