

RCVD AUG 6 '08

OIL CONS. DIV.

DIST. 3-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☒ AMENDED REPORT

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-039-30136		Pool Code 71629	Pool Name Basin Fruitland Coal
Property Code	Property Name Carracas 11 A		Well Number 3
OGRID No. 162928	Operator Name Energen Resources Corporation		Elevation 7585

10 Surface Location

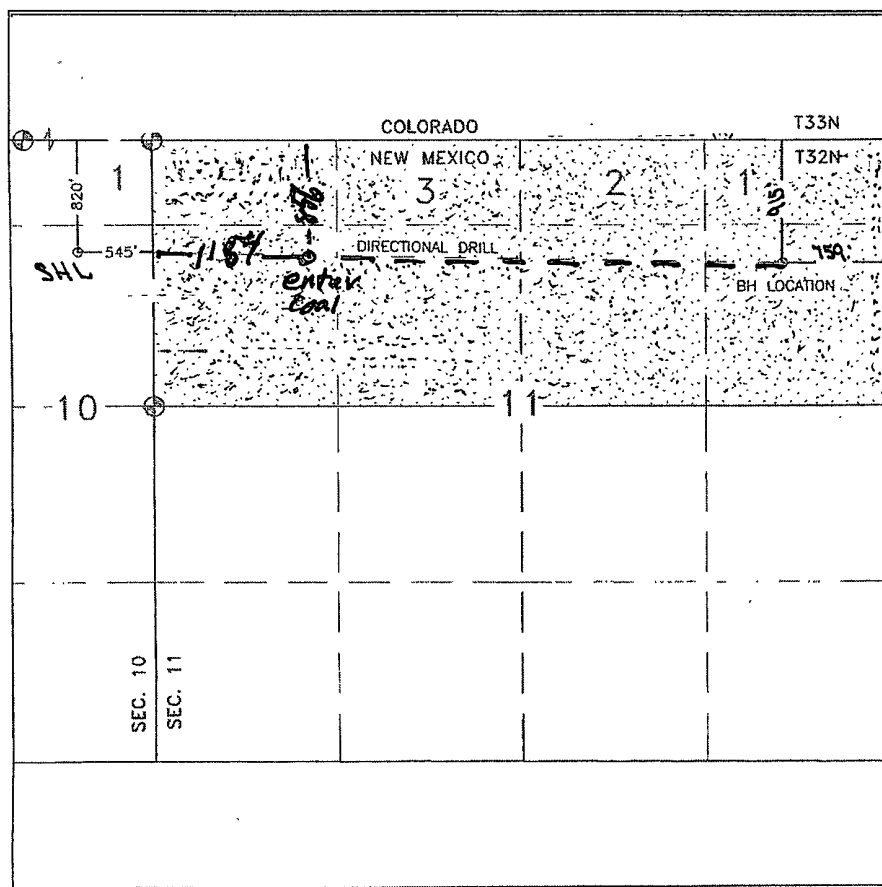
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	10	32N	5W		820	North	545	East	Rio Arriba

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
F	11	32N	5W		915'	North	750'	East	Rio Arriba

Dedicated Acres 235.04 - (N/2)	Joint or Infill	Consolidation Code	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.



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

Vicki Donaghey 7-21-08
Date

Vicki Donaghey
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

August 18, 2006

Date of Survey

Signature and Seal of Professional Surveyor.
Original survey recorded
and conducted by
David R. Russell

10201

Certificate Number



Energen Resources

**Carson Natl Forest-NE S11,T32N, R5W
CARRACAS MESA
CARRACAS 11A #3
MOTHERBORE**

Survey: Survey #2 MWD

X and Y report

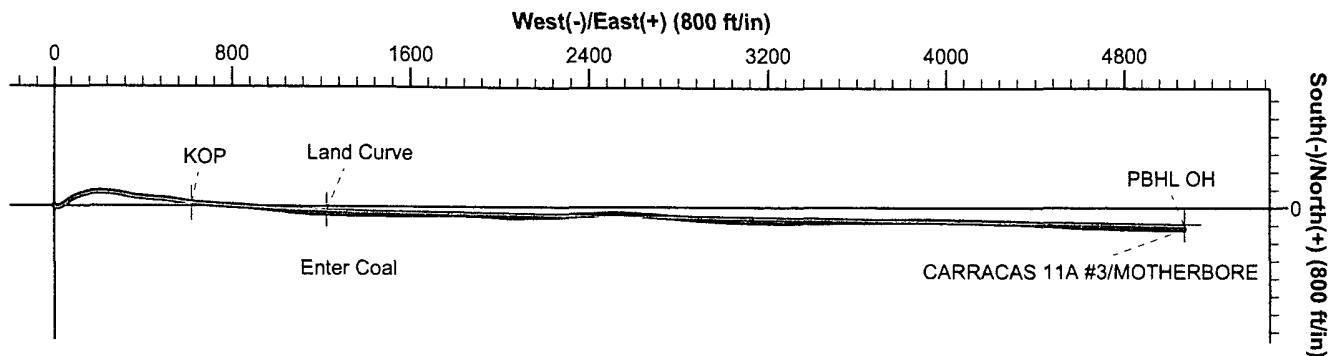
04 August, 2008

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OIL CONS. DIV.

