

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

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

OCT 18 2010

APPLICATION FOR PERMIT TO DRILL OR REENTER

Bureau of Land Management
Farmington Field Office

1a. Type of Work ☒ DRILL ☐ REENTER		5. Lease Serial No. JICARILLA APACHE 96	
1b. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name JICARILLA APACHE	
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. Jicarilla 96 #600H	
3b. Phone No. (include area code) (505)325-6800		9. API Well No. 30-039-30999	
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface (A) Sec.3-T26N-R3W ; 595'FNL. 700'FEL At proposed prod. zone (A) Sec.2-T26N-R3W ; 900'FNL. 200'FEL		10. Field and Pool, or Exploratory Gavilan Mancos	
14. Distance in miles and direction from nearest town or post office* 25 miles from Lindrith		11. Sec., T., R., M., or Blk. and Survey or Area Sec.3-T26N-R03W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 595'		12. County or Parish Rio Arriba	
16. No. of Acres in lease 2560		13. State NM	
17. Spacing Unit dedicated to this well 320 N/2			
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 77'		20. BLM/BIA Bond No. on file	
19. Proposed Depth 12694' MD			
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7098' GL		22. Approximate date work will start* 02/01/2011	
23. Estimated duration 35 days			

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

24. Attachments

DRILLING OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
GENERAL REQUIREMENTS*

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 <i>Stephen Byers</i>	Name (Printed/Typed) Stephen Byers	Date 10/07/2010
Title Drilling Engineer		
Approved by (Signature) <i>D. Mancoske</i>	Name (Printed/Typed)	Date 12/18/10
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 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 NSL



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

NMOC D JAN 05 2011

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

Form C-102
Revised October 12, 2005

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30999	² Pool Code 27194	³ Pool Name GAVILIAN MANCOS
⁴ Property Code 22033 21938	⁵ Property Name JICARILLA 96	⁶ Well Number 600H
⁷ GRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 7098'

¹⁰ Surface Location

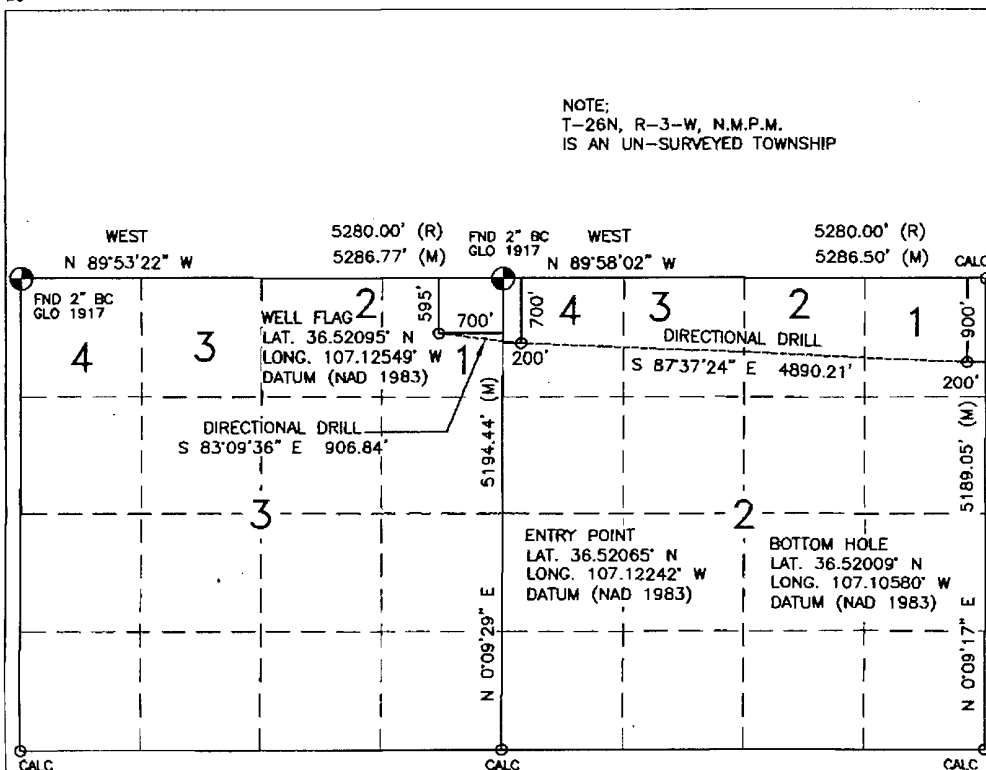
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	3	26N	3W	/	595'	NORTH	700'	EAST	RIO ARRIBA

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
A	2	26N	3W	/	900'	NORTH	200'	EAST	RIO ARRIBA
¹² Dedicated Acres 320N			¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No. NSL Pending		

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.

Stephen Byers 10-7-10
Signature Date
Stephen Byers
Printed Name

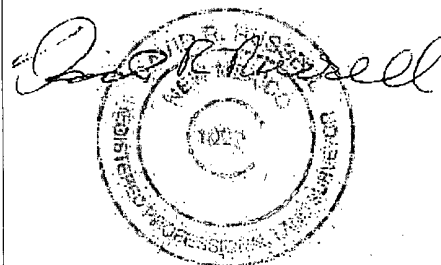
¹⁸ SURVEYOR CERTIFICATION

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.

