

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010APPLICATION FOR PERMIT TO DRILL OR REENTER
DEC 20 2010

1a. Type of Work ☒ DRILL ☐ REENTER		5. Lease Serial No. USA SF 079483
1b. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
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. San Juan 30-4 Unit #102H
3b. Phone No. (include area code) (505) 325-6800		9. API Well No. 30-039-31006
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface A Sec. 17-T30N-R4W ; 939' FNL. 979' FEL At proposed prod. zone B Sec. 8-T30N-R4W ; 760' FNL. 1800' FEL		10. Field and Pool, or Exploratory Basin Fruitland Coal
14. Distance in miles and direction from nearest town or post office* 9 miles from Gobernador, NM		11. Sec., T., R., M., or Blk. and Survey or Area Sec. 17-T30N-R04W
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 939'	16. No. of Acres in lease 1213.88 640	17. Spacing Unit dedicated to this well 320 E/2
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 500'	19. Proposed Depth 9013' MD	20. BLM/BIA Bond No. on file NM 2707
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7319' GL	22. Approximate date work will start* 04/01/2011	23. Estimated duration 30 days

24. Attachments

RCVD FEB 9 '11

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

OIL CONS. DIV.

- | | |
|--|---|
| 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 |

DIST. 3

25. Signature <i>Stephen Byers</i>	Name (Printed/Typed) Stephen Byers	Date 12/7/2010
Title Drilling Engineer		
Approved by (Signature) <i>D. Montecinos</i>	Name (Printed/Typed)	Date 2/2/2011
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)

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

Hold C104
for Directional Survey
and "As Drilled" plat

FEB 14 2011

NMOCD

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

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

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised July 16, 2010

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 87506

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Farmington Field Office
Bureau of Land Management

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31006	² Pool Code 71629	³ Pool Name FRUITLAND COAL
⁴ Property Code 21994	⁵ Property Name SAN JUAN 30-4 UNIT	⁶ Well Number 102H
⁷ OGRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 7319'

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	17	30N	4W		939'	NORTH	979'	EAST	RIO ARRIBA

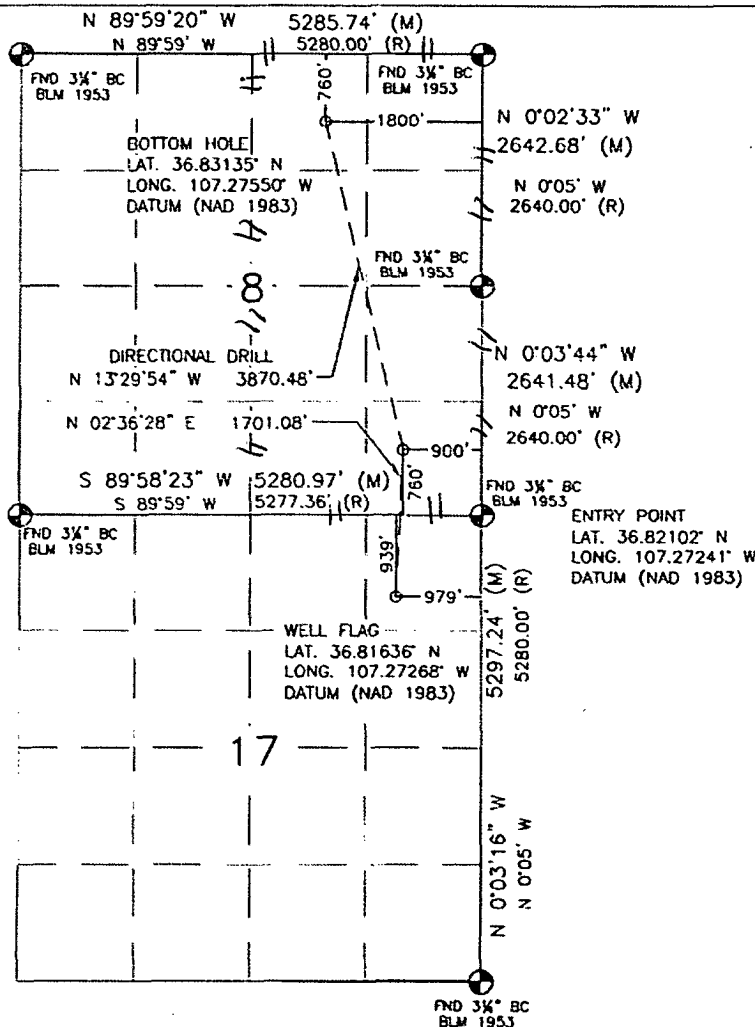
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	8	30N	4W		760'	NORTH	1800'	EAST	RIO ARRIBA

