Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
OCT 20 2009
Bureau of Land Management
Farmington Field Office

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. USA NMNM 30015

1a. Type of Work [X] DRILL [ ] REENTER

6. If Indian, Allotee or Tribe Name

1b. Type of Well [ ] Oil Well [X] Gas Well [ ] Other [ ] Single Zone [ ] Multiple Zone

7. Unit or CA Agreement Name and No.

2. Name of Operator
Energen Resources Corporation

8. Lease Name and Well No.
Carracas 31 B #12 H

3a. Address
2010 Afton Place Farmington, New Mexico 87401

3b. Phone No. *(include area code)*
(505)325-6800

9. API Well No.
30039 30823

4. Location of Well *(Report location clearly and in accordance with any State equirements)**

At surface 994 FSL, 861 FEL

At proposed prod. zone 760 FSL, 2100 FWL Sec. 31 - 32N - 4W

10. Field and Pool, or Exploratory
Basin Fruitland Coal

11. Sec., T., R., M., or Blk. and Survey or Area
(P) Sec.30, T32N, 4W NMPM

14. Distance in miles and direction from nearest town or post office*
Approx 36.5 miles NE of Gobernador, NM

12. County or Parish
Rio Arriba

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any)	16. No. of Acres in lease	17. Spacing Unit dedicated to this well
994'	2482.00	300.96 acres W/2 Sec. 31

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
50'	10718'MD	

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
7247'GL	April 1, 2010	25

24. Attachments

RCVD MAY 11'10

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the BLM

DIST. 3

25. Signature	Name *(Printed/Typed)*	Date
	Jason Kincaid	10/12/2009

Title
DRILLING ENGINEER

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
		5/6/2010

Title	Office
AFM	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 knowlingly 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 for Directional Survey and "As Drilled" plat

*(Instructions on page 2)

NOTIFY AZTEC OCD 24 HRS. PRIOR TO CASING & CEMENT

MAY 13 2010

NMOCD

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

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

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

Rec
7-31-09

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

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	[2] Pool Code	[3] Pool Name
30-039-30823	71629	BASIN FRUITLAND COAL

[4] Property Code	[5] Property Name	[6] Well Number
35667	CARRACAS 31B	12 H

[7] OGRID No.	[8] Operator Name	[9] Elevation
162928	ENERGEN RESOURCES CORPORATION	7247'

[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
P	30	32N	4W		994'	SOUTH	861'	EAST	RIO ARRIBA

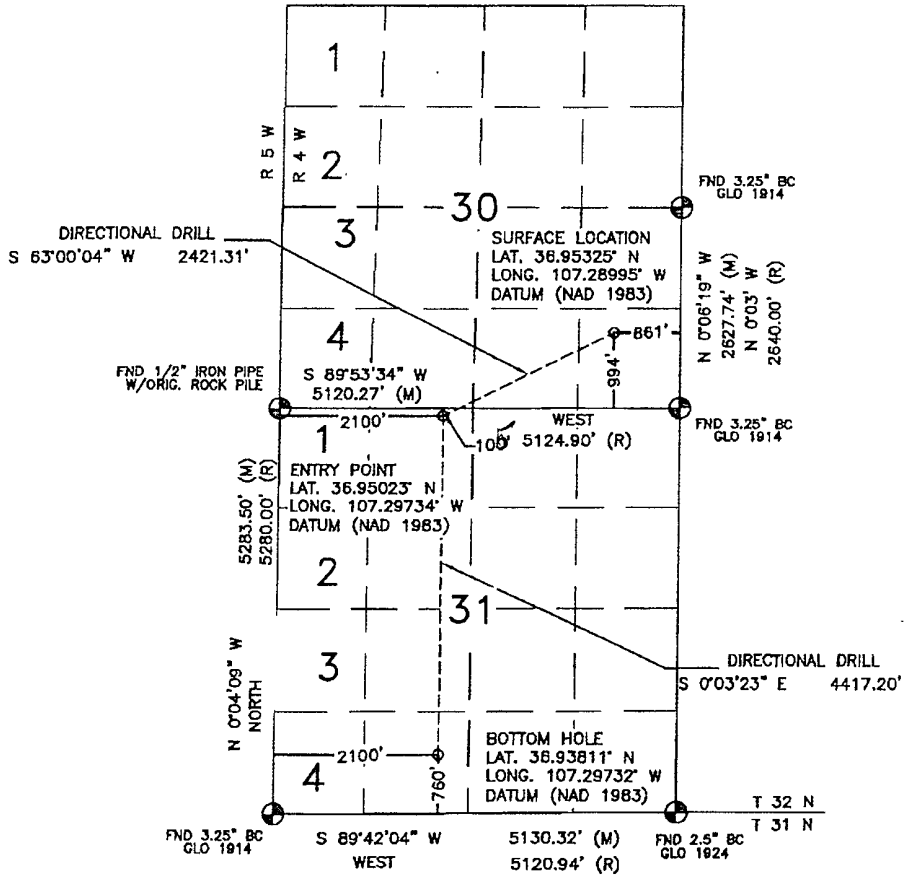
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	31	32N	4W		760'	SOUTH	2100'	WEST	RIO ARRIBA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
300.96 Acres – (W/2)			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

