

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NM 4461</b>
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 <b>Energex Resources Corporation</b>		7. Unit of CA Agreement Name and No.
3a. Address <b>2198 Bloomfield Hwy Farmington, NM 87401</b>	3b. Phone No. (include area code) <b>505.325.6800</b>	8. Lease Name and Well No. <b>Elk Horn #101S</b>
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface <b>620' fnl, 770' fel Sec 32</b> At proposed prod. zone <b>2530' fsl, 1880' fel Sec 29</b>		9. API Well No. <b>30-039-09812</b>
14. Distance in miles and direction from nearest town or post office* <b>Approximately 6.3 miles south southeast of Arboles, CO</b>		10. Field and Pool, or Exploratory <b>Basin Fruitland Coal</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) <b>620'</b>	16. No. of Acres in lease <b>640</b>	11. Sec., T., R., M., or Blk. and Survey or Area <b>(A) S32, T32N, R5W</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>75'</b>	19. Proposed Depth <b>5958' (MD)</b>	12. County or Parish <b>Rio Arriba</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>6813' GL</b>	22. Approximate date work will start* <b>6/15/2007</b>	13. State <b>NM</b>
23. Estimated duration <b>25 days</b>		

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) <b>Nathan Smith</b>	Date <b>2/9/2007</b>
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Title <b>Drilling Engineer</b>	
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Approved by (Signature) 	Name (Printed/Typed) <b>AFEA</b>	Date <b>2/20/07</b>
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Title <b>AFEA</b>	Office <b>PFO</b>
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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)

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

HOLD 0104 FOR directional surveys  
3 BHL

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

NMOCD

NOTIFY AZTEC OCD 24hrs  
IN TIME TO WITNESS C89 Cementing

2-23-07

**DISTRICT 1**  
**1625 N. French Dr., Hobbs, N.M. 88240**

**State of New Mexico**  
**Energy, Minerals & Natural Resources Department.**

Form C-102  
Revised August 15, 2000

**DISTRICT II**  
811 South First, Artesia, N.M. 88210

**OIL CONSERVATION DIVISION**

2040 South Pacheco  
Santa Fe, NM 87505

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

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

**DISTRICT IV**  
**2040 South Pacheco, Santa Fe, NM 87505**

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-09812		*Pool Code 71624	*Pool Name Basin Fruitland Coal	
*Property Code 32567	*Property Name ELK HORN			*Well Number 101 S
*OGRID No. 162928	*Operator Name ENERGEN RESOURCES CORPORATION			*Elevation 6813.5'

## <sup>10</sup> Surface Location

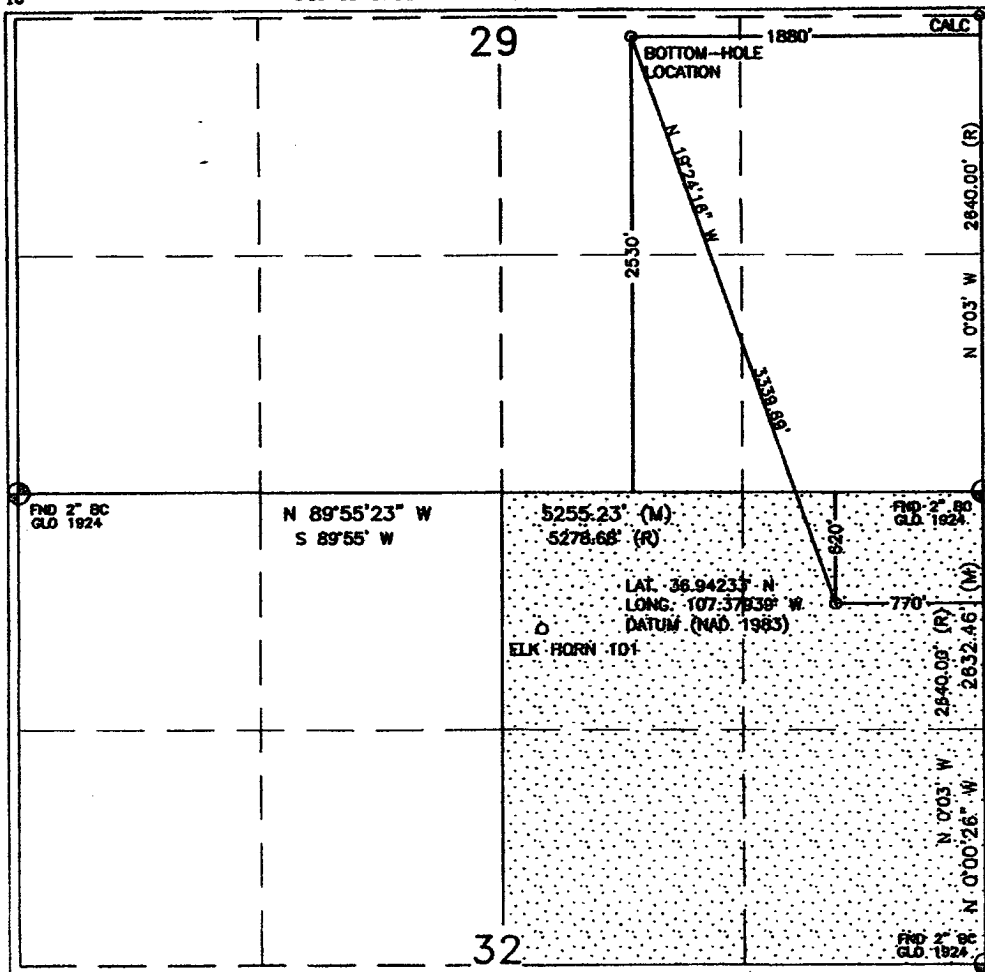
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	32	32N	5W		620'	NORTH	770'	EAST	RIO ARRIBA

