

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB NO. 1004-0137  
Expires March 31, 2007

**RECEIVED**  
FEB 11 2008

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

Bureau of Land Management  
Farmington Field Office

2008022008  
BLM-500070  
10005.DW  
10005

1a. Type of Work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NM30015
1b. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator <u>Energen Resources Corporation</u>		7. Unit or CA Agreement Name and No.
3a. Address <u>2010 Afton Place Farmington, New Mexico 87401</u>		8. Lease Name and Well No. <u>Carracas 18 B #1</u>
3b. Phone No. (include area code) <u>(505) 325-6800</u>		9. API Well No. <u>30-039-30483</u>
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface <u>570 fsl, 1705 fel</u> At proposed prod zone <u>760 fnl, 760 fel</u>		10. Field and Pool, or Exploratory <u>Basin Fruitland Coal</u>
14. Distance in miles and direction from nearest town or post office* <u>Approx. 9 miles SE of Arboles, CO.</u>		11. Sec., T., R., M., or Blk. and Survey or Area <u>(O) Sec 18, T32N, R4W</u>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) <u>570'</u>	16. No. of Acres in lease <u>2482.20</u>	12. County or Parish <u>Rio Arriba</u>
17. Spacing Unit dedicated to this well <u>320</u> E/2 - <u>299.72</u> acres	13. State <u>NM</u>	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <u>75'</u>
19. Proposed Depth <u>7027' (MD)</u>	20. BLM/BIA Bond No. on file	21. Elevations (Show whether DF, KDB, RT, GL, etc) <u>7329' GL</u>
22. Approximate date work will start* <u>9/25/08</u>	23. Estimated duration <u>25 days</u>	24. Attachments

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

- |  |  |
|--|--|
| 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 shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) <u>Nathan Smith</u>	Date <u>1/30/08</u>
Title <u>Drilling Engineer</u>		

Approved by (Signature) 	Name (Printed/Typed) <u>A. F. A.</u>	Date <u>10/21/08</u>
Title <u>AFM</u>		Office <u>FFD</u>

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.

\*(Instructions on page 2)

**NOTIFY AZTEC OCD 24 HRS.  
PRIOR TO CASING & CEMENT**

**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**

Hold C104  
for Directional Survey  
and "As Drilled" plat

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3185.4

**NMOCD**  
8      **OCT 24 2008**  
aw

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

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

State of New Mexico  
Energy, Minerals & Natural Resources Department

Form C-102  
Revised October 12, 2005

DISTRICT II  
1501 W. Grand Avenue, Artesia, N.M. 88210

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

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

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

RCVD AUG 25 '08

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

AMENDED REPORT

OIL CONS. DIV.  
DIST. 3

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-039-30483		<sup>2</sup> Pool Code 71629	<sup>3</sup> Pool Name Basin Fruitland Coal
<sup>4</sup> Property Code 35658	<sup>5</sup> Property Name CARRACAS 18 B		<sup>6</sup> Well Number 1
<sup>7</sup> GRID No. 162928	<sup>8</sup> Operator Name ENERGEN RESOURCES CORPORATION		<sup>9</sup> Elevation 7329'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	18	32N	4W		570'	SOUTH	1705'	EAST	RIO ARRIBA