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 or a compulsory pooling order heretofore entered by the division.

Signature — Date: 10-12-09

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.

JULY 23, 2009
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID R. RUSSELL
NEW MEXICO
10201
REGISTERED PROFESSIONAL LAND SURVEYOR

DAVID RUSSELL
Certificate Number 10201

10/12/2009

ENERGEN RESOURCES

OPERATIONS PLAN

WELL NAME.....Carracas 31B #12
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Jason Kincaid

GENERAL INFORMATION

Surface Location	994 FSL 861 FEL
S-T-R	(P) Sec.30, T32N, R04W
Bottom Hole Location	760 FSL 2100 FWL
S-T-R	(N) Sec.31, T32N, R04W
County, State	Rio Arriba, New Mexico
Elevations	7247' GL
Total Depth	10718' +/- (MD); 3983' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	1884' (TVD)
Ojo Alamo Ss	3204' (TVD)
Kirtland Sh	3330' (TVD)
Fruitland Fm	3690' (TVD) 3786'MD
Top Target Coal	3975' (TVD) 4521'MD
Base Target Coal	3991' (TVD)
Total Depth	**3983' (TVD), 10718' (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 2900' TVD with 5.30°/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: 3875' TVD, 3900' MD to TD
Surveys: Surface to KOP every 500' and a minimum of every 200' for directional.

10/12/2009

ENERGEN RESOURCES

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 TVD	0 0	6295 3983	8-3/4"	7"	23 lb/ft	J-55 LT&C
Prod. Liner TVD	6195 3981	10718 3983	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
Tubing	0	6100	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 % $CaCl_2$ and ¼ #/sk Flocele (15.6 ppg, 1.18 ft^3/sk 148 ft^3 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 875 sks 65/35 with 6.0 % Bentonite, 2.0 % $CaCl_2$, 10 #/sk Gilsonite, and ½ #/sk Flocele (12.3 ppg, 1.93 ft^3/sk) and a tail of 150 sks Class G with ¼ #/sk Flocele (15.6 ppg, 1.18 ft^3/sk). (1862 ft^3 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

Project: Carson National Forest Sec.30-T32N-R4W
Site: Carracas Mesa
Well: Carracas 31B #12
Wellbore: Horizontal OPE FTC

PROJECT DETAILS:

