

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010

DEC 23 2009

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work ☒ DRILL ☐ REENTER		5. Lease Serial No. 4 USA NMNM 30585	
1b. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator Energen Resources Corporation		7. Unit or CA Agreement Name and No. NMNM-99460	
3a. Address 2010 Afton Place Farmington, New Mexico 87401		8. Lease Name and Well No. Carracas 13B #44	
3b. Phone No. (include area code) (505)325-6800		9. API Well No. 30-039-30893	
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface 1724' FNL, 958' FEL Sec 23, T32N., R4W At proposed prod. zone 100' FNL, 700' FWL Sec. 13, T32N., R4W		10. Field and Pool, or Exploratory Basin Fruitland Coal	
14. Distance in miles and direction from nearest town or post office* 9 miles from Arboles		11. Sec., T., R., M., or Blk. and Survey or Area Sec. 23 T 32N R 4W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 958'		12. County or Parish Rio Arriba	
16. No. of Acres in lease 2080.		13. State NM	
17. Spacing Unit dedicated to this well Sec 13, T. 32N., R. 4W. 320 W/2			
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50'		20. BLM/BIA Bond No. on file NM 2707	
19. Proposed Depth 10018' MD			
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6773' GL		22. Approximate date work will start* 04/01/2010	
		23. Estimated duration 30 days	

24. Attachments

RCVD MAR 18 '10

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

OIL CONS. DIV.

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM |

DIST. 3

25. Signature 	Name (Printed/Typed) Jason Kincaid	Date 11/09/2009
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Title

Drilling Engineer

Approved by (Signature) 	Name (Printed/Typed) J. M. Kincaid	Date 3/16/2010
Title JEM	Office FFO	

Application approval 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.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

(Continued on page 2)

Hold C104

*(Instructions on page 2)

for Directional Survey
and "As Drilled" plat

NOTIFY AZTEC OCD 24-HRS.
PRIOR TO CASING & CEMENTING

HOLD C104 FOR Ch. in status to Carracas 13B #11

in same 1/4 section - 8Wag
R. 4W. 11.

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 LANDS

MAR 19 2010

DRILLING OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS".

This action is subject to technical and
procedural review pursuant to 43 CFR 3165.3
and appeal pursuant to 43 CFR 3165.4

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

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

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87506

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

DEC 23 2009

Bureau of Land Management ☒ AMENDED REPORT
Farmington Field Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30039-30893		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 35643	*Property Name CARRACAS 13B		*Well Number 4 H
*OGRID No. 162928	*Operator Name ENERGEN RESOURCES CORPORATION		*Elevation 6773'

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
H	23	32N	4W		1724'	NORTH	958'	EAST	RIO ARriba

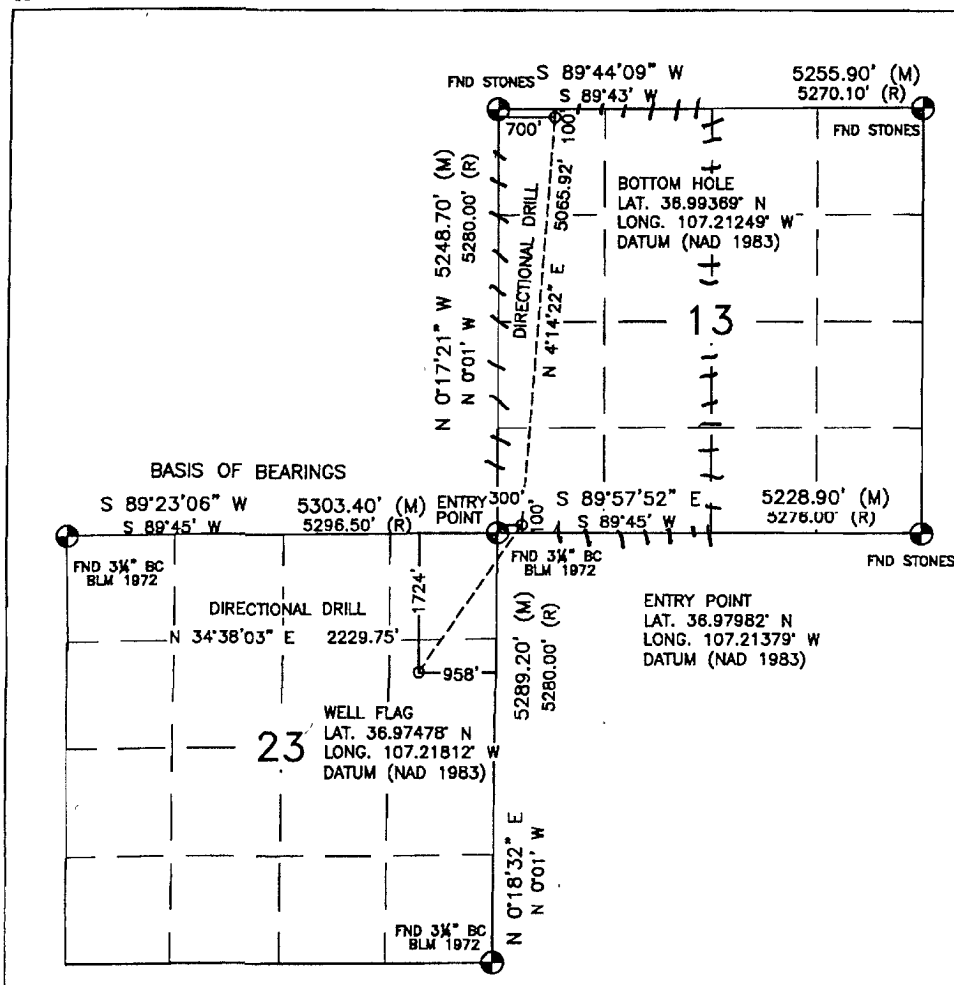
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	13	32N	4W		100'	NORTH	700'	WEST	RIO ARRIBA