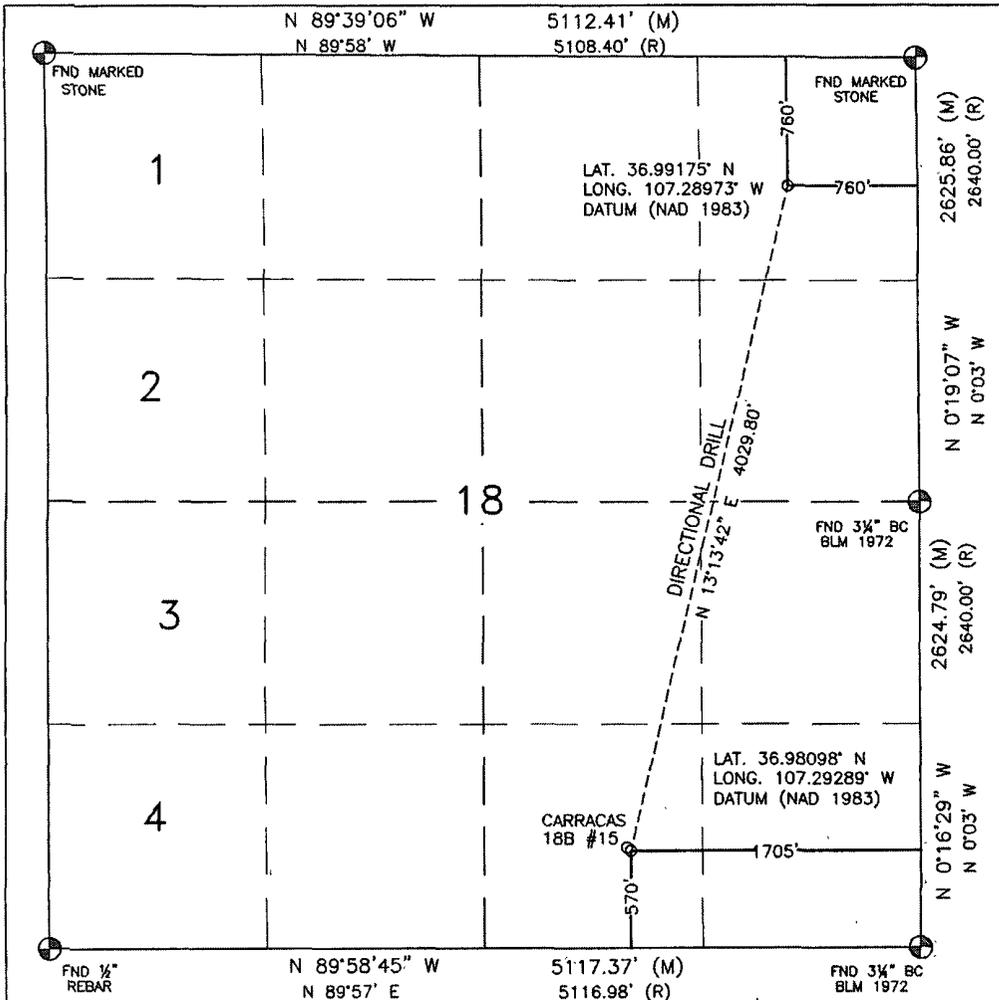
<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	18	32N	4W		760'	NORTH	760'	EAST	RIO ARRIBA

<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.

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

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<sup>17</sup> 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.

*Nathan Smith* 8/22/08  
Signature Date

Nathan Smith  
Printed Name

<sup>18</sup> SURVEYOR CERTIFICATION

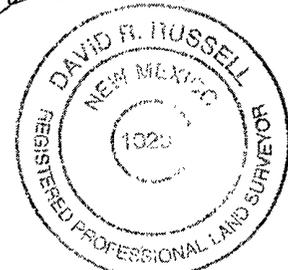
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

AUGUST 23, 2007

Date of Survey

Signature and Seal of Professional Surveyor:

*David R. Russell*



DAVID RUSSELL

Certificate Number 10201

## Operations Plan

January 30, 2008

### **Carracas18 B #1**

#### **General Information**

Location	570' fsl, 1705' fel at surface 760' fnl, 760' fel at bottom nene 18, T32N, R4W Rio Arriba County, New Mexico
Elevations	7329' GL
Total Depth	7027' (MD), 3918' (TVD)
Formation Objective	Basin Fruitland Coal

#### **Formation Tops**

San Jose	Surface
Nacimiento	2109' (TVD), 2110' (MD)
Ojo Alamo Ss	3398' (TVD), 3618' (MD)
Kirtland Sh	3523' (TVD), 3823' (MD)
Fruitland Fm	3622' (TVD), 4007' (MD)
Top Coal	3894' (TVD), 4893' (MD)
Bottom Coal	3918' (TVD)
<b>Total Depth</b>	<b>3918' (TVD), 7027' (MD)</b>

#### **Drilling**

The 12 ¼" wellbore will be drilled with a fresh water mud system.

