

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**CONFIDENTIAL**
TIGHT HOLE
RECEIVEDFORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**DEC 04 2015****SUBMIT IN TRIPLICATE - Other instructions on page 2**
Farmington Field Office
Bureau of Land Management

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

Energen Resources Corporation

3a. Address

2010 Afton Place, Farmington, NM 87401

3b. Phone No. (include area code)

505-325-6800

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

595' ENL, 700' FEL Sec. 3 T26N R03W (A) NE/NE

5. Lease Serial No.

Jicarilla Apache 96

6. If Indian, Allottee or Tribe Name

Jicarilla Apache

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.

Jicarilla 96 #600H

9. API Well No.

30-039-30999

10. Field and Pool, or Exploratory Area

Basin Mancos

11. County or Parish, State

Rio Arriba NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☒
- Notice of Intent
-
- ☐
- Subsequent Report
-
- ☐
- Final Abandonment Notice

TYPE OF ACTION

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> Acidize | <input type="checkbox"/> Deepen | <input type="checkbox"/> Production (Start/Resume) | <input type="checkbox"/> Water Shut-Off |
| <input type="checkbox"/> Alter Casing | <input type="checkbox"/> Fracture Treat | <input type="checkbox"/> Reclamation | <input type="checkbox"/> Well Integrity |
| <input type="checkbox"/> Casing Repair | <input type="checkbox"/> New Construction | <input type="checkbox"/> Recomplete | <input checked="" type="checkbox"/> Other <u>Change of Plans</u> |
| <input type="checkbox"/> Change Plans | <input type="checkbox"/> Plug and Abandon | <input type="checkbox"/> Temporarily Abandon | |
| <input type="checkbox"/> Convert to Injection | <input type="checkbox"/> Plug Back | <input type="checkbox"/> Water Disposal | |

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

This sundry is to replace the requested change of plans sundry dated 11/30/15. Attached is the revised Drilling Plan and the Directional Plan for the Jicarilla 96 #600H.

OIL CONS. DIV DIST. 3

DEC 10 2015

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Theresa McAndrews

Title Production Supervisor

Signature

Theresa McAndrews

Date 12/04/15

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

12/08/2015

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

FFO

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

NMOCD RV

12

Drilling Plan
Energen Resources Corporation
Revised 12/3/2015

Jicarilla 96 #600H

Surface Location: 595 FNL, 700 FEL

Legal Description: Sec 3, T26N, R3W (36.52095° N, 107.12549° W – NAD83)

Bottom Hole Location: 900 FNL, 200 FEL

Legal Description: Sec 2, T26N, R3W (36.52009° N, 107.10580° W – NAD83)

Sandoval, NM

1. The elevation of the unprepared ground is 7,098 feet above sea level.
2. The geological name of the surface formation is the San Jose
3. A rotary rig will be used to drill the well to a Final Proposed Total Depth of 7,278' TVD/12,694' MD.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth (TVD) (ft)</u>	<u>Depth (MD) (ft)</u>
San Jose	Surface	Surface
Nacimiento	2,000	1,474
Ojo Alamo	3,295	2,739
Kirtland	3,500	2,894
Fruitland	3,563	3,053
Pictured Cliffs	3,727	3,146
Lewis	3,911	3,231
Huerfanito Bentonite	4,255	3,479
Chacra	4,716	3,977
Cliff House	5,507	4,676
Menefee	5,557	4,720
Point Lookout	5,837	5,260
Mancos	6,287	6,287
<u>Land Curve</u>	<u>7,278</u>	<u>7,803</u>
Greenhorn	7,756	7,756
Graneros	7,811	7,811

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Water/HydroCarbon</u>
Fruitland	3,563	Gas
Pictured Cliffs	3,727	Gas
Cliffhouse	5,507	Gas
Point Lookout	5,837	Gas
Mancos	6,287	Oil/Gas

6. All proposed casing is new and the program is as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI		x1000 lbs
		MD	TVD				Burst	Collapse	Tension
Surface	20"	0-500'	0-500'	H-40	94.0	STC	1530	520	359
Intermediate	13-3/8"	0-4,000'	0-4,000'	N-80	68.0	BTC	5020	2260	1585
Drilling Liner	9-5/8"	3,800'-6,390'	3,800'-6,390'	N-80	43.5	BTC	5750	3810	1074
Production	5-1/2"	0'-12,694'	0'-7,278'	P-110	20.0	DQX Ultra	12600	11100	729

