Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JAN 22 2008
Bureau of Land Management
Farmington Field Office

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

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

2. Name of Operator
Energen Resources Corporation

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

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

4. Location of Well (*Report location clearly and in accordance with any State equirements*)*
At surface 2015'FSL, 1400'FWL K
At proposed prod. zone 1400'FSL, 100'FEL I

5. Lease Serial No.
NMNM ~~30351~~ 29341

6. If Indian, Allotee or Tribe Name

7. Unit or CA Agreement Name and No.
NMNM-78384G

8. Lease Name and Well No.
Carracas Canyon Unit 10A #16

9. API Well No.
30-039-30468

10. Field and Pool, or Exploratory
Basin Fruitland Coal

11. Sec., T., R., M., or Blk. and Survey or Area
(K) Sec.10, T32N, 5W NMPM

14. Distance in miles and direction from nearest town or post office*
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 |
|---|---|---|
| 1400' | ~~1280~~ 800 | 320 S/2 |
| **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** |
| 140' | ~~6006~~' 7304' MD | NM2707 |
| **21. Elevations (Show whether DF, KDB, RT, GL, etc.** | **22. Approximate date work will start*** | **23. Estimated duration** |
| 7633'GL | April 1, 2008 | 25 |

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.
2. A Drilling Plan
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).
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 authorized officer.

| 25. Signuature | Name (*Printed/Typed*) | Date |
|---|---|---|
| | Jason Kincaid | 1/11/2008 |

Title: DRILLING ENGINEER

| Approved by (Signautre) | Name (*Printed/Typed*) | Date |
|---|---|---|
| | | 7/30/08 |
| Title: AFM | 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 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.

*(Instructions on page 2)*

P.A.

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

Hold C104
for Directional Survey
and "As Drilled" plat

AUG 01 2008

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

NMOCD
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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".

A COMPLETE C-144 MUST BE SUBMITTED TO AND APPROVED BY THE NMOCD FOR: A PIT, CLOSED LOOP SYSTEM, BELOW GRADE TANK, OR PROPOSED ALTERNATIVE METHOD, PURSUANT TO NMOCD PART 19.15.17, PRIOR TO THE USE OR CONSTRUCTION OF THE ABOVE APPLICATIONS.

RCVD JUL 31 '08
OIL CONS. DIV.
DIST. 3

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

RECEIVED
JAN 22 2008
Bureau of Land Management
Farmington Field Office

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 |
|---|---|---|
| 30-039-30468 | 71629 | BASIN FRUITLAND COAL |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 37285 | CARRACAS CANYON UNIT 10A | ~~105~~ 16 |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 162928 | ENERGEN RESOURCES CORPORATION | 7556' |

## [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 |
|---|---|---|---|---|---|---|---|---|---|
| K | 10 | 32N | 5W | | 2015' | SOUTH | 1400' | 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 |
|---|---|---|---|---|---|---|---|---|---|
| I | 10 | 32N | 5W | | 1400' | SOUTH | 100' | EAST | RIO ARRIBA |

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 320.00 Acres – (S/2) | | | |

