

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

AUG 24 2009

FORM 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 and Management
abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

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)

SHL: (P) Sec. 21, T32N, R4W 1655' ENL & 1165' FWL

BHL: (M) Sec. 21, T32N, R4W 110' ENL & 110' FEL

5. Lease Serial No.

NM 20277-30014

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.

Carracas 21B # 1

9. API Well No.

30-03A-30473

10. Field and Pool, or Exploratory Area

Basin Fruitland Coal

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

☐ Acidize☐ Deepen☐ Production (Start/Resume)☐ Water Shut-Off☐ Alter Casing☐ Fracture Treat☐ Reclamation☐ Well Integrity☐ Casing Repair☐ New Construction☐ Recomplete☐ Other☒ Change Plans☐ Plug and Abandon☐ Temporarily Abandon☐ Convert to Injection☐ Plug Back☐ 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 recompleate 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 recompleation 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.)

Energen Resources would like to make the following change to the Carracas 21B #1. The changes will be pertaining to the BHL:

- * Change the bottom hole footage location to 110' ENL 110' FEL

Attached is a revised directional drilling and operations plan.

The changes made reflect NMCD approval for order no. R-13119 Carracas Canyon. ✓

This well was topset in the Fall of 2008 with the 7" casing landed inside the legal window in the Fruitland Coal. The liner length will be changed to reflect the final TMD of the well. ✓

RCVD SEP 2 '09

OIL CONS. DIV.

DIST. 3

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations.

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Devin Mills

Title Drilling Engineer

Signature

Date 8/21/2009

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Troy L. Salvors

Title

Petroleum Engineer

Date

8/31/2009

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.

1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039- 30473	² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 35661	⁵ Property Name Carracas 21B	⁶ Well Number #1
⁷ OGRID No. 162928	⁸ Operator Name Energen Resources Corporation	⁹ Elevation 7335' GL

¹⁰ Surface Location

UL or lot no. E	Section 21	Township 32N	Range 4W	Lot fdn	Feet from the 1655	North/South line North	Feet from the 1165	East/West line West	County 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	21	32N	4W		110	North	110	East	Rio Arriba

¹² Dedicated Acres 320 N/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13119
--	-------------------------------	----------------------------------	------------------------------------

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.

5301 12'

	17 OPERATOR CERTIFICATION <i>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 of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division</i> 8/21/2009 Signature Date Devin Mills Printed Name
	18 SURVEYOR CERTIFICATION <i>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.</i> 6/11/2007 Date of Survey Signature and Seal of Professional Surveyor Original Survey Conducted and Recorded By: David R. Russell 10201 Certificate Number

Operations Plan
Revised Aug 21, 2009 ✓

Carracas 21 B #1

General Information

Location	1655 fnl, 1165 fwl at surface 1100 fnl, 1100 fwl at bottom <i>ne line</i> ne 21, T32N, R4W Rio Arriba County, New Mexico
Elevations	7335' GL
Total Depth	8147' (MD), 4204' (TVD)
Formation Objective	Basin Fruitland Coal

Formation Tops

San Jose	Surface
Nacimiento	2320' (TVD)
Ojo Alamo Ss	3514' (TVD)
Kirtland Sh	3667' (TVD), 3669' (MD)
Fruitland Fm	3766' (TVD), 3773' (MD)
Top Coal	4180' (TVD), 4447' (MD)
Bottom Coal	4204' (TVD)
Total Depth	4204' (TVD), 7380' (MD) 8147' TMD

Drilling

The wellbore was drilled to the 7" set point in the Fall of 2008, only the production lateral remains to be drilled. ✓

The 6 1/4" wellbore will be drilled with a fresh water or brine water system depending on reservoir characteristics. Anticipated BHP can be as high as 1100 psi.

Blowout Control Specifications:

A 3000 psi minimum double ram or annulus BOP stack will be used following nipple up of casing head. BOP will be tested to 250 psi for 15 minutes and 1500 psi for 15 minutes following the nipple up after each casing string is set. A 2" nominal, 2000 psi minimum choke manifold will also be used. Choke manifold will be tested to 1500 psi for 30 minutes. An upper Kelly Cock valve handle and drill string valve should be available to fit each drill string and be available on the rig floor during drilling operations.