The 8 ¾" wellbore will be drilled with a low solids fresh water/polymer mud system. Weighting materials will be drill cuttings and if needed barite. Mud density is expected to range from 8.9 ppg to 9.5 ppg.

**Projected KOP is 1782' TVD with 2.70°/100' doglegs.**

The 6 ¼" 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 2000 psi minimum double ram or annulus BOP stack will be used following nipple up of casing head. During air drilling operations, a Shaffer Type 50 or equivalent rotating head will be installed on top of the stack. 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.

Logging Program:

Open hole logs: None

Mud logs: From 3622' (TVD), 4007' (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'-3906' (TVD) 5175' (MD)	8 3/4"	7"	23.0 ppf	J-55 LT&C
Production	3894'-3918' (TVD) 5125'-7027' (MD)	6 1/4"	4 1/2"	11.6 ppf	J-55 LT&C
Tubing	0'-5100' (MD)		2 3/8"	4.7 ppf	J-55

### Casing Equipment:

Surface Casing: Depending on wellbore conditions, a Texas Pattern Guide Shoe on bottom. Casing centralization with standard bow spring centralizers to achieve optimal standoff.

Intermediate Casing: Depending on wellbore conditions, a Cement nose guide shoe with self fill insert float collar on top of bottom joint and casing centralization with standard 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 Std (class B) with 2.0 % CaCl<sub>2</sub> and 1/4 #/sk Flocele (15.6 ppg, 1.18 ft<sup>3</sup>/sk 148 ft<sup>3</sup> of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 600 psi for 30 min.

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 730 sks 65/35 with 6.0 % Bentonite, 2.0 % CaCl<sub>2</sub>, 10 #/sk Gilsomite, and 1/2 #/sk Flocele (12.3 ppg, 1.96 ft<sup>3</sup>/sk) and a tail of 125 sks Type V with 1/4 #/sk Flocele (15.6 ppg, 1.18 ft<sup>3</sup>/sk). (1556ft<sup>3</sup> of slurry, 100 % excess to circulate to surface). Test casing to 1200 psi for 30 min.