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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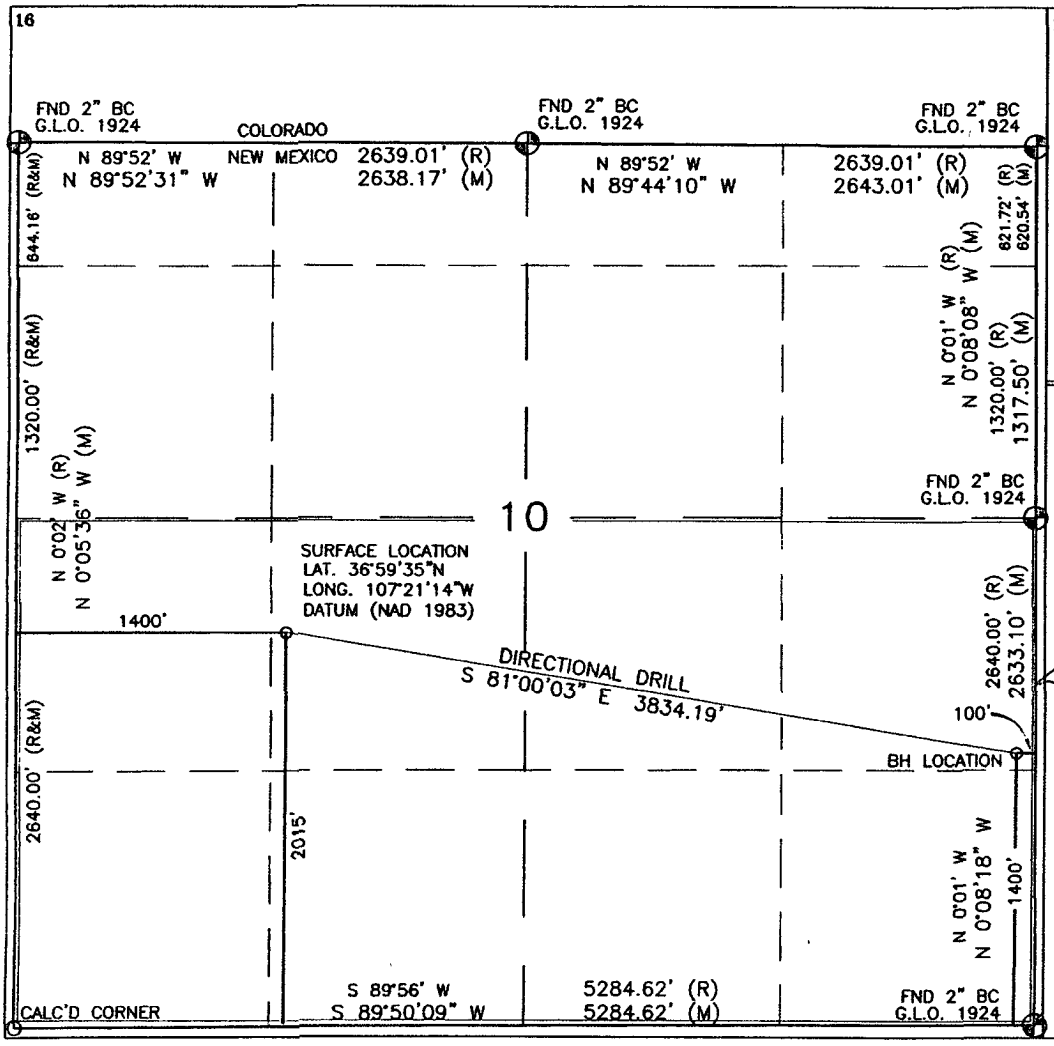



## 17 OPERATOR CERTIFICATION

*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: 1-11-08

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.*

OCTOBER 21, 2005
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID R. RUSSELL
NEW MEXICO
10201
REGISTERED PROFESSIONAL LAND SURVEYOR

DAVID RUSSELL
Certificate Number 10201

**Operations Plan**
Revised July 22, 2008

**Carracas 10 A #16**

## General Information

| | |
|---|---|
| Location | 2015 fsl, 1400 fwl at surface<br>1400 fsl, 100 fel at bottom<br>nesw 10, T32N, R5W<br>Rio Arriba County, New Mexico |
| Elevations | 7556' GL |
| Total Depth | 7304' (MD), 4079' (TVD) |
| Formation Objective | Basin Fruitland Coal |

## Formation Tops

| | |
|---|---|
| San Jose | Surface |
| Nacimiento | 2011' (TVD) |
| Ojo Alamo Ss | 3336' (TVD), 3362' (MD) |
| Kirtland Sh | 3465' (TVD), 3513' (MD) |
| Fruitland Fm | 3520' (TVD), 3581' (MD) |
| Top Coal | 4054' (TVD), 4737' (MD) |
| Bottom Coal | 4079' (TVD) |
| **Total Depth** | **4079' (TVD), 7304' (MD)** |

## 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 2700' TVD with 4.22°/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 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's to 250 psi for 15 min and 1500 psi for 15 min. Test manifold to 1500 psi for 30 min.

