Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
SEP 28 2011
Bureau of Land Management
Farmington Field Office

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

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 page 2*

5. Lease Serial No.
NMNM 59696

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No
Carracas 27 B #1H

2. Name of Operator
Energen Resources Corporation

9. API Well No.
30-039-30906

3a. Address
2010 Afton Place Farmington,NM 87401

3b. Phone No. *(include area code)*
505.325.6800

10. Field and Pool, or Exploratory Area
Basin Fruitland Coal

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
762' FNL 1736' FWL, Section 26 T32N R4W

BHLs: 800' FNL 100' FWL and 2495' FNL 100' FWL, Section 27 T32N R4W

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 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.)

The Carracas 27B #1H's completeion will be changed to a dual lateral with both laterals producing out of the Basin Fruitland coal in the North half of section 27 T32N R4W.

These the producing interval for the Northern most lateral will be from 800' FNL and 800' FEL of section 27 to 800' FNL and 100' FWL of sec. 27 while the south lateral will be from 100' FEL and 800' FNL to 2495' FNL and 100' FWL of 27. The window for the south lateral will be milled in the 7" casing at the start of the producting interval for the south lateral.

RECEIVED
OCT 2011
OIL CONS. DIV. DIST. 3

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

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

ReQu. Res SD order 27-B #5

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)* Devin Mills
Title Drilling Engineer
Signature
Date 5/02/2011

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Troy L. Salyers
Title Petroleum Engineer
Date 9/29/2011
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

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 July 10, 2010

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	71629	BASIN FRUITLAND COAL

[4] Property Code	[5] Property Name	[6] Well Number
35664	CARRACAS 27B	1H

[7] OGRID No.	[8] Operator Name	[9] Elevation
162928	ENERGEN RESOURCES CORPORATION	6636'

[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
C	26	32N	4W		762'	NORTH	1736'	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
D/E	27	32N	4W		800'/2495'	NORTH	100'	WEST	RIO ARRIBA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320.00 ACRES - N/2			

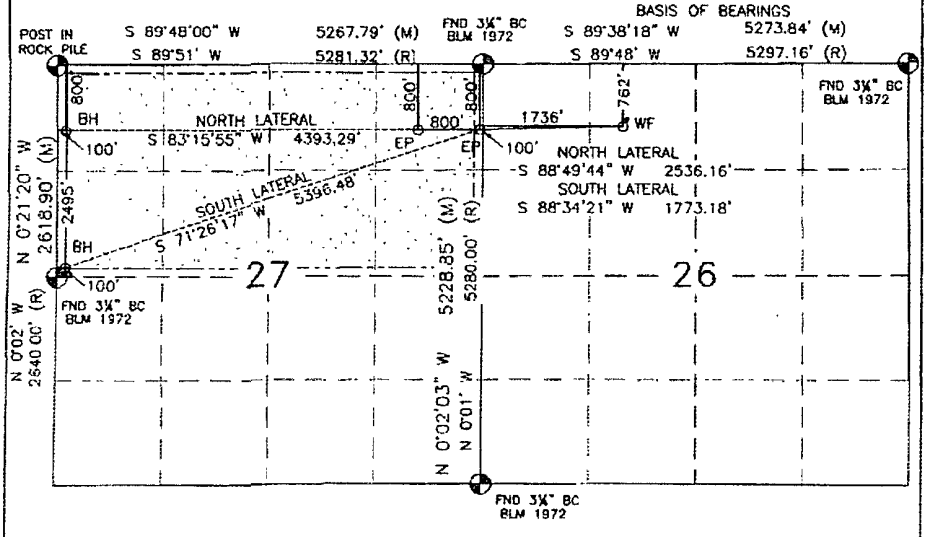
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16

NORTH LATERAL
BOTTOM HOLE
LAT. 36.96270° N
LONG. 107.25063° W
DATUM (NAD 1983)

NORTH LATERAL
ENTRY POINT
LAT. 36.96274° N
LONG. 107.23571° W
DATUM (NAD 1983)

WELL FLAG
LAT. 36.96288° N
LONG. 107.22703° W
DATUM (NAD 1983)



SOUTH LATERAL
BOTTOM HOLE
LAT. 36.95805° N
LONG. 107.25060° W
DATUM (NAD 1983)

SOUTH LATERAL
ENTRY POINT
LAT. 36.96276° N
LONG. 107.23309° W
DATUM (NAD 1983)

[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: 4-28-11

DEVIN MILLS
Printed Name

DMILLS@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.

