

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JAN 19 2010

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. USA NMNM 30015	
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 Energen Resources Corporation		7. Unit or CA Agreement Name and No.	
3a. Address 2010 Afton Place Farmington, New Mexico 87401		8. Lease Name and Well No. Carracas 30B #6H	
3b. Phone No. (include area code) (505)325-6800		9. APL Well No. 3003930905	
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface 1560' FSL, 741' FWL At proposed prod. zone 1000' FNL, 400' FWL D BHL: 30-32N-4W		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 2 Sec. 20 T 32N R 4W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 741'		12. County or Parish Rio Arriba	
16. No. of Acres in lease 2482.2		13. State NM	
17. Spacing Unit dedicated to this well 310.45 220 N/2		20. BLM/BIA Bond No. on file	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 63'		19. Proposed Depth 10473' MD	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7405' GL		22. Approximate date work will start* 04/01/2010	
		23. Estimated duration 30 days	

24. Attachments

RCVD MAR 31 '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 <i>Stephen Byers</i>	Name (Printed/Typed) Stephen Byers	Date 1/19/2010
Title Drilling Engineer		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed)	Date 3/29/2010
Title AFM	Office FEO	

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)

*(Instructions on page 2)

HOLD C104 FOR

sh to Carracas 30B #6

NOTIFY AZTEC OCD 24 HRS

PRIOR TO CASING APPROVAL

This action is subject to technical and procedural review pursuant to 43 CFR 3165.2 and appeal pursuant to 43 CFR 3165.4
HOLD C104 for Directional Survey and "As Drilled" plat

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

APR 05 2010

NMOCD

ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

RECEIVED

DISTRICT I
1826 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
1301 W. Grand Avenue, Artesia, N.M. 86210

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

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

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

JAN 19 2010
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-30905		*Pool Code 71629	*Pool Name Basin Fruitland Coal
*Property Code 35597	*Property Name CARRACAS 30B		*Well Number 6
*OGRID No. 162928	*Operator Name ENERGEN RESOURCES CORPORATION		*Elevation 7405'

¹⁰ Surface Location

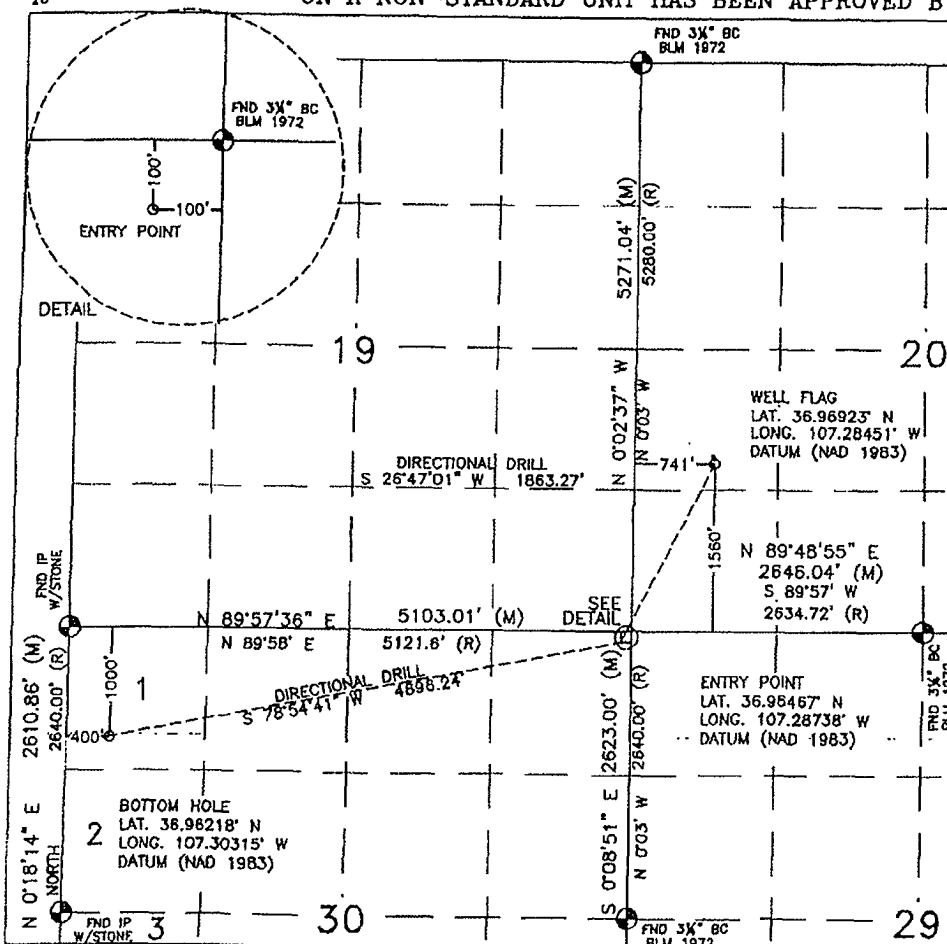
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	20	32N	4W		1560'	SOUTH	741'	WEST	RIO ARriba