Logging Program:

Open hole logs: None
Mud logs: From 3520' (TVD), 3581' (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 ¼" | 9 5/8" | 32.3 ppf | H-40 ST&C |
| Intermediate | 0'-4057'(TVD) 4780' (MD) | 8 ¾" | 7" | 23.0 ppf | J-55 LT&C |
| Production | 4054'-4079' (TVD) 4730'-7300' (MD) | 6 ¼" | 4 ½" | 11.6 ppf | J-55 LT&C |
| Tubing | 0'-4700'(MD) | | 2 3/8" | 4.7 ppf | J-55 |

Casing Equipment:

Surface Casing: Texas Pattern Guide Shoe on bottom. Casing centralization with three (3) standard bow spring centralizers to achieve optimal standoff.

Intermediate Casing: self fill float shoe on bottom of first joint with a self fill float collar on top of first joint and casing centralization with double 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" slip on/weld 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 to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min. Test BOP's as outlined in 'Drilling' section.

Intermediate Casing: Before cementing, circulate hole at least 1 ½ hole volumes of mud and reduce funnel viscosity to minimum to aide in hole cleanout. Depending on wellbore conditions, cement may consist of 670 sks 65/35 with 6.0 % Bentonite, 2.0 % $CaCl_2$, 10 #/sk Gilsonite, and ½ #/sk Flocele (12.3 ppg, 1.96 $ft^3$/sk) and a tail of 125 sks Class G with ¼ #/sk Flocele (15.6 ppg, 1.18 $ft^3$/sk). (~~4643 ft$^3$~~ 1461 ft$^3$ of slurry to circulate to surface). Test casing to 1000 psi for 30 min. Test BOP's as outlined in 'Drilling' section.

**Other Information**

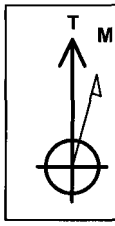
1) This well will be an open hole completion lined with an uncemented pre-drilled liner.
2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The intermediate string may need to be cemented in multiple stages with a slurry design deviated from 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 - S10, T32N, R5W
**Site:** Carracas Mesa
**Well:** Carracas Canyon Unit 10 A #16
**Wellbore:** Preliminary Plan
Plan: Plan #2 (Carracas Canyon Unit 10 A #16/Preliminary Plan)