OCTOBER 7, 2008

Date of Survey

Signature and Seal of Professional Surveyor:



DAVID RUSSELL

Certificate Number

10201

10/7/2010



OPERATIONS PLAN

WELL NAME.....Jicarilla 96 #600H
JOB TYPE.....Horizontal Mancos/Niobrara C
DEPT.....Drilling and Completions
DRILLING ENGINEER.....Stephen Byers

GENERAL INFORMATION

Surface Location	595' FNL 700' FEL
S-T-R	(A) Sec.3, T26N, R03W
Bottom Hole Location	900' FNL 200' FEL
S-T-R	(A) Sec.2, T26N, R03W
County, State	Rio Arriba, New Mexico
Elevations	7098' GL
Total Depth	12,694' +/- (MD); 7,278' (TVD)
Formation Objective	Mancos/Niobrara "C"

FORMATION TOPS

San Jose	Surface
Nacimiento	2000' (TVD)
Ojo Alamo Ss	3273' (TVD)
Kirtland Sh	3453' (TVD)
Fruitland Fm	3523' (TVD)
Pictured Cliffs	3703' (TVD)
Huerfanito Bentonite	4218' (TVD)
Chacra	4713' (TVD)
Cliff House	5528' (TVD)
Menefee	5593' (TVD)
Point Lookout	5843' (TVD)
Mancos	6313' (TVD)
Mancos/Niobrara "A"	7093' (TVD), 7202' (MD)
Top Niobrara "C"	7268' (TVD), 7667' (MD)
Base Niobrara "C"	7358' (TVD)

DRILLING

Conductor: 17-1/2" wellbore will be drilled with a freshwater mud system (spud mud)

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 an air/mist system. Mud density is expected to range from 6.0 ppg to 7.2 ppg.

Production: 6-1/4" wellbore will be drilled with an oil based mud or inverted foam system depending on reservoir characteristics. Anticipated BHP can be as high as 1800 psi.

Projected KOP is 6,400' TVD with 6.59°/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.**

10/7/2010



Logging Program:

Open hole logs: FMI 5638 – 10058 MD, 4492' – 4492' TVD.

Mudlogs: 2900' TVD, 2900' 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
Conductor	0	500	17-1/2"	13-3/8"	54.5 lb/ft	J-55 ST&C
Surface	0	3900	12-1/4"	9-5/8"	40 lb/ft	L-80 LT&C
Intermediate TVD	3800 3800	7803 7278	8-3/4"	7"	23 lb/ft	L-80 LT&C
Prod. Liner TVD	7703 7276	12694 7278	6-1/4"	4-1/2"	11.6 lb/ft	P-110 LT&C
Tubing	0	7600	none	2-3/8"	4.7 lb/ft	J-55

Conductor 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.

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: 4-1/2" Packer's Plus assembly. See Completions procedure for details

WELLHEAD

11" 5000 x 9 5/8" weld/slip on casing head. 9 5/8" x 7"x 2 3/8" 5000 psi Flanged Wellhead .

10/7/2010



CEMENTING

Conductor Casing: 588 sks Type V with 2.0 % CaCl_2 and $\frac{1}{4}$ #/sk Flocele (15.6 ppg, $1.18 \text{ ft}^3/\text{sks}$ 695 ft^3 of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test conductor casing to 750 psi for 30 min.

Surface Casing: Depending on wellbore conditions, cement may consist of 777 sks PRB II with 5 #/sk Gilsonite, and $\frac{1}{4}$ #/sk Flocele (12.3 ppg, $2.24 \text{ ft}^3/\text{sks}$) and a tail of 100 sks PRB II with $\frac{1}{4}$ #/sk Flocele and 5#/sk Gilsonite (13.5 ppg, $1.81 \text{ ft}^3/\text{sks}$). (1740 ft^3 of lead slurry and 181 ft^3 tail, 100% excess lead to circulate to surface). WOC 12 hours. Test casing to 750 psi for 30 min.

Intermediate Casing: Depending on wellbore conditions, cement may consist of 391 sks PRB II with 5 #/sk Gilsonite, and $\frac{1}{4}$ #/sk Flocele (12.3 ppg, $2.24 \text{ ft}^3/\text{sks}$) and a tail of 100 sks PRB II with $\frac{1}{4}$ #/sk Flocele and 5#/sk Gilsonite (13.5 ppg, $1.81 \text{ ft}^3/\text{sks}$). (875 ft^3 of lead slurry and 181 ft^3 tail, 100% excess lead to circulate to surface). WOC 12 hours. Test casing to 1500 psi for 30 min.