DIST. 3

PATHFINDER
ENERGY SERVICES



PROJECT DETAILS: Carson Natl Forest-NE S11,T32N, R5W
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Central Zone
 Magnetic Model: IGRF200510
 System Datum: Mean Sea Level
 Local North: True

WELL DETAILS: CARRACAS 11A #3
 Ground Elevation: 7585.0
 RKB Elevation: WELL2 @ 7601.0ft (L&W#1)
 Rig Name: L&W#1

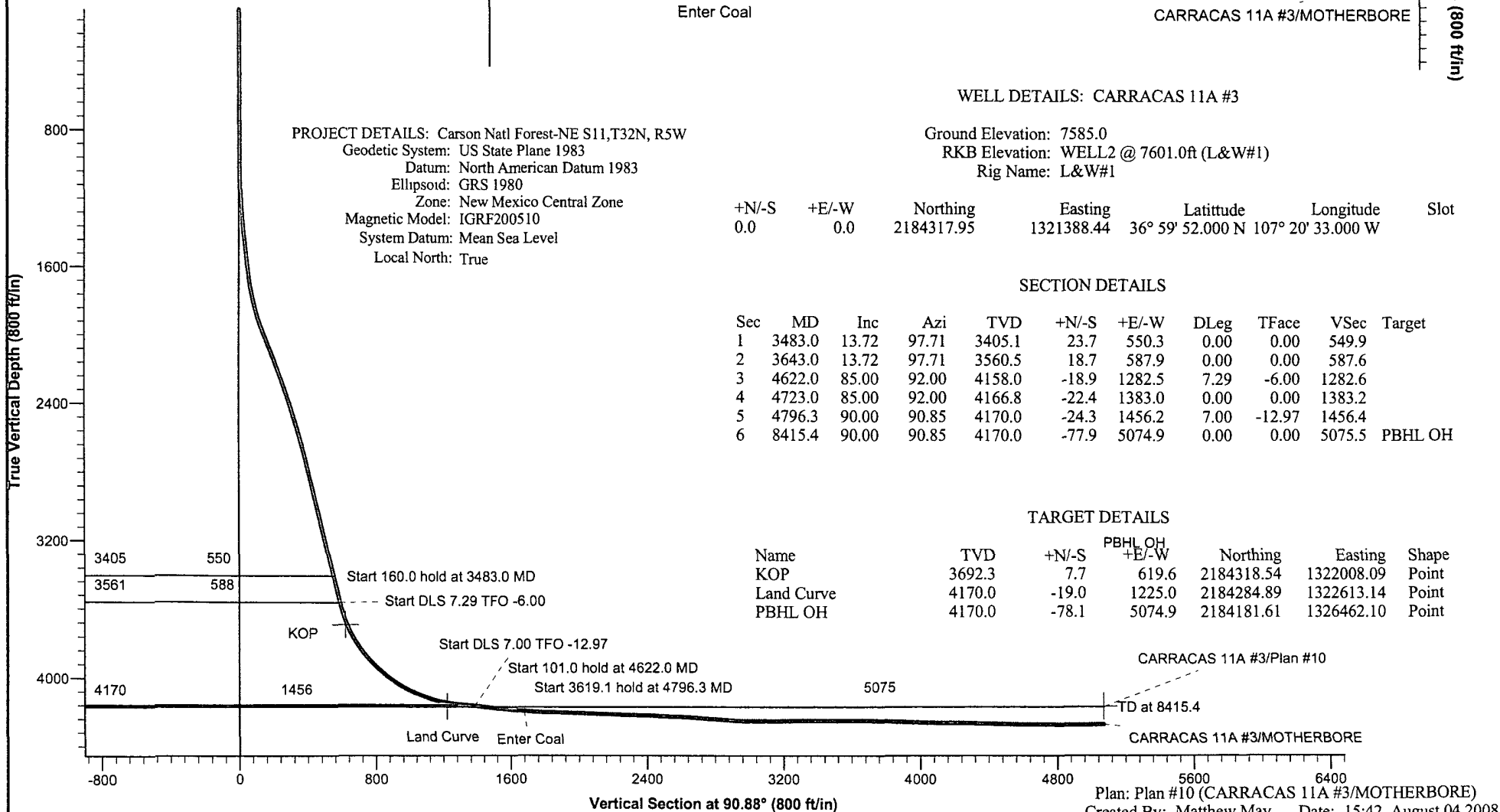
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	2184317.95	1321388.44	36° 59' 52.000 N	107° 20' 33.000 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	3483.0	13.72	97.71	3405.1	23.7	550.3	0.00	0.00	549.9	Target
2	3643.0	13.72	97.71	3560.5	18.7	587.9	0.00	0.00	587.6	
3	4622.0	85.00	92.00	4158.0	-18.9	1282.5	7.29	-6.00	1282.6	
4	4723.0	85.00	92.00	4166.8	-22.4	1383.0	0.00	0.00	1383.2	
5	4796.3	90.00	90.85	4170.0	-24.3	1456.2	7.00	-12.97	1456.4	
6	8415.4	90.00	90.85	4170.0	-77.9	5074.9	0.00	0.00	5075.5	PBHL OH