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

UL or lot no. J	Section 29	Township 32N	Range 5W	Lot Idn	Feet from the 2530'	North/South line SOUTH	Feet from the 1880'	East/West line EAST	County RIO ARRIBA
<sup>13</sup> Dedicated Acres 320 347.59 Acres - (E/2)			<sup>14</sup> Joint or Infill		<sup>15</sup> Consolidation Code		<sup>16</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

18



## 17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

  
Signature

Nathan Smith  
Printed Name

Drilling Engineer

2/8/07  
Date

## 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.

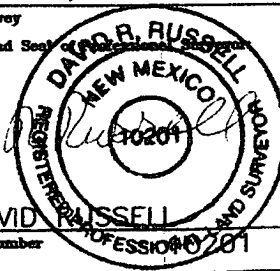
MAY 24, 2006

Date of Survey \_\_\_\_\_

**Signature and Seal**

DAVID RUSSELL

**Certificate Number**



Submit 3 Copies To Appropriate District  
Office  
District I  
1625 N. French Dr., Hobbs, NM 87240  
District II  
1301 W. Grand Ave., 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 and Natural Resources

Form C-103  
May 27, 2004

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

WELL API NO 30-039-09812

5. Indicate Type of Lease  
STATE ☐ FEE ☐

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:  
Oil Well ☐ Gas Well ☐ Other

2. Name of Operator  
Energen Resources Corporation

3. Address of Operator  
2198 Bloomfield Hwy Farmington, NM 87401

4. Well Location

Unit Letter A : 620 feet from the North line and 770 feet from the East line

Section 32 Township 32N Range 5W NMPM County Rio Arriba

11. Elevation (Show whether DR, RKB, RT, GR, etc.)  
6813' GL

Pit or Below-grade Tank Application ☒ or Closure ☐

Pit type Drill Depth to Groundwater >100' Distance from nearest fresh water well >1000' Distance from nearest surface water >250'

Pit Liner Thickness: 12 mil Below-Grade Tank: Volume \_\_\_\_\_ bbls; Construction Material \_\_\_\_\_

12. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐

TEMPORARILY ABANDON ☐ CHANGE PLANS ☐

PULL OR ALTER CASING ☐ MULTIPLE COMPLETION ☐

OTHER: Build a drilling reserve pit ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐

COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐

CASING TEST AND CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Energen Resources plans to build a lined pit in accordance with 'OCD Pit and Below Grade Tank Guidelines' issued on November 1, 2004 and also plans to submit a C-144 for closure of such pit in accordance with BIM and 'OCD Pit and Below Grade Tank Guidelines'.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒ , a general permit ☐ or an (attached) alternative OCD-approved plan ☐

SIGNATURE Nathan Smith TITLE Drilling Engineer DATE 2/9/07

Type or print name Nathan Smith

E-mail address:

Telephone No. 505.325.6800

For State Use Only

DEPUTY OIL & GAS INSPECTOR, DIST. #1

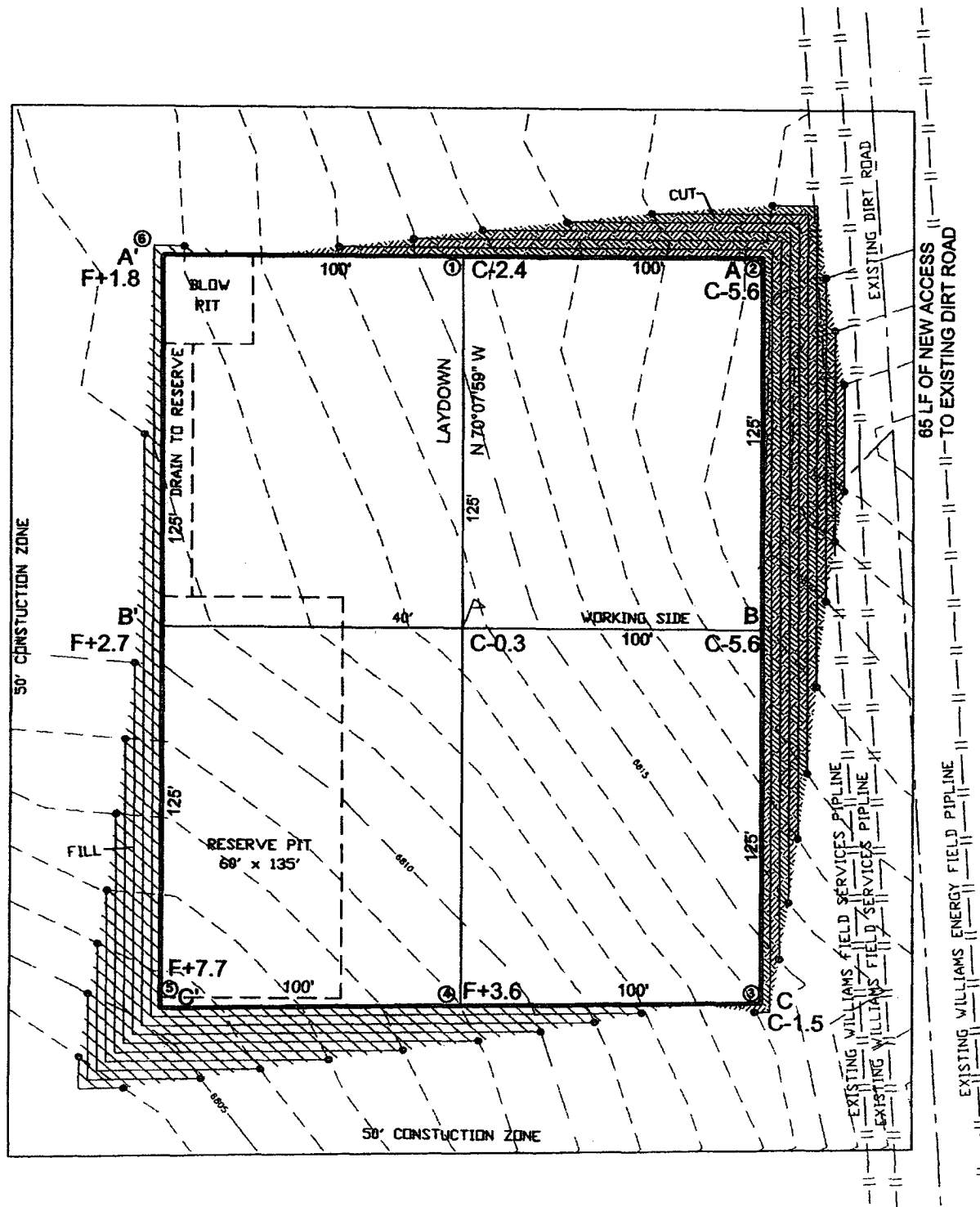
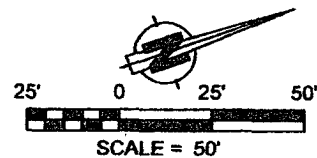
APPROVED BY [Signature] TITLE \_\_\_\_\_ DATE FEB 23 2007