¹² Dedicated Acres 320 E/2 Sec. 8	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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

16



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.

Stephen Byers 12/7/10
Signature Date

Stephen Byers
Printed Name

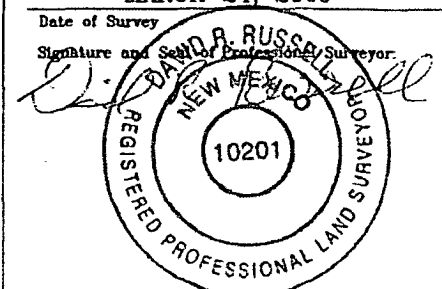
sbyers@energen.com
E-mail Address

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.

MARCH 24, 2009

Date of Survey
Signature and Seal of Professional Surveyor



DAVID RUSSELL

Certificate Number 10201

12/7/2010



OPERATIONS PLAN

WELL NAME.....San Juan 30-4 Unit #102H
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Stephen Byers

GENERAL INFORMATION

Surface Location	939 FNL 979 FEL
S-T-R	(A) Sec. 17, T30N, R04W
Bottom Hole Location	760 FNL 1800 FEL
S-T-R	(B) Sec. 8, T30N, R04W
County, State	Rio Arriba, New Mexico
Elevations	7319' GL
Total Depth	9013' +/- (MD); 4047' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	2697' (TVD)
Ojo Alamo Ss	3434' (TVD)
Kirtland Sh	3677' (TVD)
Fruitland Fm	3855' (TVD) 4209'MD
Top Target Coal	4037' (TVD) 4877'MD
Base Target Coal	4053' (TVD)
Total Depth	4047' (TVD), 9013' (MD)

DRILLING

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 a LSND mud system. Weighting materials will be drill cuttings and if needed barite. Mud density is expected to range from 8.4 ppg to 9.0 ppg.

Production: 6-1/4" 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.

Projected KOP is 2500' TVD with 3.88°/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.**

Logging Program:

Open hole logs: None

Mudlogs: 3261' TVD, 3300' MD to TD

Surveys: Surface to KOP every 500' and a minimum of every 200' for directional.

12/7/2010

CASING, TUBING & CASING EQUIPMENT

String	Start Depth	End Depth	Wellbore	Size	Wt	Grade
Surface	0	200	12-1/4"	9-5/8"	32.3 lb/ft	H-40 ST&C
Intermediate TVD	0 0	5072 4047	8-3/4"	7"	23 lb/ft	J-55 LT&C
Prod. Liner TVD	4972 4045	9013 4047	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
Tubing	0	4700	none	2-3/8"	4.7 lb/ft	J-55

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. DV tools set at 3800' MD for cement operations!

Production Liner: Bull nose guide shoe on bottom of first joint, H-Latch liner drop off tool on top of last joint.

WELLHEAD

11" 3000 x 9 5/8" weld/slip on casing head. 9 5/8" x 7"x 2 3/8" 3000 psi Flanged Wellhead .

CEMENTING

Surface Casing: 107 sks Type V with 2.0 % CaCl₂ and ¼ #/sk Flocele (15.6 ppg, 1.18 ft³/sk 126 ft³ of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min.

Intermediate Casing: Circulate hole at least 1-1/2 hole volumes of mud and reduce funnel viscosity to aid in hole cleanout. Stage 1 to begin at 3800' – 5072' MD.