## 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.

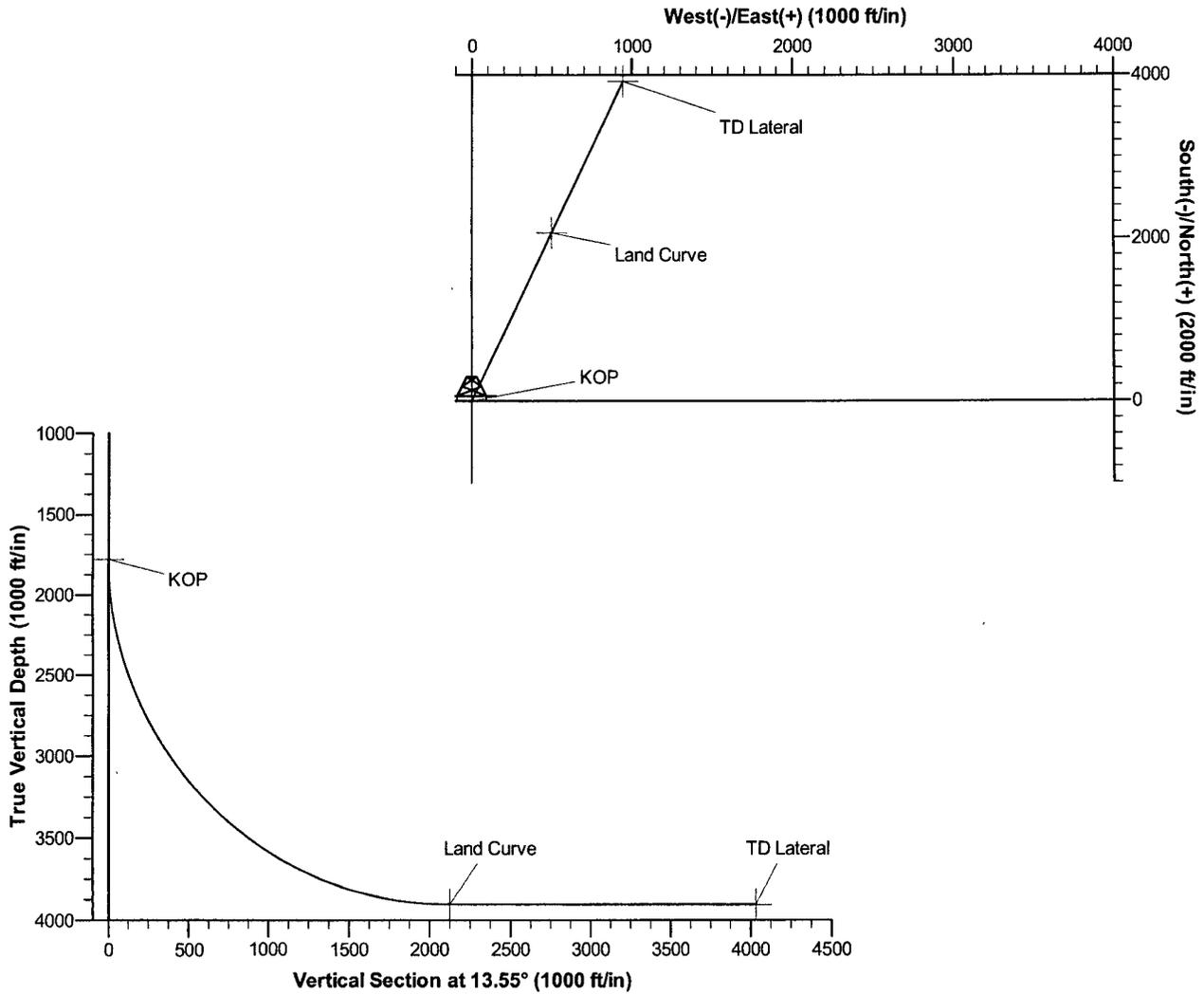


**Project: Carson Natl Forest - S18, T32N, 4W**  
**Site: Carracas Mesa**  
**Well: Carracas 18 B #1**  
**Wellbore: Horizontal Completion**  
**Plan: Preliminary Plan (Carracas 18 B #1/Horizontal Completion)**

<b>PROJECT DETAILS: Carson Natl Forest - S18, T32N, 4W</b>
<b>Geodetic System: US State Plane 1983</b> <b>Datum: North American Datum 1983</b> <b>Ellipsoid: GRS 1980</b> <b>Zone: New Mexico Central Zone</b>  <b>System Datum: Mean Sea Level</b>

Azimuths to True North  
 Magnetic North: 10.13°  
  
 Magnetic Field  
 Strength: 51291.4snT  
 Dip Angle: 63.85°  
 Date: 1/14/2008  
 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	1781.7	0.00	0.00	1781.7	0.0	0.0	0.00	0.00	0.0	KOP
3	5118.6	90.00	13.55	3906.0	2065.2	497.7	2.70	13.55	2124.3	Land Curve
4	7027.2	90.00	13.55	3906.0	3920.7	944.9	0.00	0.00	4033.0	TD Lateral



