

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

MAY 16 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 an 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.15, T32N, R5W 120'FSL & 440'FEL

BHL: (M) Sec.15, T32N, R5W 850'FSL & 60'FWL

5. Lease Serial No.

NMNM 30351

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.

Carracas 15A # 11

9. API Well No.

30-039-30469

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 recomple 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 recomple 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 15A #11. The changes will be pertaining to the landing point of the 7" int. casing and the BHL:

- * Change kick-off point to 2900'MD
- * Change int. casing setting measured depth (MD) TD to 4225' MD and cement with 565 sks lead followed by 150 sks tail.
- * Change the TD of the well to 8212' (MD) and run the 4 1/2" liner to this depth with a new liner top of 4175' (MD).
- * Change the bottom hole footage location to 850'FSL 60'FWL

Attached is a revised directional drilling and operations plan.
The changes made reflect NMOCD approval for order no. R-13119 Carracas Canyon.

RCVD MAY 20 '09

OIL CONS. DIV.

DIST. 3

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations.

Hold C104
for Directional Survey
and "As Drilled" plat
COS Carracas 15A #16

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

Jason Kincaid

Title Drilling Engineer

Signature

Date 5/15/2009

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes it a crime for anyone 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

District I

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 30-039-30469	² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 35654	⁵ Property Name CARRACAS 15A	⁶ Well Number 11
⁷ OGRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 7227'

¹⁰ Surface Location

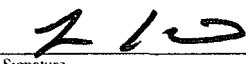
UL or lot no. P	Section 15	Township 32N	Range 5W	Lot Idn	Feet from the 120	North/South line SOUTH	Feet from the 440	East/West line EAST	County RIO ARriba
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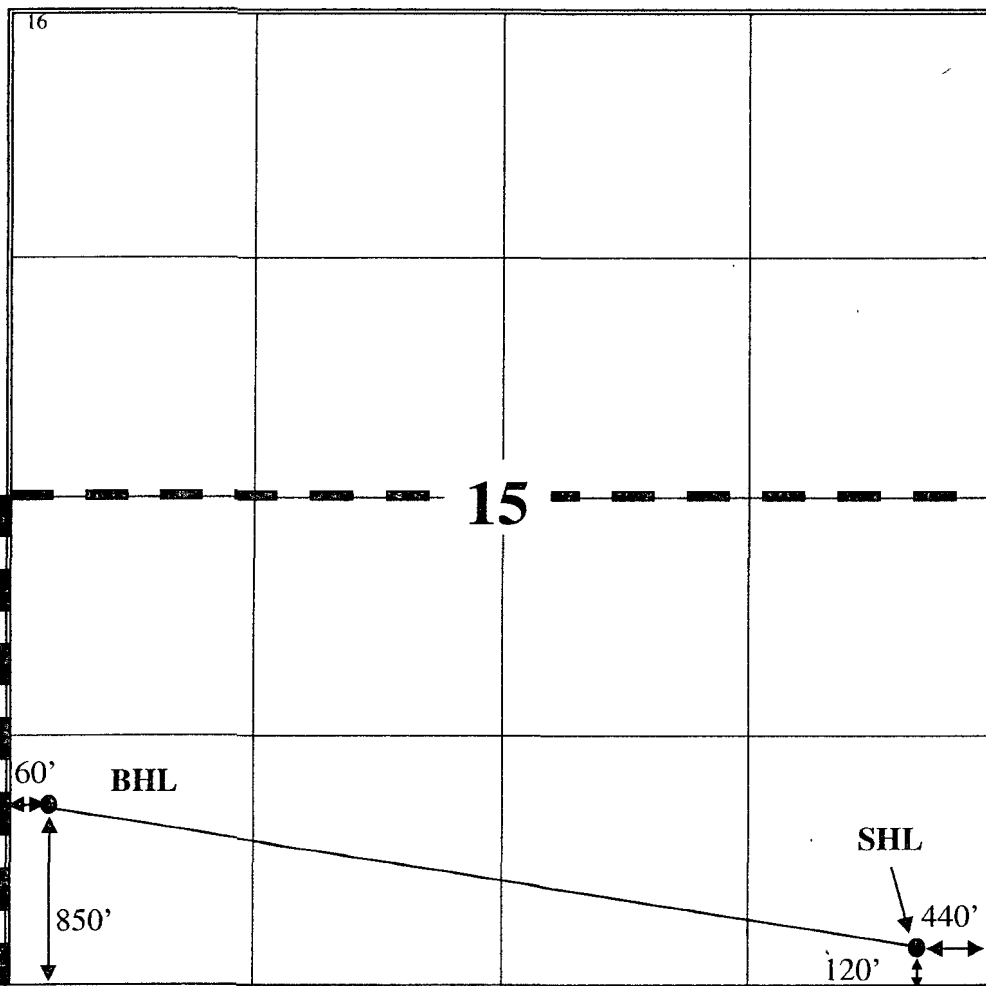
¹¹ Bottom Hole Location If Different From Surface