7. Cementing Program:

- a. 24" hole x 20" casing at 500' will have cement circulated to surface with 890 sks (100% excess true hole) VARICEM™ CEMENT, 15.8 ppg, 1.17 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 2 JOINTS OF CASING AND 1 ON THE LAST JOINT AT SURFACE. 10 BBLS OF WATER AHEAD OF CEMENT AS SPACER.
- b. 17-1/2" hole x 13-3/8" casing at 4,000' will have cement circulated to surface with 2130 sks (75% excess true hole) of HALCEM™ SYSTEM 0.125 #/sk Poly-E-Flake – 12.3 ppg, 1.93 ft³/sk followed 430 sks (50% excess true hole) VARICEM™ SYSTEM – 13.5 ppg, 1.29 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLS OF MUDFLUSH FOLLOWED BY 20 BBLS OF CHEMWASH AHEAD OF CEMENT AS SPACER Test 13-3/8" Intermediate Casing to 1500 psi applied pressure. NOTE: TOTAL PRESSURE WILL CONSIST OF HYDROSTATIC AND APPLIED PRESSURE!!
- c. 12-1/4" hole x 9-5/8" casing at 6,390'. Cement with 820 sks (75% excess true hole) of HALCEM™ SYSTEM 0.125 #/sk Poly-E-Flake – 12.3 ppg, 1.93 ft³/sk followed 195 sks (50% excess true hole) VARICEM™ SYSTEM – 13.5 ppg, 1.29 ft³/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3RD JOINT TO THE LAST (TOP) JOINT. 20 BBLS OF CHEMWASH AHEAD OF CEMENT AS SPACER. Test 9-5/8" Liner to 1500 psi applied pressure. NOTE: TOTAL PRESSURE WILL CONSIST OF HYDROSTATIC AND APPLIED PRESSURE!!
- d. 8-3/4" hole x 5-1/2" liner at 12,694'. A fluid caliper will be run to determine base slurry cement to have TOC at surface. Cement with 760 sks (50% excess true hole) of HALCEM™ CEMENT – 12.3 ppg, 1.93 ft³/sk followed by 1850 sks BONDCEM™ SYSTEM CEMENT – 13.3 ppg, 1.35 ft³/sk (50% excess. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN AT OPERATORS DISCRETION TO 6,390' THEN ONE PER JOINT TO 6,190'. CENTRALIZERS TO BE RAN TO SURFACE AT OPERATORS DISCRETION. Pressure Test During Completion Operations.

8. Pressure Control Equipment

- a. BOPE to be installed prior to Surface Casing drillout.
- b. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
- c. BOPE working pressure of 3,000 psi.
- d. Function test and visual inspection to be done at each casing size change prior to drill out.
- e. BOP annular to be tested to 50% of working pressure.
- f. All BOP and related equipment will be tested in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005.
- g. BOP remote controls to be located on rig floor and readily accessible, master control on ground at accumulator will be able to function all preventors.
- h. Kill line will be 2 in min and have two kill line valves, one being a check valve.

- i. Choke line will be 2 in min and have two choke line valves, choke manifold with have two adjustable chokes, one manual and one remote. All choke lines will be as straight as possible. Any turns will be properly targeted using block and/or running tees. Choke line and manifold to be pressure tested to 1,500 psi.
- j. Float sub and TIW valve will be on the rig floor at all times.
- k. If high pressure co-flex hoses are used, they will be run as straight as possible and anchored to prevent whip.
- l. The main discharge line (panic line) will be at least 100' from the choke manifold and discharged into an appropriately sized discharge facility.
- m. During air drilling operations, all equipment will be used in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005, Section E. 'Special Drilling Operations'.

9. Mud Program:

0' – 4,000'	Fresh water LSND. LCM as needed for losses and seepage. 8.5 to 9.0 ppg, 32 to 75 vis, PV 3 to 5, YP 5 to 7, WL NC
4,000' – 6,390'	Air/Mist. Anticipated gas rate at 3500 scfm
6,390' – 12,694'	WBM with shale and clay stabilizers. As needed LCM for losses and seepage. 8.3 to 9.3 ppg, 15 to 35 vis, PV 4-6, YP 4-6, WL < 20

****During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control.**

****A pH of 10 or above in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.**

Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any "kicks" of formation fluids.