Conditions of Approval, if any:

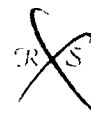
LATITUDE: 36.94233°N  
LONGITUDE: 107.37939°W  
DATUM: NAD 83

# ENERGEN RESOURCES CORPORATION

ELK HORN #101 S  
620' FNL & 770' FEL  
LOCATED IN THE NE/4 NE/4 OF SECTION 32,  
T32N, R5W, N.M.P.M.,  
RIO ARriba COUNTY, NEW MEXICO  
ELEVATION: 6713.2', NAVD 88



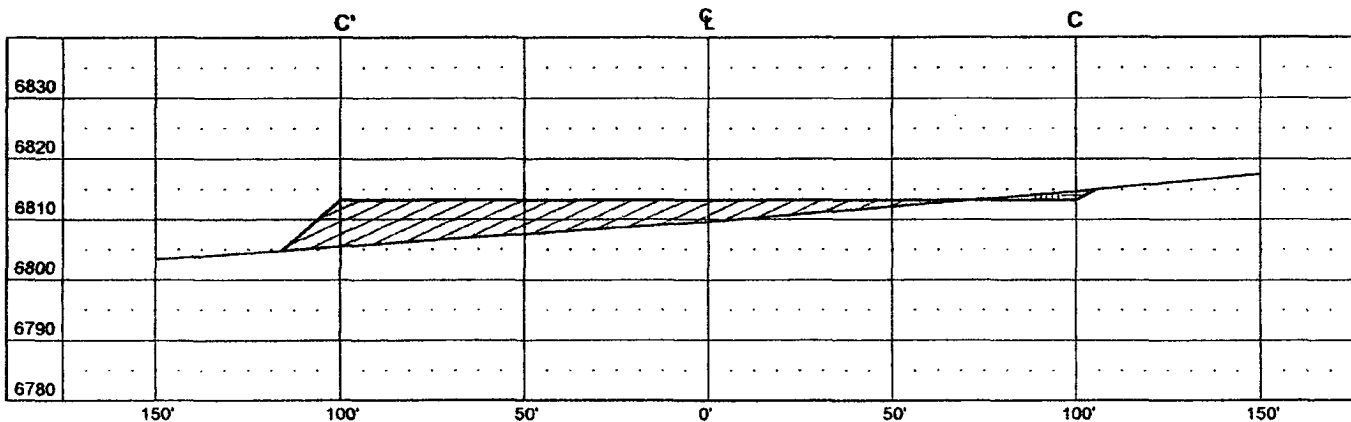
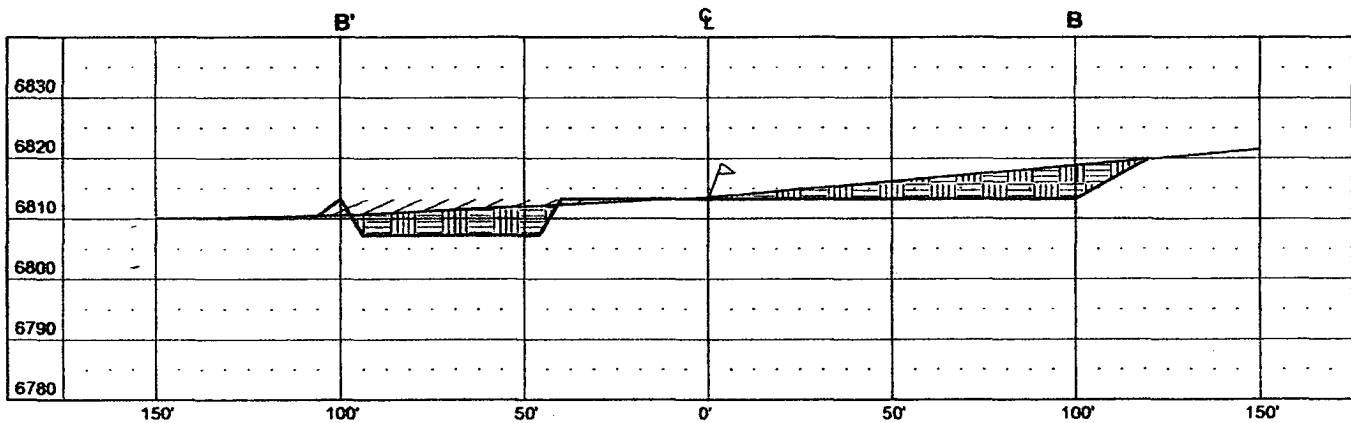
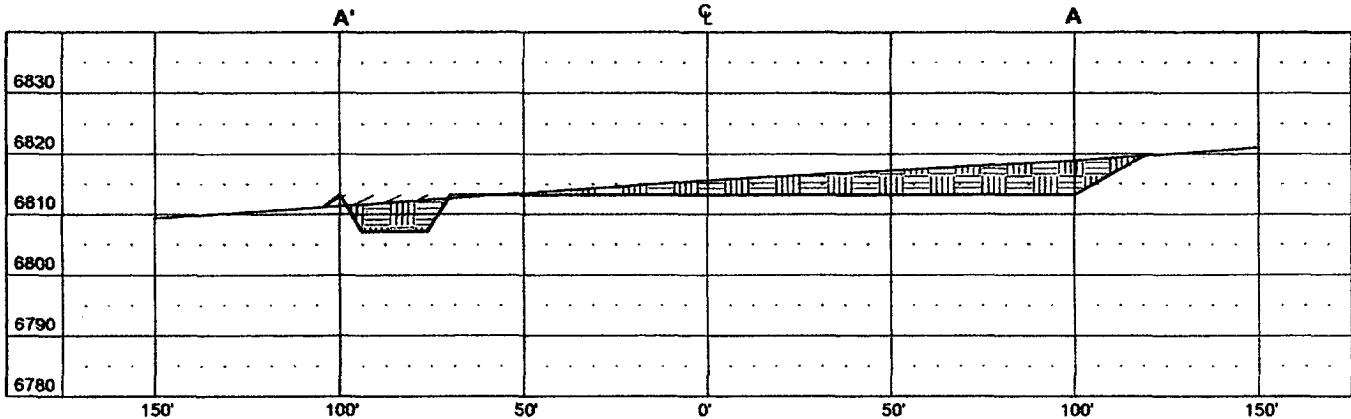
1 FOOT CONTOUR INTERVAL SHOWN  
SCALE: 1" = 50'  
JOB No.: ERG113  
DATE: 05/25/06



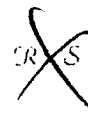
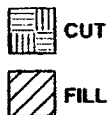
**Russell Surveying**  
1409 W. Aztec Blvd. #5  
Aztec, New Mexico 87410  
(505) 334-8637

# ENERGEN RESOURCES CORPORATION

ELK HORN #101 S  
620' FNL & 770' FEL  
LOCATED IN THE NE/4 NE/4 OF SECTION 32,  
T32N, R5W, N.M.P.M.,  
RIO ARriba COUNTY, NEW MEXICO  
ELEVATION: 6713.2', NAVD 88



VERT. SCALE: 1" = 30'  
HORZ. SCALE: 1" = 50'  
JOB No.: ERG113  
DATE: 05/25/06