First Stage: Pre-flush with 5 bbls H2O + 20 bbls Mud Flush + 5 bbls H2O and follow with Lead with 90 sks San Juan PRB II with 5#/sk Gilsonite and ¼ #/sk Flocele (12.3 ppg, 2.24 ft³/sk, 202 ft³) and a tail of 50 sks San Juan PRB II with 5#/sk Gilsonite and ¼ #/sk Flocele (13.5 ppg, 1.81 ft³/sk, 90.5 ft³). Circulate 100% excess lead off of stage tool. Circulated 4-5 hours between stages at time plug down on first stage.

Second Stage: 353 sks lead of San Juan PRB II with 5#/sk Gilsonite and ¼ #/sk Flocele (12.3 ppg, 2.24 ft³/sk, 791 ft³ of slurry and a tail of 100sks PRB II with 5#/sk Gilsonite and ¼ #/sk Flocele (13.5 ppg, 1.81 yield, 181 ft³). Circulate 100% excess lead to surface. WOC 12 hours. Test casing to 1500 psi for 30 min.

Production Liner: NO CEMENT, Open Hole Completion

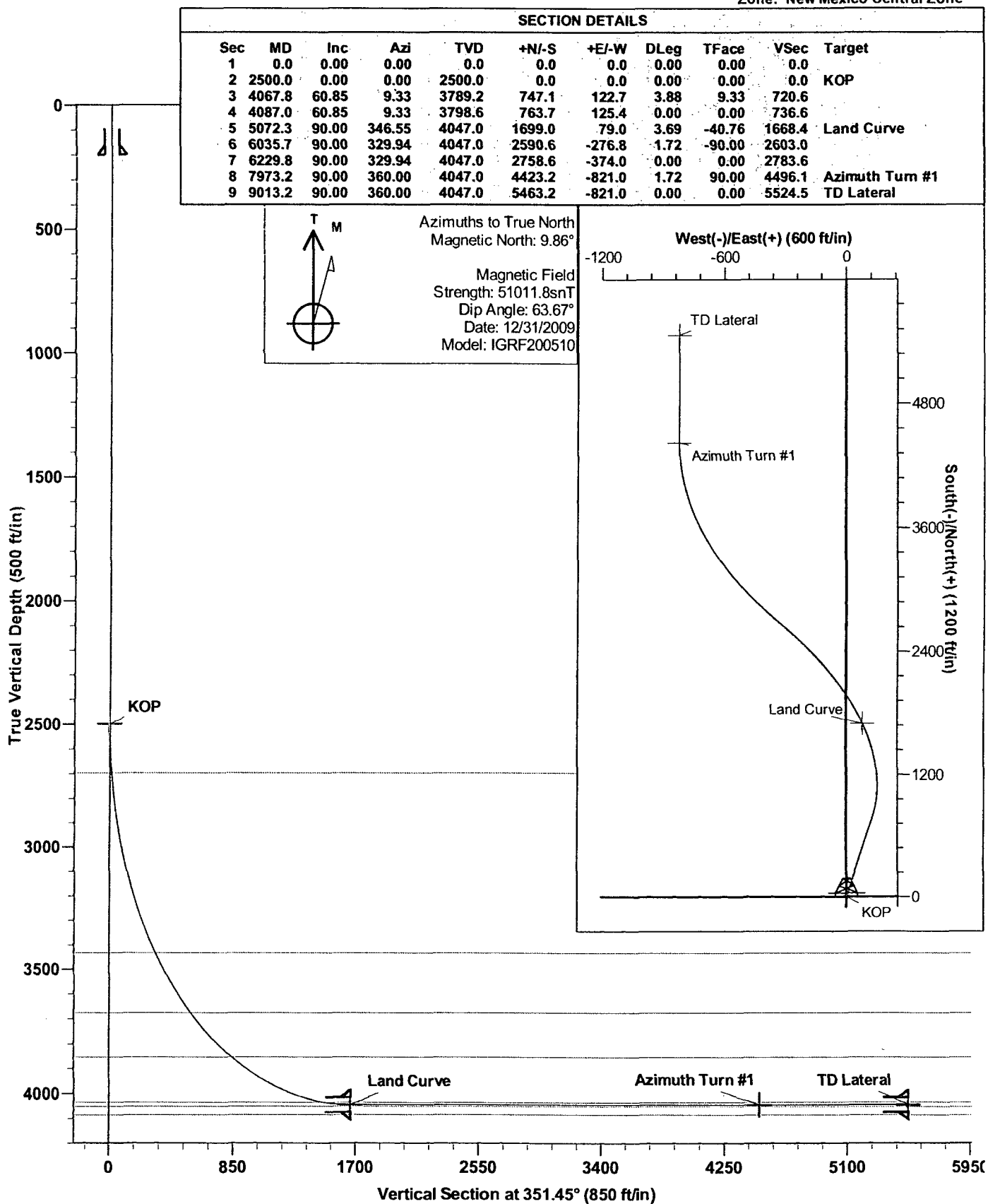
Set slips with full string weight

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

12/7/2010

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. The #46 and #11 wells in the east half of section 8 will be turned to POW during drilling operations.
- 4) No abnormal temperatures or pressures are anticipated.
- 5) This gas is dedicated.



Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec 17-T30N-R4W
Site: American Mesa
Well: San Juan 30-4 Unit #102H
Wellbore: Horizontal OPE FTC
Design: Plan #1

Local Co-ordinate Reference: Well San Juan 30-4 Unit #102H
TVD Reference: KB @ 7332.0ft (KB)
MD Reference: KB @ 7332.0ft (KB)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Carson National Forest Sec 17-T30N-R4W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	American Mesa			
Site Position:		Northing:	2,118,042.06 ft	Latitude: 36° 48' 58.896 N
From:	Lat/Long	Easting:	1,341,069.63 ft	Longitude: 107° 16' 21.648 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence: -0.61 °

Well	San Juan 30-4 Unit #102H			
Well Position	+N/-S	0.0 ft	Northing:	2,118,042.06 ft
	+E/-W	0.0 ft	Easting:	1,341,069.63 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,319.0 ft	Ground Level: 7,319.0 ft

Wellbore	Horizontal OPE FTC				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.86	63.67	51,012