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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
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I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organisation 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

Date _____

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.

AUGUST 13, 2009

Date of Survey

Signature and Seal of Professional Surveyor.



DAVID RUSSELL

Certificate Number

10201

11/9/2009



OPERATIONS PLAN

WELL NAME.....Carracas 13B #4
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Stephen Byers

GENERAL INFORMATION

Surface Location	1724 FNL 958 FEL
S-T-R	(H) Sec. 23, T32N, R04W
Bottom Hole Location	100 FNL 700 FWL
S-T-R	(D) Sec. 13, T32N, R04W
County, State	Rio Arriba, New Mexico
Elevations	6773' GL
Total Depth	10018' +/- (MD); 3315' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	1505' (TVD)
Ojo Alamo Ss	2755' (TVD)
Kirtland Sh	2834' (TVD)
Fruitland Fm	3189' (TVD) 3561' MD
Top Target Coal	3308' (TVD) 4530' MD
Base Target Coal	3323' (TVD)
Total Depth	3315' (TVD), 10018' (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 LSND 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 1900' TVD with 4.15°/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: 3108' TVD, 4330' MD to TD

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

11/9/2009

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	4953	8-3/4"	7"	23 lb/ft	J-55 LT&C
TVD	0	3315				
Prod. Liner	4853	10018	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
TVD	3313	3315				
Tubing	0	4653	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 588 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). (1,383 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.