**PROJECT DETAILS: Carson Natl Forest - S10, T32N, R5W**

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

**System Datum:** Mean Sea Level

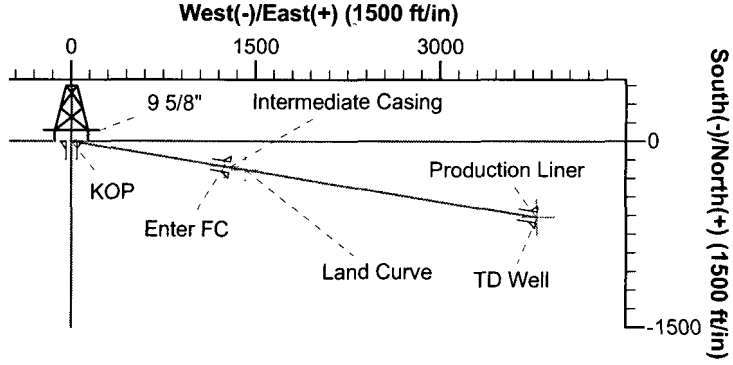


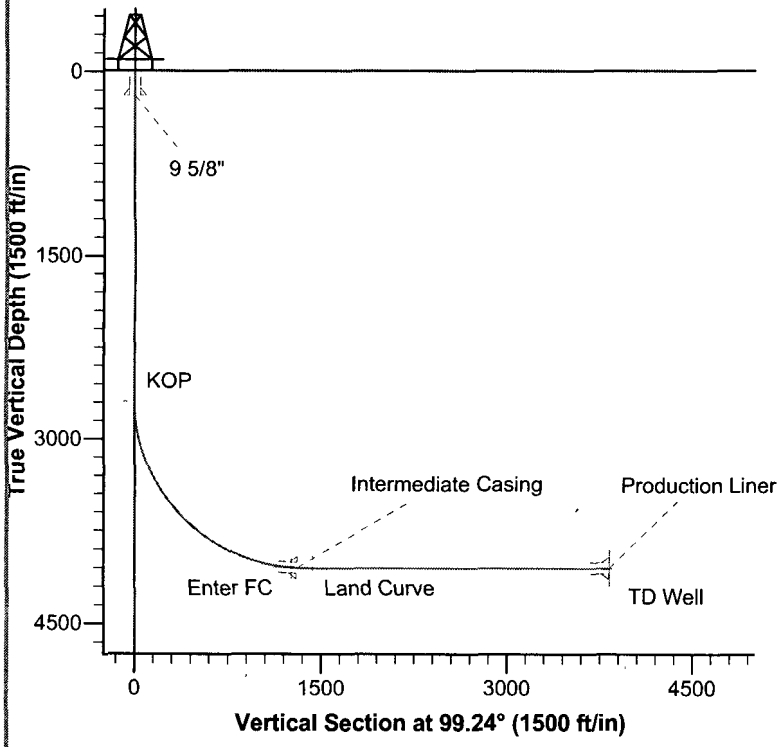

Azimuths to True North
Magnetic North: 10.15°

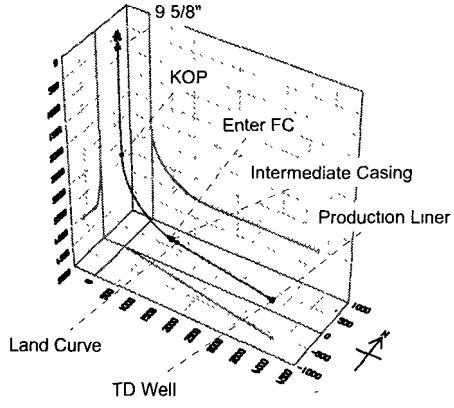
Magnetic Field
Strength: 51287.5snT
Dip Angle: 63.85°
Date: 1/17/2008
Model: IGRF200510

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 | 2700.0 | 0.00 | 0.00 | 2700.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | KOP |
| 3 | 4737.2 | 86.00 | 99.24 | 4054.0 | -202.7 | 1246.2 | 4.22 | 99.24 | 1262.6 | Enter FC |
| 4 | 4909.2 | 90.00 | 99.25 | 4060.0 | -230.3 | 1415.8 | 2.33 | 0.13 | 1434.4 | Land Curve |
| 5 | 7304.3 | 90.00 | 99.23 | 4060.0 | -614.9 | 3779.8 | 0.00 | -109.39 | 3829.5 | TD Well |