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	351.45

Survey Tool Program	Date 12/7/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,013.2	Plan #1 (Horizontal OPE FTC)	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

Company: Energen Resources
Project: Carson National Forest Sec 17-T30N-R4W
Site: American Mesa
Well: San Juan 30-4 Unit #102H
Wellbore: Horizontal OPE FTC
Design: Plan #1

Local Co-ordinate Reference: Well San Juan 30-4 Unit #102H
TVD Reference: KB @ 7332.0ft (KB)
MD Reference: KB @ 7332.0ft (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)
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
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
KOP							
2,600.0	2,599.9	3.88	9.33	3.88	3.3	0.5	3.2
2,697.6	2,697.0	7.67	9.33	3.88	13.0	2.1	12.6
Nacimiento Fm							
2,700.0	2,699.4	7.76	9.33	3.88	13.3	2.2	12.9
2,800.0	2,797.9	11.64	9.33	3.88	30.0	4.9	28.9
2,900.0	2,895.1	15.52	9.33	3.88	53.1	8.7	51.3
3,000.0	2,990.5	19.41	9.33	3.88	82.8	13.6	79.8
3,100.0	3,083.6	23.29	9.33	3.88	118.7	19.5	114.5
3,200.0	3,174.1	27.17	9.33	3.88	160.7	26.4	155.0
3,300.0	3,261.4	31.05	9.33	3.88	208.7	34.3	201.3
3,400.0	3,345.3	34.93	9.33	3.88	262.4	43.1	253.1
3,500.0	3,425.3	38.81	9.33	3.88	321.6	52.8	310.2
3,511.3	3,434.0	39.25	9.33	3.88	328.6	54.0	317.0
Ojo Alamo SS							
3,600.0	3,501.0	42.69	9.33	3.88	386.0	63.4	372.3
3,700.0	3,572.1	46.57	9.33	3.88	455.4	74.8	439.2
3,800.0	3,638.4	50.46	9.33	3.88	529.3	86.9	510.5
3,862.3	3,677.0	52.87	9.33	3.88	577.5	94.8	557.0
Kirtland Sh							
3,900.0	3,699.4	54.34	9.33	3.88	607.4	99.8	585.9
4,000.0	3,754.9	58.22	9.33	3.88	689.5	113.2	665.0
4,067.8	3,789.2	60.85	9.33	3.88	747.1	122.7	720.6
4,087.0	3,798.6	60.85	9.33	0.00	763.7	125.4	736.6
4,100.0	3,804.9	61.21	8.97	2.80	774.9	127.2	747.4
4,200.0	3,850.9	64.04	6.30	2.83	862.9	139.0	832.7
4,209.4	3,855.0	64.31	6.06	2.86	871.4	139.9	840.9
Fruitland Fm							
4,300.0	3,892.4	66.92	3.76	2.88	953.5	147.0	921.1
4,400.0	3,929.3	69.83	1.32	2.91	1,046.4	151.0	1,012.3
4,500.0	3,961.3	72.78	358.97	2.95	1,141.1	151.3	1,105.9

