

GEOLOGIC REPORT
PROPOSED AMARILLO CANYON UNIT AREA
SAN JUAN CO., NEW MEXICO

LOCATION:

The proposed Amarillo Canyon Unit is located in Township 27N North, Range 13 West, San Juan County. Geologically the proposed unit is situated on the south flank of the San Juan basin, approximately 25 miles northwest of the active drilling Gallup/Mancos horizontal oil play (Exhibit #1). Energen Resources will be the operator and proposes to drill the initial unit test obligation well, the Richardson Navajo 27-13-10 #4H, at a tentative surface location in the SE/4 SW/4 of section 11, 27N-13W. The east to west horizontal will traverse cross the S/2 of section 10 with a bottom hole location in the SW/4 SW/4 of section 10 (Exhibit #8). Energen will drill a horizontal lateral of no less than 1,500 feet to test the Gallup portion of the Mancos formation at a true vertical depth of about 5,400' and measured depth of approximately 11,000'. This location was previously a shallow Fruitland Coal location that was converted to a Gallup/Mancos test. All of the surface area of the proposed unit is located on NAPI lands, thus Energen is trying to be sensitive to the Navajo Nation and reduce surface disturbance in the area. The time to permit new locations on NAPI lands can also be costly and lengthy, thus the desire to expedite and save costs with the existing shallow permit.

GEOLOGY:

The proposed Amarillo Canyon unit is located on the gently dipping southwest flank of the San Juan basin. Dip is approximately 40-50' per mile to the northeast in the area and no indications of faulting or other tectonic disruptions are evident in the area (Exhibit #10). The Upper Cretaceous aged Gallup portion of the Mancos Shale was deposited in near to far-shore marine environments resulting in a combination of finer grained siltstones, shales and sandstones being present. Oil and gas is trapped in this interval stratigraphically and follows both structural and depositional strike in the area and is a blanket deposit without much variation. Oil saturations and permeability appear to be adequate to make this a viable economic unconventional horizontal drilling play. We believe that successful production can be established in this area utilizing horizontal drilling and hydraulic fracturing technologies.

A vertical pilot will be drilled prior to the horizontal, which will provide valuable information in order to evaluate the target interval and determine the exact landing point for the horizontal. Side wall cores and logs will be acquired and analyzed in this effort.

The primary horizontal target for the proposed unit area is the Niobrara C interval. This is equivalent to the Middle Gallup Sandstone, which is the target often referred to by other operators in the play. Neither the Gallup nor Niobrara C have formation name status, but are considered members of the Mancos Shale formation. This terminology is shown on the Amarillo Canyon type log (Exhibit #5).

The structure map on the primary target zone (Exhibit #10) shows the location of the proposed unit and test well as described above. The map is contoured on the top of the Niobrara C (equivalent to the Middle Gallup). Isopach thickness for the proposed gross unitized interval (Top of Mancos Shale

to the base of Greenhorn) does not vary more than a few 10's of feet across the area as shown on cross sections A-A' and B-B' and the isopach map (Exhibits #11, #12 and #13). Thus continuity of the proposed unit interval appears to be very good across in the area.

DRILLING ACTIVITY:

The proposed unit is in close proximity to existing vertical production from the Gallup/Niobrara C interval. Energen has also performed several recent pay-add workovers within the unit area to prove the viability of Gallup/Niobrara oil production. The entire proposed unit lies within the Basin Mancos pool (Exhibit #7). There are several vertical Gallup pools nearby, Cha Cha Gallup pool to the north and Gallegos Gallup pool several miles to the south that have produced prolifically from the Gallup/Niobrara interval. The closest successful Gallup/Niobrara horizontal drilling is located approximately 25 to 30 miles to the southeast. There has been several horizontal wells drilled by XTO and ConocoPhillips within 15 to 20 miles of the Amarillo Canyon, but they appear to be uneconomic. BP is currently adding Gallup pay-adds to some of their operated Dakota vertical wells at the Gallegos Canyon unit just to the east and northeast of the unit (Exhibit #14). They also have plans to follow-up with a horizontal test across sections 5 and 6 of T27N-R12W sometime in the near future. We believe that with the nearby proven vertical production and utilizing proper hydraulic fracturing techniques on horizontal wells, that economic production can be established at the Amarillo Canyon unit area.

There are a number of shallow Fruitland Coal wells that have been drilled and or producing in the immediate area of the Amarillo Canyon unit. For simplicity, only wells drilled to the Mancos Shale or deeper are posted on the enclosed map exhibits.

INITIAL TEST WELL:

The initial horizontal test well will be the Richardson Navajo 27-13-10 #4H, surface location in the SW of section 11, T27N-R13W and a bottomhole location in the SW/4 SW/4 of section 10. This well was drilled and production casing run in November 2015 and is currently undergoing completion operations. The well will be a multiple stage completion with hydraulic fracturing performed. We expect to see similar results as in the actively drilling and producing area 25 miles to the southeast. These horizontal wells are typically completed with oil rates of 300 to 500 BPD and gas rates 500 to 1000 MCFD per well.

A preliminary plan of development (Exhibit #15) would involve multiple pad locations as well as drilling in both west to east and east to west directions. Extended laterals of approximately 7,000' are also planned. This will help to minimize surface disturbance and provide for a more economically viable project.

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