AUGUST 11, 2009
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID RUSSELL
Certificate Number 10201

9/28/2011

ENERGEN RESOURCES

OPERATIONS PLAN

WELL NAME.....Carracas 27B #1
JOB TYPE.....Horizontal OPE FTC
DEPT.....Drilling and Completions
PREPARED BY.....Devin Mills

GENERAL INFORMATION

Surface Location	762 FNL, 1736 FWL
S-T-R	(C) Sec. 26, T32N, R04W
Bottom Hole Locations	800 FNL, 100 FWL
	2495' FNL, 100' FWL
S-T-R	(D,E) Sec. 27, T32N, R04W
County, State	Rio Arriba, New Mexico
Elevations	6636' GL
Total Depth	9871' +/- (MD); 3556' (TVD)
Formation Objective	Basin Fruitland Coal

FORMATION TOPS

San Jose	Surface
Nacimiento	1759' (TVD)
Ojo Alamo Ss	2859' (TVD)
Kirtland Sh	3124' (TVD)
Fruitland Fm	3295' (TVD) 3679'MD
Top Target Coal	3559' (TVD) 4464'MD
Base Target Coal	3574' (TVD)
Total Depth	**3556' (TVD), 9871' (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 1500 psi.

Projected KOP is 1441' TVD with 2.67°/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: 2800' TVD, 2711' MD to TD
Surveys: Surface to KOP every 500' and a minimum of every 200' for directional.

9/28/2011

ENERGEN RESOURCES

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	5202 3569	8-3/4"	7"	23 lb/ft	J-55 LT&C
Prod. Liner TVD	5150 3570	9558 3556	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
Prod. Liner TVD	4438 3554	9871 3556	6-1/4"	4-1/2"	11.6 lb/ft	J-55 LT&C
Tubing	0	4464	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.

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

2nd 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: 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, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min.

Intermediate Casing: Depending on wellbore conditions, cement may consist of 577 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 150 sks Class G with ¼ #/sk Flocele (15.6 ppg, 1.18 ft^3/sk). (1,383 ft^3 of slurry, 100% excess to circulate 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.

OTHER INFORMATION

1) This well will be an open hole dual lateral completion lined with an uncemented pre-drilled liner.

ENERGEN RESOURCES

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.

Energen Resources

Carson National Forest
27B; Sec 27 T32N R4W
Carracas 27B #1H
Wellbore #1

Plan: Design #1

APD Report

21 April, 2011

Project: Carson National Fore
Site: 27B; Sec 27 T32N R4
Well: Carracas 27B #1H
Wellbore: Wellbore #1
n: Design #1 (Carracas 27B #1H/Wellbore #