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec 17-T30N-R4W
Site: American Mesa
Well: San Juan 30-4 Unit #102H
Wellbore: Horizontal OPE FTC
Design: Plan #1

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TVD Reference: KB @ 7332.0ft (KB)
MD Reference: KB @ 7332.0ft (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)
4,600.0	3,988.4	75.75	356.70	2.97	1,237.3	147.6	1,201.6
4,700.0	4,010.5	78.75	354.49	2.99	1,334.5	140.1	1,298.8
4,800.0	4,027.4	81.76	352.32	3.01	1,432.4	128.8	1,397.3
4,877.8	4,037.0	84.11	350.66	3.02	1,508.7	117.4	1,474.5
Top Target Coal							
4,900.0	4,039.2	84.78	350.19	3.03	1,530.5	113.7	1,496.6
5,000.0	4,045.6	87.81	348.07	3.03	1,628.5	94.9	1,596.3
5,072.3	4,047.0	90.00	346.55	3.03	1,699.0	79.0	1,668.4
Land Curve							
5,100.0	4,047.0	90.00	346.07	0.00	1,725.9	72.4	1,696.0
5,200.0	4,047.0	90.00	344.35	0.00	1,822.6	46.9	1,795.4
5,300.0	4,047.0	90.00	342.62	0.00	1,918.5	18.5	1,894.4
5,400.0	4,047.0	90.00	340.90	0.00	2,013.4	-12.8	1,993.0
5,500.0	4,047.0	90.00	339.18	0.00	2,107.4	-46.9	2,091.0
5,600.0	4,047.0	90.00	337.45	0.00	2,200.3	-83.9	2,188.4
5,700.0	4,047.0	90.00	335.73	0.00	2,292.1	-123.6	2,285.0
5,800.0	4,047.0	90.00	334.00	0.00	2,382.6	-166.1	2,380.9
5,900.0	4,047.0	90.00	332.28	0.00	2,471.8	-211.3	2,475.8
6,000.0	4,047.0	90.00	330.55	0.00	2,559.7	-259.1	2,569.7
6,035.7	4,047.0	90.00	329.94	0.00	2,590.6	-276.8	2,603.0
6,100.0	4,047.0	90.00	329.94	0.00	2,646.3	-309.0	2,662.8
6,200.0	4,047.0	90.00	329.94	0.00	2,732.9	-359.1	2,755.9
6,229.8	4,047.0	90.00	329.94	0.00	2,758.6	-374.0	2,783.6
6,300.0	4,047.0	90.00	331.15	0.00	2,819.8	-408.6	2,849.2
6,400.0	4,047.0	90.00	332.87	0.00	2,908.1	-455.5	2,943.5
6,500.0	4,047.0	90.00	334.60	0.00	2,997.7	-499.8	3,038.7
6,600.0	4,047.0	90.00	336.32	0.00	3,088.7	-541.3	3,134.9
6,700.0	4,047.0	90.00	338.05	0.00	3,180.9	-580.1	3,231.8
6,800.0	4,047.0	90.00	339.77	0.00	3,274.2	-616.0	3,329.4
6,900.0	4,047.0	90.00	341.50	0.00	3,368.5	-649.2	3,427.6
7,000.0	4,047.0	90.00	343.22	0.00	3,463.8	-679.5	3,526.3
7,100.0	4,047.0	90.00	344.94	0.00	3,560.0	-706.9	3,625.5
7,200.0	4,047.0	90.00	346.67	0.00	3,656.9	-731.5	3,725.0
7,300.0	4,047.0	90.00	348.39	0.00	3,754.6	-753.0	3,824.8
7,400.0	4,047.0	90.00	350.12	0.00	3,852.8	-771.7	3,924.7
7,500.0	4,047.0	90.00	351.84	0.00	3,951.6	-787.4	4,024.7
7,600.0	4,047.0	90.00	353.57	0.00	4,050.7	-800.1	4,124.7
7,700.0	4,047.0	90.00	355.29	0.00	4,150.3	-809.8	4,224.5
7,800.0	4,047.0	90.00	357.01	0.00	4,250.0	-816.5	4,324.2
7,900.0	4,047.0	90.00	358.74	0.00	4,350.0	-820.2	4,423.5
7,973.2	4,047.0	90.00	360.00	0.00	4,423.2	-821.0	4,496.1
Azimuth Turn #1							
8,000.0	4,047.0	90.00	360.00	0.00	4,450.0	-821.0	4,522.6
8,100.0	4,047.0	90.00	360.00	0.00	4,550.0	-821.0	4,621.4
8,200.0	4,047.0	90.00	360.00	0.00	4,650.0	-821.0	4,720.3