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
KOP	3692.3	7.7	619.6	2184318.54	1322008.09	Point
Land Curve	4170.0	-19.0	1225.0	2184284.89	1322613.14	Point
PBHL OH	4170.0	-78.1	5074.9	2184181.61	1326462.10	Point



Company: Energen Resources
 Project: Carson Natl Forest-NE S11,T32N, R5W
 Site: CARRACAS MESA
 Well: CARRACAS 11A #3
 Wellbore: MOTHERBORE
 Design: MOTHERBORE

Local Co-ordinate Reference: Well CARRACAS 11A #3
 TVD Reference: WELL2 @ 7601.0ft (L&W#1)
 MD Reference: WELL2 @ 7601.0ft (L&W#1)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: 200316 NWDB

Project: Carson Natl Forest-NE S11,T32N, R5W

Map System: US State Plane 1983
 Geo Datum: North American Datum 1983
 Map Zone: New Mexico Central Zone

System Datum: Mean Sea Level

Site: CARRACAS MESA

Site Position:	From:	Lat/Long	0.0 ft	Northing: 2,184,317.95 ft Easting: 1,321,388.44 ft Slot Radius: "	Latitude: 36° 59' 52.000 N Longitude: 107° 20' 33.000 W Grid Convergence: -0.66 °
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Well: CARRACAS-11A #3

Well Position	+N/-S	0.0 ft	Northing: 2,184,317.95 ft Easting: 1,321,388.44 ft Wellhead Elevation: 7,585.0 ft	Latitude: 36° 59' 52.000 N Longitude: 107° 20' 33.000 W Ground Level: 7,585.0 ft
	+E/-W	0.0 ft		
Position Uncertainty		0.0 ft		

Wellbore: MOTHERBORE

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	4/10/2008	10.12	63.85	51,269

Design: MOTHERBORE

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	90.90

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Survey Program		Date 8/4/2008		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.0	1,898.0	Gyro Data (MOTHERBORE)	NS-GYRO-MS	North sensing gyrocompassing m/s
1,948.0	8,417.0	Survey #2 MWD (MOTHERBORE)	MWD	MWD - Standard

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
1,900.0	18.93	66.59	1,889.3	42.8	107.3	106.7	0.00	2,184,359.48	1,321,496.26	
1,950.0	20.05	72.07	1,936.5	48.6	122.9	122.2	4.29	2,184,365.16	1,321,511.93	
1,981.0	20.84	72.41	1,965.5	51.9	133.2	132.4	2.58	2,184,368.35	1,321,522.28	
2,012.0	21.28	75.43	1,994.5	55.0	143.9	143.1	3.78	2,184,371.31	1,321,533.01	
2,042.0	21.54	79.54	2,022.4	57.4	154.6	153.7	5.07	2,184,373.55	1,321,543.73	
2,075.0	21.81	81.71	2,053.1	59.4	166.7	165.7	2.56	2,184,375.40	1,321,555.77	
2,106.0	21.81	82.92	2,081.8	60.9	178.1	177.1	1.45	2,184,376.81	1,321,567.20	
2,139.0	21.54	84.54	2,112.5	62.2	190.2	189.2	1.99	2,184,378.00	1,321,579.33	
2,171.0	21.02	88.29	2,142.3	63.0	201.8	200.8	4.55	2,184,378.60	1,321,590.92	
2,202.0	20.66	91.19	2,171.3	63.0	212.8	211.8	3.52	2,184,378.52	1,321,601.95	
2,234.0	20.40	92.66	2,201.3	62.6	224.0	223.0	1.80	2,184,378.02	1,321,613.16	
2,266.0	20.14	93.71	2,231.3	62.0	235.1	234.1	1.40	2,184,377.28	1,321,624.22	
2,319.0	19.79	94.95	2,281.1	60.7	253.1	252.1	1.04	2,184,375.70	1,321,642.25	
2,350.0	19.61	95.72	2,310.3	59.7	263.5	262.6	1.02	2,184,374.61	1,321,652.64	
2,380.0	19.26	96.91	2,338.6	58.6	273.4	272.5	1.76	2,184,373.40	1,321,662.55	
2,411.0	18.91	98.02	2,367.9	57.3	283.5	282.6	1.63	2,184,371.97	1,321,672.58	
2,442.0	18.03	99.03	2,397.3	55.8	293.2	292.3	3.02	2,184,370.41	1,321,682.28	
2,473.0	17.41	100.78	2,426.8	54.2	302.5	301.6	2.64	2,184,368.68	1,321,691.55	
2,503.0	17.15	101.60	2,455.5	52.5	311.2	310.4	1.19	2,184,366.85	1,321,700.27	
2,534.0	17.50	102.01	2,485.0	50.6	320.3	319.4	1.20	2,184,364.86	1,321,709.29	
2,565.0	17.50	103.31	2,514.6	48.5	329.4	328.6	1.26	2,184,362.71	1,321,718.36	