PROJECT DETAILS: Carson National Forest

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

System Datum: Mean Sea Level

T M

Azimuths to True North
Magnetic North: 9.69°

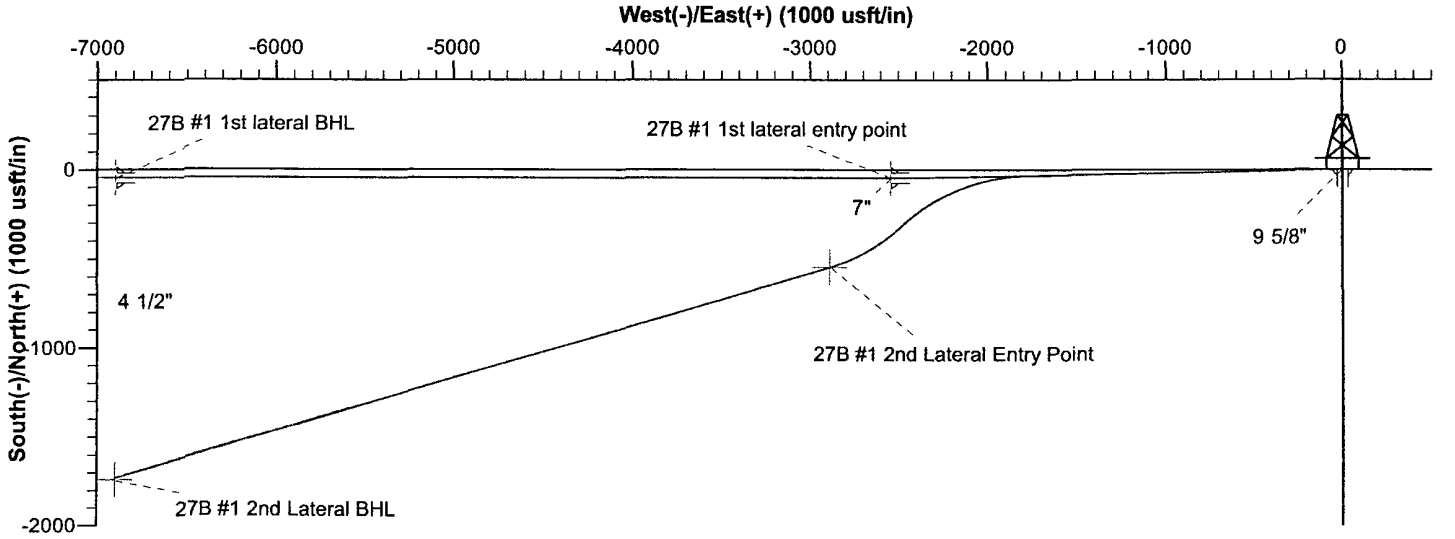
Magnetic Field
Strength: 50981.5snT
Dip Angle: 63.78°
Date: 4/21/2011
Model: IGRF200510

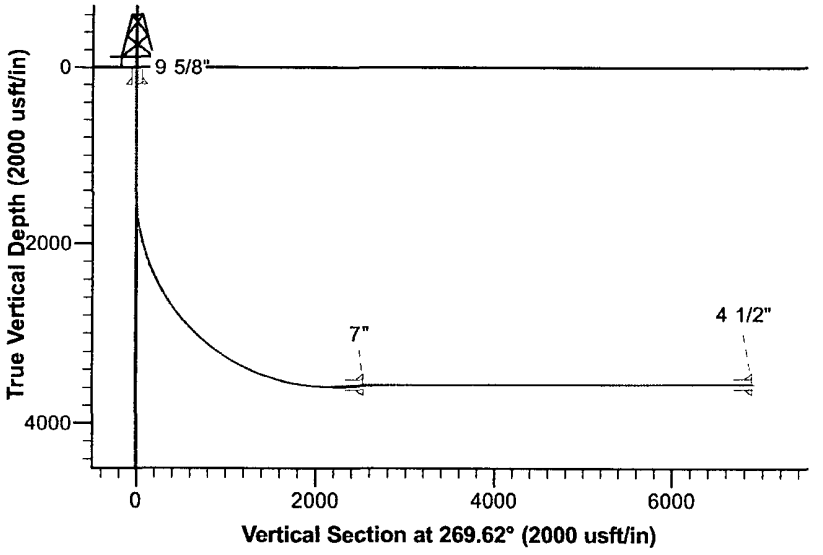
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1441.0	0.00	0.00	1441.0	0.0	0.0	0.00	0.00	0.0	
3	5008.4	95.24	268.93	3578.2	-43.9	-2341.7	2.67	268.93	2342.0	
4	5202.5	90.17	270.00	3569.0	-45.7	-2535.5	2.67	168.03	2535.8	27B #1 1st lateral entry point
5	9558.5	90.17	270.00	3556.0	-45.7	-6891.5	0.00	0.00	6891.7	27B #1 1st lateral BHL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	4438.0	80.01	268.93	3554.6	-33.2	-1773.6	0.00	0.00	1728.1	
2	5215.0	94.94	227.34	3590.3	-316.8	-2475.7	5.67	-72.06	2478.2	
3	5683.9	90.18	253.52	3569.0	-545.7	-2879.6	5.67	99.55	2925.7	27B #1 2nd Lateral Entry Point
4	9871.0	90.18	253.52	3556.1	-1733.6	-6894.6	0.00	0.00	7109.2	27B #1 2nd Lateral BHL





