Form 3160-5
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
SF-079485B

6. If Indian, Allottee or Tribe Name

2007 APR -4 AM 10:01

7. If Unit or CA/Agreement, Name and/or No.

RECEIVED
210 FARMINGTON NM

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

8. Well Name and No.
San Juan 30-4 Unit #48

2. Name of Operator
Energen Resources Corporation

9. API Well No.
30-039-27698

3a. Address
2198 Bloomfield Hwy, Farmington, NM 87401

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

10. Field and Pool, or Exploratory Area
East Blanco Pictured Cliffs

4. Location of Well (*Footage, Sec., T., R., M., or Survey Description*)
At surface: 645' FSL, 2425' ~~FWL~~ FEL
At bottom: 760' FSL, 110' FEL
Sec 17 T30N R04W

11. County or Parish, State
Rio Arriba NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change from vertical drill to horizontal drill
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

Energen Resources would like to change the San Juan 30-4 Unit #48 well from a vertical conventional drill to a horizontal drill as follows:

RCVD APR6'07
OIL CONS. DIV.
DIST. 3

Surface Casing: No Change

Intermediate Casing: KOP at 3500' TVD with a Build Up Rate (BUR) of 8.85 deg/100' and drill according to the attached directional plan and operations plan. Land curve in the bottom Pictured Cliffs sand at 4375' TVD, 5500' MD. Cement to surface with 775 sacks lead and 125 sacks tail as outlined in attached operations plan.

Production Liners: Drill at 90 deg in lower PC sand to a depth of 4375' TVD, 6218' MD. Leave open hole to monitor production for 30 days. Run liner and fracture stimulate PC sand if required (sundry to follow prior to stimulation operation). Mill window at 4350' MD, 4175' TVD and drill upper lateral to a TD of 4175' TVD, 6187' MD according to attached directional plan. Completion will be open hole or fracture stimulated depending on lower lateral status.

~~HOLD C104 FOR~~ directional survey + BH survey

14. I hereby certify that the foregoing is true and correct
Name (*Printed/Typed*) Nathan Smith
Title Drilling Engineer
Date 4/3/07

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Troy L Salyers
Title Petroleum Engineer
Date 4/4/07
Office FFO

Conditions of approval, if any, are attached. Approval of this notice 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.

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes 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.

NMOCD

RCVD APR6'07
OIL CONS. DIV.
DIST. 3

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, 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 & 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

RECEIVED 070 FARMINGTON NM 2007 APR -6 AM 10: 01

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-039-27698	72400	East Blanco Pictured Cliffs

4 Property Code	5 Property Name	6 Well Number
	San Juan 30-4 Unit	#48

7 OGRID No.	8 Operator Name	9 Elevation
162928	Energen Resources Corporation	7415'

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
O	17	30N	4W		645	South	2425	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
P	17	30N	4W		760	South	110	East	Rio Arriba

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
160.0 SE/4			

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.

5277.36'

16

5280.00'

Datum: NAD1927
N36.80611
W107.27694

SHL

BHL

110'

2425'

645'

760'

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 of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 1/22/2007

Nathan Smith
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.

April 28, 2003
Date of Survey

Signature and Seal of Professional Surveyor:
Original survey conducted and recorded by Jason C. Edwards

Certificate #15269
Certificate Number

Operations Plan
Revised April 3, 2007

San Juan 30-4 Unit #48

General Information

Location	645' fsl, 2425' fwl at surface 760' fsl, 110' fel at bottom sese S17, T30N, R4W Rio Arriba County, New Mexico
Elevations	7415' GL
Total Depth	6475' (MD), 4425' (TVD)
Formation Objective	East Blanco Pictured Cliffs

Formation Tops

San Jose	Surface
Nacimiento	3188' (TVD)
Ojo Alamo Ss	3508' (TVD)
Kirtland Sh	3690' (TVD)
Fruitland Fm	3737' (TVD)
Top Coal	4077' (TVD), 4174' (MD)
Bottom Coal	4137' (TVD), 4327' (MD)
Upper Pictured Cliffs Ss	4145' (TVD), 4348' (MD)
Lower Pictured Cliffs Ss	4326' (TVD), 4964' (MD)
Lewis Shale	4477' (TVD)
Total Depth	4425' (TVD), 6374' (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 3500' TVD with a BUR of 8.85°/100'.
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 750 psi.
Blowout Control Specifications:

A 2000 psi minimum double ram or annulus BOP stack 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: None
Mud logs: From 3737' (TVD), 3737' (MD) to TD. (Top of Fruitland Fm)
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'-4375' (TVD) 5500' (MD)	8 ¾"	7"	23.0 ppf	J-55 LT&C
Production	4375'-4211' (TVD) 4175'-4211' (TVD) 5500'-6218' (MD) 4350'-6187' (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: 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 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" casing head. 9 5/8" x 7"x 2 3/8" 3000 psi Flanged Wellhead .

Cementing

Surface Casing: 125 sks Std (class B) with 2.0 % $CaCl_2$ and ¼ #/sk Flocele (15.6 ppg, 1.18 ft^3/sk 148 ft^3 of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min.

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 775 sks 65/35 with 6.0 % Bentonite, 2.0 % $CaCl_2$, 10 #/sk Gilsonite, and ½ #/sk Flocele (12.3 ppg, 1.93 ft^3/sk) and a tail of 125 sks Sks with ¼ #/sk Flocele (15.6 ppg, 1.18 ft^3/sk). (1402 ft^3 of slurry, 100 % excess to circulate to surface). Test casing to 1200 psi for 30 min.

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.

Energen Resources

SJ BR - S17, T30N, R4W
Cabresto Mesa
San Juan 30-4 Unit #48
Preliminary Plan

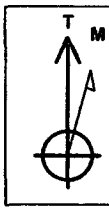
Plan: Plan #1

Energen Resources - Design

03 April, 2007

ENERGEN RESOURCES

Project: SJ BR - S17, T30N, R4W
Site: Cabresto Mesa
Well: San Juan 30-4 Unit #48
Wellbore: Preliminary Plan
Plan: Plan #1 (San Juan 30-4 Unit #48/Preliminary Plan)



Azimuths to True North
Magnetic North: 10.22°

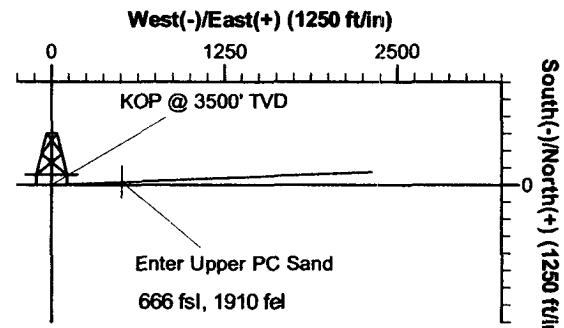
Magnetic Field
Strength: 51343.8snT
Dip Angle: 63.72°
Date: 1/22/2007
Model: IGRF200510