Logging Program:

Open hole logs: None

Mud logs: From 3766' (TVD), 3773' (MD) to TD.

Surveys: Surface to KOP every 500' and a minimum of every 250' for directional.

Tubulars

Casing, Tubing, & Casing Equipment:

String	Interval	Wellbore	Casing	Csg Wt	Grade
Surface	0'-200'	12 1/4"	9 5/8"	32.3 ppf	H-40 ST&C
Intermediate	0'-4194' (TVD) 4540' (MD)	8 3/4"	7"	23.0 ppf	J-55 LT&C
Production	4190'-4204' (TVD) 4500'-8147' (MD)	6 1/4"	4 1/2"	11.6 ppf	J-55 LT&C
Tubing	0'-4450' (MD)		2 3/8"	4.7 ppf	J-55

Casing Equipment:

Surface Casing: A Texas Pattern Guide Shoe on bottom and a Insert Float Valve on top of the first joint. Casing centralization with a minimum of three (3) standard bow spring centralizers to achieve optimal standoff.

Intermediate Casing: A Self Fill Float Shoe on the bottom of the first joint with Self Fill Float Collar on top of first joint. Casing centralization with double bow spring and rigid centralizers to optimize standoff. Two turbolating centralizers at the base of the Ojo Alamo are recommended.

Liner: Bull nose guide shoe on bottom of first joint, H-Latch liner drop off tool on top of last joint.

Wellhead

3000 psi 11" x 9 5/8" casing head. 9 5/8" x 7"x 2 3/8" 3000 psi Flanged Wellhead .

Cementing

Surface Casing: 125 sks Type V with 2.0 % CaCl₂ and 1/4 #/sk Flocele (15.6 ppg, 1.18 ft³/sk 148 ft³ of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min. *Circulated to surface 10/15/2008*

Intermediate Casing: Before cementing, circulate hole at least 1 1/2 hole volumes of mud and reduce funnel viscosity to minimum to aide in hole cleanout. Depending on wellbore conditions, cement may consist of 650 sks 65/35 with 6.0 % Bentonite, 2.0 % CaCl₂, 10 #/sk Gilsonite, and 1/2 #/sk Flocele (12.3 ppg, 1.93 ft³/sk) and a tail of 150 sks Class G with 1/4 #/sk Flocele (15.6 ppg, 1.18 ft³/sk). (1431 ft³ of slurry to circulate to surface). Test casing to 1500 psi for 30 min. *Circulated to surface 10/30/2008*

Other Information

- 1) This well will be an open hole completion lined with an uncemented pre-drilled liner. ✓
- 2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The intermediate string may need to be cemented in multiple stages with a slurry design deviated from that listed above.
- 3) If high reservoir pressures or water flows are encountered slurry design may need to be deviated to from those listed above to satisfy wellbore and formation conditions.
- 4) No abnormal temperatures or pressures are anticipated. This gas is dedicated.

Energen Resources

Carson National Forest

21B; Sec 21 T32N R4W

Carracas 21B #1

Wellbore #1

Plan: Design #2 ✓

APD REPORT

31 August, 2009

Energen APD REPORT

Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas 21B #1
Project:	Carson National Forest	TVD Reference:	WELL @ 7351.0ft (Original Well Elev)
Site:	21B; Sec 21 T32N R4W	MD Reference:	WELL @ 7351.0ft (Original Well Elev)
Well:	Carracas 21B #1	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #2	Database:	EDM 2003.21 Single User Db

Project:	Carson National Forest		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	21B; Sec 21 T32N R4W				
Site Position:	Northing:	2,175,713.03 ft	Latitude:	36° 58' 29.388 N	
From:	Lat/Long	Easting:	1,343,896.31 ft	Longitude:	107° 15' 54.432 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-0.61 °

Well	Carracas 21B #1					
Well Position	+N/-S	0.0 ft	Northing:	2,175,713.03 ft	Latitude:	36° 58' 29.388 N
	+E/-W	0.0 ft	Easting:	1,343,896.31 ft	Longitude:	107° 15' 54.432 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,335.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	8/21/2009	(°)	(°)	(nT)
			9.92	63.82	51,138

Design	Design #2			
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	68.98

Survey Tool Program	Date 8/31/2009			
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0.0	8,147.0	Design #2 (Wellbore #1)	MWD	MWD - Standard