Energen
APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Project Carson National Forest

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site 27B; Sec 27 T32N R4W

Site Position:		**Northing:**	2,171,245.97 usft	**Latitude:**	36° 57' 46.368 N
From:	Lat/Long	**Easting:**	1,354,978.23 usft	**Longitude:**	107° 13' 37.308 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.59 °

Well Carracas 27B #1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	2,171,245.97 usft		**Latitude:**	36° 57' 46.368 N
	+E/-W	0.0 usft	**Easting:**	1,354,978.23 usft		**Longitude:**	107° 13' 37.308 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		usft	**Ground Level:**	6,636.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	4/21/2011	9.69	63.78	50,981

Design Design #1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	269.62

Survey Tool Program **Date** 4/21/2011

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	9,558.5	Design #1 (Wellbore #1)	MWD	MWD - Standard

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B, Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
200 0	0 00	0.00	200.0	0 0	0.0	0 0	0 00
9 5/8"							
1,441.0	0.00	0.00	1,441.0	0.0	0.0	0.0	0.00
1,500.0	1.58	268.93	1,500.0	0.8	0.0	-0 8	2.67
1,600.0	4.24	268.93	1,599.9	5.9	-0.1	-5.9	2 67
1,700.0	6.91	268.93	1,699.4	15.6	-0.3	-15.6	2.67
1,760.2	8.52	268 93	1,759.0	23 7	-0.4	-23.7	2.67
Nacimiento							
1,800.0	9 58	268.93	1,798.3	30 0	-0.6	-30.0	2.67
1,900.0	12.25	268.93	1,896.5	48.9	-0.9	-48.9	2.67
2,000.0	14.92	268.93	1,993 7	72.4	-1.4	-72.4	2.67
2,100.0	17.59	268.93	2,089.7	100.4	-1.9	-100.4	2.67
2,200.0	20.26	268.93	2,184.3	132.8	-2.5	-132.8	2.67
2,300 0	22 93	268.93	2,277.2	169.6	-3 2	-169 6	2.67
2,400.0	25.60	268.93	2,368.4	210.7	-3.9	-210 7	2.67
2,500.0	28.27	268 93	2,457 5	256.0	-4.8	-256.0	2.67
2,600.0	30.94	268.93	2,544.5	305.4	-5.7	-305 4	2.67
2,700.0	33.61	268.93	2,629.0	358.8	-6.7	-358.8	2.67
2,800.0	36 28	268.93	2,711 0	416.1	-7.8	-416.0	2.67
2,900.0	38.95	268.93	2,790.2	477.1	-8.9	-477.0	2.67
2,990.0	41 36	268.93	2,859.0	535.1	-10.0	-535.1	2.67
Ojo Alamo							
3,000.0	41.62	268.93	2,866 5	541.7	-10.2	-541 7	2 67
3,100.0	44.29	268.93	2,939.6	609.9	-11.4	-609.8	2.67
3,200.0	46.96	268.93	3,009.6	681.3	-12.8	-681 3	2.67
3,300.0	49.63	268.93	3,076.1	756.0	-14.2	-755.9	2.67