Equipment:

2-Mongoose Shale Shakers

2-3400 High Speed Centrifuges with stands and pumps

2-Roll off bins with Tracks

2-200 bbl Open top Frac tanks

1-Mud/Gas Separator and Degasser

1-Trip/Surge Tank

Electronic or Visual monitoring system to indicate lost returns

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
 - b. Electric Logging Program: Triple Combo, FMI, Sonic Scanner
 - c. LWD Program: TBD
 - d. Coring Program: Sidewall in Mancos Formation
 - e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.
11. Bottom Hole Pressure expected to be 2,500 +/- psi
12. Bottom Hole Temperature expected to be 160 deg F.

Energen
DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Jicarilla Sec 3-T26N-R3W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Lease #96		
Site Position:		Northing:	2,010,066.54 ft
From:	Lat/Long	Easting:	1,383,437.43 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	36° 31' 15.420 N
		Longitude:	107° 7' 28.524 W
		Grid Convergence:	-0.52 "

Well	Jicarilla 96 #600H		
Well Position	+N/-S	0.0 ft	Northing: 2,010,066.54 ft
	+E/-W	0.0 ft	Easting: 1,383,437.43 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,098.0 ft
		Latitude:	36° 31' 15.420 N
		Longitude:	107° 7' 28.524 W
		Ground Level:	7,098.0 ft

Wellbore	Horizontal UPE Niobrara C				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	12/31/2009	(°)	(°)	(nT)
			9.76	63.44	50,864

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	93.02

Survey Tool Program	Date 7/6/2010			
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0.0	12,694.2	Plan #1 (Horizontal UPE Niobrara C)	MWD	MWD - Standard

Planned Survey							
MD	TVD	Inc	Azi	Build	N/S	E/W	V. Sec
(ft)	(ft)	(°)	(°)	(°/100ft)	(ft)	(ft)	(ft)
0.0	0.0	0.00	0.00	0.00	0.0	0.0	0.0
100.0	100.0	0.00	0.00	0.00	0.0	0.0	0.0
200.0	200.0	0.00	0.00	0.00	0.0	0.0	0.0
300.0	300.0	0.00	0.00	0.00	0.0	0.0	0.0
400.0	400.0	0.00	0.00	0.00	0.0	0.0	0.0
500.0	500.0	0.00	0.00	0.00	0.0	0.0	0.0
600.0	600.0	0.00	0.00	0.00	0.0	0.0	0.0
700.0	700.0	0.00	0.00	0.00	0.0	0.0	0.0
800.0	800.0	0.00	0.00	0.00	0.0	0.0	0.0
900.0	900.0	0.00	0.00	0.00	0.0	0.0	0.0
1,000.0	1,000.0	0.00	0.00	0.00	0.0	0.0	0.0
1,100.0	1,100.0	0.00	0.00	0.00	0.0	0.0	0.0