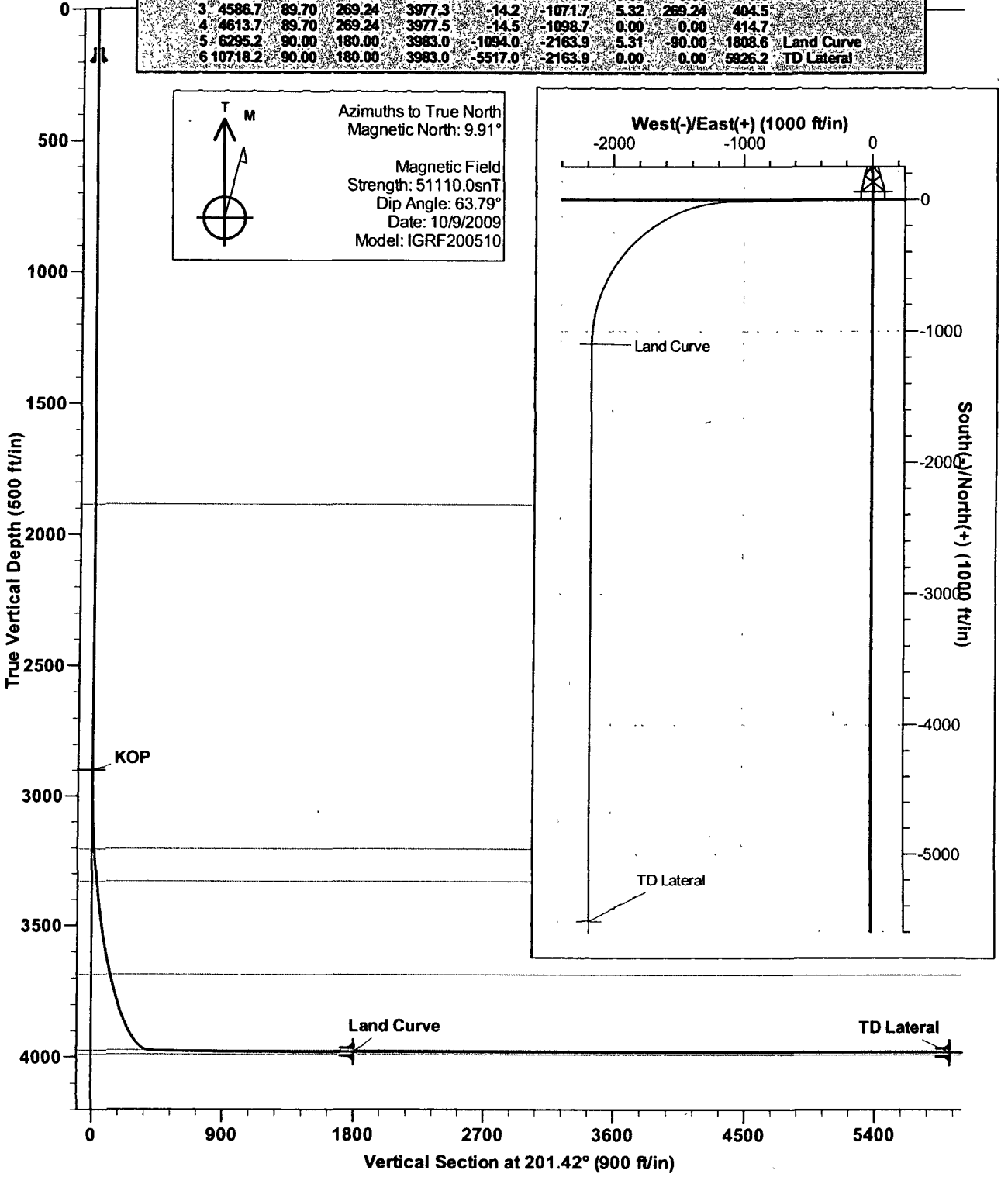
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone

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	4586.7	89.70	269.24	3977.3	-14.2	-1071.7	5.32	269.24	404.5	
4	4613.7	89.70	269.24	3977.5	-14.5	-1098.7	0.00	0.00	414.7	
5	6295.2	90.00	180.00	3983.0	-1094.0	-2163.9	5.31	-90.00	1808.6	Land Curve
6	10718.2	90.00	180.00	3983.0	-5517.0	-2163.9	0.00	0.00	5926.2	TD Lateral

Azimuths to True North
Magnetic North: 9.91°

Magnetic Field
Strength: 51110.0snT
Dip Angle: 63.79°
Date: 10/9/2009
Model: IGRF200510