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
3,375.5	51.65	268.93	3,124.0	814.4	-15.3	-814.3	2.67
Kirtland							
3,400.0	52.30	268.93	3,139.1	833.7	-15.6	-833.6	2.67
3,500.0	54.97	268.93	3,198.4	914.2	-17.1	-914.1	2.67
3,600.0	57.64	268.93	3,253.8	997.3	-18.7	-997.2	2.67
3,679.3	59.76	268.93	3,295 0	1,065.1	-20.0	-1,064.9	2 67
Fruitland							
3,700.0	60.31	268.93	3,305.4	1,083.0	-20.3	-1,082.9	2.67
3,800.0	62.98	268.93	3,352.9	1,171.0	-21.9	-1,170.9	2.67
3,900 0	65.65	268.93	3,396.2	1,261.1	-23.6	-1,261.0	2.67
4,000.0	68.32	268.93	3,435.3	1,353.1	-25.4	-1,353.0	2.67
4,100.0	70.99	268.93	3,470 1	1,446.9	-27.1	-1,446.7	2 67
4,200.0	73.66	268.93	3,500.4	1,542.2	-28.9	-1,542.0	2 67
4,300.0	76.33	268.93	3,526.3	1,638.7	-30.7	-1,638.6	2.67
4,400.0	79.00	268.93	3,547.7	1,736.4	-32.5	-1,736.2	2.67
4,464.3	80.71	268.93	3,559.0	1,799.7	-33.7	-1,799.5	2.67
Fruitland Coal							
4,500 0	81 67	268.93	3,564 5	1,835.0	-34.4	-1,834.8	2 67
4,600.0	84.34	268.93	3,576.7	1,934.2	-36.2	-1,934.0	2.67
4,700.0	87.01	268.93	3,584.2	2,033.9	-38.1	-2,033.7	2 67
4,800 0	89 68	268.93	3,587 1	2,133.8	-40.0	-2,133.6	2 67
4,900.0	92.35	268.93	3,585.3	2,233.8	-41.9	-2,233.6	2.67
5,000.0	95.02	268.93	3,578.9	2,333.6	-43.7	-2,333.3	2.67
5,008.4	95.24	268.93	3,578.2	2,342.0	-43.9	-2,341.7	2.67
5,100.0	92.85	269.43	3,571.7	2,433.3	-45.2	-2,433.1	2.67
5,200.0	90.24	269.99	3,569 0	2,533.3	-45.7	-2,533.0	2 67

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
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Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
5,202.0	90.18	270.00	3,569.0	2,535.3	-45.7	-2,535.0	2.67
7"							
5,202 5	90.17	270 00	3,569.0	2,535.8	-45.7	-2,535.5	2 67
27B #1 1st lateral entry point							
5,300.0	90.17	270.00	3,568.7	2,633.3	-45.7	-2,633.0	0.00
5,400.0	90.17	270.00	3,568.4	2,733.3	-45.7	-2,733.0	0.00
5,500.0	90.17	270.00	3,568.1	2,833.3	-45.7	-2,833.0	0 00
5,546.5	90.17	270.00	3,568.0	2,879.8	-45.7	-2,879.6	0.00
27B #1 2nd Lateral Entry Point							
5,600.0	90.17	270.00	3,567.8	2,933 3	-45.7	-2,933.0	0.00
5,700.0	90.17	270 00	3,567.5	3,033.3	-45 7	-3,033.0	0 00
5,800.0	90.17	270.00	3,567.2	3,133.3	-45.7	-3,133.0	0.00
5,900.0	90.17	270.00	3,566.9	3,233 3	-45.7	-3,233.0	0.00
6,000.0	90.17	270.00	3,566.6	3,333 2	-45.7	-3,333.0	0.00
6,100.0	90.17	270.00	3,566.3	3,433.2	-45.7	-3,433.0	0.00
6,200.0	90.17	270.00	3,566 0	3,533.2	-45.7	-3,533.0	0 00
6,300.0	90.17	270.00	3,565.7	3,633.2	-45.7	-3,633.0	0.00
6,400.0	90.17	270 00	3,565.4	3,733 2	-45.7	-3,733.0	0.00
6,500.0	90.17	270.00	3,565.1	3,833.2	-45.7	-3,833.0	0.00
6,600.0	90.17	270.00	3,564.8	3,933.2	-45.7	-3,933.0	0.00
6,700.0	90 17	270.00	3,564.5	4,033 2	-45.7	-4,033.0	0 00
6,800.0	90.17	270.00	3,564.2	4,133.2	-45.7	-4,133.0	0.00
6,900.0	90.17	270.00	3,563.9	4,233.2	-45.7	-4,233.0	0.00
7,000.0	90.17	270.00	3,563.7	4,333 2	-45.7	-4,333 0	0.00
7,100.0	90.17	270.00	3,563.4	4,433.2	-45.7	-4,433.0	0.00
7,200.0	90.17	270.00	3,563.1	4,533 2	-45.7	-4,533.0	0 00
7,300.0	90.17	270.00	3,562.8	4,633.2	-45.7	-4,633.0	0.00