Production Liner: NO CEMENT

Set slips with full string weight

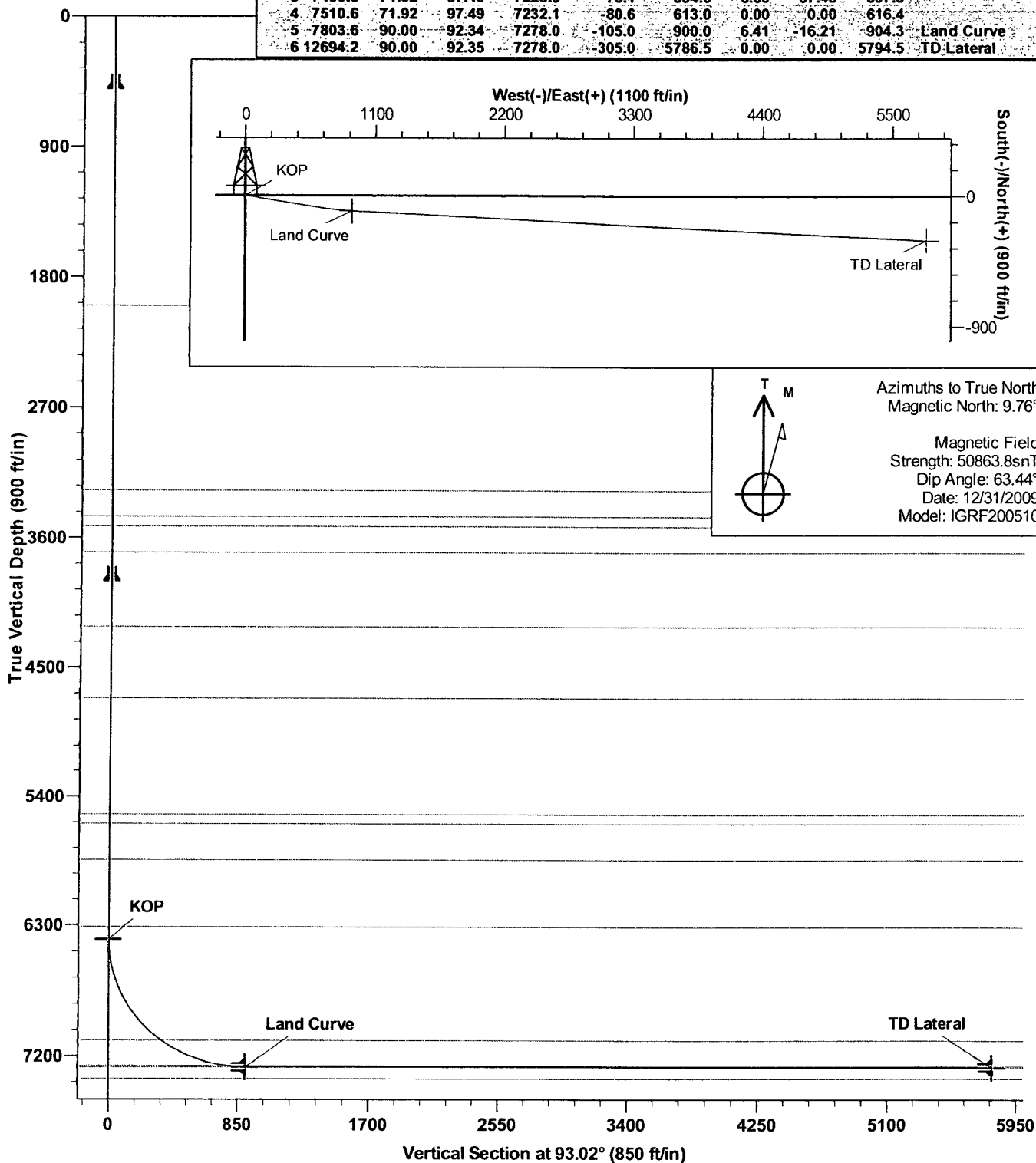
If cement does not circulate, run temperature survey in 8 hrs. to determine TOC.

OTHER INFORMATION

- 1) This well will be an open hole completion lined with an uncemented 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	6400.0	0.00	0.00	6400.0	0.0	0.0	0.00	0.00	0.0	KOP
3	7490.5	71.92	97.49	7225.9	-78.1	594.0	6.59	97.49	597.3	
4	7510.6	71.92	97.49	7232.1	-80.6	613.0	0.00	0.00	616.4	
5	7803.6	90.00	92.34	7278.0	-105.0	900.0	6.41	-16.21	904.3	Land Curve
6	12694.2	90.00	92.35	7278.0	-305.0	5786.5	0.00	0.00	5794.5	TD Lateral



Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Jicarilla Sec 3-T26N-R3W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Lease #96		
Site Position:		Northing:	2,010,066.54 ft
From:	Lat/Long	Easting:	1,383,437.43 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	36° 31' 15.420 N
		Longitude:	107° 7' 28.524 W
		Grid Convergence:	-0.52 °

Well	Jicarilla 96 #600H		
Well Position	+N/-S	0.0 ft	Northing: 2,010,066.54 ft
	+E/-W	0.0 ft	Easting: 1,383,437.43 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,098.0 ft
		Latitude:	36° 31' 15.420 N
		Longitude:	107° 7' 28.524 W
		Ground Level:	7,098.0 ft