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Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,596.0	16.80	102.33	2,544.2	46.5	338.3	337.5	2.44	2,184,360.58	1,321,727.25
2,628.0	15.83	100.83	2,574.9	44.7	347.1	346.4	3.30	2,184,358.67	1,321,736.03
2,660.0	15.39	97.59	2,605.8	43.3	355.6	354.9	3.05	2,184,357.19	1,321,744.51
2,689.0	15.12	96.29	2,633.7	42.4	363.2	362.5	1.50	2,184,356.18	1,321,752.07
2,721.0	14.86	96.11	2,664.7	41.5	371.4	370.7	0.83	2,184,355.19	1,321,760.29
2,753.0	14.61	96.02	2,695.6	40.7	379.5	378.8	0.78	2,184,354.24	1,321,768.37
2,785.0	13.72	95.59	2,726.6	39.9	387.3	386.6	2.80	2,184,353.36	1,321,776.15
2,817.0	13.63	95.84	2,757.7	39.1	394.8	394.1	0.34	2,184,352.52	1,321,783.67
2,849.0	13.72	96.50	2,788.8	38.3	402.3	401.7	0.56	2,184,351.62	1,321,791.18
2,881.0	13.63	96.31	2,819.9	37.4	409.8	409.2	0.31	2,184,350.69	1,321,798.69
2,912.0	13.81	96.15	2,850.0	36.7	417.2	416.5	0.59	2,184,349.81	1,321,805.99
2,944.0	13.98	94.39	2,881.1	35.9	424.8	424.2	1.42	2,184,349.02	1,321,813.63
2,976.0	14.07	93.58	2,912.1	35.4	432.5	431.9	0.67	2,184,348.39	1,321,821.36
3,008.0	14.25	93.25	2,943.2	34.9	440.4	439.8	0.62	2,184,347.83	1,321,829.17
3,071.0	13.72	93.54	3,004.3	34.0	455.6	455.0	0.85	2,184,346.76	1,321,844.36
3,133.0	13.10	94.49	3,064.6	33.0	469.9	469.3	1.06	2,184,345.59	1,321,858.69
3,197.0	12.93	94.38	3,127.0	31.9	484.3	483.7	0.27	2,184,344.31	1,321,873.05
3,260.0	13.19	96.01	3,188.3	30.6	498.4	497.9	0.72	2,184,342.86	1,321,887.21
3,324.0	13.28	97.50	3,250.6	28.9	513.0	512.5	0.55	2,184,340.96	1,321,901.73
3,356.0	13.54	97.65	3,281.8	27.9	520.3	519.8	0.82	2,184,339.90	1,321,909.08
3,387.0	13.88	98.88	3,311.9	26.9	527.6	527.1	1.44	2,184,338.76	1,321,916.34
3,419.0	13.89	97.74	3,342.9	25.8	535.2	534.7	0.86	2,184,337.56	1,321,923.92
3,451.0	13.72	97.48	3,374.0	24.8	542.8	542.3	0.57	2,184,336.47	1,321,931.48
3,483.0	13.72	97.71	3,405.1	23.7	550.3	549.9	0.17	2,184,335.38	1,321,938.99
3,514.0	13.63	98.24	3,435.2	22.7	557.6	557.1	0.50	2,184,334.28	1,321,946.24
3,546.0	13.54	98.34	3,466.3	21.6	565.0	564.6	0.29	2,184,333.11	1,321,953.66
3,578.0	13.45	98.85	3,497.4	20.5	572.4	572.0	0.47	2,184,331.91	1,321,961.03

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3,610.0	13.37	99.29	3,528.6	19.4	579.7	579.3	0.41	2,184,330.65	1,321,968.34	
3,641.0	14.25	99.62	3,558.7	18.1	587.0	586.7	2.85	2,184,329.35	1,321,975.63	
3,673.0	15.83	99.84	3,589.6	16.7	595.2	594.9	4.94	2,184,327.86	1,321,983.80	
3,705.0	18.03	98.66	3,620.2	15.2	604.4	604.1	6.96	2,184,326.26	1,321,992.98	
3,737.0	20.22	97.49	3,650.4	13.8	614.8	614.5	6.95	2,184,324.67	1,322,003.34	
3,768.0	22.34	96.20	3,679.3	12.4	625.9	625.7	7.00	2,184,323.21	1,322,014.49	
3,777.6	23.05	95.79	3,688.1	12.1	629.6	629.4	7.57	2,184,322.78	1,322,018.16	
KOP										
3,800.0	24.71	94.93	3,708.6	11.2	638.7	638.4	7.57	2,184,321.83	1,322,027.19	
3,832.0	27.26	94.66	3,737.4	10.0	652.6	652.4	7.98	2,184,320.50	1,322,041.15	
3,863.0	30.07	94.40	3,764.6	8.9	667.5	667.2	9.07	2,184,319.16	1,322,055.95	
3,895.0	32.80	93.98	3,791.9	7.7	684.1	683.9	8.56	2,184,317.75	1,322,072.58	
3,927.0	35.79	93.12	3,818.3	6.5	702.1	701.9	9.47	2,184,316.43	1,322,090.56	
3,959.0	38.16	93.40	3,843.9	5.4	721.3	721.1	7.42	2,184,315.12	1,322,109.76	
3,991.0	40.63	92.85	3,868.6	4.3	741.6	741.4	7.80	2,184,313.78	1,322,130.02	
4,023.0	42.91	92.34	3,892.5	3.4	762.9	762.7	7.20	2,184,312.57	1,322,151.31	
4,055.0	45.29	92.27	3,915.5	2.5	785.1	785.0	7.44	2,184,311.42	1,322,173.54	
4,087.0	47.48	92.50	3,937.5	1.5	808.3	808.1	6.86	2,184,310.19	1,322,196.68	
4,118.0	49.33	93.25	3,958.1	0.4	831.4	831.3	6.24	2,184,308.76	1,322,219.82	
4,150.0	51.00	94.41	3,978.6	-1.3	855.9	855.9	5.91	2,184,306.84	1,322,244.31	
4,182.0	52.85	95.28	3,998.4	-3.4	881.0	881.0	6.16	2,184,304.42	1,322,269.38	
4,213.0	54.87	95.70	4,016.6	-5.8	906.0	905.9	6.61	2,184,301.74	1,322,294.27	
4,245.0	57.51	95.38	4,034.4	-8.4	932.4	932.4	8.29	2,184,298.87	1,322,320.70	
4,276.0	60.15	95.55	4,050.5	-10.9	958.8	958.9	8.53	2,184,296.04	1,322,347.07	
4,307.0	63.14	96.11	4,065.2	-13.7	986.0	986.0	9.78	2,184,292.95	1,322,374.18	
4,339.0	65.42	96.70	4,079.1	-16.9	1,014.6	1,014.7	7.32	2,184,289.41	1,322,402.79	
4,370.0	67.53	96.49	4,091.5	-20.2	1,042.8	1,043.0	6.83	2,184,285.82	1,322,430.98	