UL or lot no. M	Section 15	Township 32N	Range 5W	Lot Idn	Feet from the 850	North/South line SOUTH	Feet from the 60	East/West line WEST	County RIO ARriba
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¹² Dedicated Acres 320 S/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. Case No. 14287 R-13119 (5-1-09)
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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	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 of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division  Signature Date 5/15/2009 JASON KINCAID Printed Name
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 13, 2005 Date of Survey Original Survey Conducted and Recorded By: David R. Russell 10201 Certificate Number	



5/15/2009
ENERGEN
R E S O U R C E S
OPERATIONS PLAN

WELL NAME.....Carracas 15A #11
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Jason Kincaid

GENERAL INFORMATION

Surface Location	120 FSL 440 FEL
S-T-R	(P) Sec.36, T32N, R05W
Bottom Hole Location	850 FSL 60 FWL
S-T-R	(M) Sec.36, T32N, R05W
County, State	Rio Arriba, New Mexico
Elevations	7227' GL
Total Depth	8212' +/- (MD); 3743' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	1817' (TVD)
Ojo Alamo Ss	3142' (TVD) 3145'MD
Kirtland Sh	3282' (TVD) 3296'MD
Fruitland Fm	3642' (TVD) 3807'MD
Top Target Coal	3732' (TVD) 4087'MD
Base Target Coal	3755' (TVD)
Total Depth	3743' (TVD), 8212' (MD)

DRILLING

Surface: 12-1/4" wellbore will be drilled with a fresh water mud system (spud mud).

Intermediate: 8-3/4" wellbore will be drilled with a LSD mud system. Weighting materials will be drill cuttings and if needed barite. Mud density is expected to range from 8.4 ppg to 9.0 ppg.

Production: 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.

Projected KOP is 2900' TVD with 6.80°/100' doglegs.

Blowout Control Specifications:

A 3000 psi minimum double ram or annulus BOP stack will be used following nipple up of casing head. A 2" nominal, 2000 psi minimum choke manifold will also be used. 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. **Pressure test BOP to 250 psi for 15 min and 2000 psi for 15 min.**

Logging Program:

Open hole logs: None

Mudlogs: 3532' TVD, 3600' MD to TD

Surveys: Surface to KOP every 500' and a minimum of every 200' for directional.

CASING, TUBING & CASING EQUIPMENT

String	Start Depth	End Depth	Wellbore	Size	Wt	Grade
Surface	0	200	12-1/4"	9-5/8"	32.3 lb/ft	H-40 ST&C
Intermediate	0	4225	8-3/4"	7"	23 lb/ft	J-55 LT&C
TVD	0	3743				
Prod. Liner	4175	8212	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
TVD	3740	3743				
Tubing	0	4100	none	2-3/8"	4.7 lb/ft	J-55

Surface Casing: Texas Pattern Guide Shoe on bottom of first joint and an insert float valve on top of first joint. Casing centralization with a minimum of 3 standard bow spring centralizers to achieve optimal standoff.

Intermediate Casing: Self fill float shoe with self fill float collar on bottom and top of first joint. Casing centralization with double bow spring and centralizers to optimize standoff.

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

WELLHEAD

11" 3000 x 9 5/8" weld/slip on 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 ¼ #/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.

