

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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FEB 20 2009


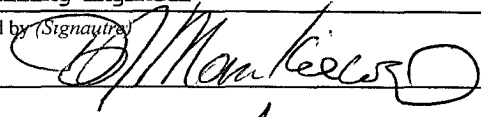
FORM APPROVED  
OMB NO. 1004-0137  
Expires July 31, 2010

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NMNM-611285</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 <b>Navajo Nation</b>	
2. Name of Operator <b>Energen Resources Corporation</b>		7. Unit or CA Agreement Name and No. <b>NMNM-73892</b>	
3a. Address <b>2010 Afton Place Farmington, New Mexico 87401</b>		8. Lease Name and Well No. <b>Navajo 1 #1M</b>	
3b. Phone No. (include area code) <b>(505) 325-6800</b>		9. API Well No. <b>30045-34919</b>	
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface <b>1870' FSL and 903' FEL</b> At proposed prod. zone		10. Field and Pool, or Exploratory <b>Mesa Verde / Dakota</b>	
14. Distance in miles and direction from nearest town or post office*		11. Sec., T., R., M., or Blk. and Survey or Area <b>I Sec. 25 T 27N R 9 W</b>	
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) <b>903'</b>		12. County or Parish <b>San Juan</b>	
16. No. of Acres in lease		13. State <b>NM</b>	
17. Spacing Unit dedicated to this well <b>320 E/2 Dk/mv</b>		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>100'</b>	
19. Proposed Depth <b>6896'</b>		20. BLM/BIA Bond No. on file <b>NM2707</b>	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>6137' GL</b>		22. Approximate date work will start* <b>4/01/09</b>	
23. Estimated duration <b>20 Days</b>		24. Attachments <b>RCVD MAR 5 '09 OIL CONS. DIV.</b>	

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must 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 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              |

25. Signature 	Name (Printed/Typed) <b>Devin Mills</b>	Date <b>2/16/09</b>
Title <b>Drilling Engineer</b>		
Approved by (Signature) 	Name (Printed/Typed) <b>AEM</b>	Date <b>3/3/09</b>
Title <b>AEM</b>	Office <b>PFD</b>	

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

MAR 09 2009

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

NMOCDF

REC 12-30-08  
Arch cleared 2-3-09  
Onsited 2-5-09  
SAOK 2-11-09

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

District II  
1301 W. Grand Avenue, Artesia, NM 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

*API Number 90045-34919		*Pool Code 72319/71599		*Pool Name MV/DK	
*Property Code 21984		*Property Name NAVAJO 1			*Well Number #1M
*OGRID No. 162928		*Operator Name ENERGEN RESOURCES			*Elevation 6137

#### 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
1	25	27-N	9-W		1870'	SOUTH	903'	EAST	SAN JUAN

#### 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
*Dedicated Acres		*Joint or Infill		*Consolidation Code		*Order No.			

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16			17
		<b>OPERATOR CERTIFICATION</b> 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 of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.  Signature: <u>Dr. R. 2/16/08</u> Date: <u>2/16/08</u> Printed Name: <u>Devon Miller</u>	
		<b>18 SURVEYOR CERTIFICATION</b> 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.  Date of Survey: <u>12/09/08</u> Signature and Seal of Professional Surveyor: <u>[Signature]</u> Certificate Number: <u>8466</u>	

Twinned Next to Brown Gentle #1

## Operations Plan

February 11, 2009

### **Navajo 1 #1M**

#### **General Information**

Location	1870' fsl, 903' fsl nese S25, T27N, R09W San Juan County, New Mexico
Elevations	6137' GL
Total Depth	6869' (MD)
Formation Objective	Dakota

#### **Formation Tops**

Nacimiento	Surface	Huerfanito Bentonite	2553'
Ojo Alamo Ss	1229'	Cliff House	3639'
Kirtland Sh	1349'	Menefee	3725'
Fruitland Fm	1709'	Point Lookout Ss.	4339'
Top Coal	1892'	Mancos Shale	4689'
Pictured Cliffs	2082'	Dakota	6524'
Lewis Shale	2239'	Morrison	6729'
Int Csg Point	4450'	TD	6896'

#### **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 non-dispersed fresh water mud system. Weighting materials will be drill cuttings and/or barite as needed. Mud density is expected to range from 8.3 ppg to 8.9 ppg.

The 6 1/4" hole will be drilled with a low solids non-dispersed fresh water mud system. Weighting materials will be drill cuttings and/or barite as needed. Mud density is expected to range from 8.3 ppg to 8.9 ppg

Blowout Control Specifications:

A 2000 psi minimum double ram or annulus BOP stack (figure 1) 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: From Surface to Intermediate setting depth - None

From Intermediate setting depth to TD - Triple Combo

Mud Logs: From 2239'

Coring: None

Surveys: Surface and/or every 500' to TD

#### **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'-4450'	8 3/4"	7"	23.0 ppf	J-55 LT&C
Production	4250'-6896'	6 1/4"	4 1/2"	11.6 ppf	J-55 LT&C
Tubing	0'-6574'		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 on bottom with self fill insert float collar on top of shoe joint and casing centralization with bow spring centralizers to optimize standoff. Two turbolating centralizers at the base of the Ojo Alamo are recommended.