SECTION DETAILS

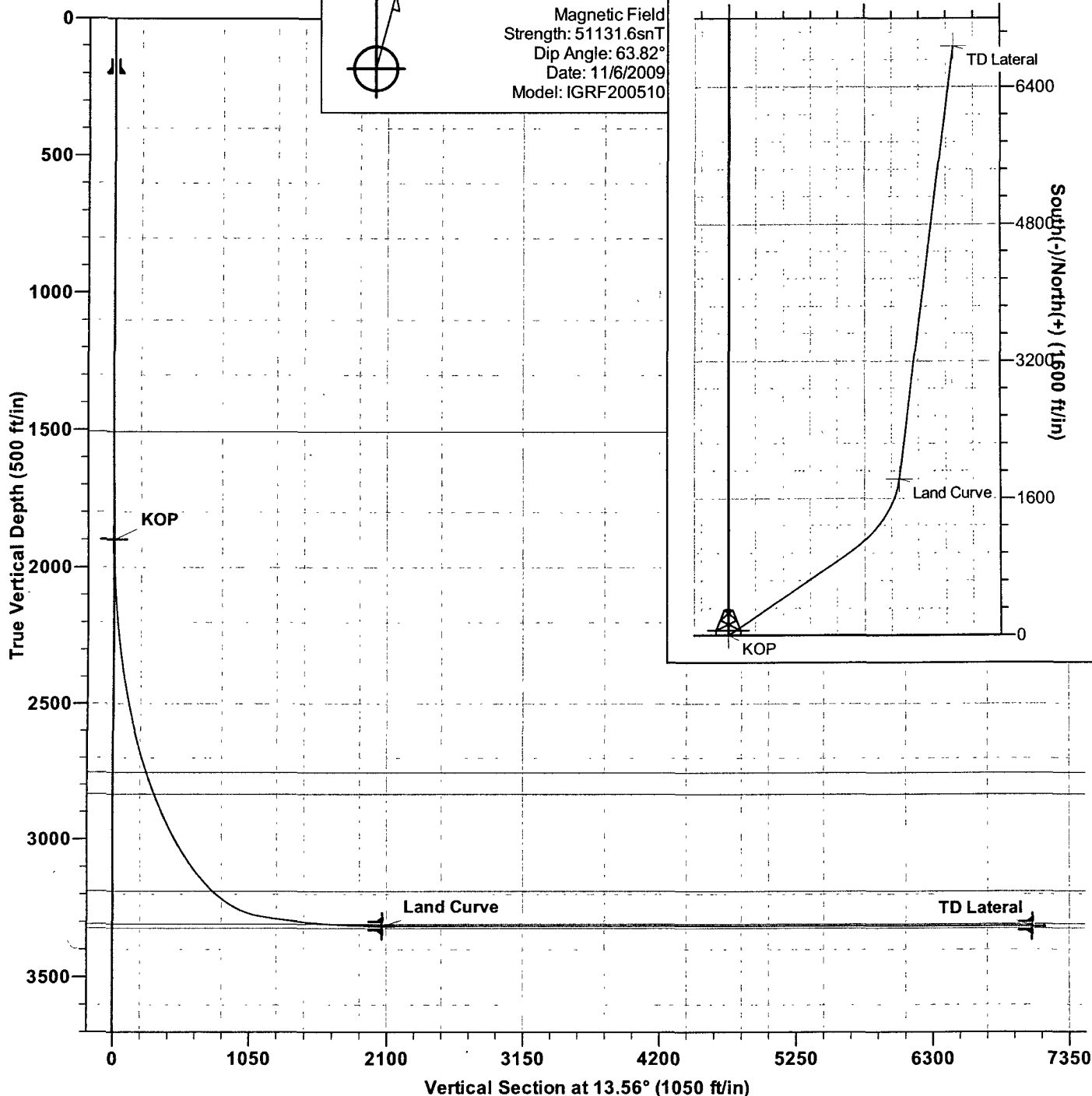
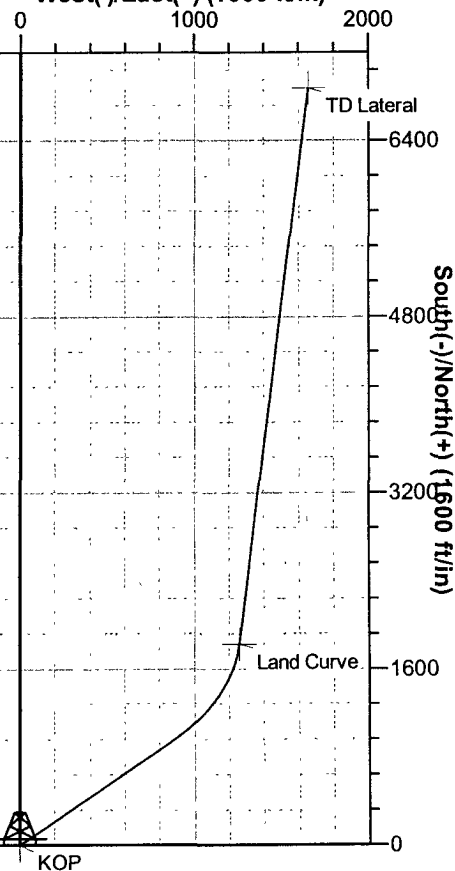
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1900.0	0.00	0.00	1900.0	0.0	0.0	0.00	0.00	0.0	KOP
3	3972.5	85.92	42.69	3278.5	943.5	870.4	4.15	42.69	1121.4	
4	3981.4	85.92	42.69	3279.1	950.1	876.5	0.00	0.00	1129.1	
5	4953.7	90.00	4.53	3315.0	1824.0	1258.0	3.94	-84.83	2068.2	Land Curve
6	10018.2	90.00	4.53	3315.0	6872.7	1658.0	0.00	0.00	7069.9	TD Lateral



Azimuths to True North
Magnetic North: 9.87°

Magnetic Field
Strength: 51131.6snT
Dip Angle: 63.82°
Date: 11/6/2009
Model: IGRF200510

West(-)/East(+) (1000 ft/in)