MD (ft)	TVD (ft)	Inc (°)	Azi (azimuth) (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
0.0	0.0	0.00	0.00	0.00	0.0	2,175,713.03	1,343,896.31
100.0	100.0	0.24	114.05	0.24	0.2	2,175,712.94	1,343,896.51
200.0	200.0	0.49	114.05	0.24	0.6	2,175,712.68	1,343,897.09
254.0	254.0	0.62	114.05	0.24	1.0	2,175,712.46	1,343,897.56
300.0	300.0	0.59	119.87	-0.07	1.3	2,175,712.24	1,343,897.99
400.0	400.0	0.54	134.67	-0.05	1.8	2,175,711.64	1,343,898.76
500.0	500.0	0.53	151.18	-0.01	2.1	2,175,710.91	1,343,899.31
600.0	600.0	0.56	166.92	0.03	2.1	2,175,710.02	1,343,899.63
687.0	687.0	0.62	178.49	0.07	1.8	2,175,709.14	1,343,899.73
700.0	700.0	0.63	178.98	0.10	1.8	2,175,709.00	1,343,899.73
800.0	800.0	0.73	182.17	0.10	1.4	2,175,707.81	1,343,899.70
900.0	900.0	0.83	184.59	0.10	0.8	2,175,706.45	1,343,899.61

Energen APD REPORT

Company: Energen Resources
Project: Carson National Forest
Site: 21B; Sec 21 T32N R4W
Well: Carracas 21B #1
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well Carracas 21B #1
TVD Reference: WELL @ 7351.0ft (Original Well Elev)
MD Reference: WELL @ 7351.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.21 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (azimuth) (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
1,000.0	999.9	0.93	186.49	0.10	0.1	2,175,704.91	1,343,899.44
1,100.0	1,099.9	1.04	188.01	0.10	-0.7	2,175,703.21	1,343,899.20
1,122.0	1,121.9	1.06	188.31	0.10	-0.9	2,175,702.81	1,343,899.14
1,200.0	1,199.9	0.98	187.55	-0.10	-1.6	2,175,701.44	1,343,898.93
1,300.0	1,299.9	0.88	186.38	-0.10	-2.3	2,175,699.83	1,343,898.72
1,400.0	1,399.9	0.77	184.89	-0.10	-3.0	2,175,698.40	1,343,898.56
1,500.0	1,499.9	0.67	182.95	-0.10	-3.5	2,175,697.14	1,343,898.46
1,552.0	1,551.9	0.62	181.69	-0.10	-3.8	2,175,696.56	1,343,898.43
1,600.0	1,599.9	0.66	174.93	0.08	-3.9	2,175,696.02	1,343,898.44
1,700.0	1,699.9	0.76	163.33	0.10	-4.1	2,175,694.82	1,343,898.67
1,800.0	1,799.9	0.88	154.69	0.12	-4.1	2,175,693.49	1,343,899.17
1,900.0	1,899.8	1.02	148.28	0.14	-3.9	2,175,692.03	1,343,899.95