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4,402.0	69.29	95.49	4,103.2	-23.3	1,072.4	1,072.7	6.22	2,184,282.38	1,322,460.53
4,434.0	70.96	94.68	4,114.1	-25.9	1,102.4	1,102.7	5.74	2,184,279.37	1,322,490.48
4,466.0	72.98	93.78	4,124.0	-28.2	1,132.7	1,133.0	6.86	2,184,276.78	1,322,520.79
4,498.0	75.71	92.54	4,132.7	-29.9	1,163.5	1,163.8	9.31	2,184,274.73	1,322,551.53
4,530.0	78.52	92.41	4,139.8	-31.2	1,194.7	1,195.0	8.79	2,184,273.02	1,322,582.68
4,562.0	80.20	91.91	4,145.7	-32.4	1,226.1	1,226.5	5.47	2,184,271.48	1,322,614.09
4,564.3	80.31	91.93	4,146.1	-32.5	1,228.3	1,228.7	4.86	2,184,271.38	1,322,616.33
Land Curve									
4,593.0	81.69	92.13	4,150.6	-33.5	1,256.7	1,257.1	4.86	2,184,270.05	1,322,644.67
4,625.0	83.80	91.62	4,154.6	-34.5	1,288.4	1,288.8	6.78	2,184,268.65	1,322,676.38
4,657.0	85.30	90.97	4,157.7	-35.2	1,320.3	1,320.7	5.11	2,184,267.56	1,322,708.21
4,689.0	84.94	90.74	4,160.4	-35.7	1,352.1	1,352.5	1.33	2,184,266.72	1,322,740.09
4,720.0	83.89	90.98	4,163.4	-36.2	1,383.0	1,383.4	3.47	2,184,265.90	1,322,770.93
4,752.0	83.62	90.68	4,166.9	-36.6	1,414.8	1,415.2	1.26	2,184,265.08	1,322,802.73
4,784.0	83.98	90.38	4,170.3	-36.9	1,446.6	1,447.0	1.46	2,184,264.42	1,322,834.53
4,814.0	84.24	90.33	4,173.4	-37.1	1,476.4	1,476.9	0.88	2,184,263.89	1,322,864.37
4,846.0	84.33	90.02	4,176.6	-37.2	1,508.3	1,508.7	1.00	2,184,263.43	1,322,896.21
4,878.0	84.33	89.95	4,179.8	-37.2	1,540.1	1,540.5	0.22	2,184,263.07	1,322,928.05
4,910.0	84.50	89.83	4,182.9	-37.1	1,572.0	1,572.4	0.65	2,184,262.77	1,322,959.90
4,942.0	84.86	89.44	4,185.8	-36.9	1,603.8	1,604.2	1.65	2,184,262.60	1,322,991.76
4,974.0	84.94	89.33	4,188.7	-36.6	1,635.7	1,636.1	0.42	2,184,262.58	1,323,023.63
5,006.0	85.03	89.08	4,191.5	-36.2	1,667.6	1,668.0	0.83	2,184,262.66	1,323,055.51
5,019.0	84.78	88.85	4,192.6	-35.9	1,680.5	1,680.9	2.58	2,184,262.74	1,323,068.46
Enter Coal									
5,038.0	84.42	88.52	4,194.4	-35.5	1,699.4	1,699.8	2.58	2,184,262.96	1,323,087.37
5,053.0	85.12	88.55	4,195.8	-35.1	1,714.4	1,714.7	4.67	2,184,263.17	1,323,102.31
5,144.0	89.16	90.71	4,200.3	-34.5	1,805.2	1,805.6	5.03	2,184,262.71	1,323,193.17

Company: Energen Resources
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 Database: 200316 NWDB