Energen
DIRECTIONAL PLAN

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Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	N/S (ft)	E/W (ft)	V. Sec (ft)
1,200.0	1,200.0	0.00	0.00	0.00	0.0	0.0	0.0
1,300.0	1,300.0	0.00	0.00	0.00	0.0	0.0	0.0
1,400.0	1,400.0	0.00	0.00	0.00	0.0	0.0	0.0
1,500.0	1,500.0	0.00	0.00	0.00	0.0	0.0	0.0
1,600.0	1,600.0	0.00	0.00	0.00	0.0	0.0	0.0
1,700.0	1,700.0	0.00	0.00	0.00	0.0	0.0	0.0
1,800.0	1,800.0	0.00	0.00	0.00	0.0	0.0	0.0
1,900.0	1,900.0	0.00	0.00	0.00	0.0	0.0	0.0
2,000.0	2,000.0	0.00	0.00	0.00	0.0	0.0	0.0
Nacimiento							
2,100.0	2,100.0	0.00	0.00	0.00	0.0	0.0	0.0
2,200.0	2,200.0	0.00	0.00	0.00	0.0	0.0	0.0
2,300.0	2,300.0	0.00	0.00	0.00	0.0	0.0	0.0
2,400.0	2,400.0	0.00	0.00	0.00	0.0	0.0	0.0
2,500.0	2,500.0	0.00	0.00	0.00	0.0	0.0	0.0
2,600.0	2,600.0	0.00	0.00	0.00	0.0	0.0	0.0
2,700.0	2,700.0	0.00	0.00	0.00	0.0	0.0	0.0
2,800.0	2,800.0	0.00	0.00	0.00	0.0	0.0	0.0
2,900.0	2,900.0	0.00	0.00	0.00	0.0	0.0	0.0
3,000.0	3,000.0	0.00	0.00	0.00	0.0	0.0	0.0
3,100.0	3,100.0	0.00	0.00	0.00	0.0	0.0	0.0
3,200.0	3,200.0	0.00	0.00	0.00	0.0	0.0	0.0
3,273.0	3,273.0	0.00	0.00	0.00	0.0	0.0	0.0
Ojo Alamo SS							
3,300.0	3,300.0	0.00	0.00	0.00	0.0	0.0	0.0
3,400.0	3,400.0	0.00	0.00	0.00	0.0	0.0	0.0
3,453.0	3,453.0	0.00	0.00	0.00	0.0	0.0	0.0
Kirtland Sh							
3,500.0	3,500.0	0.00	0.00	0.00	0.0	0.0	0.0
3,523.0	3,523.0	0.00	0.00	0.00	0.0	0.0	0.0
Fruitland Fm							
3,600.0	3,600.0	0.00	0.00	0.00	0.0	0.0	0.0
3,700.0	3,700.0	0.00	0.00	0.00	0.0	0.0	0.0
3,703.0	3,703.0	0.00	0.00	0.00	0.0	0.0	0.0
Pictured Cliffs SS							
3,800.0	3,800.0	0.00	0.00	0.00	0.0	0.0	0.0
3,900.0	3,900.0	0.00	0.00	0.00	0.0	0.0	0.0
4,000.0	4,000.0	0.00	0.00	0.00	0.0	0.0	0.0
4,100.0	4,100.0	0.00	0.00	0.00	0.0	0.0	0.0
4,200.0	4,200.0	0.00	0.00	0.00	0.0	0.0	0.0
4,218.0	4,218.0	0.00	0.00	0.00	0.0	0.0	0.0
Huerfano Bentonite							
4,300.0	4,300.0	0.00	0.00	0.00	0.0	0.0	0.0
4,400.0	4,400.0	0.00	0.00	0.00	0.0	0.0	0.0
4,500.0	4,500.0	0.00	0.00	0.00	0.0	0.0	0.0

Energen
DIRECTIONAL PLAN

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MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	N/S (ft)	E/W (ft)	V. Sec (ft)
4,600.0	4,600.0	0.00	0.00	0.00	0.0	0.0	0.0
4,700.0	4,700.0	0.00	0.00	0.00	0.0	0.0	0.0
4,713.0	4,713.0	0.00	0.00	0.00	0.0	0.0	0.0
Chacra							
4,800.0	4,800.0	0.00	0.00	0.00	0.0	0.0	0.0
4,900.0	4,900.0	0.00	0.00	0.00	0.0	0.0	0.0
5,000.0	5,000.0	0.00	0.00	0.00	0.0	0.0	0.0
5,100.0	5,100.0	0.00	0.00	0.00	0.0	0.0	0.0
5,200.0	5,200.0	0.00	0.00	0.00	0.0	0.0	0.0
5,300.0	5,300.0	0.00	0.00	0.00	0.0	0.0	0.0
5,400.0	5,400.0	0.00	0.00	0.00	0.0	0.0	0.0
5,500.0	5,500.0	0.00	0.00	0.00	0.0	0.0	0.0
5,528.0	5,528.0	0.00	0.00	0.00	0.0	0.0	0.0
Cliff House							
5,593.0	5,593.0	0.00	0.00	0.00	0.0	0.0	0.0
Menefee							
5,600.0	5,600.0	0.00	0.00	0.00	0.0	0.0	0.0
5,700.0	5,700.0	0.00	0.00	0.00	0.0	0.0	0.0
5,800.0	5,800.0	0.00	0.00	0.00	0.0	0.0	0.0
5,843.0	5,843.0	0.00	0.00	0.00	0.0	0.0	0.0
Point Lookout							
5,900.0	5,900.0	0.00	0.00	0.00	0.0	0.0	0.0
6,000.0	6,000.0	0.00	0.00	0.00	0.0	0.0	0.0
6,100.0	6,100.0	0.00	0.00	0.00	0.0	0.0	0.0
6,200.0	6,200.0	0.00	0.00	0.00	0.0	0.0	0.0
6,300.0	6,300.0	0.00	0.00	0.00	0.0	0.0	0.0
6,313.0	6,313.0	0.00	0.00	0.00	0.0	0.0	0.0
Mancos							
6,400.0	6,400.0	0.00	0.00	0.00	0.0	0.0	0.0
KOP							
6,450.0	6,450.0	3.30	97.49	6.59	-0.2	1.4	1.4
6,500.0	6,499.8	6.59	97.49	6.59	-0.7	5.7	5.7
6,550.0	6,549.3	9.89	97.49	6.59	-1.7	12.8	12.9
6,600.0	6,598.2	13.19	97.49	6.59	-3.0	22.7	22.8
6,650.0	6,646.6	16.49	97.49	6.59	-4.7	35.4	35.6
6,700.0	6,694.1	19.78	97.49	6.59	-6.7	50.8	51.1
6,750.0	6,740.6	23.08	97.49	6.59	-9.1	69.0	69.3
6,800.0	6,786.0	26.38	97.49	6.59	-11.8	89.7	90.2
6,850.0	6,830.1	29.68	97.49	6.59	-14.9	113.0	113.6
6,900.0	6,872.9	32.97	97.49	6.59	-18.3	138.8	139.5
6,950.0	6,914.0	36.27	97.49	6.59	-22.0	166.9	167.8
7,000.0	6,953.4	39.57	97.49	6.59	-26.0	197.4	198.5
7,050.0	6,991.0	42.87	97.49	6.59	-30.3	230.0	231.3
7,100.0	7,026.7	46.16	97.49	6.59	-34.8	264.8	266.3
7,150.0	7,060.3	49.46	97.49	6.59	-39.7	301.5	303.2