Wellbore	Horizontal UPE Niobrara C				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.76	63.44	50,864

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	93.02	

Survey Tool Program	Date 7/6/2010				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,694.2	Plan #1 (Horizontal UPE Niobrara C)	MWD	MWD - Standard	

Planned Survey							
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	N/S (ft)	E/W (ft)	V. Sec (ft)
0.0	0.0	0.00	0.00	0.00	0.0	0.0	0.0
100.0	100.0	0.00	0.00	0.00	0.0	0.0	0.0
200.0	200.0	0.00	0.00	0.00	0.0	0.0	0.0
300.0	300.0	0.00	0.00	0.00	0.0	0.0	0.0
400.0	400.0	0.00	0.00	0.00	0.0	0.0	0.0
500.0	500.0	0.00	0.00	0.00	0.0	0.0	0.0
600.0	600.0	0.00	0.00	0.00	0.0	0.0	0.0
700.0	700.0	0.00	0.00	0.00	0.0	0.0	0.0
800.0	800.0	0.00	0.00	0.00	0.0	0.0	0.0
900.0	900.0	0.00	0.00	0.00	0.0	0.0	0.0
1,000.0	1,000.0	0.00	0.00	0.00	0.0	0.0	0.0
1,100.0	1,100.0	0.00	0.00	0.00	0.0	0.0	0.0

Energen

DIRECTIONAL PLAN

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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)
1,200.0	1,200.0	0.00	0.00	0.00	0.0	0.0	0.0
1,300.0	1,300.0	0.00	0.00	0.00	0.0	0.0	0.0
1,400.0	1,400.0	0.00	0.00	0.00	0.0	0.0	0.0
1,500.0	1,500.0	0.00	0.00	0.00	0.0	0.0	0.0
1,600.0	1,600.0	0.00	0.00	0.00	0.0	0.0	0.0
1,700.0	1,700.0	0.00	0.00	0.00	0.0	0.0	0.0
1,800.0	1,800.0	0.00	0.00	0.00	0.0	0.0	0.0
1,900.0	1,900.0	0.00	0.00	0.00	0.0	0.0	0.0
2,000.0	2,000.0	0.00	0.00	0.00	0.0	0.0	0.0
Nacimiento							
2,100.0	2,100.0	0.00	0.00	0.00	0.0	0.0	0.0
2,200.0	2,200.0	0.00	0.00	0.00	0.0	0.0	0.0
2,300.0	2,300.0	0.00	0.00	0.00	0.0	0.0	0.0
2,400.0	2,400.0	0.00	0.00	0.00	0.0	0.0	0.0
2,500.0	2,500.0	0.00	0.00	0.00	0.0	0.0	0.0
2,600.0	2,600.0	0.00	0.00	0.00	0.0	0.0	0.0
2,700.0	2,700.0	0.00	0.00	0.00	0.0	0.0	0.0
2,800.0	2,800.0	0.00	0.00	0.00	0.0	0.0	0.0
2,900.0	2,900.0	0.00	0.00	0.00	0.0	0.0	0.0
3,000.0	3,000.0	0.00	0.00	0.00	0.0	0.0	0.0
3,100.0	3,100.0	0.00	0.00	0.00	0.0	0.0	0.0
3,200.0	3,200.0	0.00	0.00	0.00	0.0	0.0	0.0
3,273.0	3,273.0	0.00	0.00	0.00	0.0	0.0	0.0
Ojo Alamo SS							
3,300.0	3,300.0	0.00	0.00	0.00	0.0	0.0	0.0
3,400.0	3,400.0	0.00	0.00	0.00	0.0	0.0	0.0
3,453.0	3,453.0	0.00	0.00	0.00	0.0	0.0	0.0
Kirtland Sh							
3,500.0	3,500.0	0.00	0.00	0.00	0.0	0.0	0.0
3,523.0	3,523.0	0.00	0.00	0.00	0.0	0.0	0.0
Fruitland Fm							
3,600.0	3,600.0	0.00	0.00	0.00	0.0	0.0	0.0
3,700.0	3,700.0	0.00	0.00	0.00	0.0	0.0	0.0
3,703.0	3,703.0	0.00	0.00	0.00	0.0	0.0	0.0
Pictured Cliffs SS							
3,800.0	3,800.0	0.00	0.00	0.00	0.0	0.0	0.0
3,900.0	3,900.0	0.00	0.00	0.00	0.0	0.0	0.0
4,000.0	4,000.0	0.00	0.00	0.00	0.0	0.0	0.0
4,100.0	4,100.0	0.00	0.00	0.00	0.0	0.0	0.0
4,200.0	4,200.0	0.00	0.00	0.00	0.0	0.0	0.0
4,218.0	4,218.0	0.00	0.00	0.00	0.0	0.0	0.0
Huerfano Bentonite							
4,300.0	4,300.0	0.00	0.00	0.00	0.0	0.0	0.0
4,400.0	4,400.0	0.00	0.00	0.00	0.0	0.0	0.0
4,500.0	4,500.0	0.00	0.00	0.00	0.0	0.0	0.0