**Russell Surveying**  
1409 W. Aztec Blvd. #5  
Aztec, New Mexico 87410  
(505) 334-8637

## Operations Plan

February 8, 2007

### **Elkhorn #101S**

#### **General Information**

Location	620' fnl, 770' fel at surface 2530' fsl, 1880' fel at bottom nene S32, T32N, R05W Rio Arriba County, New Mexico
Elevations	6813' GL
Total Depth	5958' +/- (MD); 3695' +/- (TVD)
Formation Objective	Basin Fruitland Coal

#### **Formation Tops**

San Jose	Surface
Nacimiento	1609' (TVD)
Ojo Alamo Ss	2907' (TVD), 3085' (MD)
Kirtland Sh	3027' (TVD), 3258' (MD)
Fruitland Fm	3089' (TVD), 3353' (MD)
Top Coal	3503' (TVD), 4163' (MD)
Target Coal Top (1)	3503' (TVD), 4163' (MD)
Target Coal Base (1)	3523' (TVD), 4210' (MD)
Target Coal Top (2)	3623' (TVD), 4437' (MD)
Target Coal Base (2)	3629' (TVD), 4451' (MD)
Bottom Coal	3629' (TVD), 4451' (MD)
Pictured Cliffs Ss	3635' (TVD), 4464' (MD)
Total Depth	3695' (TVD), 5958' (MD)

#### **Drilling**

The 12 1/4" wellbore will be drilled with a fresh water mud system.