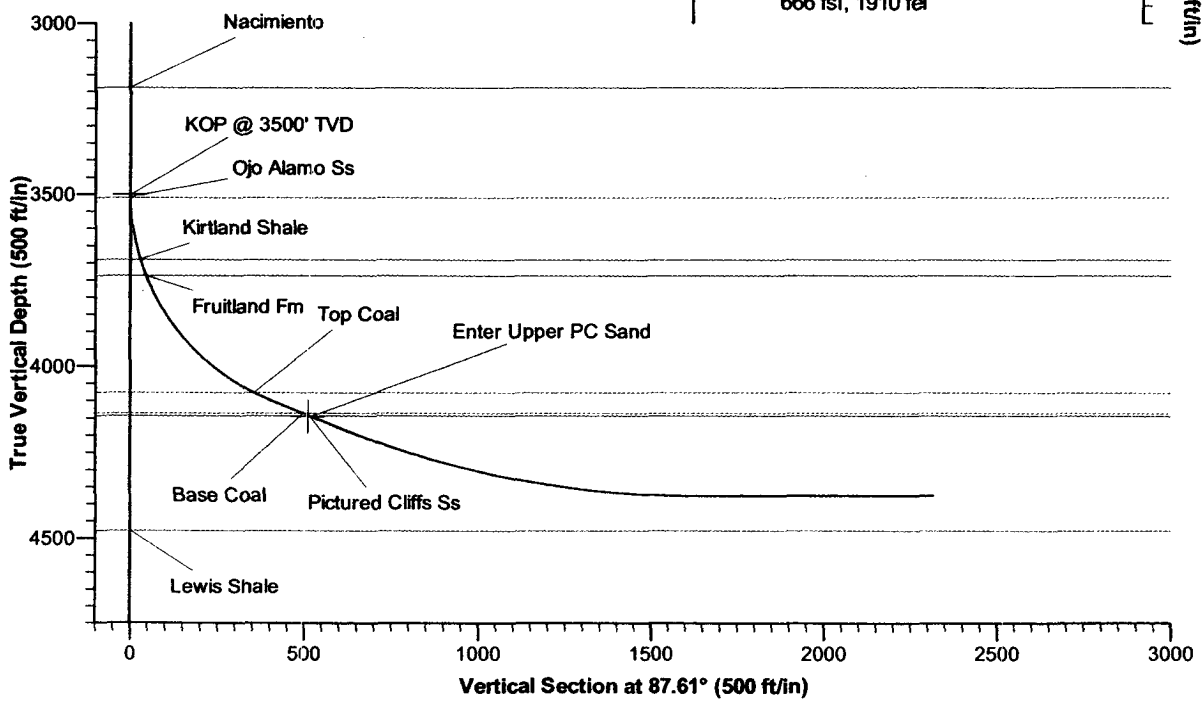
PROJECT DETAILS: SJ BR - S17, T30N, R4W	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico West 3003
System Datum:	Mean Sea Level

SURFACE LOCATION	
Easting:	662886.35
Northing:	2113157.43

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	3500.0	0.00	0.00	3500.0	0.0	0.0	0.00	0.00	0.0
3	4268.0	68.00	87.61	4100.0	16.9	404.4	8.85	87.61	404.7
4	4468.2	68.00	87.61	4175.0	24.6	589.8	0.00	0.00	590.3
5	5522.9	90.00	87.61	4375.0	67.5	1617.8	2.09	0.00	1619.2
6	6218.6	90.00	87.61	4375.0	96.5	2313.0	0.00	0.00	2315.0





Energen

Energen Resources - Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Preliminary Plan	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.16 Single User Db

Project SJ BR - S17, T30N, R4W

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico West 3003		

Site Cabresto Mesa

Site Position:		**Northing:**	2,113,157.43 ft	**Latitude:**	36° 48' 22.000 N
From:	Lat/Long	**Easting:**	662,886.35 ft	**Longitude:**	107° 16' 37.000 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.33 °

Well San Juan 30-4 Unit #48

Well Position	**+N/-S**	0.0 ft	**Northing:**	2,113,157.43 ft	**Latitude:**	36° 48' 22.000 N
	+E/-W	0.0 ft	**Easting:**	662,886.35 ft	**Longitude:**	107° 16' 37.000 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	7,415.0 ft	**Ground Level:**	7,415.0 ft

Wellbore Preliminary Plan

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	1/22/2007	10.22	63.72	51,344

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	87.61	

Survey Tool Program **Date** 4/3/2007

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	6,218.6	Plan #1 (Preliminary Plan)	MWD	MWD - Standard