ENERGEN RESOURCES

Energen Resources

Directional Plan

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well Carracas 31B #12
Project:	Carson National Forest Sec.30-T32N-R4W	**TVD Reference:**	KB @ 7262.0ft (Drilling Rig)
Site:	Carracas Mesa	**MD Reference:**	KB @ 7262.0ft (Drilling Rig)
Well:	Carracas 31B #12	**North Reference:**	True
Wellbore:	Horizontal OPE FTC	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Plan #1	**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)
4,586.7	3,977.3	89.70	269.24	5.32	-14.2	-1,071.7	404.5
4,600.0	3,977.4	89.70	269.24	0.00	-14.4	-1,085.0	409.5
4,613.7	3,977.5	89.70	269.24	0.00	-14.5	-1,098.7	414.7
4,700.0	3,977.9	89.70	264.66	0.00	-19.1	-1,184.8	450.4
4,800.0	3,978.4	89.71	259.35	0.00	-33.0	-1,283.8	499.5
4,900.0	3,978.9	89.71	254.05	0.01	-56.0	-1,381.1	556.4
5,000.0	3,979.4	89.72	248.74	0.01	-87.9	-1,475.8	620.7
5,100.0	3,979.9	89.73	243.43	0.01	-128.4	-1,567.2	691.8
5,200.0	3,980.4	89.75	238.12	0.01	-177.2	-1,654.4	769.1
5,300.0	3,980.8	89.76	232.82	0.02	-233.9	-1,736.8	851.9
5,400.0	3,981.2	89.78	227.51	0.02	-297.9	-1,813.6	939.6
5,500.0	3,981.5	89.80	222.20	0.02	-368.8	-1,884.1	1,031.3
5,600.0	3,981.9	89.82	216.89	0.02	-445.9	-1,947.7	1,126.3
5,700.0	3,982.2	89.84	211.59	0.02	-528.5	-2,004.0	1,223.8
5,800.0	3,982.4	89.87	206.28	0.02	-616.0	-2,052.3	1,322.9
5,900.0	3,982.6	89.89	200.97	0.03	-707.6	-2,092.4	1,422.8
6,000.0	3,982.8	89.92	195.67	0.03	-802.5	-2,123.8	1,522.6
6,100.0	3,982.9	89.95	190.36	0.03	-899.9	-2,146.3	1,621.5
6,200.0	3,983.0	89.97	185.05	0.03	-999.0	-2,159.7	1,718.6
6,295.2	3,983.0	90.00	180.00	0.03	-1,094.0	-2,163.9	1,808.6
			Land Curve				
6,300.0	3,983.0	90.00	180.00	0.00	-1,098.8	-2,163.9	1,813.1
6,400.0	3,983.0	90.00	180.00	0.00	-1,198.8	-2,163.9	1,906.2
6,500.0	3,983.0	90.00	180.00	0.00	-1,298.8	-2,163.9	1,999.3
6,600.0	3,983.0	90.00	180.00	0.00	-1,398.8	-2,163.9	2,092.4
6,700.0	3,983.0	90.00	180.00	0.00	-1,498.8	-2,163.9	2,185.5
6,800.0	3,983.0	90.00	180.00	0.00	-1,598.8	-2,163.9	2,278.6
6,900.0	3,983.0	90.00	180.00	0.00	-1,698.8	-2,163.9	2,371.7
7,000.0	3,983.0	90.00	180.00	0.00	-1,798.8	-2,163.9	2,464.8
7,100.0	3,983.0	90.00	180.00	0.00	-1,898.8	-2,163.9	2,557.9
7,200.0	3,983.0	90.00	180.00	0.00	-1,998.8	-2,163.9	2,650.9
7,300.0	3,983.0	90.00	180.00	0.00	-2,098.8	-2,163.9	2,744.0
7,400.0	3,983.0	90.00	180.00	0.00	-2,198.8	-2,163.9	2,837.1
7,500.0	3,983 0	90.00	180.00	0.00	-2,298.8	-2,163.9	2,930.2
7,600.0	3,983.0	90.00	180.00	0.00	-2,398.8	-2,163.9	3,023.3
7,700.0	3,983.0	90.00	180.00	0.00	-2,498.8	-2,163.9	3,116.4
7,800.0	3,983.0	90.00	180.00	0.00	-2,598.8	-2,163.9	3,209.5
7,900.0	3,983.0	90.00	180.00	0.00	-2,698.8	-2,163.9	3,302.6
8,000.0	3,983.0	90.00	180.00	0.00	-2,798.8	-2,163.9	3,395.7
8,100.0	3,983.0	90.00	180.00	0.00	-2,898.8	-2,163.9	3,488.8
8,200.0	3,983.0	90.00	180.00	0.00	-2,998.8	-2,163.9	3,581.9
8,300.0	3,983.0	90.00	180.00	0.00	-3,098.8	-2,163.9	3,675.0
8,400.0	3,983.0	90.00	180.00	0.00	-3,198.8	-2,163.9	3,768.1
8,500.0	3,983.0	90.00	180.00	0.00	-3,298.8	-2,163.9	3,861.2
8,600.0	3,983.0	90.00	180.00	0.00	-3,398.8	-2,163.9	3,954.3