The 8 3/4" 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 8.3 ppg to 8.9 ppg. Kick off point is anticipated to be at 1225 ft (TVD) with a build up rate of 2.37°/100 ft. This wellbore will be drilled as a pilot hole and later used as a sump for pumping water. A whipstock will be set 25-30 vertical feet above the top of each coal bearing zone. A 6 1/4" window will be milled and a curve built and landed at 90 degrees in the middle portion of the target coal zones. A separate 6 1/4" lateral will be drilled for each coal zone, target coal (2) first, followed by target coal (1) second.

The 6 1/4" wellbore will be drilled with a fresh water system or CaCl<sub>2</sub> brine as wellbore and formation pressures dictate.

Blowout Control Specifications:

A 2000 psi minimum double ram or annulus BOP stack (figure 1) 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.

**Logging Program:**

Open hole logs: Gamma Ray MWD and mud logs.

Coring: None

Natural Gauges: Surface and as needed for directional surveys

**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	200'-4600' (MD)				
	3695' (TVD)	8 3/4"	7"	23.0 ppf	J-55 LT&C
Production	4385'-5958' (MD)	6 1/4"	4 1/2"	11.6 ppf	J-55 LT&C
	3600'-3625' (TVD)				
	4099'-5930' (MD)	6 1/4"	4 1/2"	11.6 ppf	J-55 LT&C
	3475'-3510' (TVD)				
Tubing	0'- 3670' (TVD)		2 3/8"	4.7 ppf	J-55
	4525' (MD)				

**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 centralizers to optimize standoff. Two turbolating centralizers at the base of the Ojo Alamo are recommended.

Production Liners: Bull Nose guide shoe on bottom of first joint. H-Latch drop off liner tool outside of milled window.

**Wellhead**

11" 3000 x 9 5/8" casing head. 11" 3000 x 7 1/16" Christmas Tree..

**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 1000 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 650 sks 65/35 with 6.0 % Bentonite, 2.0 % CaCl<sub>2</sub>, 10 #/sk Gilsonite, and 1/2 #/sk Flocele (12.3 ppg, 1.93 ft<sup>3</sup>/sk) and a tail of 150 sks of Type V cement with 5.0 #/sk Gilsonite, and 1/4 #/sk Flocele (15.4ppg, 1.18 ft<sup>3</sup>/sk). (1432 ft<sup>3</sup> of slurry, 100 % excess to circulate to surface).

Production: Open Hole Completions – NO CEMENT

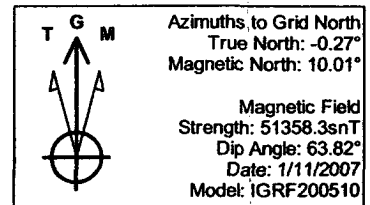
## Other Information

- 1) This well will be an open hole completion
- 2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The production 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 for the region are anticipated.  
BHP can be as high as 1250 psi.
- 5) This gas is dedicated.





Project: SJ BR; S29, T32N, R5W  
Site: Eul Canyon  
Well: Elk Horn #101S  
Wellbore: Motherbore  
Plan: Preliminary (Elk Horn #101S/Motherbore)

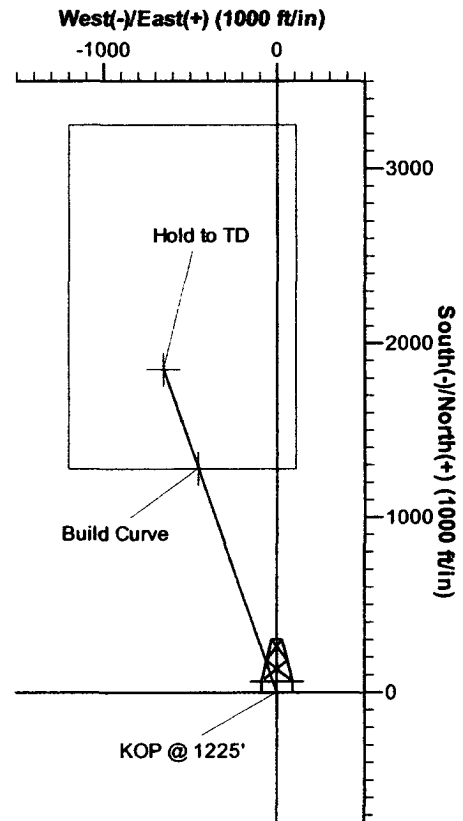
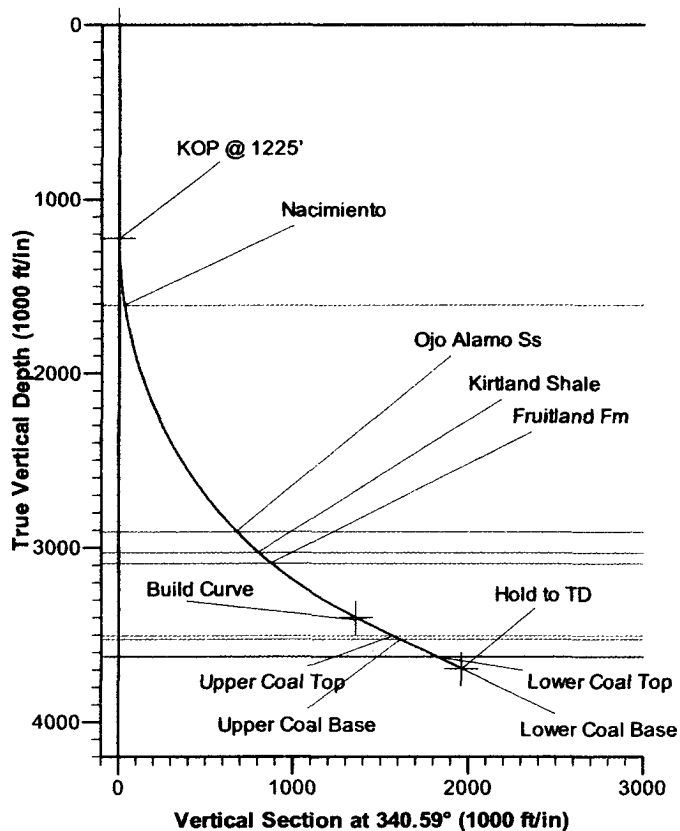