Intermediate Casing: Depending on wellbore conditions, cement may consist of 565 sks 65/35 with 6.0 % Bentonite, 2.0 % CaCl₂, 10 #/sk Gilsonite, and ½ #/sk Flocele (12.3 ppg, 1.93 ft³/sk) and a tail of 150 sks Class G with ¼ #/sk Flocele (15.6 ppg, 1.18 ft³/sk). (1270 ft³ of slurry, 100% excess to circulate to surface). WOC 12 hours. Test casing to 1200 psi for 30 min.

Production Liner: NO CEMENT, Open Hole Completion

Set slips with full string weight

If cement does not circulate, run temperature survey in 8 hrs. to determine TOC.

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.
- 5) This gas is dedicated.



Energen Resources

**Carson National Forest
Sec.15-T32N-R05W
Carracas 15A #11
Horizontal OPE FTC**

Final Plan #1

2009 Drilling Program

15 May, 2009

Prepared By: Jason L. Kincaid

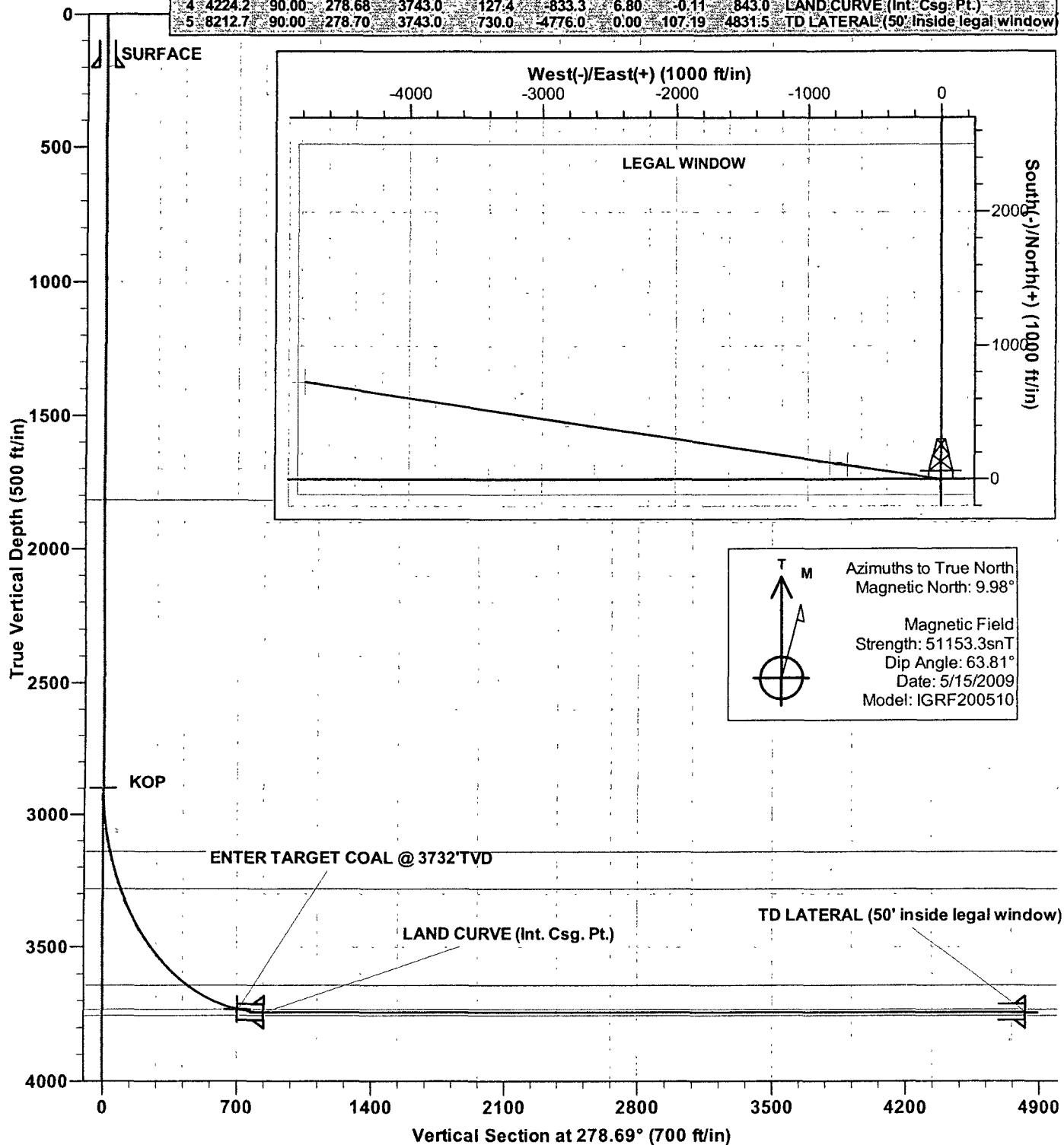
Project: Carson National Forest
Site: Sec.15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC

PROJECT DETAILS:

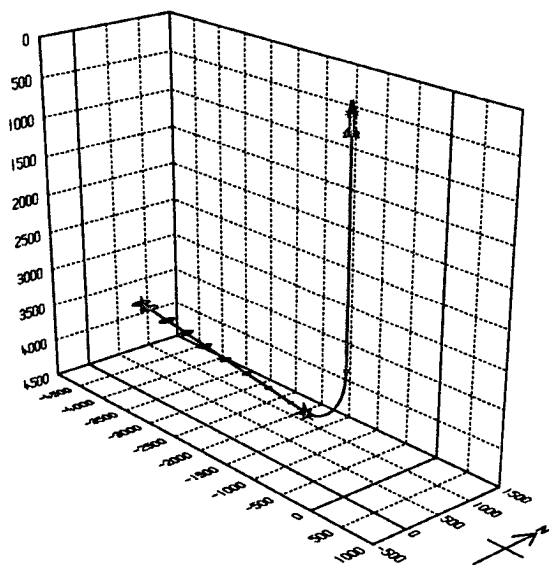
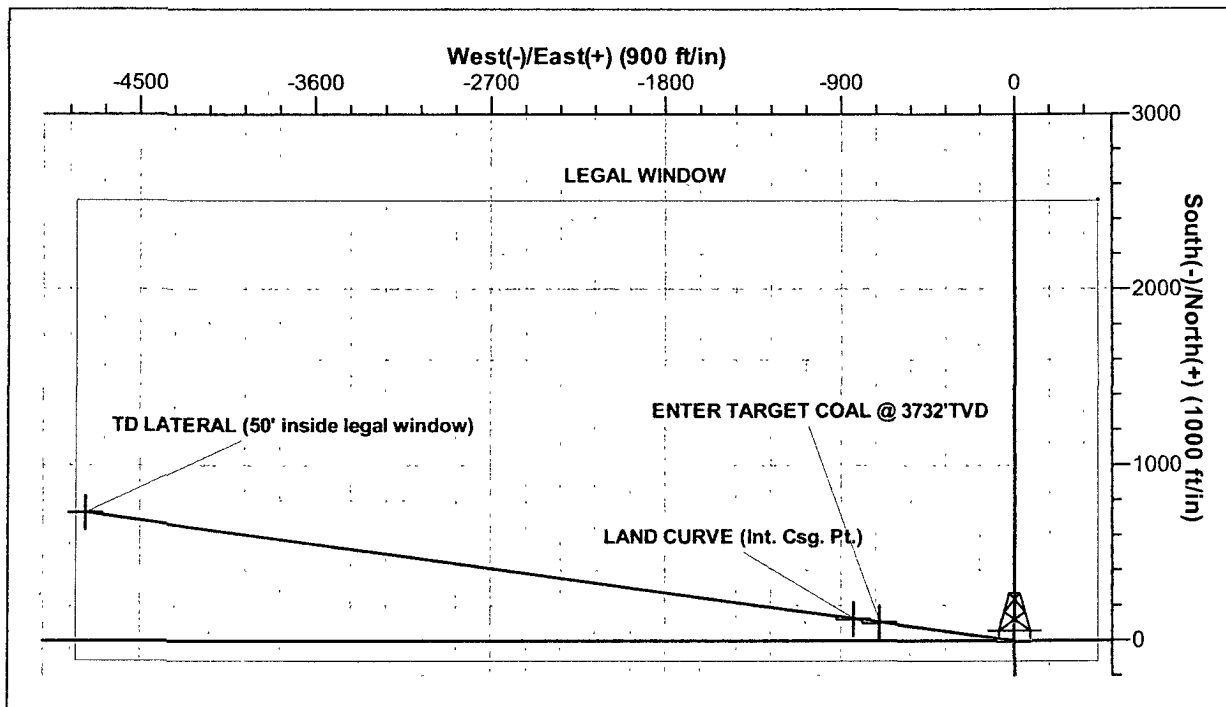
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone

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	2900.0	0.00	0.00	2900.0	0.0	0.0	0.00	0.00	0.0	KOP
3	4087.8	80.73	278.69	3732.0	106.9	-699.1	6.80	278.69	707.2	ENTER TARGET COAL @ 3732' TVD
4	4224.2	90.00	278.68	3743.0	127.4	-833.3	6.80	-0.11	843.0	LAND CURVE (Int. Csg. Pt.)
5	8212.7	90.00	278.70	3743.0	730.0	-4776.0	0.00	107.19	4831.5	TD LATERAL (50' inside legal window)



Project: Carson National Forest
Site: Sec.15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC
Design: Final Plan #1



Company: Energen Resources
Project: Carson National Forest
Site: Sec.15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC
Design: Final Plan #1

Local Co-ordinate Reference: Well Carracas 15A #11
TVD Reference: KB @ 7242.0ft (Drilling Rig KB)
MD Reference: KB @ 7242.0ft (Drilling Rig KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003 16 Single User Db

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

Site		Sec.15-T32N-R05W			
Site Position:		Northing:	2,175,415.92 ft	Latitude:	36° 58' 23.988 N
From:	Lat/Long	Easting:	1,321,379.80 ft	Longitude:	107° 20' 31.848 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-0.66 °

Well	Carracas 15A #11					
Well Position	+N/-S	0.0 ft	Northing:	2,175,415.92 ft	Latitude:	36° 58' 23.988 N
	+E/-W	0.0 ft	Easting:	1,321,379.80 ft	Longitude:	107° 20' 31.848 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	7,227.0 ft	Ground Level:	7,227.0 ft

Wellbore	Horizontal OPE FTC				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	5/15/2009	9.98	63.81	51,153

Design	Final Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	278.69

Survey Tool Program	Date	5/15/2009
From	To	
(ft)	(ft)	
0.0	8,212.7	Final Plan #1 (Horizontal OPE FTC)
Survey (Wellbore)	Tool Name	Description
	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

Company: Energen Resources
Project: Carson National Forest
Site: Sec.15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC
Design: Final Plan #1

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MD Reference: KB @ 7242.0ft (Drilling Rig 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)
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
1,817.0	1,817.0	0.00	0.00	0.00	0.0	0.0	0.0
Nacimiento							
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
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
KOP							
2,950.0	2,950.0	3.40	278.69	6.80	0.2	-1.5	1.5
3,000.0	2,999.8	6.80	278.69	6.80	0.9	-5.9	5.9
3,050.0	3,049.2	10.19	278.69	6.80	2.0	-13.2	13.3
3,100.0	3,098.1	13.59	278.69	6.80	3.6	-23.3	23.6
3,145.5	3,142.0	16.68	278.69	6.80	5.4	-35.1	35.5
Ojo Alamo							
3,150.0	3,146.4	16.99	278.69	6.80	5.6	-36.4	36.8
3,200.0	3,193.7	20.39	278.69	6.80	8.0	-52.2	52.8
3,250.0	3,240.0	23.79	278.69	6.80	10.8	-70.8	71.6
3,296.5	3,282.0	26.95	278.69	6.80	13.8	-90.5	91.5
Kirtland							
3,300.0	3,285.2	27.19	278.69	6.80	14.1	-92.1	93.1
3,350.0	3,328.9	30.58	278.69	6.80	17.7	-115.9	117.3
3,400.0	3,371.2	33.98	278.69	6.80	21.8	-142.3	144.0
3,450.0	3,411.8	37.38	278.69	6.80	26.2	-171.2	173.1
3,500.0	3,450.6	40.78	278.69	6.80	30.9	-202.3	204.7
3,550.0	3,487.5	44.18	278.69	6.80	36.0	-235.7	238.4
3,600.0	3,522.3	47.58	278.69	6.80	41.5	-271.2	274.3
3,650.0	3,554.9	50.97	278.69	6.80	47.2	-308.6	312.2
3,700.0	3,585.2	54.37	278.69	6.80	53.2	-347.9	351.9
3,750.0	3,613.1	57.77	278.69	6.80	59.5	-388.9	393.4
3,800.0	3,638.5	61.17	278.69	6.80	66.0	-431.5	436.5
3,807.3	3,642.0	61.66	278.69	6.80	66.9	-437.8	442.9
Fruitland							