Energen

DIRECTIONAL PLAN

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Planned Survey

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4,600.0	4,600.0	0.00	0.00	0.00	0.0	0.0	0.0
4,700.0	4,700.0	0.00	0.00	0.00	0.0	0.0	0.0
4,713.0	4,713.0	0.00	0.00	0.00	0.0	0.0	0.0
Chacra							
4,800.0	4,800.0	0.00	0.00	0.00	0.0	0.0	0.0
4,900.0	4,900.0	0.00	0.00	0.00	0.0	0.0	0.0
5,000.0	5,000.0	0.00	0.00	0.00	0.0	0.0	0.0
5,100.0	5,100.0	0.00	0.00	0.00	0.0	0.0	0.0
5,200.0	5,200.0	0.00	0.00	0.00	0.0	0.0	0.0
5,300.0	5,300.0	0.00	0.00	0.00	0.0	0.0	0.0
5,400.0	5,400.0	0.00	0.00	0.00	0.0	0.0	0.0
5,500.0	5,500.0	0.00	0.00	0.00	0.0	0.0	0.0
5,528.0	5,528.0	0.00	0.00	0.00	0.0	0.0	0.0
Cliff House							
5,593.0	5,593.0	0.00	0.00	0.00	0.0	0.0	0.0
Menefee							
5,600.0	5,600.0	0.00	0.00	0.00	0.0	0.0	0.0
5,700.0	5,700.0	0.00	0.00	0.00	0.0	0.0	0.0
5,800.0	5,800.0	0.00	0.00	0.00	0.0	0.0	0.0
5,843.0	5,843.0	0.00	0.00	0.00	0.0	0.0	0.0
Point Lookout							
5,900.0	5,900.0	0.00	0.00	0.00	0.0	0.0	0.0
6,000.0	6,000.0	0.00	0.00	0.00	0.0	0.0	0.0
6,100.0	6,100.0	0.00	0.00	0.00	0.0	0.0	0.0
6,200.0	6,200.0	0.00	0.00	0.00	0.0	0.0	0.0
6,300.0	6,300.0	0.00	0.00	0.00	0.0	0.0	0.0
6,313.0	6,313.0	0.00	0.00	0.00	0.0	0.0	0.0
Mancos							
6,400.0	6,400.0	0.00	0.00	0.00	0.0	0.0	0.0
KOP							
6,450.0	6,450.0	3.30	97.49	6.59	-0.2	1.4	1.4
6,500.0	6,499.8	6.59	97.49	6.59	-0.7	5.7	5.7
6,550.0	6,549.3	9.89	97.49	6.59	-1.7	12.8	12.9
6,600.0	6,598.2	13.19	97.49	6.59	-3.0	22.7	22.8
6,650.0	6,646.6	16.49	97.49	6.59	-4.7	35.4	35.6
6,700.0	6,694.1	19.78	97.49	6.59	-6.7	50.8	51.1
6,750.0	6,740.6	23.08	97.49	6.59	-9.1	69.0	69.3
6,800.0	6,786.0	26.38	97.49	6.59	-11.8	89.7	90.2
6,850.0	6,830.1	29.68	97.49	6.59	-14.9	113.0	113.6
6,900.0	6,872.9	32.97	97.49	6.59	-18.3	138.8	139.5
6,950.0	6,914.0	36.27	97.49	6.59	-22.0	166.9	167.8
7,000.0	6,953.4	39.57	97.49	6.59	-26.0	197.4	198.5
7,050.0	6,991.0	42.87	97.49	6.59	-30.3	230.0	231.3
7,100.0	7,026.7	46.16	97.49	6.59	-34.8	264.8	266.3
7,150.0	7,060.3	49.46	97.49	6.59	-39.7	301.5	303.2