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
5,174.0	88.29	91.89	4,201.0	-35.2	1,835.2	1,835.6	4.89	2,184,261.68	1,323,223.14	
5,205.0	88.72	93.11	4,201.8	-36.6	1,866.2	1,866.5	4.17	2,184,259.98	1,323,254.08	
5,236.0	88.37	91.75	4,202.6	-37.9	1,897.1	1,897.5	4.53	2,184,258.31	1,323,285.03	
5,267.0	88.64	92.32	4,203.4	-39.0	1,928.1	1,928.5	2.03	2,184,256.85	1,323,315.98	
5,298.0	88.64	94.01	4,204.1	-40.7	1,959.1	1,959.5	5.45	2,184,254.79	1,323,346.90	
5,327.0	87.41	93.77	4,205.1	-42.6	1,988.0	1,988.4	4.32	2,184,252.49	1,323,375.80	
5,358.0	87.58	93.19	4,206.5	-44.5	2,018.9	2,019.3	1.95	2,184,250.25	1,323,406.68	
5,389.0	87.76	91.20	4,207.8	-45.7	2,049.8	2,050.3	6.44	2,184,248.71	1,323,437.62	
5,419.0	87.76	89.74	4,208.9	-46.0	2,079.8	2,080.3	4.86	2,184,248.12	1,323,467.59	
5,449.0	87.49	89.12	4,210.2	-45.7	2,109.8	2,110.2	2.25	2,184,248.08	1,323,497.56	
5,510.0	89.16	88.19	4,212.0	-44.2	2,170.7	2,171.2	3.13	2,184,248.81	1,323,558.53	
5,540.0	87.93	88.59	4,212.7	-43.4	2,200.7	2,201.1	4.31	2,184,249.31	1,323,588.52	
5,571.0	86.88	88.16	4,214.1	-42.5	2,231.7	2,232.1	3.66	2,184,249.83	1,323,619.48	
5,601.0	85.74	87.40	4,216.1	-41.3	2,261.6	2,262.0	4.56	2,184,250.65	1,323,649.41	
5,663.0	88.99	86.72	4,218.9	-38.2	2,323.4	2,323.7	5.36	2,184,253.11	1,323,711.28	
5,692.0	89.25	88.03	4,219.3	-36.8	2,352.4	2,352.7	4.60	2,184,254.11	1,323,740.26	
5,722.0	89.69	88.04	4,219.6	-35.8	2,382.4	2,382.6	1.47	2,184,254.79	1,323,770.25	
5,752.0	87.85	87.88	4,220.3	-34.7	2,412.3	2,412.6	6.16	2,184,255.52	1,323,800.23	
5,783.0	86.26	86.99	4,221.9	-33.4	2,443.3	2,443.5	5.88	2,184,256.55	1,323,831.18	
5,814.0	86.53	87.08	4,223.8	-31.8	2,474.2	2,474.4	0.92	2,184,257.79	1,323,862.09	
5,844.0	86.79	89.24	4,225.6	-30.8	2,504.1	2,504.3	7.24	2,184,258.41	1,323,892.03	
5,875.0	88.02	90.92	4,227.0	-30.8	2,535.1	2,535.2	6.71	2,184,258.01	1,323,922.99	
5,904.0	88.20	92.91	4,227.9	-31.8	2,564.0	2,564.2	6.89	2,184,256.71	1,323,951.95	
5,935.0	87.76	93.45	4,229.0	-33.5	2,595.0	2,595.2	2.25	2,184,254.64	1,323,982.86	
5,966.0	86.79	93.66	4,230.5	-35.5	2,625.9	2,626.1	3.20	2,184,252.36	1,324,013.74	
5,997.0	86.00	93.96	4,232.4	-37.5	2,656.7	2,657.0	2.73	2,184,249.95	1,324,044.58	
6,027.0	85.91	93.62	4,234.6	-39.5	2,686.6	2,686.9	1.17	2,184,247.63	1,324,074.42	