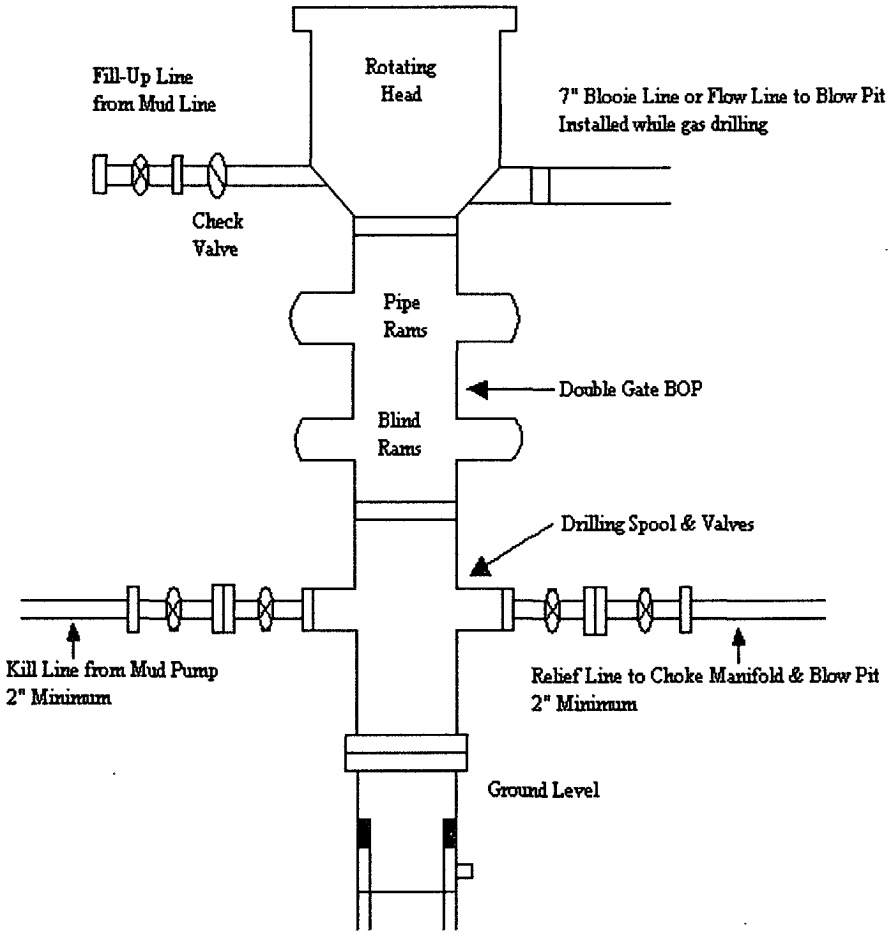


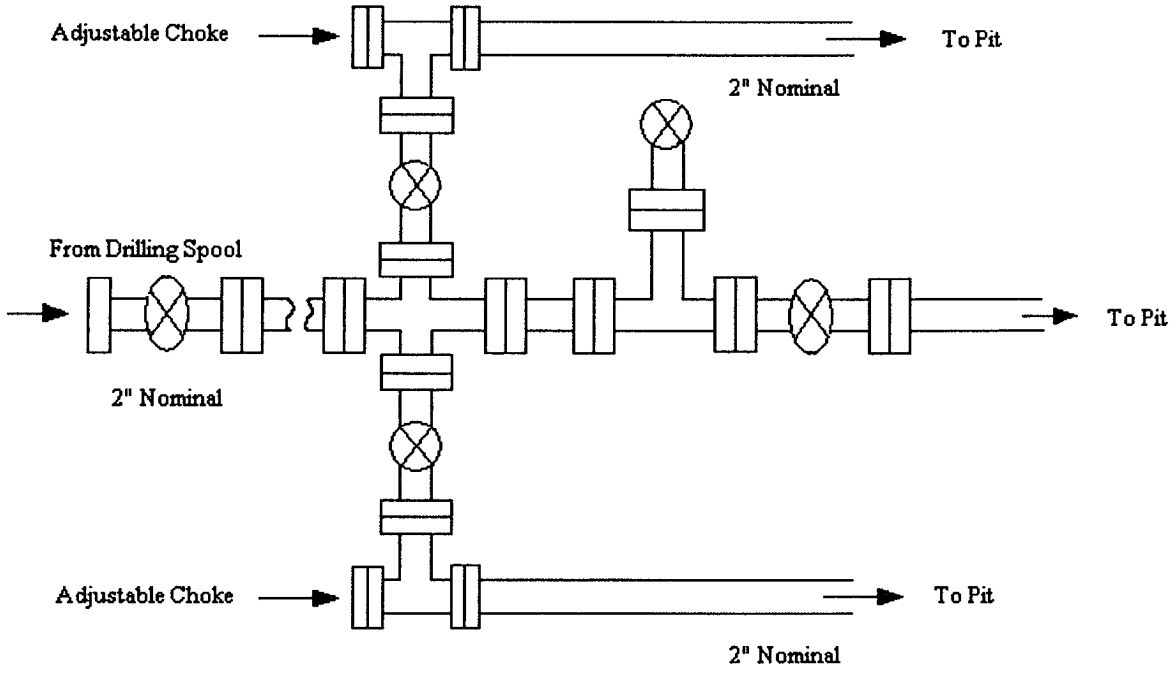
## Energen Resources Corporation

Typical BOP Configuration for Gas Drilling



# Energen Resources Corporation

Typical 2000 psi Choke Manifold Configuration




Choke manifold installed from surface to TD