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (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)
7,200.0	7,091.6	52.76	97.49	6.59	-44.7	340.1	342.0
7,202.2	7,093.0	52.91	97.49	6.59	-45.0	341.9	343.8
Mancos/Niobrara "A"							
7,250.0	7,120.7	56.06	97.49	6.59	-50.0	380.4	382.5
7,300.0	7,147.4	59.35	97.49	6.59	-55.6	422.3	424.6
7,350.0	7,171.7	62.65	97.49	6.59	-61.3	465.7	468.2
7,400.0	7,193.4	65.95	97.49	6.59	-67.1	510.3	513.1
7,450.0	7,212.4	69.25	97.49	6.59	-73.2	556.1	559.2
7,490.5	7,225.9	71.92	97.49	6.59	-78.1	594.0	597.3
7,500.0	7,228.8	71.92	97.49	0.00	-79.3	603.0	606.3
7,510.6	7,232.1	71.92	97.49	0.00	-80.6	613.0	616.4
7,550.0	7,243.5	74.34	96.76	6.16	-85.3	650.4	654.0
7,600.0	7,255.7	77.43	95.86	6.16	-90.6	698.6	702.4
7,650.0	7,265.3	80.51	94.98	6.17	-95.3	747.4	751.4
7,667.3	7,268.0	81.58	94.67	6.17	-96.7	764.4	768.5
Top Target Niobrara "C"							
7,700.0	7,272.2	83.60	94.11	6.17	-99.2	796.8	800.9
7,750.0	7,276.5	86.69	93.25	6.18	-102.4	846.5	850.7
7,803.6	7,278.0	90.00	92.34	6.18	-105.0	900.0	904.3
Land in Niobrara "C" - Land Curve							
7,900.0	7,278.0	90.00	92.34	0.00	-108.9	996.3	1,000.7
8,000.0	7,278.0	90.00	92.34	0.00	-113.0	1,096.2	1,100.6
8,100.0	7,278.0	90.00	92.34	0.00	-117.1	1,196.1	1,200.6
8,200.0	7,278.0	90.00	92.34	0.00	-121.2	1,296.1	1,300.6
8,300.0	7,278.0	90.00	92.34	0.00	-125.3	1,396.0	1,400.6
8,400.0	7,278.0	90.00	92.34	0.00	-129.3	1,495.9	1,500.6
8,500.0	7,278.0	90.00	92.34	0.00	-133.4	1,595.8	1,600.6
8,600.0	7,278.0	90.00	92.34	0.00	-137.5	1,695.7	1,700.6
8,700.0	7,278.0	90.00	92.34	0.00	-141.6	1,795.6	1,800.6
8,800.0	7,278.0	90.00	92.34	0.00	-145.7	1,895.6	1,900.6
8,900.0	7,278.0	90.00	92.34	0.00	-149.8	1,995.5	2,000.6
9,000.0	7,278.0	90.00	92.34	0.00	-153.8	2,095.4	2,100.6
9,100.0	7,278.0	90.00	92.34	0.00	-157.9	2,195.3	2,200.6
9,200.0	7,278.0	90.00	92.34	0.00	-162.0	2,295.2	2,300.6
9,300.0	7,278.0	90.00	92.34	0.00	-166.1	2,395.1	2,400.6
9,400.0	7,278.0	90.00	92.34	0.00	-170.2	2,495.1	2,500.5
9,500.0	7,278.0	90.00	92.34	0.00	-174.3	2,595.0	2,600.5
9,600.0	7,278.0	90.00	92.34	0.00	-178.3	2,694.9	2,700.5
9,700.0	7,278.0	90.00	92.34	0.00	-182.4	2,794.8	2,800.5
9,800.0	7,277.9	90.00	92.34	0.00	-186.5	2,894.7	2,900.5
9,900.0	7,277.9	90.00	92.34	0.00	-190.6	2,994.6	3,000.5
10,000.0	7,277.9	90.00	92.34	0.00	-194.7	3,094.5	3,100.5
10,100.0	7,277.9	90.00	92.34	0.00	-198.8	3,194.5	3,200.5
10,200.0	7,277.9	90.00	92.34	0.00	-202.8	3,294.4	3,300.5
10,300.0	7,277.9	90.00	92.34	0.00	-206.9	3,394.3	3,400.5

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (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)
10,400.0	7,277.9	90.00	92.34	0.00	-211.0	3,494.2	3,500.5
10,500.0	7,277.9	90.00	92.34	0.00	-215.1	3,594.1	3,600.5
10,600.0	7,277.9	90.00	92.34	0.00	-219.2	3,694.0	3,700.5
10,700.0	7,277.9	90.00	92.34	0.00	-223.3	3,794.0	3,800.5
10,800.0	7,277.9	90.00	92.34	0.00	-227.3	3,893.9	3,900.5
10,900.0	7,277.9	90.00	92.34	0.00	-231.4	3,993.8	4,000.4
11,000.0	7,277.9	90.00	92.34	0.00	-235.5	4,093.7	4,100.4
11,100.0	7,277.9	90.01	92.34	0.00	-239.6	4,193.6	4,200.4
11,200.0	7,277.8	90.01	92.34	0.00	-243.7	4,293.5	4,300.4
11,300.0	7,277.8	90.01	92.34	0.00	-247.8	4,393.5	4,400.4
11,400.0	7,277.8	90.01	92.34	0.00	-251.8	4,493.4	4,500.4
11,500.0	7,277.8	90.01	92.34	0.00	-255.9	4,593.3	4,600.4
11,600.0	7,277.8	90.01	92.34	0.00	-260.0	4,693.2	4,700.4
11,700.0	7,277.8	90.01	92.34	0.00	-264.1	4,793.1	4,800.4
11,800.0	7,277.8	90.01	92.34	0.00	-268.2	4,893.0	4,900.4
11,900.0	7,277.8	90.01	92.34	0.00	-272.3	4,993.0	5,000.4
12,000.0	7,277.8	90.01	92.34	0.00	-276.3	5,092.9	5,100.4
12,100.0	7,277.8	90.01	92.34	0.00	-280.4	5,192.8	5,200.4
12,200.0	7,277.7	90.01	92.34	0.00	-284.5	5,292.7	5,300.4
12,300.0	7,277.7	90.01	92.34	0.00	-288.6	5,392.6	5,400.3
12,400.0	7,277.7	90.01	92.34	0.00	-292.7	5,492.5	5,500.3
12,500.0	7,277.7	90.01	92.34	0.00	-296.8	5,592.5	5,600.3
12,600.0	7,277.7	90.01	92.34	0.00	-300.8	5,692.4	5,700.3
12,694.2	7,278.0	90.00	92.35	-0.01	-305.0	5,786.5	5,794.5