Energen DIRECTIONAL PLAN

Company: Energen Resources
Project: Carlson National Forest Sec. 23-T32N-R04W
Site: Carracas Mesa
Well: Carracas 13B #4
Wellbore: Horizontal OPE FTC
Design: Preliminary Plan #1

Local Co-ordinate Reference: Well Carracas 13B #4
TVD Reference: KB @ 6788.0ft (KB)
MD Reference: KB @ 6788.0ft (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)
4,530.9	3,308.0	88.12	21.10	0.43	1,413.2	1,164.6	1,646.9
Top Target Coal							
4,600.0	3,310.1	88.42	18.39	0.44	1,478.3	1,187.9	1,715.6
4,700.0	3,312.5	88.86	14.47	0.44	1,574.1	1,216.2	1,815.5
4,800.0	3,314.1	89.31	10.55	0.45	1,671.7	1,237.8	1,915.4
4,900.0	3,314.9	89.76	6.63	0.45	1,770.6	1,252.8	2,015.0
4,953.7	3,315.0	90.00	4.53	0.45	1,824.0	1,258.0	2,068.2
Land Curve							
5,000.0	3,315.0	90.00	4.53	0.00	1,870.2	1,261.7	2,113.9
5,100.0	3,315.0	90.00	4.53	0.00	1,969.9	1,269.6	2,212.7
5,200.0	3,315.0	90.00	4.53	0.00	2,069.6	1,277.5	2,311.4
5,300.0	3,315.0	90.00	4.53	0.00	2,169.2	1,285.4	2,410.2
5,400.0	3,315.0	90.00	4.53	0.00	2,268.9	1,293.3	2,508.9
5,500.0	3,315.0	90.00	4.53	0.00	2,368.6	1,301.1	2,607.7
5,600.0	3,315.0	90.00	4.53	0.00	2,468.3	1,309.0	2,706.5
5,700.0	3,315.0	90.00	4.53	0.00	2,568.0	1,316.9	2,805.2
5,800.0	3,315.0	90.00	4.53	0.00	2,667.7	1,324.8	2,904.0
5,900.0	3,315.0	90.00	4.53	0.00	2,767.4	1,332.7	3,002.7
6,000.0	3,315.0	90.00	4.53	0.00	2,867.1	1,340.6	3,101.5
6,100.0	3,315.0	90.00	4.53	0.00	2,966.7	1,348.5	3,200.3
6,200.0	3,315.0	90.00	4.53	0.00	3,066.4	1,356.4	3,299.0
6,300.0	3,315.0	90.00	4.53	0.00	3,166.1	1,364.3	3,397.8
6,400.0	3,315.0	90.00	4.53	0.00	3,265.8	1,372.2	3,496.5
6,500.0	3,315.0	90.00	4.53	0.00	3,365.5	1,380.1	3,595.3
6,600.0	3,315.0	90.00	4.53	0.00	3,465.2	1,388.0	3,694.1
6,700.0	3,315.0	90.00	4.53	0.00	3,564.9	1,395.9	3,792.8
6,800.0	3,315.0	90.00	4.53	0.00	3,664.6	1,403.8	3,891.6
6,900.0	3,315.0	90.00	4.53	0.00	3,764.2	1,411.7	3,990.3
7,000.0	3,315.0	90.00	4.53	0.00	3,863.9	1,419.6	4,089.1
7,100.0	3,315.0	90.00	4.53	0.00	3,963.6	1,427.5	4,187.9
7,200.0	3,315.0	90.00	4.53	0.00	4,063.3	1,435.4	4,286.6
7,300.0	3,315.0	90.00	4.53	0.00	4,163.0	1,443.3	4,385.4
7,400.0	3,315.0	90.00	4.53	0.00	4,262.7	1,451.2	4,484.1
7,500.0	3,315.0	90.00	4.53	0.00	4,362.4	1,459.1	4,582.9
7,600.0	3,315.0	90.00	4.53	0.00	4,462.1	1,467.0	4,681.7
7,700.0	3,315.0	90.00	4.53	0.00	4,561.7	1,474.9	4,780.4
7,800.0	3,315.0	90.00	4.53	0.00	4,661.4	1,482.8	4,879.2
7,900.0	3,315.0	90.00	4.53	0.00	4,761.1	1,490.7	4,977.9
8,000.0	3,315.0	90.00	4.53	0.00	4,860.8	1,498.6	5,076.7
8,100.0	3,315.0	90.00	4.53	0.00	4,960.5	1,506.5	5,175.5
8,200.0	3,315.0	90.00	4.53	0.00	5,060.2	1,514.4	5,274.2
8,300.0	3,315.0	90.00	4.53	0.00	5,159.9	1,522.3	5,373.0
8,400.0	3,315.0	90.00	4.53	0.00	5,259.6	1,530.2	5,471.7
8,500.0	3,315.0	90.00	4.53	0.00	5,359.2	1,538.1	5,570.5
8,600.0	3,315.0	90.00	4.53	0.00	5,458.9	1,546.0	5,669.3