# Energen

## Plan Design

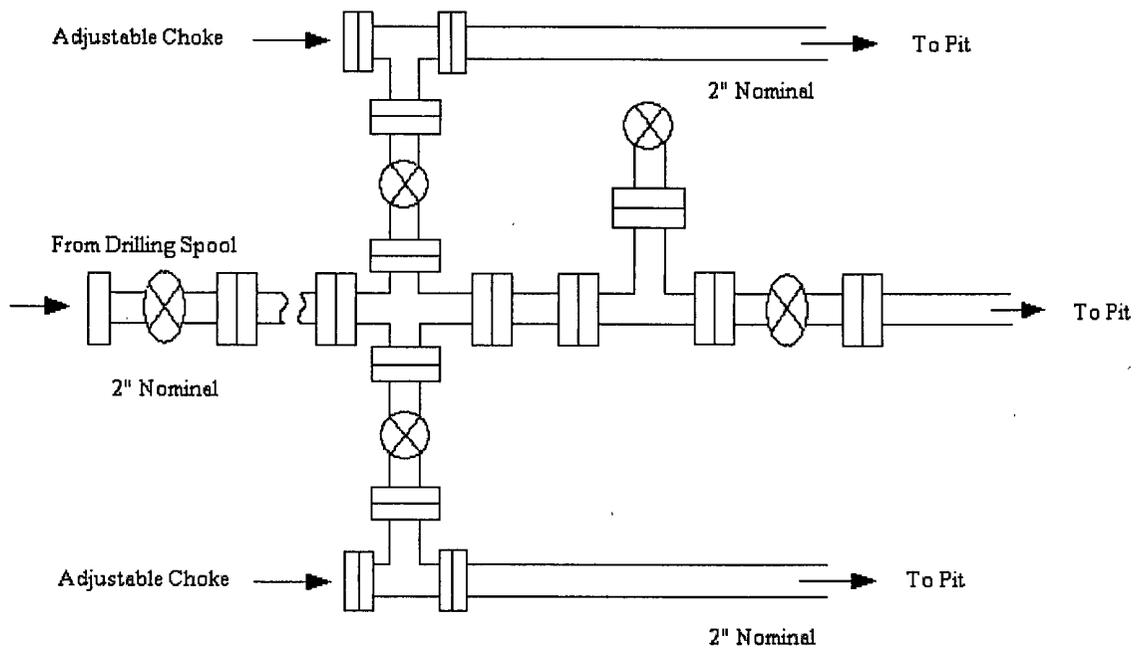
<b>Company:</b>	Energen Resources	<b>Local Co-ordinate Reference:</b>	Well Carracas 18 B #1
<b>Project:</b>	Carson Natl Forest - S18, T32N, 4W	<b>TVD Reference:</b>	KB @ 7346.0ft (Drilling Rig)
<b>Site:</b>	Carracas Mesa	<b>MD Reference:</b>	KB @ 7346.0ft (Drilling Rig)
<b>Well:</b>	Carracas 18 B #1	<b>North Reference:</b>	True
<b>Wellbore:</b>	Horizontal Completion	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Preliminary Plan	<b>Database:</b>	EDM 2003.16 Single User Db

Targets										
Target Name	hit/miss target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Shape		(°)	(°)	(ft)	(ft)	(ft)	(m)	(m)		
KOP		0.00	0.00	1,781.7	0.0	0.0	663,867.84	407,155.36	36° 58' 51.528 N	107° 17' 34.404 W
- plan hits target										
- Point										
Land Curve		0.00	0.00	3,906.0	2,065.2	497.7	664,495.62	407,313.94	36° 59' 11.947 N	107° 17' 28.270 W
- plan hits target										
- Point										
TD Lateral		0.00	0.00	3,906.0	3,920.7	944.9	665,059.65	407,456.43	36° 59' 30.293 N	107° 17' 22.757 W
- plan hits target										
- Point										

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
4,007.5	3,622.0	Fruitland		0.00		
	3,918.0	Bottom Main Coal		0.00		
4,892.6	3,894.0	Top Main Coal		0.00		
2,110.3	2,109.0	Nacimiento		0.00		
3,822.9	3,523.0	Kirtland		0.00		
3,618.5	3,398.0	Ojo Alamo		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