1,984.0	1,983.8	1.14	144.13	0.15	-3.6	2,175,690.71	1,343,900.82
2,000.0	1,999.8	1.14	143.64	0.02	-3.5	2,175,690.45	1,343,901.00
2,100.0	2,099.8	1.16	140.60	0.02	-2.9	2,175,688.85	1,343,902.22
2,200.0	2,199.8	1.18	137.66	0.02	-2.2	2,175,687.30	1,343,903.54
2,300.0	2,299.8	1.20	134.82	0.02	-1.4	2,175,685.78	1,343,904.96
2,400.0	2,399.7	1.23	132.10	0.03	-0.5	2,175,684.31	1,343,906.49
2,403.0	2,402.7	1.23	132.02	0.03	-0.5	2,175,684.26	1,343,906.53
2,500.0	2,499.7	1.17	133.60	-0.06	0.4	2,175,682.87	1,343,908.01
2,600.0	2,599.7	1.11	135.41	-0.06	1.3	2,175,681.46	1,343,909.41
2,700.0	2,699.7	1.05	137.42	-0.06	2.0	2,175,680.08	1,343,910.70
2,800.0	2,799.7	0.99	139.68	-0.06	2.6	2,175,678.74	1,343,911.86
2,836.0	2,835.7	0.97	140.56	-0.06	2.8	2,175,678.26	1,343,912.25
2,900.0	2,899.7	1.13	139.29	0.24	3.2	2,175,677.36	1,343,913.00
3,000.0	2,999.6	1.37	137.89	0.25	4.0	2,175,675.71	1,343,914.42
3,100.0	3,099.6	1.62	136.92	0.25	4.9	2,175,673.77	1,343,916.17
3,200.0	3,199.5	1.86	136.20	0.25	6.1	2,175,671.54	1,343,918.24
3,263.0	3,262.5	2.02	135.84	0.25	6.9	2,175,669.99	1,343,919.70
3,300.0	3,299.5	1.93	135.77	-0.24	7.4	2,175,669.07	1,343,920.58
3,331.0	3,330.5	2.02	126.91	0.29	7.9	2,175,668.36	1,343,921.37
3,363.0	3,362.4	2.55	98.05	1.66	8.8	2,175,667.90	1,343,922.53
3,394.0	3,393.4	3.52	84.85	3.13	10.3	2,175,667.88	1,343,924.16
3,400.0	3,399.4	3.73	83.03	3.58	10.7	2,175,667.91	1,343,924.53
3,425.0	3,424.3	4.66	77.31	3.70	12.5	2,175,668.22	1,343,926.34
3,456.0	3,455.2	7.03	72.30	7.65	15.6	2,175,669.04	1,343,929.38
3,488.0	3,486.8	10.20	69.88	9.91	20.4	2,175,670.56	1,343,933.92
3,500.0	3,498.6	11.45	68.42	10.45	22.7	2,175,671.34	1,343,936.04
3,519.0	3,517.1	13.45	66.66	10.51	26.8	2,175,672.87	1,343,939.84
3,551.0	3,548.1	16.27	67.30	8.81	35.0	2,175,675.99	1,343,947.43
3,582.0	3,577.7	17.76	68.01	4.81	44.1	2,175,679.35	1,343,955.85
3,600.0	3,594.8	18.30	68.67	3.03	49.6	2,175,681.35	1,343,961.05
3,614.0	3,608.1	18.73	69.15	3.04	54.1	2,175,682.91	1,343,965.22
3,646.0	3,638.3	19.96	70.18	3.84	64.7	2,175,686.48	1,343,975.20