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec. 23-T32N-R04W
Site: Carracas Mesa
Well: Carracas 13B #4
Wellbore: Horizontal OPE FTC
Design: Preliminary Plan #1

Local Co-ordinate Reference: Well Carracas 13B #4
TVD Reference: KB @ 6788.0ft (KB)
MD Reference: KB @ 6788.0ft (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
TD Lateral - plan hits target - Point	0.00	0.00	3,315.0	6,872.7	1,658.0	2,184,229.58	1,360,636.25	36° 59' 55.306 N	107° 12' 29.205 W
KOP - plan hits target - Point	0.00	0.00	1,900.0	0.0	0.0	2,177,374.01	1,358,908.79	36° 58' 47.352 N	107° 12' 49.644 W
Land Curve - plan hits target - Point	0.00	0.00	3,315.0	1,824.0	1,258.0	2,179,185.19	1,360,185.18	36° 59' 5.387 N	107° 12' 34.139 W

Casing Points

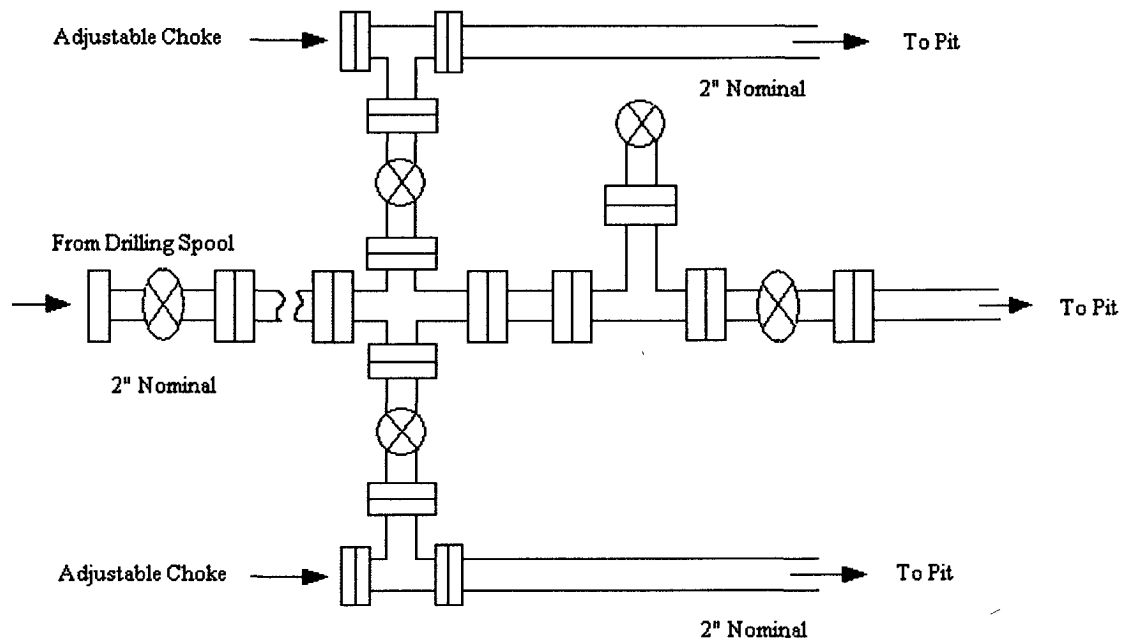
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
200.0	200.0	Surface	9-5/8	12-1/4
4,953.0	3,315.0	Intermediate	7	8-3/4
10,018.0	3,315.0	Liner	4-1/2	6-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,821.9	2,755.0	Ojo Alamo SS		0.00	
2,925.6	2,834.0	Kirtland Sh		0.00	
3,561.0	3,189.0	Fruitland Fm		0.00	
4,530.9	3,308.0	Top Target Coal		0.00	
	3,323.0	Base Target Coal		0.00	
1,505.0	1,505.0	Nacimiento		0.00	

Checked By: _____ Approved By: _____ Date: _____

Energen Resources Corporation
Typical 2000 psi Choke Manifold Configuration



Choke manifold installed from surface to TD

Energen Resources Corporation

Typical BOP Configuration for Gas Drilling