Energen

DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec 17-T30N-R4W
Site: American Mesa
Well: San Juan 30-4 Unit #102H
Wellbore: Horizontal OPE FTC
Design: Plan #1

Local Co-ordinate Reference: Well San Juan 30-4 Unit #102H
TVD Reference: KB @ 7332.0ft (KB)
MD Reference: KB @ 7332.0ft (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)
8,300.0	4,047.0	90.00	360.00	0.00	4,750.0	-821.0	4,819.2
8,400.0	4,047.0	90.00	360.00	0.00	4,850.0	-821.0	4,918.1
8,500.0	4,047.0	90.00	360.00	0.00	4,950.0	-821.0	5,017.0
8,600.0	4,047.0	90.00	360.00	0.00	5,050.0	-821.0	5,115.9
8,700.0	4,047.0	90.00	360.00	0.00	5,150.0	-821.0	5,214.8
8,800.0	4,047.0	90.00	360.00	0.00	5,250.0	-821.0	5,313.7
8,900.0	4,047.0	90.00	360.00	0.00	5,350.0	-821.0	5,412.6
9,000.0	4,047.0	90.00	360.00	0.00	5,450.0	-821.0	5,511.4
9,013.2	4,047.0	90.00	360.00	0.00	5,463.2	-821.0	5,524.5

TD Lateral

Energen DIRECTIONAL PLAN

Company: Energen Resources
Project: Carson National Forest Sec 17-T30N-R4W
Site: American Mesa
Well: San Juan 30-4 Unit #102H
Wellbore: Horizontal OPE FTC
Design: Plan #1

Local Co-ordinate Reference: Well San Juan 30-4 Unit #102H
TVD Reference: KB @ 7332.0ft (KB)
MD Reference: KB @ 7332.0ft (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	2,500.0	0.0	0.0	2,118,042.06	1,341,069.63	36° 48' 58.896 N	107° 16' 21.648 W
TD Lateral - plan hits target - Point	0.00	0.00	4,047.0	5,463.2	-821.0	2,123,513.69	1,340,307.12	36° 49' 52.914 N	107° 16' 31.747 W
Azimuth Turn #1 - plan hits target - Point	0.00	0.00	4,047.0	4,423.2	-821.0	2,122,473.75	1,340,295.99	36° 49' 42.631 N	107° 16' 31.746 W
Land Curve - plan hits target - Point	0.00	0.00	4,047.0	1,699.0	79.0	2,119,740.12	1,341,166.80	36° 49' 15.695 N	107° 16' 20.676 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
200.0	200.0	Surface	9-5/8	12-1/4
5,072.0	4,047.0	Intermediate	7	8-3/4
9,013.0	4,047.0	Liner	4-1/2	6-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	4,053.0	Base Target Coal		0.00	
3,862.3	3,677.0	Kirtland Sh		0.00	
3,511.3	3,434.0	Ojo Alamo SS		0.00	
4,209.4	3,855.0	Fruitland Fm		0.00	
2,697.6	2,697.0	Nacimiento Fm		0.00	
	4,088.0	Pictured Cliffs SS		0.00	
4,877.8	4,037.0	Top Target Coal		0.00	