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	30	32N	4W	1	1000'	NORTH	400'	WEST	RIO ARriba

*Dedicated Acres 310.45 N/2 30-32N-4W	*Joint or Infill	*Consolidation Code	*Order No. R-13119
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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



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.

Stephen Byers 1-19-10
Signature Date

Stephen Byers
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 31, 2009
Date of Survey

Signature and Seal of Professional Surveyor:
David R. Russell

DAVID R. RUSSELL
NEW MEXICO
REGISTERED PROFESSIONAL LAND SURVEYOR
10201

DAVID RUSSELL
Certificate Number 10201



OPERATIONS PLAN

WELL NAME.....Carracas 30B #6
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Stephen Byers

GENERAL INFORMATION

Surface Location	1560 FSL 741 FWL
S-T-R	(L) Sec. 20, T32N, R04W
Bottom Hole Location	1000 FNL 400 FWL
S-T-R	(D) Sec. 30, T32N, R04W
County, State	Rio Arriba, New Mexico
Elevations	7405' GL
Total Depth	10473' +/- (MD); 4110' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	2205' (TVD)
Ojo Alamo Ss	3454' (TVD)
Kirtland Sh	3588' (TVD)
Fruitland Fm	3670' (TVD) 3686'MD
Top Target Coal	4100' (TVD) 4449'MD
Base Target Coal	4120' (TVD)
Total Depth	4110' (TVD), 10473' (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 3275' TVD with 6.85°/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: 3900' TVD, 4249' 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 TVD	0 0	5783 4110	8-3/4"	7"	23 lb/ft	J-55 LT&C
Prod. Liner TVD	5683 4108	10473 4110	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
Tubing	0	5483	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 717 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). (1,382 ft³ of slurry, 100% excess to circulate to surface). WOC 12 hours. Test casing to 1200 psi for 30 min. **1560 Ft³**