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
7,400.0	90.17	270.00	3,562.5	4,733.2	-45.7	-4,733.0	0.00
7,500.0	90.17	270 00	3,562.2	4,833.2	-45.7	-4,833 0	0.00
7,600.0	90.17	270.00	3,561.9	4,933.2	-45.7	-4,933.0	0.00
7,700.0	90.17	270.00	3,561.6	5,033.2	-45.7	-5,033.0	0 00
7,800 0	90.17	270.00	3,561.3	5,133 2	-45.7	-5,133.0	0.00
7,900.0	90.17	270.00	3,561.0	5,233.2	-45.7	-5,233.0	0.00
8,000 0	90.17	270.00	3,560.7	5,333 2	-45.7	-5,333.0	0.00
8,100.0	90.17	270.00	3,560.4	5,433.2	-45.7	-5,433.0	0.00
8,200 0	90.17	270.00	3,560.1	5,533.2	-45.7	-5,533.0	0.00
8,300 0	90.17	270 00	3,559 8	5,633 2	-45.7	-5,633.0	0.00
8,400.0	90.17	270.00	3,559.5	5,733.2	-45.7	-5,733.0	0.00
8,500.0	90.17	270.00	3,559 2	5,833.2	-45.7	-5,833.0	0.00
8,600 0	90.17	270.00	3,558 9	5,933.2	-45.7	-5,933.0	0.00
8,700.0	90.17	270.00	3,558.6	6,033 2	-45.7	-6,033.0	0.00
8,800 0	90.17	270.00	3,558 3	6,133.2	-45.7	-6,133 0	0.00
8,900.0	90.17	270.00	3,558.0	6,233.2	-45.7	-6,233.0	0.00
9,000.0	90.17	270.00	3,557 7	6,333 2	-45.7	-6,333.0	0.00
9,100.0	90.17	270.00	3,557.4	6,433.2	-45.7	-6,433.0	0.00
9,200.0	90.17	270.00	3,557.1	6,533.2	-45.7	-6,533.0	0.00
9,300.0	90.17	270.00	3,556.8	6,633.2	-45 7	-6,633 0	0 00
9,400.0	90.17	270 00	3,556.5	6,733.2	-45.7	-6,733.0	0.00
9,500.0	90.17	270.00	3,556.2	6,833.2	-45.7	-6,833.0	0.00
9,555.0	90 17	270.00	3,556.0	6,888.2	-45.7	-6,888 0	0 00
4 1/2"							
9,558.5	90.17	270.00	3,556.0	6,891 7	-45.7	-6,891 5	0.00
27B #1 2nd Lateral BHL - 27B #1 1st lateral BHL							

Energen

APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B, Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
200.0	200.0	9 5/8"	9-5/8	12-1/4
5,202.0	3,569.0	7"	7	8-3/4
9,555.0	3,556.0	4 1/2"	5-1/2	6-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,464.3	3,559 0	Fruitland Coal	coal	0.00	
4,464.3	3,559 0	Fruitland Coal	Coal	0.00	
2,990.0	2,859.0	Ojo Alamo	sandstone	0.00	
2,990.0	2,859.0	Ojo Alamo	Sandstone	0.00	
3,375.5	3,124.0	Kirtland	shale	0.00	
3,375.5	3,124.0	Kirtland	Shale	0.00	
3,679.3	3,295.0	Fruitland	sandstone	0.00	
3,679.3	3,295.0	Fruitland	Sandstone	0.00	
1,760.2	1,759.0	Nacimiento	shale	0.00	
1,760.2	1,759.0	Nacimiento	Shale	0.00	

Checked By: _____ Approved By: _____ Date: _____

Energen
APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #2	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Project Carson National Forest

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site 27B; Sec 27 T32N R4W

Site Position:		**Northing:**	2,171,245.97 usft	**Latitude:**	36° 57' 46.368 N
From:	Lat/Long	**Easting:**	1,354,978.23 usft	**Longitude:**	107° 13' 37.308 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.59 °

Well Carracas 27B #1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	2,171,245.97 usft	**Latitude:**	36° 57' 46.368 N
	+E/-W	0 0 usft	**Easting:**	1,354,978.23 usft	**Longitude:**	107° 13' 37.308 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	6,636 0 usft

Wellbore Wellbore #2

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	4/21/2011	9.69	63.78	50,981

Design Design #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	4,438.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	255.89