PROJECT DETAILS: SJ BR; S29, T32N, R5W	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico Western Zone
System Datum:	Mean Sea Level

SURFACE LOCATION	
Easting:	2855747.24
Northing:	2162652.96

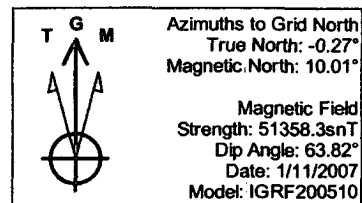
#### SECTION DETAILS

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	1225.0	0.00	0.00	1225.0	0.0	0.0	0.00	0.00	0.0	KOP @ 1225'
3	3928.1	64.00	340.59	3400.0	1281.9	-451.7	2.37	340.59	1359.1	Build Curve
4	4600.0	63.99	340.59	3694.6	1851.4	-652.4	0.00	0.00	1963.0	Hold to TD





**Project:** SJ BR; S29, T32N, R5W  
**Site:** Eul Canyon  
**Well:** Elk Horn #101S  
**Wellbore:** Lower Lateral  
**Plan:** Preliminary (Elk Horn #101S/Lower Lateral)

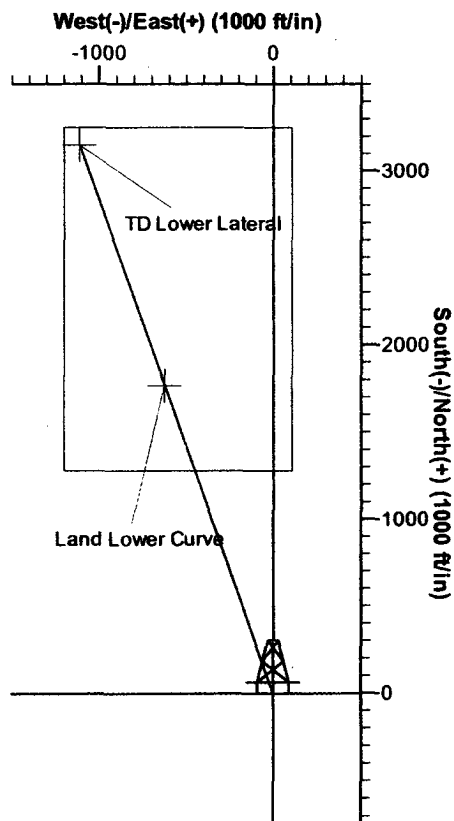
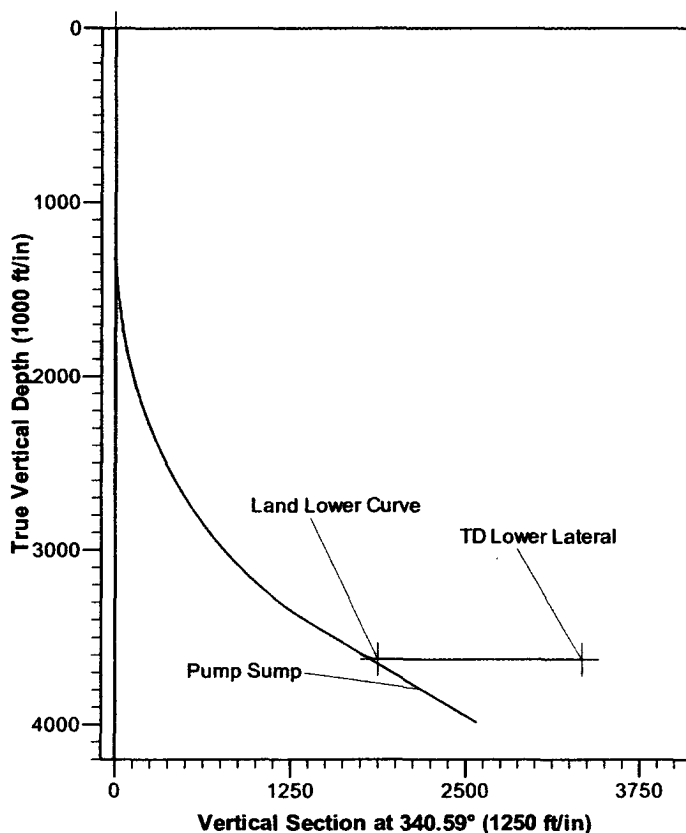


PROJECT DETAILS: SJ BR; S29, T32N, R5W	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico Western Zone
System Datum:	Mean Sea Level