Company: Energen Resources
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MD Reference: KB @ 7242.0ft (Drilling Rig 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)
3,850.0	3,661.3	64.57	278.69	6.80	72.7	-475.5	481.0
3,900.0	3,681.4	67.97	278.69	6.80	79.6	-520.7	526.7
3,950.0	3,698.8	71.36	278.69	6.80	86.7	-567.0	573.6
4,000.0	3,713.4	74.76	278.69	6.80	93.9	-614.3	621.4
4,050.0	3,725.1	78.16	278.69	6.80	101.3	-662.4	670.1
4,087.8	3,732.0	80.73	278.69	6.80	106.9	-699.1	707.2
Top Coal - ENTER TARGET COAL @ 3732" TVD							
4,100.0	3,733.9	81.56	278.69	6.80	108.7	-711.0	719.3
4,150.0	3,739.7	84.96	278.69	6.80	116.2	-760.1	768.9
4,200.0	3,742.7	88.36	278.68	6.80	123.8	-809.4	818.8
4,224.2	3,743.0	90.00	278.68	6.80	127.4	-833.3	843.0
LAND CURVE (Int. Csg. Pt.)							
4,300.0	3,743.0	90.00	278.68	0.00	138.8	-908.3	918.8
4,400.0	3,743.0	90.00	278.68	0.00	153.9	-1,007.1	1,018.8
4,500.0	3,743.0	90.00	278.68	0.00	169.0	-1,106.0	1,118.8
4,600.0	3,743.0	90.00	278.68	0.00	184.1	-1,204.8	1,218.8
4,700.0	3,743.0	90.00	278.68	0.00	199.2	-1,303.7	1,318.8
4,800.0	3,743.0	90.00	278.68	0.00	214.3	-1,402.5	1,418.8
4,900.0	3,743.0	90.00	278.68	0.00	229.4	-1,501.4	1,518.8
5,000.0	3,743.0	90.00	278.68	0.00	244.5	-1,600.2	1,618.8
5,100.0	3,743.0	90.00	278.68	0.00	259.6	-1,699.1	1,718.8
5,200.0	3,742.9	90.00	278.68	0.00	274.7	-1,798.0	1,818.8
5,300.0	3,742.9	90.00	278.68	0.00	289.8	-1,896.8	1,918.8
5,400.0	3,742.9	90.00	278.68	0.00	304.9	-1,995.7	2,018.8
5,500.0	3,742.9	90.00	278.69	0.00	320.0	-2,094.5	2,118.8
5,600.0	3,742.9	90.00	278.69	0.00	335.1	-2,193.4	2,218.8
5,700.0	3,742.9	90.00	278.69	0.00	350.2	-2,292.2	2,318.8
5,800.0	3,742.9	90.00	278.69	0.00	365.3	-2,391.1	2,418.8
5,900.0	3,742.9	90.00	278.69	0.00	380.4	-2,489.9	2,518.8
6,000.0	3,742.9	90.00	278.69	0.00	395.5	-2,588.8	2,618.8
6,100.0	3,742.9	90.00	278.69	0.00	410.6	-2,687.6	2,718.8
6,200.0	3,742.9	90.00	278.69	0.00	425.7	-2,786.5	2,818.8
6,300.0	3,742.9	90.00	278.69	0.00	440.8	-2,885.3	2,918.8
6,400.0	3,742.9	90.00	278.69	0.00	455.9	-2,984.2	3,018.8
6,500.0	3,742.9	90.00	278.69	0.00	471.0	-3,083.0	3,118.8
6,600.0	3,742.9	90.00	278.69	0.00	486.1	-3,181.9	3,218.8
6,700.0	3,742.9	90.00	278.69	0.00	501.2	-3,280.7	3,318.8
6,800.0	3,742.9	90.00	278.69	0.00	516.4	-3,379.6	3,418.8
6,900.0	3,742.9	90.00	278.69	0.00	531.5	-3,478.4	3,518.8
7,000.0	3,742.9	90.00	278.69	0.00	546.6	-3,577.3	3,618.8
7,100.0	3,742.9	90.00	278.70	0.00	561.7	-3,676.1	3,718.8
7,200.0	3,742.9	90.00	278.70	0.00	576.8	-3,775.0	3,818.8
7,300.0	3,743.0	90.00	278.70	0.00	592.0	-3,873.8	3,918.8
7,400.0	3,743.0	90.00	278.70	0.00	607.1	-3,972.7	4,018.8
7,500.0	3,743.0	90.00	278.70	0.00	622.2	-4,071.5	4,118.8