Energen
APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B, Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #2	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Survey Tool Program **Date** 4/21/2011

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	4,438.0	Design #1 (Wellbore #1)	MWD	MWD - Standard
4,438.0	9,871.0	Design #1 (Wellbore #2)	MWD	MWD - Standard

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
4,438.0	80.01	268.93	3,554.6	1,728.1	-33 2	-1,773.6	0.00
4,463 9	80.47	267.51	3,559.0	1,753.1	-34.0	-1,799.1	5 67
Fruitland Coal							
4,500.0	81.11	265.54	3,564.8	1,788.1	-36.2	-1,834.7	5.67
4,600.0	82.94	260.13	3,578.7	1,886.4	-48.5	-1,932.9	5.67
4,700.0	84.84	254.76	3,589.3	1,985 7	-70 2	-2,029.9	5.67
4,800.0	86.78	249.42	3,596.6	2,085.2	-100.8	-2,124 7	5 67
4,900.0	88.75	244.10	3,600.5	2,183.8	-140.2	-2,216.5	5.67
5,000.0	90.73	238.79	3,601.0	2,280.6	-188.0	-2,304.3	5.67
5,100.0	92.70	233.48	3,598.0	2,374.6	-243.7	-2,387.3	5.67
27B #1 1st lateral entry point							
5,200.0	94.65	228.15	3,591.6	2,465 0	-306.7	-2,464.6	5.67
5,215.0	94.94	227.34	3,590.3	2,478.2	-316.8	-2,475.7	5.67
5,300.0	94.13	232.11	3,583.6	2,554.2	-371.5	-2,540.3	5.67
5,400.0	93.13	237.69	3,577.2	2,647 4	-428.9	-2,621.9	5.67
5,500.0	92.11	243.27	3,572.7	2,743.6	-478.1	-2,708.8	5.67
5,600.0	91.06	248 85	3,569.9	2,842.1	-518.6	-2,800.1	5.67
5,683.9	90.18	253 52	3,569.0	2,925.7	-545.7	-2,879.6	5.67
27B #1 2nd Lateral Entry Point							
5,700.0	90.18	253.52	3,569.0	2,941.8	-550.2	-2,895.0	0.00
5,800.0	90.18	253 52	3,568.6	3,041 7	-578.6	-2,990.9	0.00
5,900.0	90.18	253.52	3,568.3	3,141.6	-607.0	-3,086.7	0.00

Energen

APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B, Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #2	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
6,000.0	90.18	253.52	3,568.0	3,241.5	-635.4	-3,182.6	0.00
6,100.0	90.18	253.52	3,567.7	3,341.4	-663.7	-3,278.5	0.00
6,200.0	90.18	253.52	3,567.4	3,441.3	-692.1	-3,374.4	0.00
6,300.0	90.18	253.52	3,567.1	3,541.2	-720.5	-3,470.3	0.00
6,400.0	90.18	253.52	3,566.8	3,641.2	-748.8	-3,566.2	0.00
6,500.0	90.18	253.52	3,566.5	3,741.1	-777.2	-3,662.1	0.00
6,600.0	90.18	253.52	3,566.2	3,841.0	-805.6	-3,758.0	0.00
6,700.0	90.18	253.52	3,565.9	3,940.9	-833.9	-3,853.9	0.00
6,800.0	90.18	253.52	3,565.6	4,040.8	-862.3	-3,949.8	0.00
6,900.0	90.18	253.52	3,565.3	4,140.7	-890.7	-4,045.7	0.00
7,000.0	90.18	253.52	3,565.0	4,240.6	-919.1	-4,141.5	0.00
7,100.0	90.18	253.52	3,564.6	4,340.6	-947.4	-4,237.4	0.00
7,200.0	90.18	253.52	3,564.3	4,440.5	-975.8	-4,333.3	0.00
7,300.0	90.18	253.52	3,564.0	4,540.4	-1,004.2	-4,429.2	0.00
7,400.0	90.18	253.52	3,563.7	4,640.3	-1,032.5	-4,525.1	0.00
7,500.0	90.18	253.52	3,563.4	4,740.2	-1,060.9	-4,621.0	0.00
7,600.0	90.18	253.52	3,563.1	4,840.1	-1,089.3	-4,716.9	0.00
7,700.0	90.18	253.52	3,562.8	4,940.0	-1,117.6	-4,812.8	0.00
7,800.0	90.18	253.52	3,562.5	5,040.0	-1,146.0	-4,908.7	0.00
7,900.0	90.18	253.52	3,562.2	5,139.9	-1,174.4	-5,004.6	0.00
8,000.0	90.18	253.52	3,561.9	5,239.8	-1,202.8	-5,100.5	0.00
8,100.0	90.18	253.52	3,561.6	5,339.7	-1,231.1	-5,196.3	0.00
8,200.0	90.18	253.52	3,561.3	5,439.6	-1,259.5	-5,292.2	0.00
8,300.0	90.18	253.52	3,561.0	5,539.5	-1,287.9	-5,388.1	0.00
8,400.0	90.18	253.52	3,560.7	5,639.4	-1,316.2	-5,484.0	0.00
8,500.0	90.18	253.52	3,560.3	5,739.4	-1,344.6	-5,579.9	0.00
8,600.0	90.18	253.52	3,560.0	5,839.3	-1,373.0	-5,675.8	0.00