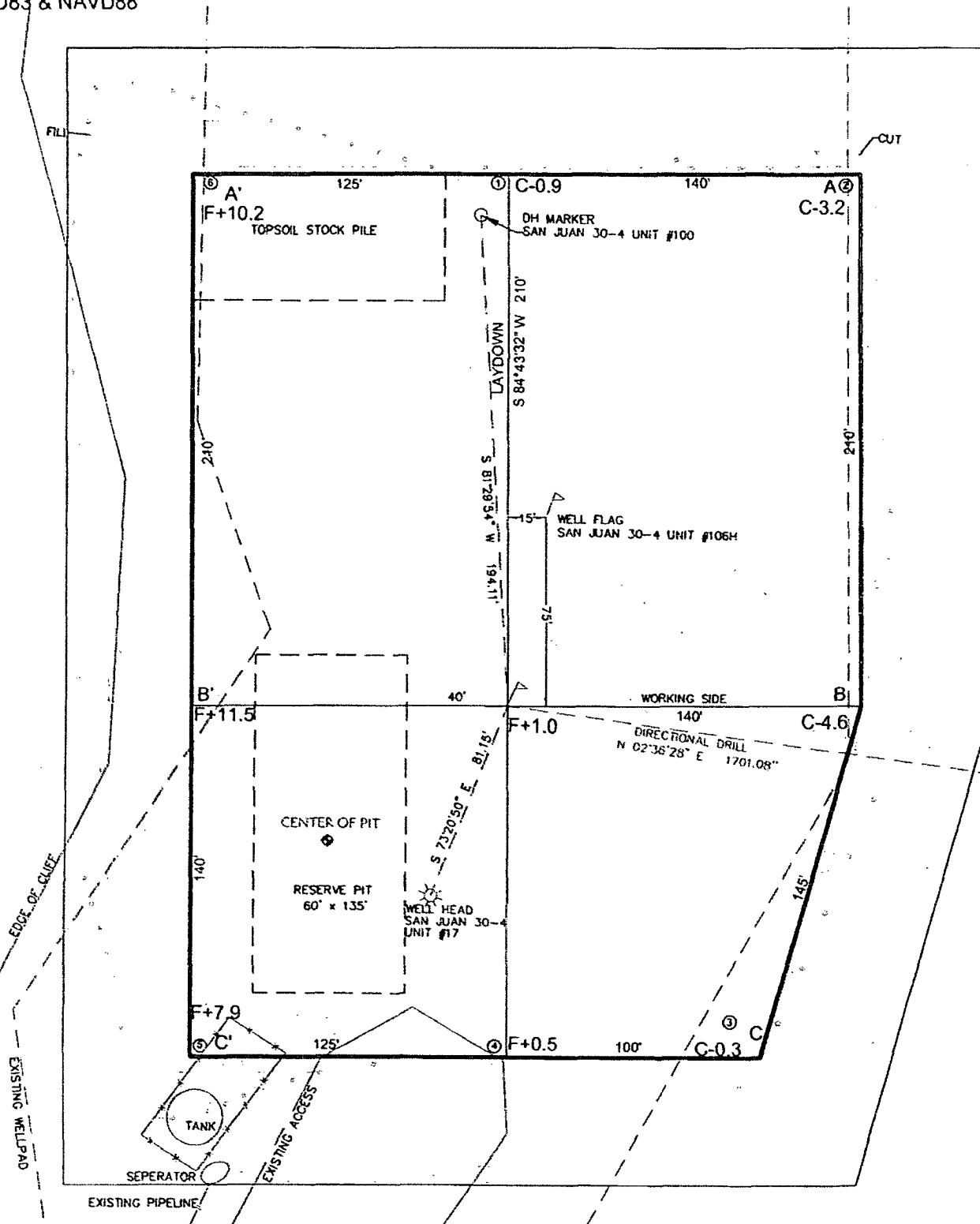
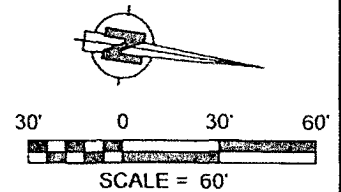
Checked By: _____ Approved By: _____ Date: _____