Production Liner: NO CEMENT, Open Hole Completion

Set slips with full string weight

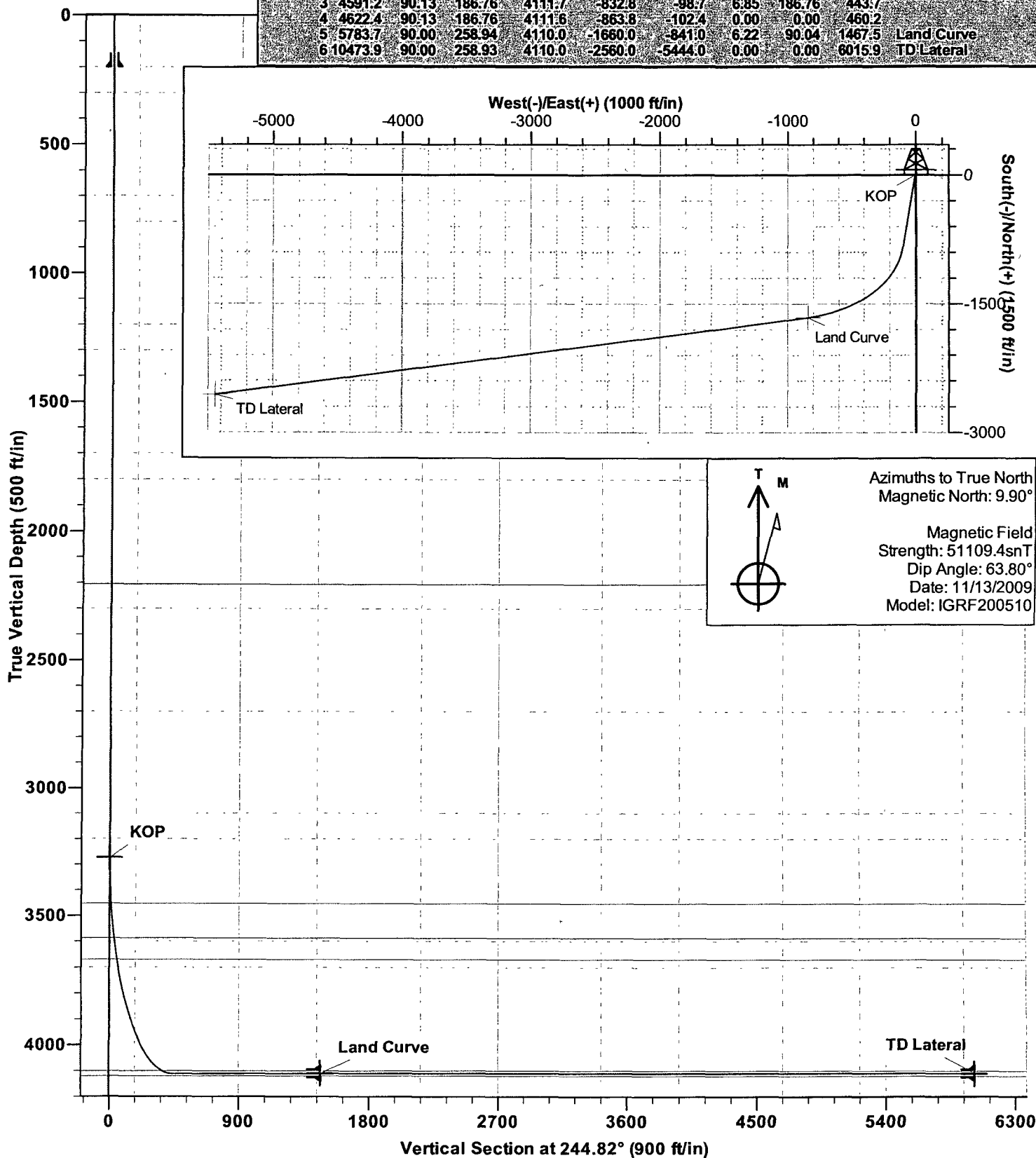
If cement does not circulate, run temperature survey in 8 hrs. to determine TOC.

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	3275.0	0.00	0.00	3275.0	0.0	0.0	0.00	0.00	0.0	KOP
3	4591.2	90.13	186.76	4111.7	-832.8	-98.7	6.85	186.76	443.7	
4	4622.4	90.13	186.76	4111.6	-863.8	-102.4	0.00	0.00	460.2	
5	5783.7	90.00	258.94	4110.0	-1660.0	-841.0	6.22	90.04	1467.5	Land Curve
6	10473.9	90.00	258.93	4110.0	-2560.0	-5444.0	0.00	0.00	6015.9	TD Lateral



Energen DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec. 20-T32N-R04W
Site: Carracas Mesa
Well: Carracas 30B #6
Wellbore: Horizontal OPE FTC
Design: Plan #1

Local Co-ordinate Reference: Well Carracas 30B #6
TVD Reference: KB @ 7420.0ft (KB)
MD Reference: KB @ 7420.0ft (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)
10,473.9	4,110.0	90.00	258.93	-0.01	-2,560.0	-5,444.0	6,015.9
TD Lateral							