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Survey											
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6,057.0	86.00	94.99	4,236.7	-41.7	2,716.4	2,716.8	4.57	2,184,245.04	1,324,104.23		
6,086.0	86.09	94.90	4,238.7	-44.2	2,745.3	2,745.6	0.44	2,184,242.22	1,324,133.02		
6,116.0	86.70	94.64	4,240.6	-46.7	2,775.1	2,775.5	2.21	2,184,239.39	1,324,162.83		
6,147.0	86.17	93.67	4,242.5	-49.0	2,806.0	2,806.4	3.56	2,184,236.79	1,324,193.66		
6,178.0	85.82	94.07	4,244.6	-51.0	2,836.8	2,837.3	1.71	2,184,234.35	1,324,224.49		
6,209.0	84.68	93.26	4,247.2	-53.0	2,867.6	2,868.1	4.51	2,184,232.02	1,324,255.29		
6,239.0	85.03	93.20	4,249.9	-54.7	2,897.5	2,898.0	1.18	2,184,230.00	1,324,285.10		
6,270.0	87.49	93.05	4,251.9	-56.4	2,928.4	2,928.9	7.95	2,184,227.96	1,324,315.97		
6,301.0	89.34	93.89	4,252.8	-58.3	2,959.3	2,959.8	6.55	2,184,225.72	1,324,346.87		
6,330.0	89.96	93.01	4,253.0	-60.0	2,988.2	2,988.8	3.71	2,184,223.65	1,324,375.80		
6,361.0	90.13	92.68	4,252.9	-61.5	3,019.2	3,019.8	1.20	2,184,221.75	1,324,406.74		
6,392.0	89.52	92.02	4,253.0	-62.8	3,050.2	3,050.8	2.90	2,184,220.13	1,324,437.70		
6,422.0	89.60	91.65	4,253.3	-63.8	3,080.2	3,080.8	1.26	2,184,218.82	1,324,467.67		
6,455.0	89.69	91.35	4,253.5	-64.6	3,113.1	3,113.8	0.95	2,184,217.58	1,324,500.64		
6,487.0	90.66	91.05	4,253.4	-65.3	3,145.1	3,145.8	3.17	2,184,216.54	1,324,532.63		
6,519.0	91.36	91.91	4,252.8	-66.1	3,177.1	3,177.8	3.46	2,184,215.35	1,324,564.60		
6,551.0	90.40	90.49	4,252.3	-66.8	3,209.1	3,209.8	5.36	2,184,214.31	1,324,596.58		
6,583.0	91.01	90.08	4,251.9	-67.0	3,241.1	3,241.8	2.30	2,184,213.79	1,324,628.57		
6,616.0	90.84	89.27	4,251.4	-66.8	3,274.1	3,274.7	2.51	2,184,213.59	1,324,661.56		
6,648.0	90.66	89.68	4,251.0	-66.5	3,306.1	3,306.7	1.40	2,184,213.52	1,324,693.56		
6,680.0	90.22	89.66	4,250.7	-66.3	3,338.1	3,338.7	1.38	2,184,213.34	1,324,725.56		
6,712.0	89.60	89.77	4,250.8	-66.1	3,370.1	3,370.7	1.97	2,184,213.13	1,324,757.56		
6,744.0	89.52	89.67	4,251.0	-66.0	3,402.1	3,402.7	0.40	2,184,212.92	1,324,789.56		
6,777.0	89.69	89.58	4,251.2	-65.8	3,435.1	3,435.7	0.58	2,184,212.76	1,324,822.56		
6,809.0	90.22	89.08	4,251.3	-65.4	3,467.1	3,467.7	2.28	2,184,212.76	1,324,854.56		
6,841.0	90.13	88.86	4,251.2	-64.8	3,499.1	3,499.7	0.74	2,184,212.97	1,324,886.56		
6,873.0	90.04	89.24	4,251.1	-64.3	3,531.1	3,531.7	1.22	2,184,213.13	1,324,918.55		

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Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
6,906.0	90.48	88.99	4,251.0	-63.8	3,564.1	3,564.6	1.53	2,184,213.27	1,324,951.55	
6,938.0	89.60	89.57	4,251.0	-63.4	3,596.1	3,596.6	3.29	2,184,213.30	1,324,983.55	
6,970.0	89.87	89.44	4,251.1	-63.1	3,628.1	3,628.6	0.94	2,184,213.21	1,325,015.55	
7,002.0	89.69	90.07	4,251.2	-63.0	3,660.1	3,660.6	2.05	2,184,212.98	1,325,047.55	
7,034.0	88.81	89.40	4,251.6	-62.8	3,692.1	3,692.6	3.46	2,184,212.76	1,325,079.55	
7,067.0	88.46	88.95	4,252.4	-62.3	3,725.1	3,725.6	1.73	2,184,212.86	1,325,112.54	
7,099.0	88.90	89.01	4,253.2	-61.8	3,757.0	3,757.5	1.39	2,184,213.06	1,325,144.53	
7,131.0	87.85	88.89	4,254.1	-61.2	3,789.0	3,789.5	3.30	2,184,213.28	1,325,176.52	
7,163.0	87.58	89.09	4,255.3	-60.6	3,821.0	3,821.5	1.05	2,184,213.47	1,325,208.49	
7,195.0	87.85	89.42	4,256.6	-60.2	3,853.0	3,853.4	1.33	2,184,213.52	1,325,240.46	
7,228.0	88.20	89.50	4,257.8	-59.9	3,885.9	3,886.4	1.09	2,184,213.46	1,325,273.44	
7,260.0	88.20	91.12	4,258.8	-60.1	3,917.9	3,918.4	5.06	2,184,212.92	1,325,305.42	
7,292.0	87.58	91.67	4,259.9	-60.9	3,949.9	3,950.4	2.59	2,184,211.77	1,325,337.38	
7,324.0	87.67	91.54	4,261.3	-61.7	3,981.9	3,982.3	0.49	2,184,210.51	1,325,369.33	
7,357.0	88.37	90.76	4,262.4	-62.4	4,014.8	4,015.3	3.17	2,184,209.47	1,325,402.29	
7,389.0	89.16	90.59	4,263.1	-62.8	4,046.8	4,047.3	2.53	2,184,208.72	1,325,434.27	
7,421.0	89.16	91.35	4,263.6	-63.3	4,078.8	4,079.3	2.37	2,184,207.82	1,325,466.26	
7,453.0	89.69	91.12	4,263.9	-64.0	4,110.8	4,111.3	1.81	2,184,206.76	1,325,498.24	
7,485.0	90.04	91.05	4,264.0	-64.6	4,142.8	4,143.3	1.12	2,184,205.79	1,325,530.22	
7,517.0	89.43	91.38	4,264.1	-65.3	4,174.8	4,175.3	2.17	2,184,204.74	1,325,562.21	
7,550.0	89.25	91.10	4,264.5	-66.0	4,207.8	4,208.3	1.01	2,184,203.65	1,325,595.19	
7,582.0	89.69	91.67	4,264.8	-66.8	4,239.8	4,240.3	2.25	2,184,202.51	1,325,627.16	
7,614.0	88.55	92.08	4,265.3	-67.8	4,271.7	4,272.3	3.79	2,184,201.09	1,325,659.13	
7,646.0	88.37	91.91	4,266.1	-68.9	4,303.7	4,304.3	0.77	2,184,199.61	1,325,691.08	
7,678.0	88.20	92.40	4,267.1	-70.2	4,335.7	4,336.2	1.62	2,184,198.04	1,325,723.03	
7,710.0	88.72	92.18	4,268.0	-71.4	4,367.6	4,368.2	1.76	2,184,196.40	1,325,754.98	
7,742.0	88.81	93.28	4,268.7	-73.0	4,399.6	4,400.2	3.45	2,184,194.51	1,325,786.91	