WELL FLAG

LATITUDE: 36.81636° N
 LONGITUDE: 107.27268° W
 DATUM: NAD 83
CENTER OF PIT
 LATITUDE: 36.81616° N
 LONGITUDE: 107.27257° W
 ELEVATION: 7308.1'
 NAD83 & NAVD88

ENERGEN RESOURCES CORPORATION

SAN JUAN 30-4 UNIT #102H
 939' FNL & 979' FEL
 LOCATED IN THE NE/4 NE/4 OF SECTION 17,
 T30N, R4W, N.M.P.M.,
 RIO ARriba COUNTY, NEW MEXICO
 GROUND ELEVATION: 7319', NAVD 88
 FINISHED PAD ELEVATION: 7320.1', NAVD 88



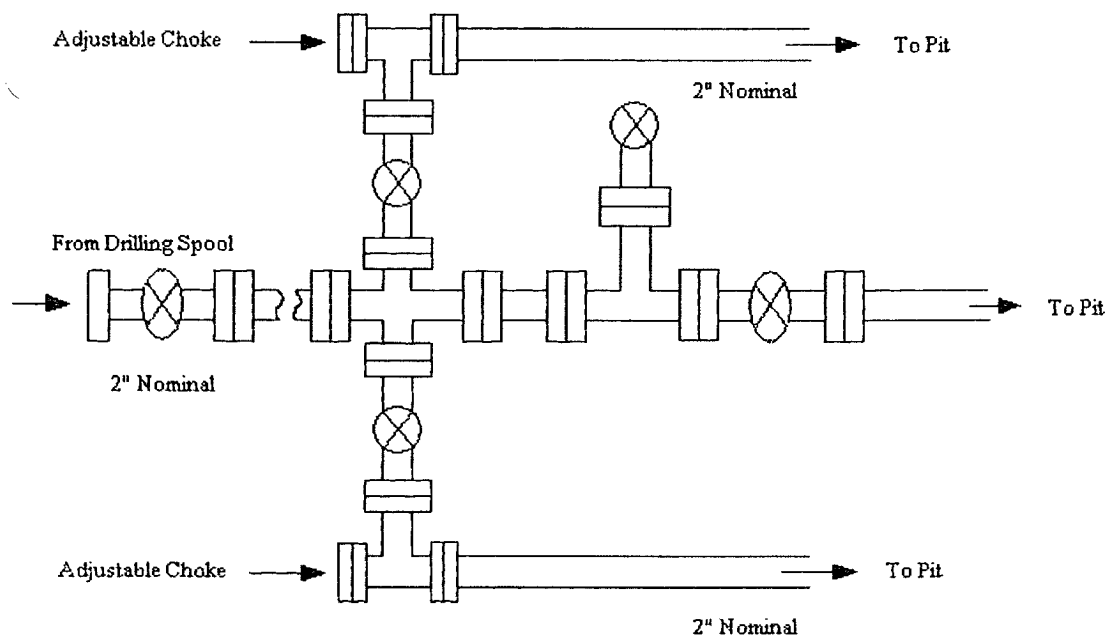
1 FOOT CONTOUR INTERVAL SHOWN
 SCALE: 1" = 60'
 JOB No.: ERG210
 DATE: 12/02/10
 DRAWN BY: GRR



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