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
0.0	0.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
San Jose							
100.0	100.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
200.0	200.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
300.0	300.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
400.0	400.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
500.0	500.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
600.0	600.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
700.0	700.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
800.0	800.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
900.0	900.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,000.0	1,000.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Preliminary Plan	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
1,100.0	1,100.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,200.0	1,200.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,300.0	1,300.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,400.0	1,400.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,500.0	1,500.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,600.0	1,600.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,700.0	1,700.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,800.0	1,800.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
1,900.0	1,900.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,000.0	2,000.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,100.0	2,100.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,200.0	2,200.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,300.0	2,300.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,400.0	2,400.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,500.0	2,500.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,600.0	2,600.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,700.0	2,700.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,800.0	2,800.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
2,900.0	2,900.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,000.0	3,000.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,100.0	3,100.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,188.0	3,188.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
Nacimiento							
3,200.0	3,200.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,300.0	3,300.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,400.0	3,400.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
3,500.0	3,500.0	0.00	0.00	0.00	0.0	2,113,157.43	662,886.35
KOP @ 3500' TVD							
3,508.0	3,508.0	0.71	87.61	8.85	0.0	2,113,157.43	662,886.40
Ojo Alamo Ss							
3,550.0	3,550.0	4.43	87.61	8.85	1.9	2,113,157.52	662,888.28
3,600.0	3,599.6	8.85	87.61	8.85	7.7	2,113,157.79	662,894.05
3,650.0	3,648.7	13.28	87.61	8.85	17.3	2,113,158.25	662,903.64
3,692.8	3,690.0	17.07	87.61	8.85	28.5	2,113,158.78	662,914.84
Kirtland Shale							
3,700.0	3,696.8	17.71	87.61	8.85	30.7	2,113,158.88	662,916.98
3,742.6	3,737.0	21.48	87.61	8.85	45.0	2,113,159.56	662,931.26
Fruitland Fm							
3,750.0	3,743.8	22.13	87.61	8.85	47.7	2,113,159.69	662,933.99
3,800.0	3,789.4	26.56	87.61	8.85	68.3	2,113,160.67	662,954.57
3,850.0	3,833.2	30.99	87.61	8.85	92.4	2,113,161.82	662,978.61
3,900.0	3,875.0	35.42	87.61	8.85	119.7	2,113,163.12	663,005.95
3,950.0	3,914.6	39.84	87.61	8.85	150.3	2,113,164.57	663,036.44
4,000.0	3,951.7	44.27	87.61	8.85	183.7	2,113,166.16	663,069.88
4,050.0	3,986.1	48.70	87.61	8.85	220.0	2,113,167.88	663,106.09

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Preliminary Plan	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
4,100.0	4,017.7	53.12	87.61	8.85	258.8	2,113,169.72	663,144.85
4,150.0	4,046.1	57.55	87.61	8.85	299.9	2,113,171.68	663,185.92
4,200.0	4,071.3	61.98	87.61	8.85	343.1	2,113,173.73	663,229.06
4,212.5	4,077.0	63.08	87.61	8.85	354.1	2,113,174.25	663,240.09
Top Coal							
4,250.0	4,093.0	66.40	87.61	8.85	388.1	2,113,175.87	663,274.01
4,268.0	4,100.0	68.00	87.61	8.85	404.7	2,113,176.66	663,290.60
4,300.0	4,112.0	68.00	87.61	0.00	434.4	2,113,178.07	663,320.22
4,366.8	4,137.0	68.00	87.61	0.00	496.3	2,113,181.01	663,382.07
Base Coal							
4,388.1	4,145.0	68.00	87.61	0.00	516.1	2,113,181.95	663,401.85
Pictured Cliffs Ss							
4,400.0	4,149.4	68.00	87.61	0.00	527.1	2,113,182.47	663,412.83
4,468.2	4,175.0	68.00	87.61	0.00	590.3	2,113,185.48	663,476.02
4,500.0	4,186.7	68.66	87.61	2.09	619.9	2,113,186.88	663,505.51
4,600.0	4,221.4	70.75	87.61	2.09	713.7	2,113,191.34	663,599.19
4,700.0	4,252.7	72.83	87.61	2.09	808.6	2,113,195.85	663,694.07
4,800.0	4,280.4	74.92	87.61	2.09	904.7	2,113,200.41	663,790.03
4,900.0	4,304.7	77.01	87.61	2.09	1,001.7	2,113,205.02	663,886.93
5,000.0	4,325.4	79.09	87.61	2.09	1,099.5	2,113,209.67	663,984.64
5,100.0	4,342.5	81.18	87.61	2.09	1,198.1	2,113,214.35	664,083.05
5,200.0	4,356.0	83.26	87.61	2.09	1,297.1	2,113,219.06	664,182.01
5,300.0	4,366.0	85.35	87.61	2.09	1,396.6	2,113,223.79	664,281.40
5,400.0	4,372.3	87.44	87.61	2.09	1,496.4	2,113,228.53	664,381.08
5,500.0	4,374.9	89.52	87.61	2.09	1,596.4	2,113,233.28	664,480.93
5,522.9	4,375.0	90.00	87.61	2.09	1,619.2	2,113,234.36	664,503.77
5,600.0	4,375.0	90.00	87.61	0.00	1,696.4	2,113,238.03	664,580.82
5,700.0	4,375.0	90.00	87.61	0.00	1,796.4	2,113,242.78	664,680.70
5,800.0	4,375.0	90.00	87.61	0.00	1,896.4	2,113,247.53	664,780.59
5,900.0	4,375.0	90.00	87.61	0.00	1,996.4	2,113,252.28	664,880.48
6,000.0	4,375.0	90.00	87.61	0.00	2,096.4	2,113,257.04	664,980.37
6,100.0	4,375.0	90.00	87.61	0.00	2,196.4	2,113,261.79	665,080.25
6,200.0	4,375.0	90.00	87.61	0.00	2,296.4	2,113,266.54	665,180.14
6,218.6	4,375.0	90.00	87.61	0.00	2,315.0	2,113,267.42	665,198.74