Energen
DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	N/S (ft)	E/W (ft)	V. Sec (ft)
7,200.0	7,091.6	52.76	97.49	6.59	-44.7	340.1	342.0
7,202.2	7,093.0	52.91	97.49	6.59	-45.0	341.9	343.8
Mancos/Niobrara "A"							
7,250.0	7,120.7	56.06	97.49	6.59	-50.0	380.4	382.5
7,300.0	7,147.4	59.35	97.49	6.59	-55.6	422.3	424.6
7,350.0	7,171.7	62.65	97.49	6.59	-61.3	465.7	468.2
7,400.0	7,193.4	65.95	97.49	6.59	-67.1	510.3	513.1
7,450.0	7,212.4	69.25	97.49	6.59	-73.2	556.1	559.2
7,490.5	7,225.9	71.92	97.49	6.59	-78.1	594.0	597.3
7,500.0	7,228.8	71.92	97.49	0.00	-79.3	603.0	606.3
7,510.6	7,232.1	71.92	97.49	0.00	-80.6	613.0	616.4
7,550.0	7,243.5	74.34	96.76	6.16	-85.3	650.4	654.0
7,600.0	7,255.7	77.43	95.86	6.16	-90.6	698.6	702.4
7,650.0	7,265.3	80.51	94.98	6.17	-95.3	747.4	751.4
7,667.3	7,268.0	81.58	94.67	6.17	-96.7	764.4	768.5
Top Target Niobrara "C"							
7,700.0	7,272.2	83.60	94.11	6.17	-99.2	796.8	800.9
7,750.0	7,276.5	86.69	93.25	6.18	-102.4	846.5	850.7
7,803.6	7,278.0	90.00	92.34	6.18	-105.0	900.0	904.3
Land in Niobrara "C" - Land Curve							
7,900.0	7,278.0	90.00	92.34	0.00	-108.9	996.3	1,000.7
8,000.0	7,278.0	90.00	92.34	0.00	-113.0	1,096.2	1,100.6
8,100.0	7,278.0	90.00	92.34	0.00	-117.1	1,196.1	1,200.6
8,200.0	7,278.0	90.00	92.34	0.00	-121.2	1,296.1	1,300.6
8,300.0	7,278.0	90.00	92.34	0.00	-125.3	1,396.0	1,400.6
8,400.0	7,278.0	90.00	92.34	0.00	-129.3	1,495.9	1,500.6
8,500.0	7,278.0	90.00	92.34	0.00	-133.4	1,595.8	1,600.6
8,600.0	7,278.0	90.00	92.34	0.00	-137.5	1,695.7	1,700.6
8,700.0	7,278.0	90.00	92.34	0.00	-141.6	1,795.6	1,800.6
8,800.0	7,278.0	90.00	92.34	0.00	-145.7	1,895.6	1,900.6
8,900.0	7,278.0	90.00	92.34	0.00	-149.8	1,995.5	2,000.6
9,000.0	7,278.0	90.00	92.34	0.00	-153.8	2,095.4	2,100.6
9,100.0	7,278.0	90.00	92.34	0.00	-157.9	2,195.3	2,200.6
9,200.0	7,278.0	90.00	92.34	0.00	-162.0	2,295.2	2,300.6
9,300.0	7,278.0	90.00	92.34	0.00	-166.1	2,395.1	2,400.6
9,400.0	7,278.0	90.00	92.34	0.00	-170.2	2,495.1	2,500.5
9,500.0	7,278.0	90.00	92.34	0.00	-174.3	2,595.0	2,600.5
9,600.0	7,278.0	90.00	92.34	0.00	-178.3	2,694.9	2,700.5
9,700.0	7,278.0	90.00	92.34	0.00	-182.4	2,794.8	2,800.5
9,800.0	7,277.9	90.00	92.34	0.00	-186.5	2,894.7	2,900.5
9,900.0	7,277.9	90.00	92.34	0.00	-190.6	2,994.6	3,000.5
10,000.0	7,277.9	90.00	92.34	0.00	-194.7	3,094.5	3,100.5
10,100.0	7,277.9	90.00	92.34	0.00	-198.8	3,194.5	3,200.5
10,200.0	7,277.9	90.00	92.34	0.00	-202.8	3,294.4	3,300.5
10,300.0	7,277.9	90.00	92.34	0.00	-206.9	3,394.3	3,400.5