Energen **APD REPORT**

Company: Energen Resources
Project: Carson National Forest
Site: 21B, Sec 21 T32N R4W
Well: Carracas 21B #1
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well Carracas 21B #1
TVD Reference: WELL @ 7351.0ft (Original Well Elev)
MD Reference: WELL @ 7351.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.21 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (azimuth) (°)	Build (%/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
3,677.0	3,667.3	20.93	71.23	3.13	75.5	2,175,689.95	1,343,985.46
3,700.0	3,688.8	21.40	72.26	2.03	83.8	2,175,692.46	1,343,993.37
3,707.0	3,695.3	21.54	72.56	2.05	86.3	2,175,693.21	1,343,995.82
3,738.0	3,724.1	21.98	71.23	1.42	97.8	2,175,696.67	1,344,006.78
3,770.0	3,753.7	22.95	71.29	3.03	110.0	2,175,700.47	1,344,018.40
3,799.0	3,780.2	24.89	70.75	6.69	121.8	2,175,704.18	1,344,029.56
3,800.0	3,781.1	24.96	70.71	7.02	122.2	2,175,704.31	1,344,029.96
3,829.0	3,807.1	27.00	69.71	7.03	134.9	2,175,708.49	1,344,041.95
3,861.0	3,835.3	29.46	69.06	7.69	150.0	2,175,713.67	1,344,056.17
3,892.0	3,861.9	32.27	68.37	9.06	165.9	2,175,719.29	1,344,071.05
3,900.0	3,868.7	33.02	68.26	9.34	170.3	2,175,720.84	1,344,075.08
3,924.0	3,888.5	35.26	67.95	9.34	183.7	2,175,725.73	1,344,087.62
3,955.0	3,913.4	38.25	67.74	9.65	202.3	2,175,732.54	1,344,104.88
3,987.0	3,938.1	40.63	68.24	7.44	222.6	2,175,739.96	1,344,123.80
4,000.0	3,947.9	41.52	68.54	6.84	231.1	2,175,743.02	1,344,131.78
4,019.0	3,962.0	42.82	68.95	6.85	243.9	2,175,747.52	1,344,143.71
4,051.0	3,985.1	44.67	70.00	5.78	266.0	2,175,755.05	1,344,164.52
4,082.0	4,006.7	46.78	70.81	6.81	288.2	2,175,762.27	1,344,185.50
4,100.0	4,018.9	48.31	71.12	8.51	301.5	2,175,766.46	1,344,198.10
4,113.0	4,027.4	49.42	71.34	8.52	311.3	2,175,769.51	1,344,207.41
4,144.0	4,047.1	51.88	71.78	7.94	335.2	2,175,776.85	1,344,230.23
4,175.0	4,065.7	54.17	72.00	7.39	359.9	2,175,784.30	1,344,253.84
4,200.0	4,080.1	55.89	72.40	6.87	380.4	2,175,790.35	1,344,273.41
4,207.0	4,084.0	56.37	72.51	6.88	386.2	2,175,792.04	1,344,278.97
4,239.0	4,101.2	58.48	73.12	6.59	413.1	2,175,799.73	1,344,304.82
4,270.0	4,116.7	61.29	73.50	9.06	439.8	2,175,807.16	1,344,330.58
4,300.0	4,130.4	64.51	74.14	10.72	466.4	2,175,814.32	1,344,356.31
4,302.0	4,131.3	64.72	74.18	10.72	468.2	2,175,814.80	1,344,358.05
4,334.0	4,144.0	68.41	74.71	11.53	497.5	2,175,822.37	1,344,386.41
4,365.0	4,154.4	72.28	75.05	12.48	526.5	2,175,829.68	1,344,414.67
4,397.0	4,163.4	75.01	75.16	8.53	557.0	2,175,837.25	1,344,444.42
4,400.0	4,164.2	75.09	75.08	2.75	559.9	2,175,837.97	1,344,447.23
4,429.0	4,171.5	75.89	74.30	2.75	587.8	2,175,845.09	1,344,474.39
4,461.0	4,178.5	78.79	72.57	9.06	619.0	2,175,853.68	1,344,504.40
4,500.0	4,186.1	78.79	72.57	0.00	657.1	2,175,864.75	1,344,541.02
4,540.0	4,193.8	78.79	72.57	0.00	696.3	2,175,876.10	1,344,578.58
4,600.0	4,202.2	85.24	69.92	10.74	755.6	2,175,894.60	1,344,635.00
4,644.3	4,204.0	90.00	68.00	10.76	799.8	2,175,910.03	1,344,676.43
4,700.0	4,204.0	90.00	67.99	0.00	855.6	2,175,930.37	1,344,728.33
4,800.0	4,204.0	90.00	67.96	0.00	955.6	2,175,966.88	1,344,821.42
4,900.0	4,204.0	90.00	67.93	0.00	1,055.5	2,176,003.44	1,344,914.50
5,000.0	4,204.0	90.00	67.91	0.00	1,155.5	2,176,040.04	1,345,007.56
5,100.0	4,204.0	90.00	67.88	0.00	1,255.5	2,176,076.68	1,345,100.61
5,200.0	4,204.0	90.00	67.86	0.00	1,355.5	2,176,113.36	1,345,193.64