Energen

Energen Resources - Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Preliminary Plan	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**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
Enter Upper PC Sand - plan misses by 1.6ft at 4384.1ft MD (4143.5 TVD, 21.4 N, 511.9 E) - Point	0.00	0.00	4,145.0	21.3	511.3	2,113,181.74	663,397.47	36° 48' 22.211 N	107° 16' 30.713 W
KOP @ 3500' TVD - plan hits target - Point	0.00	0.33	3,500.0	0.0	0.0	2,113,157.43	662,886.35	36° 48' 22.000 N	107° 16' 37.000 W

Checked By: _____ Approved By: _____ Date: 4/3/07

Energen Resources

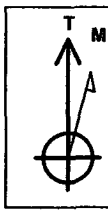
SJ BR - S17, T30N, R4W
Cabresto Mesa
San Juan 30-4 Unit #48
Upper Lateral

Plan: Plan #1

Energen Resources - Design

03 April, 2007

Project: SJ BR - S17, T30N, R4W
Site: Cabresto Mesa
Well: San Juan 30-4 Unit #48
Wellbore: Upper Lateral
Plan: Plan #1 (San Juan 30-4 Unit #48/Upper Lateral)



Azimuths to True North
Magnetic North: 10.20°

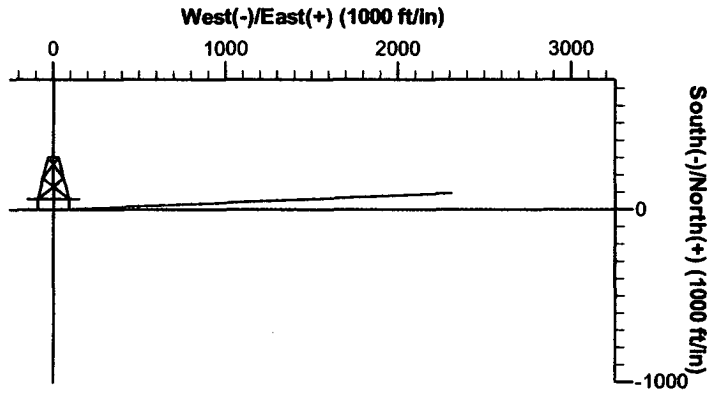
Magnetic Field
Strength: 51267.6snT
Dip Angle: 63.72°
Date: 3/30/2007
Model: IGRF200510