**Production Liner:** Depending on wellbore conditions, a cement nose guide shoe on bottom with self fill insert float collar on top of shoe joint and casing centralization with standard bow spring centralizers to optimize standoff. If multistage cementing is required, DV tool will be placed based on formation characteristics.

## Wellhead

11" 3000 x 9 5/8" Casing Head, 11" 3000 x 7 1/16" 3000 Christmas Tree.

## Cementing

Surface Casing: 225 sks Std (class B) with 2.0 %  $\text{CaCl}_2$  and 1/4 #/sk Flocele (15.6 ppg, 1.18 ft<sup>3</sup>/sk 247 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 390 sks 65/35 with 6.0 % Bentonite, 2.0 %  $\text{CaCl}_2$ , 10 #/sk Gilsonite, and 1/2 #/sk Flocele (12.3 ppg, 1.96 ft<sup>3</sup>/sk) and a tail of 30 sks of Standard (Class B) cement with 5.0 #/sk Gilsonite, and 1/4 #/sk Flocele (15.2ppg, 1.24 ft<sup>3</sup>/sk). (800 ft<sup>3</sup> of slurry, 20 % excess to circulate to surface). WOC 12 hours. Pressure test casing to 1200 psi for 30 min.

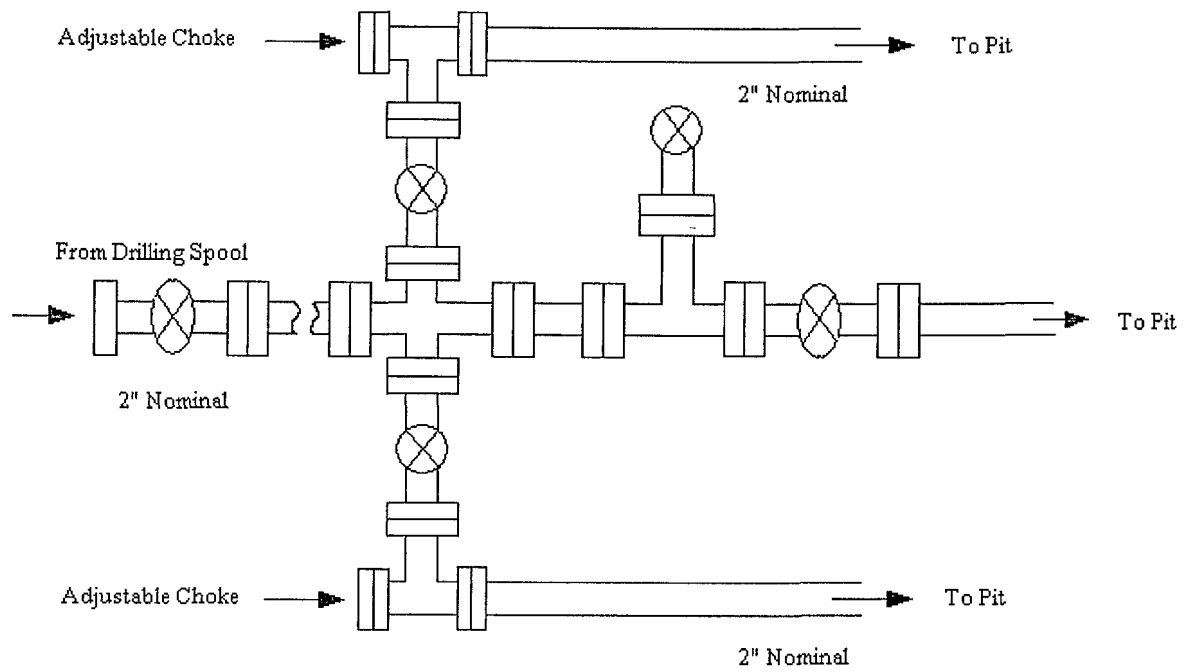
Production Liner: Depending on wellbore conditions, cement may consist of 250 sks 50/50 with 2.0 % Bentonite, 0.50% Halad-9, 0.10% CFR-3, 5 #/sk Gilsonite, and 1/4 #/sk Flocele (13.5 ppg, 1.30 ft<sup>3</sup>/sk). (325 ft<sup>3</sup> of slurry, 20 % excess open hole, no excess in liner lap to circulate off liner top). Use calipers on logs to figure cement volumes.

## Other Information

- 1) This well will be cased and the Dakota fracture stimulated.
- 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) Mesa Verde pore pressure is anticipated to be 800 psi, the Pictured Cliffs is 600 psi and the Fruitland is 500 psi.
- 4) No abnormal temperatures or pressures are anticipated.

## 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