SURFACE LOCATION	
Easting:	2855747.24
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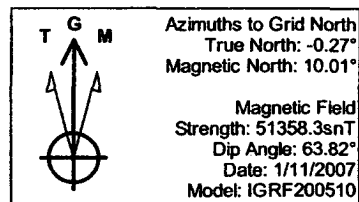
#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	4385.0	64.01	340.59	3600.3	1669.2	-588.1	0.00	0.00	1769.8	
2	4495.9	90.00	340.59	3625.0	1770.2	-623.7	23.45	0.00	1876.9	Land Lower Curve
3	5958.0	90.00	340.59	3625.0	3149.2	-1109.6	0.00	0.00	3339.0	TD Lower Lateral





**Project:** SJ BR; S29, T32N, R5W  
**Site:** Eul Canyon  
**Well:** Elk Horn #101S  
**Wellbore:** Upper Lateral  
**Plan:** Preliminary (Elk Horn #101S/Upper Lateral)

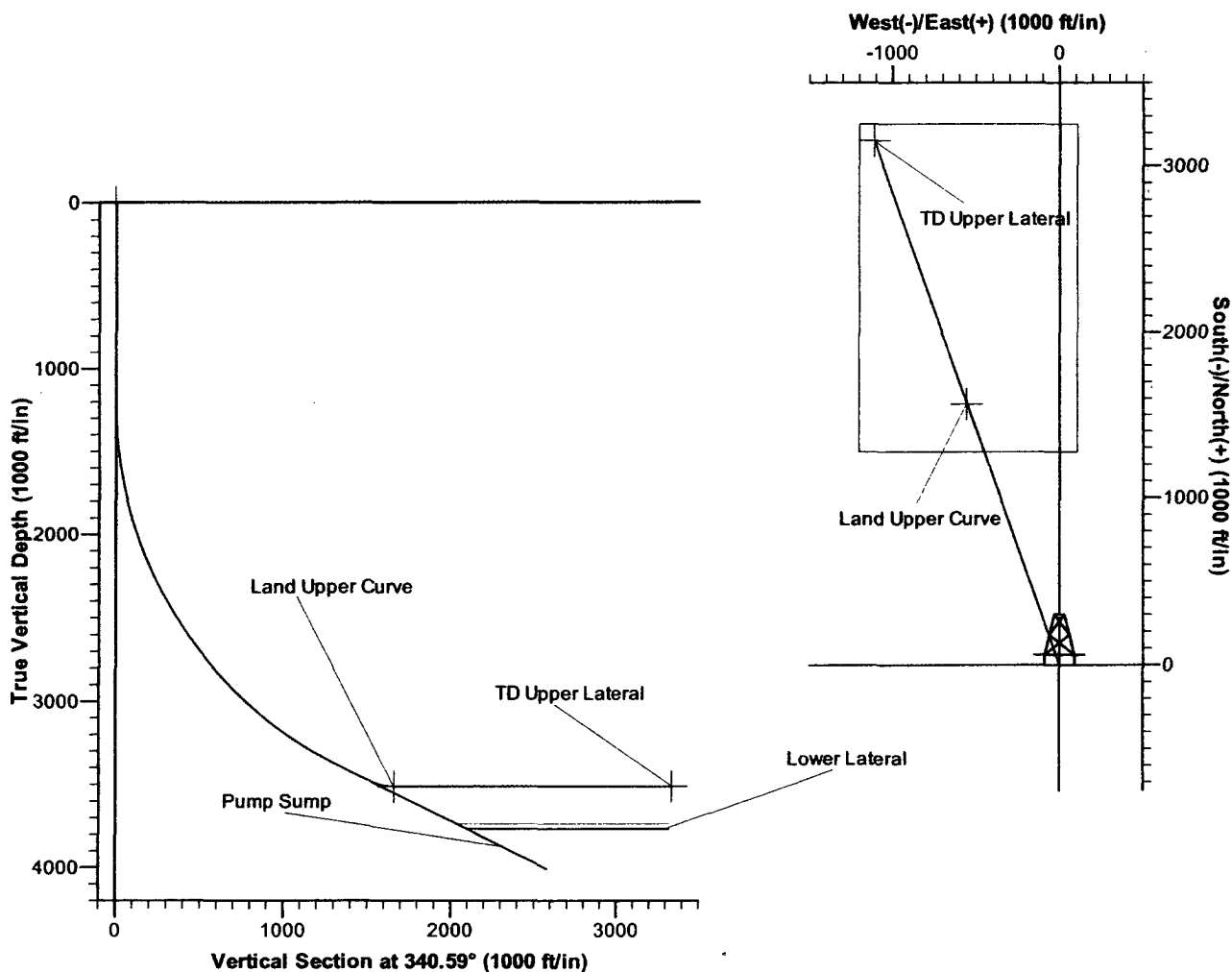


PROJECT DETAILS: SJ BR; S29, T32N, R5W	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico Western Zone
System Datum:	Mean Sea Level