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B; Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #2	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
8,700.0	90.18	253.52	3,559.7	5,939 2	-1,401.3	-5,771.7	0.00
8,800.0	90.18	253 52	3,559 4	6,039.1	-1,429 7	-5,867.6	0.00
8,900.0	90.18	253.52	3,559.1	6,139.0	-1,458.1	-5,963.5	0.00
9,000.0	90 18	253.52	3,558.8	6,238 9	-1,486 5	-6,059 4	0.00
9,100.0	90.18	253.52	3,558.5	6,338.8	-1,514.8	-6,155 3	0 00
9,200.0	90.18	253.52	3,558.2	6,438.8	-1,543.2	-6,251.1	0 00
9,300.0	90.18	253.52	3,557 9	6,538.7	-1,571 6	-6,347.0	0.00
9,389.2	90.18	253.52	3,557.6	6,627.8	-1,596.9	-6,432.6	0.00
27B #1 1st lateral BHL							
9,400.0	90.18	253.52	3,557.6	6,638.6	-1,599.9	-6,442.9	0 00
9,500.0	90.18	253.52	3,557 3	6,738.5	-1,628.3	-6,538 8	0 00
9,600.0	90.18	253.52	3,557.0	6,838.4	-1,656.7	-6,634.7	0.00
9,700.0	90 18	253.52	3,556.7	6,938.3	-1,685.0	-6,730.6	0.00
9,800.0	90.18	253.52	3,556.3	7,038.2	-1,713.4	-6,826.5	0 00
9,871.0	90.18	253.52	3,556.1	7,109.2	-1,733.6	-6,894.6	0.00
4 1/2" - 27B #1 2nd Lateral BHL							

200.0	200.0	9 5/8"	9-5/8	12-1/4
9,871.0	3,556.1	4 1/2"	4-1/2	6-1/4

Energen

APD Report

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site 27B; Sec 27 T32N R4W
Project:	Carson National Forest	**TVD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Site:	27B, Sec 27 T32N R4W	**MD Reference:**	WELL @ 6657.0usft (Original Well Elev)
Well:	Carracas 27B #1H	**North Reference:**	True
Wellbore:	Wellbore #2	**Survey Calculation Method:**	Minimum Curvature
Design:	Design #1	**Database:**	EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,375 5	3,124.0	Kirtland	shale	0.00	
3,375 5	3,124 0	Kirtland	Shale	0.00	
2,990 0	2,859.0	Ojo Alamo	sandstone	0.00	
2,990.0	2,859.0	Ojo Alamo	Sandstone	0.00	
1,760 2	1,759.0	Nacimiento	shale	0.00	
1,760.2	1,759.0	Nacimiento	Shale	0.00	
3,679.3	3,295.0	Fruitland	sandstone	0.00	
3,679.3	3,295.0	Fruitland	Sandstone	0.00	
4,463.9	3,559.0	Fruitland Coal	coal	0.00	
4,463.9	3,559.0	Fruitland Coal	Coal	0 00	

Checked By: _____ Approved By: _____ Date: _____