ENERGEN RESOURCES

Energen Resources

Directional Plan

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well Carracas 31B #12
Project:	Carson National Forest Sec.30-T32N-R4W	**TVD Reference:**	KB @ 7262.0ft (Drilling Rig)
Site:	Carracas Mesa	**MD Reference:**	KB @ 7262.0ft (Drilling Rig)
Well:	Carracas 31B #12	**North Reference:**	True
Wellbore:	Horizontal OPE FTC	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Plan #1	**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	3,983.0	-5,517.0	-2,163.9	2,162,441.43	1,334,333.42	36° 56' 17.150 N	107° 17' 50.474 W
KOP - plan hits target - Point	0.00	0.00	2,900.0	0.0	0.0	2,167,934.49	1,336,557.40	36° 57' 11.700 N	107° 17' 23.820 W
Land Curve - plan hits target - Point	0.00	0.00	3,983.0	-1,094.0	-2,163.9	2,166,864.17	1,334,381.69	36° 57' 0.882 N	107° 17' 50.478 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
6,295.0	3,983.0	Intermediate	7	8-3/4
10,718.0	3,983.0	Liner	4-1/2	6-1/4

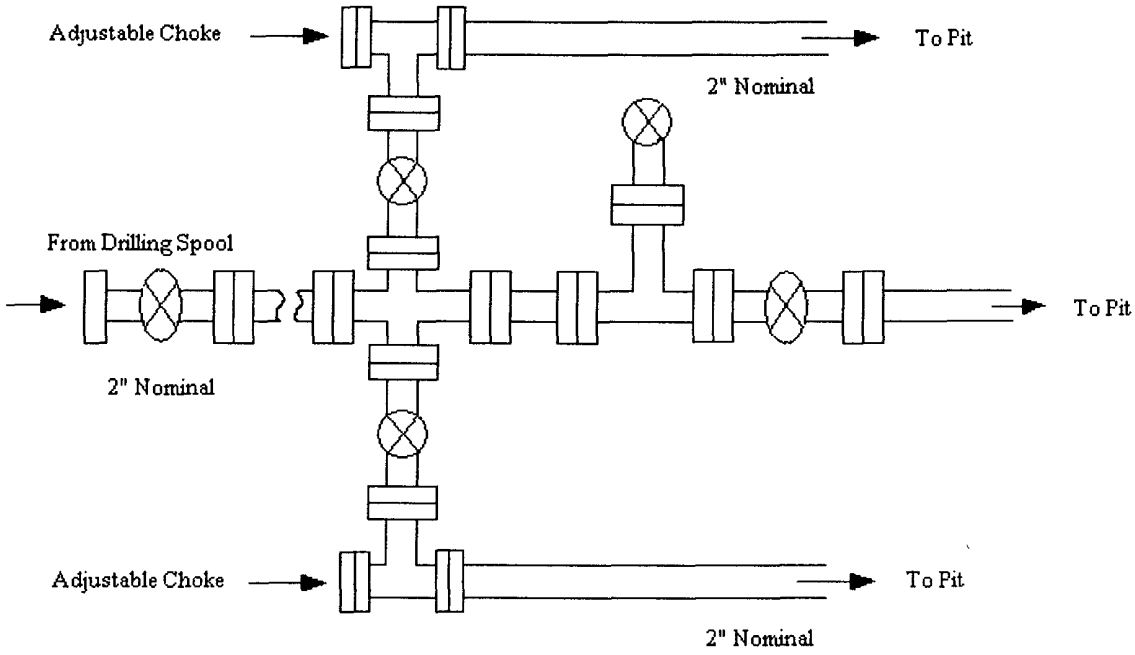
Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	3,991.0	Base Target Coal		0.00	
4,521.1	3,975.0	Top Target Coal		0.00	
3,208.2	3,204.0	Ojo Alamo		0.00	
3,342.3	3,330.0	Kirtland		0.00	
3,786.8	3,690.0	Fruitland		0.00	
1,884.0	1,884.0	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