SURFACE LOCATION	
Easting:	2855747.24
Northing:	2162652.96

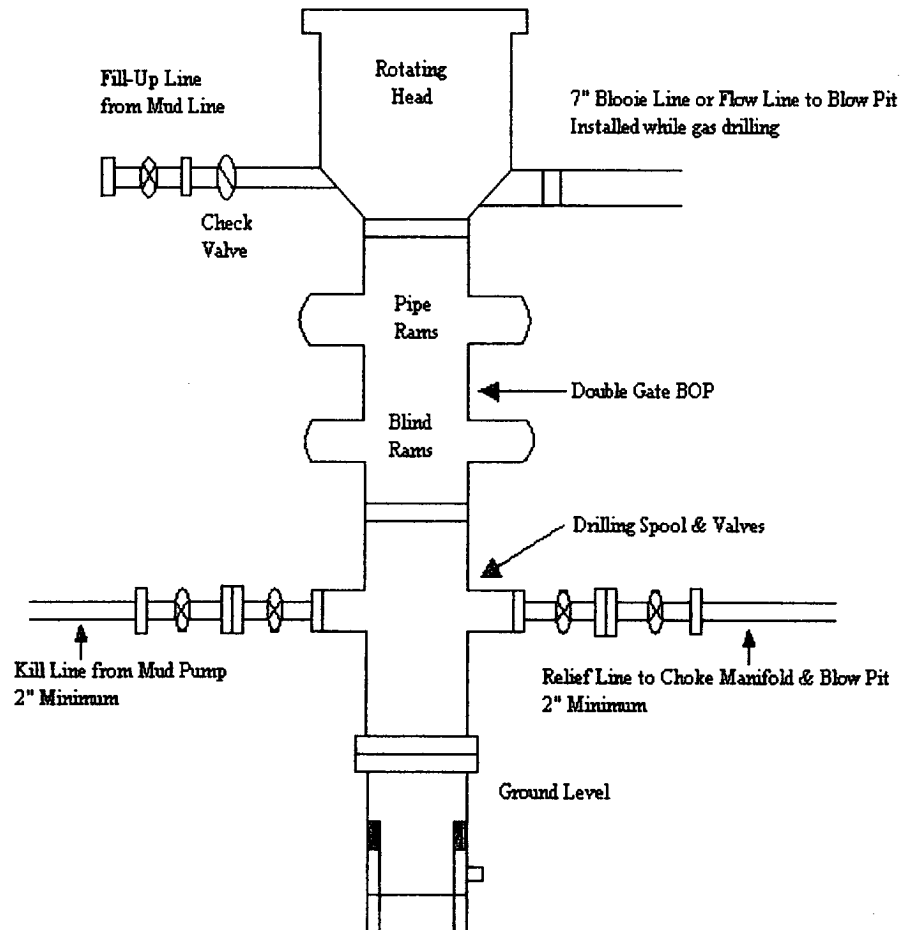
#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	4099.1	64.00	340.59	3475.0	1426.8	-502.7	0.00	0.00	1512.8	
2	4256.4	90.04	340.59	3510.0	1570.2	-553.3	16.55	0.00	1664.8	Land Upper Curve
3	5930.6	89.96	340.59	3510.0	3149.2	-1109.6	0.00	-180.00	3339.0	TD Upper Lateral

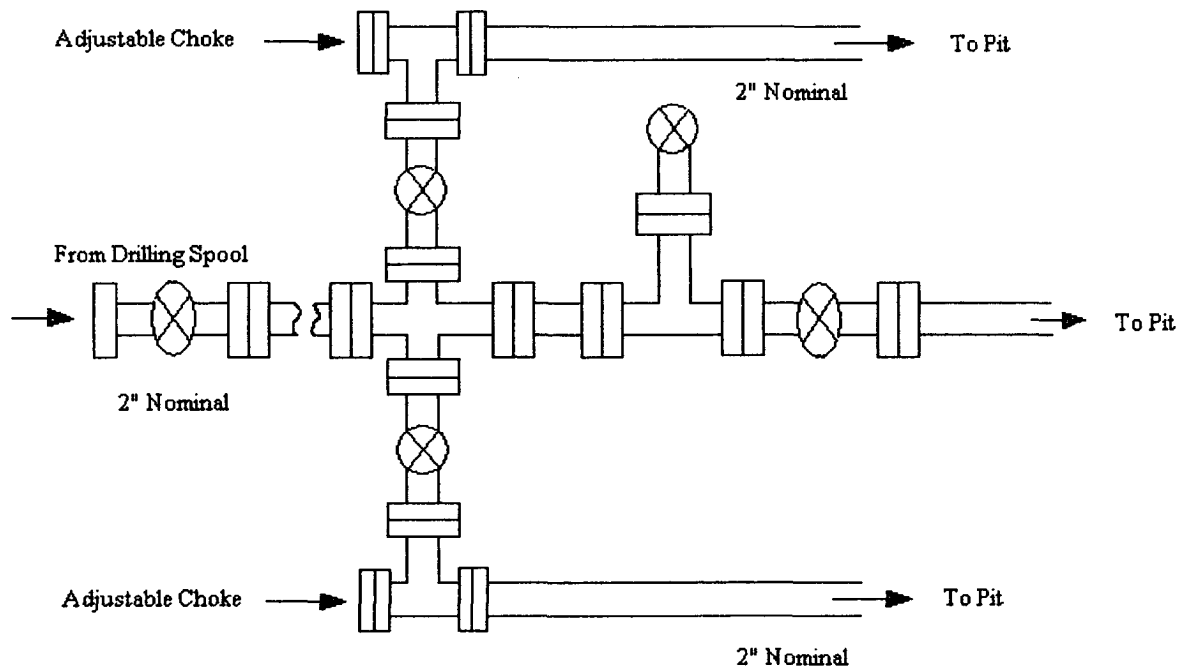


## Energen Resources Corporation

### Typical BOP Configuration for Gas Drilling



**Energen Resources Corporation**  
Typical 2000 psi Choke Manifold Configuration



Choke manifold installed from surface to TD