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7,774.0	88.72	93.54	4,269.3	-74.9	4,431.5	4,432.2	0.86	2,184,192.24	1,325,818.82	
7,806.0	88.90	93.44	4,270.0	-76.8	4,463.5	4,464.1	0.64	2,184,189.92	1,325,850.73	
7,838.0	88.99	93.80	4,270.6	-78.8	4,495.4	4,496.1	1.16	2,184,187.54	1,325,882.64	
7,870.0	88.20	93.93	4,271.4	-81.0	4,527.3	4,528.0	2.50	2,184,185.02	1,325,914.53	
7,902.0	88.55	93.37	4,272.3	-83.0	4,559.2	4,560.0	2.06	2,184,182.61	1,325,946.43	
7,933.0	88.81	93.29	4,273.0	-84.8	4,590.2	4,590.9	0.88	2,184,180.46	1,325,977.34	
7,964.0	89.52	92.18	4,273.5	-86.3	4,621.1	4,621.9	4.25	2,184,178.62	1,326,008.28	
7,996.0	89.87	91.35	4,273.6	-87.3	4,653.1	4,653.9	2.81	2,184,177.27	1,326,040.25	
8,029.0	89.60	91.20	4,273.8	-88.0	4,686.1	4,686.9	0.94	2,184,176.16	1,326,073.24	
8,061.0	89.60	91.18	4,274.0	-88.7	4,718.1	4,718.9	0.06	2,184,175.13	1,326,105.22	
8,093.0	89.43	91.54	4,274.3	-89.4	4,750.1	4,750.9	1.24	2,184,174.00	1,326,137.20	
8,125.0	89.08	91.67	4,274.7	-90.3	4,782.1	4,782.9	1.17	2,184,172.74	1,326,169.17	
8,158.0	88.81	91.54	4,275.3	-91.3	4,815.1	4,815.9	0.91	2,184,171.43	1,326,202.14	
8,190.0	89.16	91.36	4,275.9	-92.1	4,847.0	4,847.9	1.23	2,184,170.26	1,326,234.11	
8,222.0	89.78	90.75	4,276.2	-92.7	4,879.0	4,879.9	2.72	2,184,169.30	1,326,266.09	
8,254.0	90.75	90.79	4,276.0	-93.1	4,911.0	4,911.9	3.03	2,184,168.50	1,326,298.08	
8,285.0	90.84	90.33	4,275.6	-93.4	4,942.0	4,942.9	1.51	2,184,167.85	1,326,329.07	
8,317.0	91.10	90.95	4,275.0	-93.7	4,974.0	4,974.9	2.10	2,184,167.12	1,326,361.06	
8,343.0	91.45	90.53	4,274.5	-94.1	5,000.0	5,000.9	2.10	2,184,166.49	1,326,387.05	
8,417.0	91.45	90.53	4,272.6	-94.8	5,074.0	5,074.8	0.00	2,184,164.95	1,326,461.01	
PBHL OH										

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Targets

Target Name	- hit/miss: target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape		(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL OH		0.00	0.00	4,170.0	-78.1	5,074.9	2,184,181.61	1,326,462.10	36° 59' 51.223 N	107° 19' 30.443 W
	- survey misses by 103.9ft at 8417.0ft MD (4272.6 TVD, -94.8 N, 5074.0 E)									
	- Point									
Land Curve		0.00	0.00	4,170.0	-19.0	1,225.0	2,184,284.89	1,322,613.14	36° 59' 51.812 N	107° 20' 17.900 W
	- survey misses by 27.7ft at 4564.3ft MD (4146.1 TVD, -32.5 N, 1228.3 E)									
	- Point									
KOP		0.00	0.00	3,692.3	7.7	619.6	2,184,318.54	1,322,008.09	36° 59' 52.076 N	107° 20' 25.362 W
	- survey misses by 11.7ft at 3777.6ft MD (3688.1 TVD, 12.1 N, 629.6 E)									
	- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
5,019.0	4,192.6	-35.9	1,680.5	Enter Coal

Checked By: _____ Approved By: _____ Date: _____