TD Lateral

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Jicarilla Sec 3-T26N-R3W
Site: Lease #96
Well: Jicarilla 96 #600H
Wellbore: Horizontal UPE Niobrara C
Design: Plan #1

Local Co-ordinate Reference: Well Jicarilla 96 #600H
TVD Reference: KB @ 7113.0ft (KB)
MD Reference: KB @ 7113.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

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
KOP - plan hits target - Point	0.00	0.00	6,400.0	0.0	0.0	2,010,066.54	1,383,437.43	36° 31' 15.420 N	107° 7' 28.524 W
TD Lateral - plan hits target - Point	0.00	0.00	7,278.0	-305.0	5,786.5	2,009,708.98	1,389,220.92	36° 31' 12.398 N	107° 6' 17.633 W
Land Curve - plan hits target - Point	0.00	0.00	7,278.0	-105.0	900.0	2,009,953.37	1,384,336.43	36° 31' 14.382 N	107° 7' 17.498 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	Conductor	13-3/8	17-1/2
3,900.0	3,900.0	Surface	9-5/8	12-1/4
7,803.0	7,278.0	Intermediate	7	8-3/4
12,694.0	7,277.7	Liner	4-1/2	6-1/8

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,667.3	7,268.0	Top Target Niobrara "C"		0.00	
7,803.6	7,278.0	Land in Niobrara "C"		0.00	
3,453.0	3,453.0	Kirtland Sh		0.00	
5,593.0	5,593.0	Menefee		0.00	
4,713.0	4,713.0	Chacra		0.00	
3,523.0	3,523.0	Fruitland Fm		0.00	
3,703.0	3,703.0	Pictured Cliffs SS		0.00	
2,000.0	2,000.0	Nacimiento		0.00	
7,202.2	7,093.0	Mancos/Niobrara "A"		0.00	
5,528.0	5,528.0	Cliff House		0.00	
6,313.0	6,313.0	Mancos		0.00	
	7,358.0	Base Target Niobrara "C"		0.00	
4,218.0	4,218.0	Huerfano Bentonite		0.00	
5,843.0	5,843.0	Point Lookout		0.00	
3,273.0	3,273.0	Ojo Alamo SS		0.00	

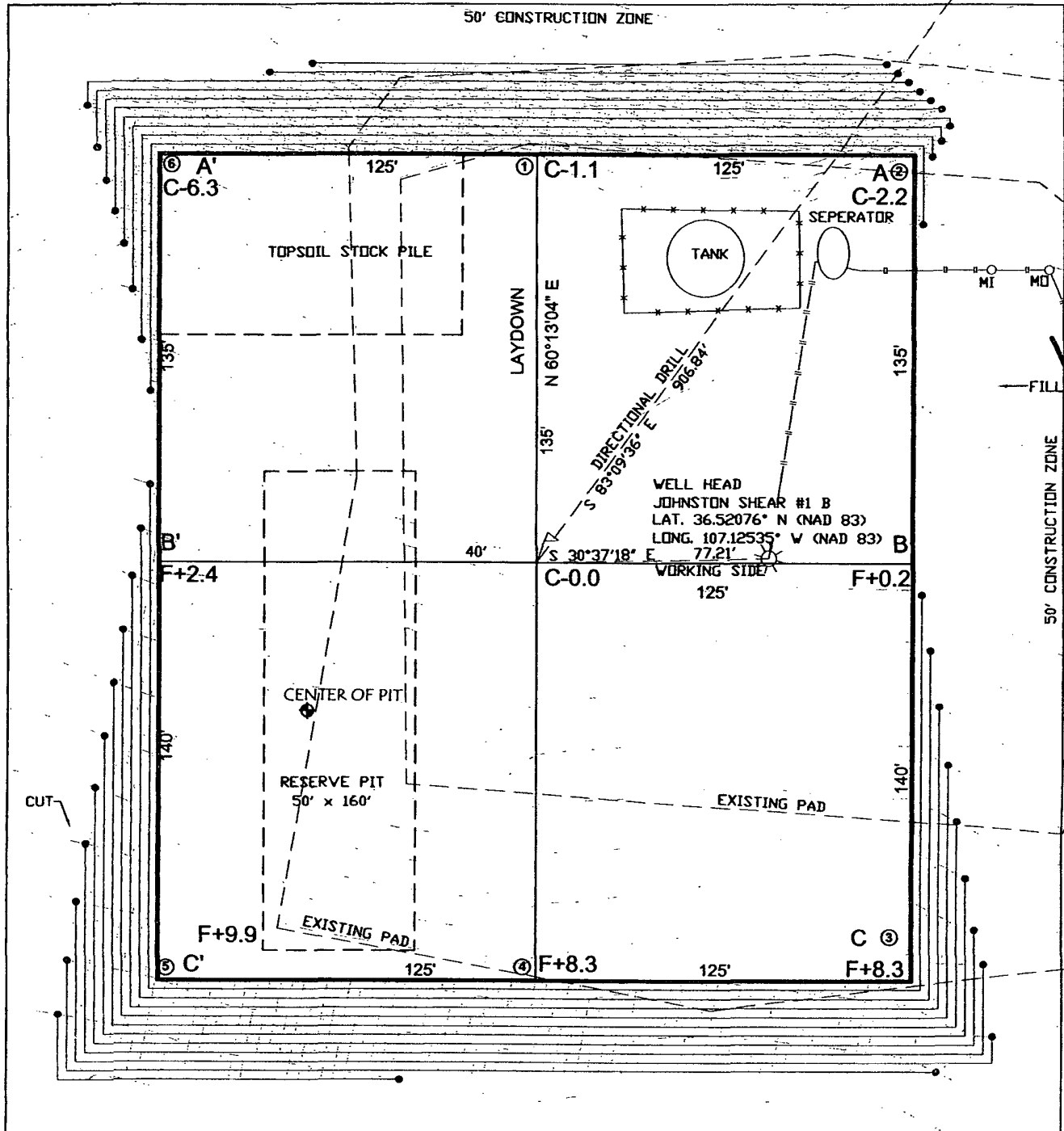
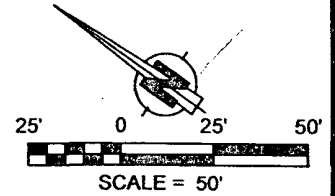
Checked By: _____ Approved By: _____ Date: _____