Company: Energen Resources
Project: Carson National Forest
Site: Sec.15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC
Design: Final Plan #1

Local Co-ordinate Reference: Well Carracas 15A #11
TVD Reference: KB @ 7242.0ft (Drilling Rig KB)
MD Reference: KB @ 7242.0ft (Drilling Rig 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)
7,600.0	3,743.0	90.00	278.70	0.00	637.3	-4,170.4	4,218.8
7,700.0	3,743.0	90.00	278.70	0.00	652.4	-4,269.2	4,318.8
7,800.0	3,743.0	90.00	278.70	0.00	667.6	-4,368.1	4,418.8
7,900.0	3,743.0	90.00	278.70	0.00	682.7	-4,466.9	4,518.8
8,000.0	3,743.0	90.00	278.70	0.00	697.8	-4,565.8	4,618.8
8,100.0	3,743.0	90.00	278.70	0.00	713.0	-4,664.6	4,718.8
8,200.0	3,743.0	90.00	278.70	0.00	728.1	-4,763.5	4,818.8
8,212.7	3,743.0	90.00	278.70	0.00	730.0	-4,776.0	4,831.5

TD LATERAL (50' inside legal window)

Company: Energen Resources
Project: Carson National Forest
Site: Sec 15-T32N-R05W
Well: Carracas 15A #11
Wellbore: Horizontal OPE FTC
Design: Final Plan #1

Local Co-ordinate Reference: Well Carracas 15A #11
TVD Reference: KB @ 7242.0ft (Drilling Rig KB)
MD Reference: KB @ 7242 0ft (Drilling Rig KB)
North Reference: True
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	2,900.0	0.0	0.0	2,175,415.92	1,321,379.80	36° 58' 23.988 N	107° 20' 31.848 W
ENTER TARGET - plan hits target - Point	0.00	0.00	3,732.0	106.9	-699.1	2,175,530.83	1,320,681.97	36° 58' 25.045 N	107° 20' 40.463 W
LAND CURVE (Int. - plan hits target - Point	0.00	0.00	3,743.0	127.4	-833.3	2,175,552.87	1,320,548.02	36° 58' 25.248 N	107° 20' 42.117 W
TD LATERAL (50' - plan hits target - Point	0.00	0.00	3,743.0	730.0	-4,776.0	2,176,200.63	1,316,612.49	36° 58' 31.202 N	107° 21' 30.704 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
200.0	200.0	SURFACE	9-5/8	12-1/4
4,224.0	3,743.0	INTERMEDIATE	7	8-3/4
8,212.0	3,743.0	LINER 50' OVERLAP	4-1/2	6-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	3,755.0	Base Coal		0.00	
3,145.5	3,142.0	Ojo Alamo		0.00	
3,807.3	3,642.0	Fruitland		0.00	
3,296.5	3,282.0	Kirtland		0.00	
4,087.8	3,732.0	Top Coal		0.00	
1,817.0	1,817.0	Nacimiento		0.00	

Checked By: _____ Approved By: _____ Date: _____