Energen
DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	N/S (ft)	E/W (ft)	V. Sec (ft)
10,400.0	7,277.9	90.00	92.34	0.00	-211.0	3,494.2	3,500.5
10,500.0	7,277.9	90.00	92.34	0.00	-215.1	3,594.1	3,600.5
10,600.0	7,277.9	90.00	92.34	0.00	-219.2	3,694.0	3,700.5
10,700.0	7,277.9	90.00	92.34	0.00	-223.3	3,794.0	3,800.5
10,800.0	7,277.9	90.00	92.34	0.00	-227.3	3,893.9	3,900.5
10,900.0	7,277.9	90.00	92.34	0.00	-231.4	3,993.8	4,000.4
11,000.0	7,277.9	90.00	92.34	0.00	-235.5	4,093.7	4,100.4
11,100.0	7,277.9	90.01	92.34	0.00	-239.6	4,193.6	4,200.4
11,200.0	7,277.8	90.01	92.34	0.00	-243.7	4,293.5	4,300.4
11,300.0	7,277.8	90.01	92.34	0.00	-247.8	4,393.5	4,400.4
11,400.0	7,277.8	90.01	92.34	0.00	-251.8	4,493.4	4,500.4
11,500.0	7,277.8	90.01	92.34	0.00	-255.9	4,593.3	4,600.4
11,600.0	7,277.8	90.01	92.34	0.00	-260.0	4,693.2	4,700.4
11,700.0	7,277.8	90.01	92.34	0.00	-264.1	4,793.1	4,800.4
11,800.0	7,277.8	90.01	92.34	0.00	-268.2	4,893.0	4,900.4
11,900.0	7,277.8	90.01	92.34	0.00	-272.3	4,993.0	5,000.4
12,000.0	7,277.8	90.01	92.34	0.00	-276.3	5,092.9	5,100.4
12,100.0	7,277.8	90.01	92.34	0.00	-280.4	5,192.8	5,200.4
12,200.0	7,277.7	90.01	92.34	0.00	-284.5	5,292.7	5,300.4
12,300.0	7,277.7	90.01	92.34	0.00	-288.6	5,392.6	5,400.3
12,400.0	7,277.7	90.01	92.34	0.00	-292.7	5,492.5	5,500.3
12,500.0	7,277.7	90.01	92.34	0.00	-296.8	5,592.5	5,600.3
12,600.0	7,277.7	90.01	92.34	0.00	-300.8	5,692.4	5,700.3
12,694.2	7,278.0	90.00	92.35	-0.01	-305.0	5,786.5	5,794.5