WELL FLAG

LATITUDE: 36.52095° N
 LONGITUDE: 107.12549° W
 DATUM: NAD 83
CENTER OF PIT
 LATITUDE: 36.52106° N
 LONGITUDE: 107.12576° W
 ELEVATION: 7085.8'
 NAD83 & NAVD88

ENERGEN RESOURCES CORPORATION

JICARILLA 96 #600
 595' FNL & 700' FEL
 LOCATED IN THE NE/4 NE/4 OF SECTION 3,
 T26N, R3W, N.M.P.M.,
 RIO ARriba COUNTY, NEW MEXICO
 GROUND ELEVATION: 7098', NAVD 88
 FINISHED PAD ELEVATION: 7097.8', NAVD 88

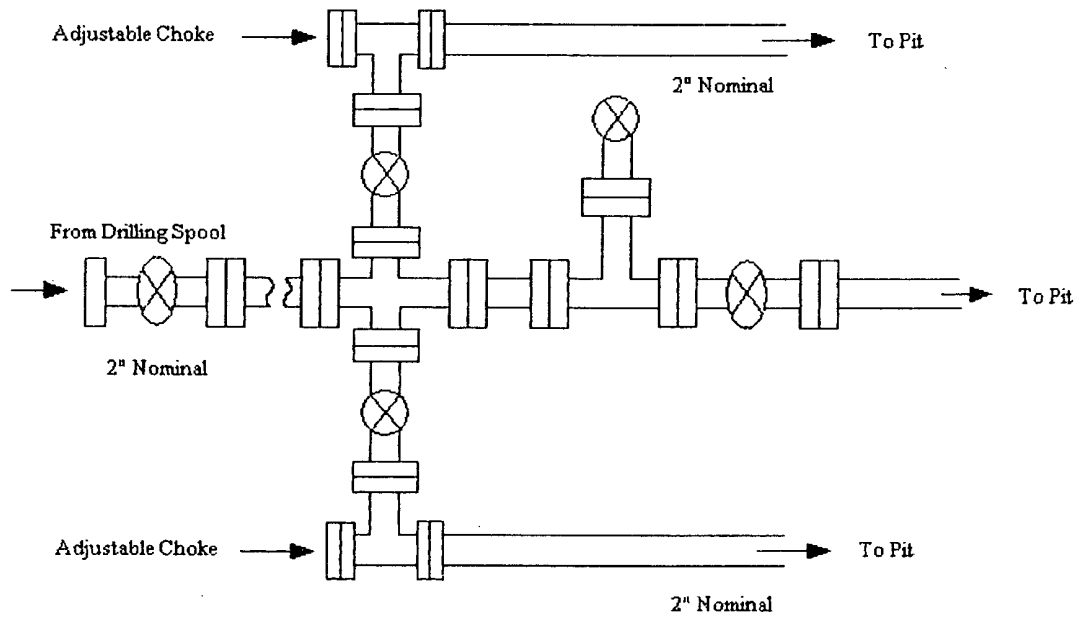


1 FOOT CONTOUR INTERVAL SHOWN
 SCALE: 1" = 50'
 JOB No.: ERG262
 DATE: 10/28/08



Russell Surveying
 1409 W. Aztec Blvd. #2
 Aztec, New Mexico 87410
 (505) 334-8637

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

