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Energen Resources

SGI-NE Sec 10, T32N,R6W

Miller Mesa

Bloomfield 10#1

Bloomfield 10 #1 ST01

Survey: Survey #1

30-045-27470
surface 1450/N 1815/W
BHI FCP 1272/N 1554/W M62855
BHL 700/N 707/W TVL 2691

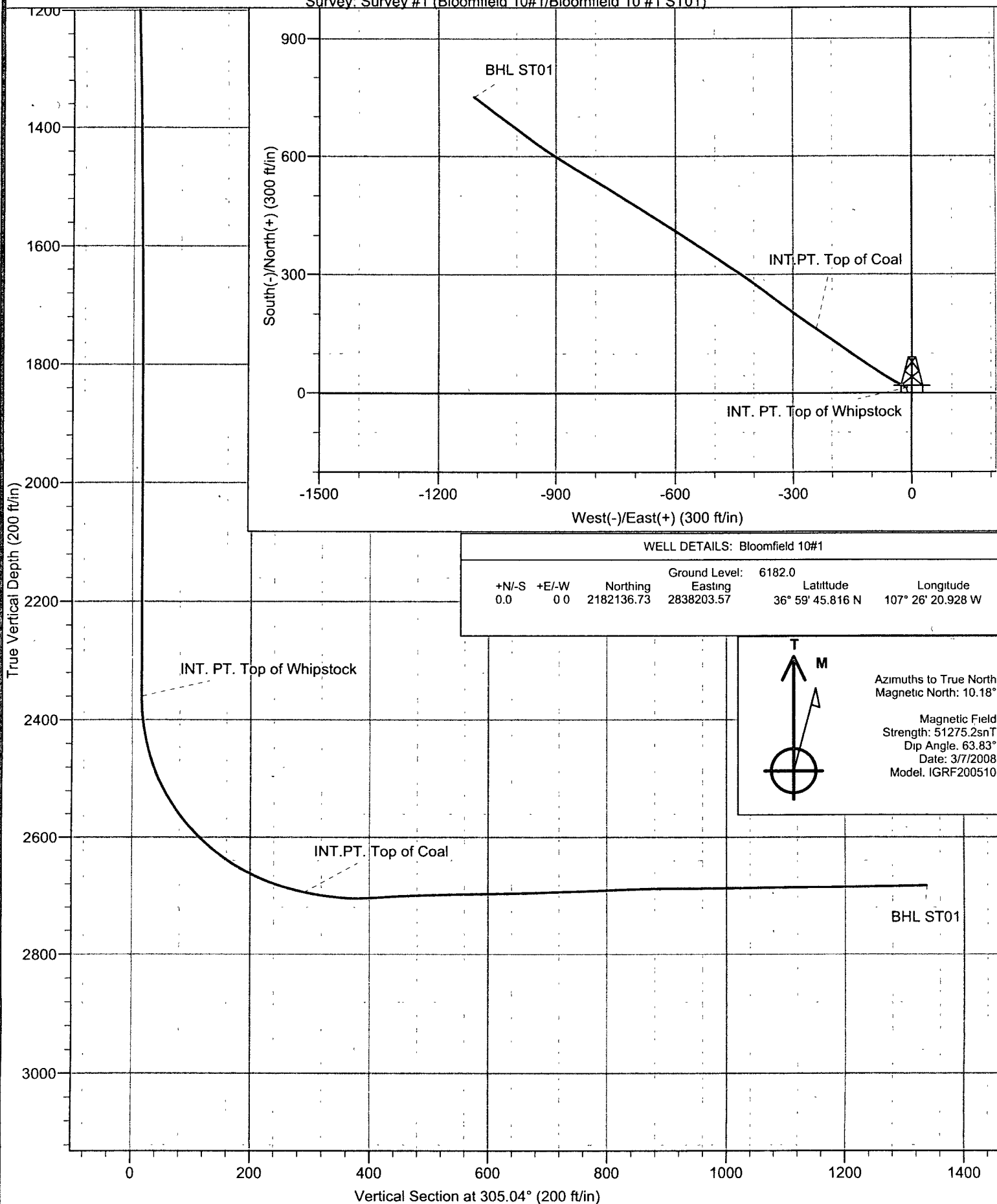
End of Well Survey

16 March, 2008

RCVD MAR 26 '08
OIL CONS. DIV.
DIST. 3

PATHFINDER
ENERGY SERVICES

Survey: Survey #1 (Bloomfield 10#1/Bloomfield 10 #1 ST01)