Energen **APD REPORT**

Company: Energen Resources
Project: Carson National Forest
Site: 21B; Sec 21-T32N R4W
Well: Carracas 21B #1
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well Carracas 21B #1
TVD Reference: WELL @ 7351.0ft (Original Well Elev)
MD Reference: WELL @ 7351.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.21 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (azimuth) (°)	Build (°/100ft)	V- Sec (ft)	Northing (ft)	Easting (ft)
5,300.0	4,204.0	90.00	67.83	0.00	1,455.5	2,176,150.09	1,345,286.65
5,400.0	4,204.0	90.00	67.80	0.00	1,555.4	2,176,186.86	1,345,379.64
5,500.0	4,204.0	90.00	67.78	0.00	1,655.4	2,176,223.67	1,345,472.62
5,600.0	4,204.0	90.00	67.75	0.00	1,755.4	2,176,260.52	1,345,565.58
5,700.0	4,204.0	90.00	67.73	0.00	1,855.4	2,176,297.42	1,345,658.53
5,800.0	4,204.0	90.00	67.70	0.00	1,955.4	2,176,334.35	1,345,751.46
5,900.0	4,204.0	90.00	67.67	0.00	2,055.3	2,176,371.33	1,345,844.37
6,000.0	4,204.0	90.00	67.65	0.00	2,155.3	2,176,408.35	1,345,937.26
6,100.0	4,204.0	90.00	67.62	0.00	2,255.3	2,176,445.42	1,346,030.14
6,200.0	4,204.0	90.00	67.60	0.00	2,355.2	2,176,482.52	1,346,123.00
6,300.0	4,204.0	90.00	67.57	0.00	2,455.2	2,176,519.67	1,346,215.84
6,400.0	4,204.0	90.00	67.54	0.00	2,555.2	2,176,556.86	1,346,308.67
6,500.0	4,204.0	90.00	67.52	0.00	2,655.2	2,176,594.09	1,346,401.48
6,600.0	4,204.0	90.00	67.49	0.00	2,755.1	2,176,631.36	1,346,494.28
6,700.0	4,204.0	90.00	67.47	0.00	2,855.1	2,176,668.68	1,346,587.05
6,800.0	4,204.0	90.00	67.44	0.00	2,955.1	2,176,706.04	1,346,679.81
6,900.0	4,204.0	90.00	67.41	0.00	3,055.0	2,176,743.44	1,346,772.55
7,000.0	4,204.0	90.00	67.39	0.00	3,155.0	2,176,780.88	1,346,865.28
7,100.0	4,204.0	90.00	67.36	0.00	3,254.9	2,176,818.36	1,346,957.99
7,200.0	4,204.0	90.00	67.34	0.00	3,354.9	2,176,855.89	1,347,050.68
7,300.0	4,204.0	90.00	67.31	0.00	3,454.9	2,176,893.45	1,347,143.36
7,400.0	4,204.0	90.00	67.28	0.00	3,554.8	2,176,931.06	1,347,236.01
7,500.0	4,204.0	90.00	67.26	0.00	3,654.8	2,176,968.72	1,347,328.65
7,600.0	4,204.0	90.00	67.23	0.00	3,754.7	2,177,006.41	1,347,421.28
7,700.0	4,204.0	90.00	67.21	0.00	3,854.7	2,177,044.15	1,347,513.88
7,800.0	4,204.0	90.00	67.18	0.00	3,954.6	2,177,081.92	1,347,606.47
7,900.0	4,204.0	90.00	67.15	0.00	4,054.6	2,177,119.74	1,347,699.05
8,000.0	4,204.0	90.00	67.13	0.00	4,154.5	2,177,157.61	1,347,791.60
8,100.0	4,204.0	90.00	67.10	0.00	4,254.5	2,177,195.51	1,347,884.14
8,147.0	4,204.0	90.00	67.09	0.00	4,301.5	2,177,213.36	1,347,927.67

Checked By: _____ Approved By: _____ Date: _____

PROJECT DETAILS: Carson National Forest

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Central Zone
 System Datum: Mean Sea Level

Azimuths to True North
 Magnetic North: 9.92°
 Magnetic Field
 Strength: 51137.8snT
 Dip Angle: 63.82°
 Date: 8/21/2009
 Model: IGRF200510