TD Lateral

Energen
DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
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Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
KOP - plan hits target - Point	0.00	0.00	6,400.0	0.0	0.0	2,010,066.54	1,383,437.43	36° 31' 15.420 N	107° 7' 28.524 W
TD Lateral - plan hits target - Point	0.00	0.00	7,278.0	-305.0	5,786.5	2,009,708.98	1,389,220.92	36° 31' 12.398 N	107° 6' 17.633 W
Land Curve - plan hits target - Point	0.00	0.00	7,278.0	-105.0	900.0	2,009,953.37	1,384,336.43	36° 31' 14.382 N	107° 7' 17.498 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
500.0	500.0	Conductor	13-3/8	17-1/2	
3,900.0	3,900.0	Surface	9-5/8	12-1/4	
7,803.0	7,278.0	Intermediate	7	8-3/4	
12,694.0	7,277.7	Liner	4-1/2	6-1/8	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,667.3	7,268.0	Top Target Niobrara "C"		0.00	
7,803.6	7,278.0	Land in Niobrara "C"		0.00	
3,453.0	3,453.0	Kirtland Sh		0.00	
5,593.0	5,593.0	Menefee		0.00	
4,713.0	4,713.0	Chacra		0.00	
3,523.0	3,523.0	Fruitland Fm		0.00	
3,703.0	3,703.0	Pictured Cliffs SS		0.00	
2,000.0	2,000.0	Nacimiento		0.00	
7,202.2	7,093.0	Mancos/Niobrara "A"		0.00	
5,528.0	5,528.0	Cliff House		0.00	
6,313.0	6,313.0	Mancos		0.00	
	7,358.0	Base Target Niobrara "C"		0.00	
4,218.0	4,218.0	Huerfano Bentonite		0.00	
5,843.0	5,843.0	Point Lookout		0.00	
3,273.0	3,273.0	Ojo Alamo SS		0.00	

Checked By: _____ Approved By: _____ Date: _____

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, N.M. 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30999	² Pool Code 27194	³ Pool Name GAVILIAN MANCOS
⁴ Property Code 22035 21938	⁵ Property Name JICARILLA 96	⁶ Well Number 600H
⁷ GRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 7098'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	3	26N	3W	1	595'	NORTH	700'	EAST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	2	26N	3W	1	900'	NORTH	200'	EAST	RIO ARriba

¹² Dedicated Acres 320 N	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. NSP Pending
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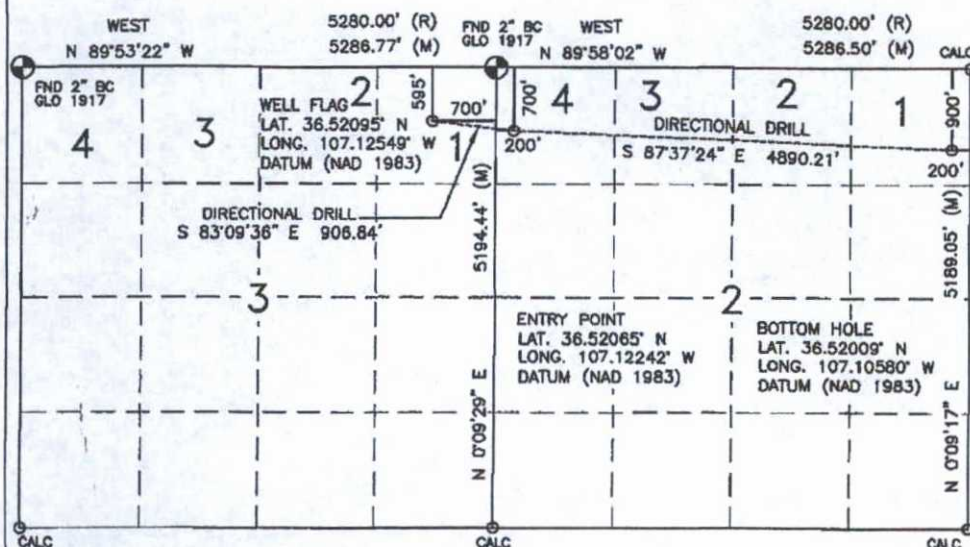
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16

OIL CONS. DIV DIST. 3

DEC 14 2015

NOTE:
T-26N, R-3-W, N.M.P.M.
IS AN UN-SURVEYED TOWNSHIP



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner or a compulsory pooling order heretofore entered by the division.

Signature: *Stephen Byers* Date: 10-7-10
Printed Name: Stephen Byers

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

OCTOBER 7, 2008

Date of Survey

Signature and Seal of Professional Surveyor:



DAVID RUSSELL

Certificate Number

10201