Pathfinder Energy Services

End of Well Survey



Company: Energen Resources
 Project: SGI-NE Sec 10, T32N,R6W
 Site: Miller Mesa
 Well: Bloomfield 10#1
 Wellbore: Bloomfield 10 #1 ST01
 Design: Bloomfield 10 #1 ST01

Local Co-ordinate Reference: Well Bloomfield 10#1
 TVD Reference: WELL @ 6197.0ft (Rig(RKB=15'))
 MD Reference: WELL @ 6197.0ft (Rig(RKB=15'))
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: EDM 2003.16 Single User Db

Project	SGI-NE Sec 10, T32N,R6W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Miller Mesa		
Site Position:		Northing:	2,182,136.73 ft
From:	Lat/Long	Easting:	2,838,203.57 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	36° 59' 45.816 N
		Longitude:	107° 26' 20.928 W
		Grid Convergence:	0.24 °

Well	Bloomfield 10#1		
Well Position	+N/-S 0.0 ft	Northing:	2,182,136.73 ft
	+E/-W 0.0 ft	Easting:	2,838,203.57 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	6,182.0 ft
		Latitude:	36° 59' 45.816 N
		Longitude:	107° 26' 20.928 W
		Ground Level:	6,182.0 ft

Wellbore	Bloomfield 10 #1 ST01		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF200510	3/7/2008	10.18
			Dip Angle (°)
			63.83
			Field Strength (nT)
			51,275

Design	Bloomfield 10 #1 ST01		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)
	0.0	0.0	0.0
		Direction (°)	305.04

Survey Program	Date 3/16/2008		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
215.0	2,315.0	Gyro (Bloomfield 10 #1 ST01)	Pathfinder
2,360.0	3,879.0	Survey #1 (Bloomfield 10 #1 ST01)	Pathfinder
		Description	
		Pathfinder MWD	
		Pathfinder MWD	

Survey							
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)
2,315.0	0.25	204.28	2,314.9	13.4	-11.1	0.00	16.8
2,360.0	0.36	153.98	2,359.9	13.2	-11.0	0.62	16.6
INT. PT. Top of Whipstock							
2,513.5	25.15	297.14	2,508.5	27.9	-40.3	16.57	49.1
2,544.6	30.34	301.50	2,536.0	35.0	-52.9	17.91	63.5
2,576.0	36.23	303.13	2,562.3	44.2	-67.5	18.97	80.7
2,607.4	41.77	303.94	2,586.7	55.2	-83.9	17.72	100.4
2,638.7	47.22	304.16	2,609.0	67.4	-102.1	17.42	122.3
2,668.8	52.14	304.10	2,628.5	80.3	-121.1	16.35	145.3
2,700.1	57.42	305.37	2,646.5	94.9	-142.1	17.19	170.8
2,731.5	62.78	304.92	2,662.2	110.6	-164.4	17.12	198.0