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	254.0	0.62	114.05	254.0	-0.6	1.3	0.24	114.05	1.0	
3	687.0	0.62	178.49	687.0	-3.9	3.5	0.15	122.22	1.8	
4	1122.0	1.06	188.31	1121.9	-10.2	2.9	0.11	23.07	-0.9	
5	1552.0	0.62	181.69	1551.9	-16.5	2.3	0.10	-170.86	-3.8	
6	1984.0	1.14	144.13	1983.8	-22.3	4.7	0.17	-67.79	-3.6	
7	2403.0	1.23	132.02	2402.7	-28.7	10.5	0.06	-76.36	-0.5	
8	2836.0	0.97	140.56	2835.7	-34.6	16.3	0.07	151.99	2.8	
9	3263.0	2.02	135.84	3262.5	-42.8	23.8	0.25	-9.05	6.9	
10	3300.0	1.93	135.77	3299.5	-43.7	24.7	0.24	-178.50	7.4	
11	3331.0	2.02	126.91	3330.5	-44.4	25.5	1.03	-78.04	7.9	
12	3363.0	2.55	98.05	3362.4	-44.8	26.7	3.90	-80.15	8.8	
13	3394.0	3.52	84.85	3393.4	-44.9	28.3	3.84	-42.48	10.3	
14	3425.0	4.66	77.31	3424.3	-44.5	30.5	4.06	-29.05	12.5	
15	3456.0	7.03	72.30	3455.2	-43.6	33.5	7.81	-14.65	15.6	
16	3488.0	10.20	69.88	3486.8	-42.1	38.1	9.97	-7.72	20.4	
17	3519.0	13.45	66.66	3517.1	-39.7	44.0	10.69	-13.06	26.8	
18	3551.0	16.27	67.30	3548.1	-36.5	51.5	8.83	3.64	35.0	
19	3582.0	17.76	68.01	3577.7	-33.0	59.9	4.85	8.28	44.1	
20	3614.0	18.73	69.15	3608.1	-29.4	69.2	3.23	20.74	54.1	
21	3646.0	19.96	70.18	3638.3	-25.7	79.2	3.99	15.99	64.7	
22	3677.0	20.93	71.23	3667.3	-22.1	89.4	3.35	21.21	75.5	
23	3707.0	21.54	72.56	3695.3	-18.8	99.7	2.59	38.92	86.3	
24	3738.0	21.98	71.23	3724.1	-15.2	110.6	2.13	-48.87	97.8	
25	3770.0	22.95	71.29	3753.7	-11.3	122.2	3.03	1.38	110.0	
26	3799.0	24.89	70.75	3780.2	-7.4	133.3	6.73	-6.69	121.8	
27	3829.0	27.00	69.71	3807.1	-3.0	145.7	7.19	-12.64	134.9	
28	3861.0	29.46	69.06	3835.3	2.3	159.8	7.75	-7.41	150.0	
29	3892.0	32.27	68.37	3861.9	8.1	174.7	9.14	-7.48	165.9	
30	3924.0	35.26	67.95	3888.5	14.7	191.2	9.37	-4.64	183.7	
31	3955.0	38.25	67.74	3913.4	21.7	208.3	9.65	-2.49	202.3	
32	3987.0	40.63	68.24	3938.1	29.3	227.2	7.50	7.80	222.6	
33	4019.0	42.82	68.95	3962.0	37.1	247.0	7.00	12.44	243.9	
34	4051.0	44.67	70.00	3985.1	44.9	267.7	6.21	21.81	266.0	
35	4082.0	46.78	70.81	4006.7	52.3	288.6	7.06	15.65	288.2	
36	4113.0	49.42	71.34	4027.4	59.8	310.5	8.61	8.68	311.3	
37	4144.0	51.88	71.78	4047.1	67.4	333.2	8.01	8.01	335.2	
38	4175.0	54.17	72.00	4065.7	75.1	356.8	7.41	4.46	359.9	
39	4207.0	56.37	72.51	4084.0	83.1	381.8	7.00	10.93	386.2	
40	4239.0	58.48	73.12	4101.2	91.1	407.6	6.79	13.86	413.1	
41	4270.0	61.29	73.50	4116.7	98.7	433.2	9.13	6.77	439.8	
42	4302.0	64.72	74.18	4131.3	106.7	460.6	10.88	10.17	468.2	
43	4334.0	68.41	74.71	4144.0	114.6	488.9	11.63	7.61	497.5	
44	4365.0	72.28	75.05	4154.4	122.2	517.1	12.53	4.79	526.5	
45	4397.0	75.01	75.16	4163.4	130.1	546.8	8.54	2.23	557.0	
46	4429.0	75.89	74.30	4171.5	138.2	576.6	3.79	-43.52	587.8	
47	4461.0	78.79	72.57	4178.5	147.1	606.6	10.49	-30.40	619.0	
48	4540.0	78.79	72.57	4193.8	170.3	680.5	0.00	0.00	696.3	
49	4644.3	90.00	68.00	4204.0	205.3	778.0	11.60	-22.35	799.8	
50	8147.0	90.00	67.09	4204.0	1543.2	4015.1	0.03	-90.00	4301.5	

500
1000
1500
2000
2500
3000
3500
4000
4500

0 1500 3000 4500 6000 7500

Vertical Section at 68.98° (1500 ft/in)