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	4,110.0	-2,560.0	-5,444.0	2,171,234.41	1,332,738.62	36° 57' 43.911 N	107° 18' 11.313 W
Land Curve - plan hits target - Point	0.00	0.00	4,110.0	-1,660.0	-841.0	2,172,084.37	1,337,351.13	36° 57' 52.815 N	107° 17' 14.599 W
KOP - plan hits target - Point	0.00	0.00	3,275.0	0.0	0.0	2,173,735.14	1,338,210.11	36° 58' 9.228 N	107° 17' 4.236 W

Casing Points

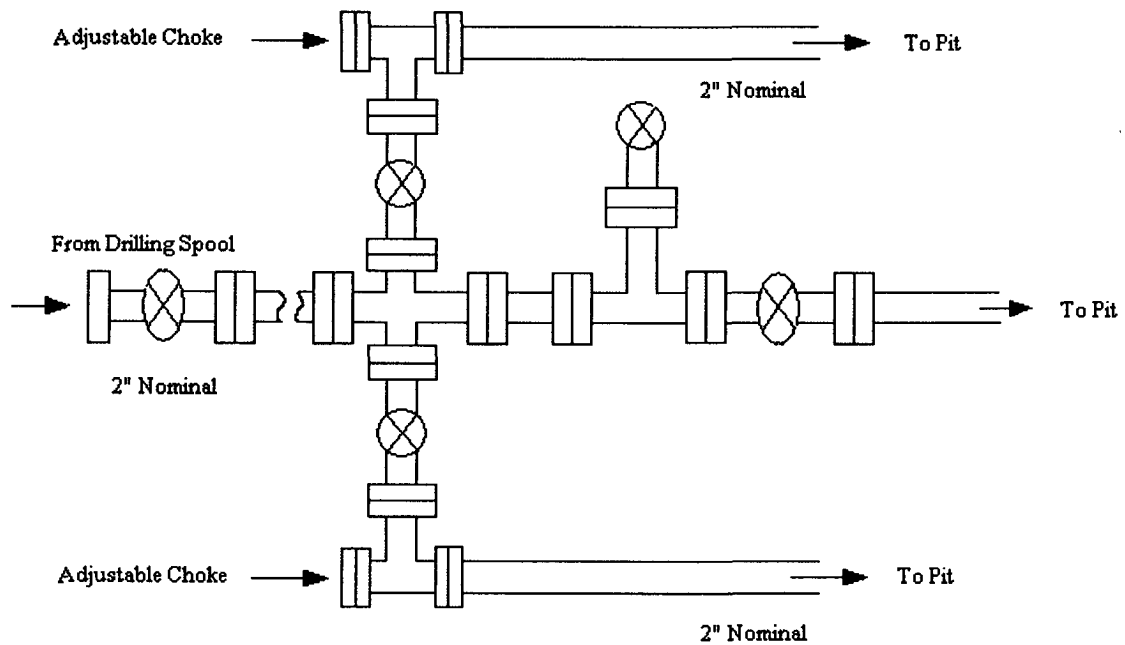
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
200.0	200.0	Surface	9-5/8	12-1/4
5,783.0	4,110.0	Intermediate	7	8-3/4
10,473.0	4,109.7	Liner	4-1/2	6-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,205.0	2,205.0	Nacimiento		0.00	
	4,120.0	Base Target Coal		0.00	
3,686.4	3,670.0	Fruitland Fm		0.00	
4,449.4	4,100.0	Top Target Coal		0.00	
3,455.4	3,454.0	Ojo Alamo SS		0.00	
3,595.8	3,588.0	Kirtland Sh		0.00	

Checked By: _____ Approved By: _____ Date: _____

Typical 2000 psi Choke Manifold Configuration



Choke manifold installed from surface to TD

Energen Resources Corporation

Typical BOP Configuration for Gas Drilling