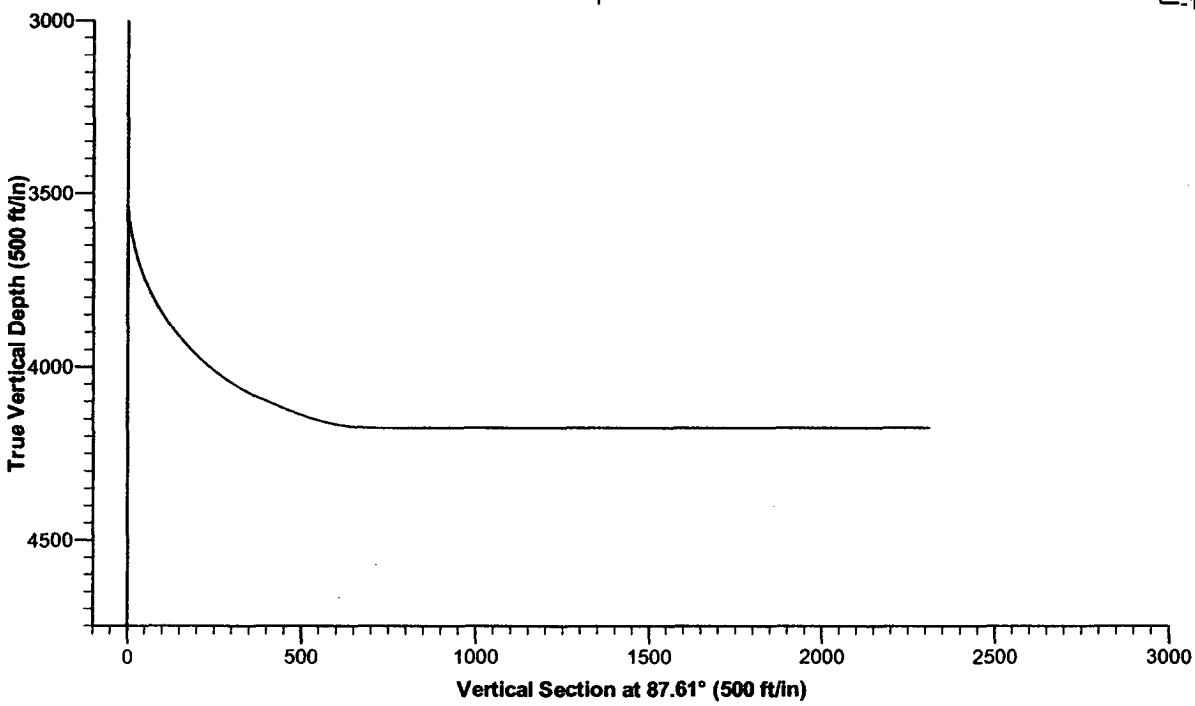
PROJECT DETAILS: SJ BR - S17, T30N, R4W	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico West 3003
System Datum:	Mean Sea Level

SURFACE LOCATION	
Easting:	662886.35
Northing:	2113157.43

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	4349.0	68.00	87.61	4130.3	20.0	479.4	0.00	0.00	479.8	
2	4584.5	90.00	87.61	4175.0	29.6	708.9	9.34	0.00	709.6	
3	6187.0	90.00	87.61	4175.0	96.4	2310.0	0.00	0.00	2312.0	





Energen

Energen Resources - Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Upper Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.16 Single User Db

Project SJ BR - S17, T30N, R4W

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico West 3003		

Site Cabresto Mesa

Site Position:		**Northing:**	2,113,157.43 ft	**Latitude:**	36° 48' 22.000 N
From:	Lat/Long	**Easting:**	662,886.35 ft	**Longitude:**	107° 16' 37.000 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.33 °

Well San Juan 30-4 Unit #48

Well Position	**+N/-S**	0.0 ft	**Northing:**	2,113,157.43 ft	**Latitude:**	36° 48' 22.000 N
	+E/-W	0.0 ft	**Easting:**	662,886.35 ft	**Longitude:**	107° 16' 37.000 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	7,415.0 ft	**Ground Level:**	7,415.0 ft

Wellbore Upper Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/30/2007	10.20	63.72	51,268

Design Plan #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	4,349.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	87.61

Survey Tool Program **Date** 4/3/2007

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	4,349.0	Plan #1 (Preliminary Plan)	MWD	MWD - Standard
4,349.0	6,187.0	Plan #1 (Upper Lateral)	MWD	MWD - Standard