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Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)
2,762.9	67.88	305.03	2,675.3	126.9	-187.7	16.25	226.6
2,795.3	73.16	304.83	2,686.1	144.4	-212.8	16.31	257.1
2,825.9	76.94	304.38	2,694.0	161.2	-237.1	12.43	286.7
2,830.0	77.41	304.40	2,694.9	163.4	-240.4	11.47	290.7
INT.PT. Top of Coal							
2,855.3	80.28	304.51	2,699.8	177.5	-260.9	11.35	315.5
2,886.0	83.27	304.89	2,704.2	194.8	-285.8	9.82	345.8
2,916.7	90.22	305.93	2,705.9	212.5	-310.8	22.89	376.5
2,948.0	93.65	307.32	2,704.8	231.2	-335.9	11.82	407.7
2,979.0	93.65	306.66	2,702.9	249.8	-360.6	2.12	438.7
3,011.0	92.24	305.58	2,701.2	268.6	-386.4	5.55	470.6
3,042.0	91.36	304.65	2,700.2	286.5	-411.8	4.13	501.6
3,073.0	91.28	304.06	2,699.5	303.9	-437.4	1.92	532.6
3,104.0	91.10	303.92	2,698.9	321.3	-463.0	0.74	563.6
3,135.0	91.01	303.40	2,698.3	338.4	-488.8	1.70	594.6
3,166.0	91.19	303.42	2,697.7	355.5	-514.7	0.58	625.5
3,198.0	91.36	303.05	2,697.0	373.0	-541.5	1.27	657.5
3,229.0	91.89	302.77	2,696.1	389.9	-567.5	1.93	688.5
3,260.0	91.80	302.67	2,695.1	406.6	-593.6	0.43	719.4
3,292.0	92.07	302.44	2,694.1	423.8	-620.5	1.11	751.4
3,323.0	92.42	302.39	2,692.8	440.4	-646.7	1.14	782.3
3,354.0	92.42	302.25	2,691.5	457.0	-672.8	0.45	813.3
3,385.0	91.71	302.84	2,690.4	473.7	-699.0	2.98	844.2
3,416.0	91.71	302.81	2,689.5	490.5	-725.0	0.10	875.2
3,448.0	89.96	301.98	2,689.0	507.6	-752.0	6.05	907.2
3,479.0	90.31	301.46	2,688.9	523.9	-778.4	2.02	938.1
3,510.0	90.48	301.50	2,688.7	540.1	-804.8	0.56	969.0
3,542.0	90.92	301.55	2,688.3	556.8	-832.1	1.38	1,001.0
3,574.0	90.92	301.80	2,687.8	573.6	-859.3	0.78	1,032.9
3,605.0	91.01	302.63	2,687.3	590.1	-885.5	2.69	1,063.9
3,636.0	90.75	303.28	2,686.8	607.0	-911.6	2.26	1,094.9
3,668.0	90.48	304.65	2,686.5	624.9	-938.1	4.36	1,126.8
3,698.0	90.13	306.05	2,686.3	642.2	-962.6	4.81	1,156.8
3,730.0	90.92	306.10	2,686.0	661.1	-988.4	2.47	1,188.8
3,761.0	90.66	305.96	2,685.6	679.3	-1,013.5	0.95	1,219.8
3,792.0	90.92	306.67	2,685.2	697.7	-1,038.5	2.44	1,250.8
3,804.0	91.10	306.84	2,685.0	704.9	-1,048.1	2.06	1,262.8
3,879.0	91.10	306.84	2,683.5	749.8	-1,108.1	0.00	1,337.8

BHL ST01



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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 - survey hits target - Point	0.00	0.00	2,379.0	13.3	-10.8	2,182,149.98	2,838,192.71	36° 59' 45.948 N	107° 26' 21.061 W
Land Curve - survey misses by 7.0ft at 2887.4ft MD (2704.3 TVD, 195.6 N, -287.0 E) - Point	0.00	0.00	2,711.0	196.9	-285.6	2,182,332.44	2,837,917.15	36° 59' 47.763 N	107° 26' 24.449 W
PBHL ST01 - survey misses by 28.3ft at 3879.0ft MD (2683.5 TVD, 749.8 N, -1108.1 E) - Point	0.00	0.00	2,711.0	750.0	-1,115.0	2,182,882.10	2,837,085.47	36° 59' 53.232 N	107° 26' 34.674 W

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
2,360.0	2,359.9	13.2	-11.0	INT. PT. Top of Whipstock
2,830.0	2,694.9	163.4	-240.4	INT.PT. Top of Coal
3,879.0	2,683.5	749.8	-1,108.1	BHL ST01

Checked By: _____ Approved By: _____ Date: _____