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
4,000.0	3,951.7	44.27	87.61	8.85	183.7	2,113,166.16	663,069.88
4,050.0	3,986.1	48.70	87.61	8.85	220.0	2,113,167.88	663,106.09
4,100.0	4,017.7	53.12	87.61	8.85	258.8	2,113,169.72	663,144.85
4,150.0	4,046.1	57.55	87.61	8.85	299.9	2,113,171.68	663,185.92
4,200.0	4,071.3	61.98	87.61	8.85	343.1	2,113,173.73	663,229.06
4,250.0	4,093.0	66.40	87.61	8.85	388.1	2,113,175.87	663,274.01
4,268.0	4,100.0	68.00	87.61	8.85	404.7	2,113,176.66	663,290.60
4,300.0	4,112.0	68.00	87.61	0.00	434.4	2,113,178.07	663,320.22
4,349.0	4,130.3	68.00	87.61	0.00	479.8	2,113,180.22	663,365.60
4,350.0	4,130.7	68.09	87.61	9.34	480.7	2,113,180.27	663,366.52
4,400.0	4,147.5	72.76	87.61	9.34	527.8	2,113,182.51	663,413.57

Energen

Energen Resources - Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Well San Juan 30-4 Unit #48
Project:	SJ BR - S17, T30N, R4W	**TVD Reference:**	KB @ 7430.0ft (Drilling Rig)
Site:	Cabresto Mesa	**MD Reference:**	KB @ 7430.0ft (Drilling Rig)
Well:	San Juan 30-4 Unit #48	**North Reference:**	True
Wellbore:	Upper Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	Build (°/100ft)	V. Sec (ft)	Northing (ft)	Easting (ft)
4,450.0	4,160.3	77.43	87.61	9.34	576.1	2,113,184.80	663,461.82
4,500.0	4,169.2	82.10	87.61	9.34	625.3	2,113,187.14	663,510.96
4,550.0	4,174.0	86.78	87.61	9.34	675.1	2,113,189.50	663,560.65
4,584.5	4,175.0	90.00	87.61	9.34	709.6	2,113,191.14	663,595.11
4,600.0	4,175.0	90.00	87.61	0.00	725.0	2,113,191.88	663,610.58
4,700.0	4,175.0	90.00	87.61	0.00	825.0	2,113,196.63	663,710.46
4,800.0	4,175.0	90.00	87.61	0.00	925.0	2,113,201.38	663,810.35
4,900.0	4,175.0	90.00	87.61	0.00	1,025.0	2,113,206.13	663,910.24
5,000.0	4,175.0	90.00	87.61	0.00	1,125.0	2,113,210.88	664,010.12
5,100.0	4,175.0	90.00	87.61	0.00	1,225.0	2,113,215.63	664,110.01
5,200.0	4,175.0	90.00	87.61	0.00	1,325.0	2,113,220.39	664,209.90
5,300.0	4,175.0	90.00	87.61	0.00	1,425.0	2,113,225.14	664,309.79
5,400.0	4,175.0	90.00	87.61	0.00	1,525.0	2,113,229.89	664,409.67
5,500.0	4,175.0	90.00	87.61	0.00	1,625.0	2,113,234.64	664,509.56
5,600.0	4,175.0	90.00	87.61	0.00	1,725.0	2,113,239.39	664,609.45
5,700.0	4,175.0	90.00	87.61	0.00	1,825.0	2,113,244.14	664,709.33
5,800.0	4,175.0	90.00	87.61	0.00	1,925.0	2,113,248.89	664,809.22
5,900.0	4,175.0	90.00	87.61	0.00	2,025.0	2,113,253.65	664,909.11
6,000.0	4,175.0	90.00	87.61	0.00	2,125.0	2,113,258.40	665,008.99
6,100.0	4,175.0	90.00	87.61	0.00	2,225.0	2,113,263.15	665,108.88
6,187.0	4,175.0	90.00	87.61	0.00	2,312.0	2,113,267.28	665,195.74

Checked By: _____ Approved By: _____ Date: 4/3/07