



RCVD AUG 29 '07

OIL CONS. DIV.

DIST. 3

Energen Resources

Carson National Forest-S26, 32N,5W 26A #10

Middle Mesa

Carracas 26 A #10

OH

30-039-30140

Surface: 745/N 1540/E

Lateral origin: 2572/S 1484/E md 5131 TVD 3893

Lateral B.H.: 748/S 1425/E md 6847 TVD 3926

Survey: Actual

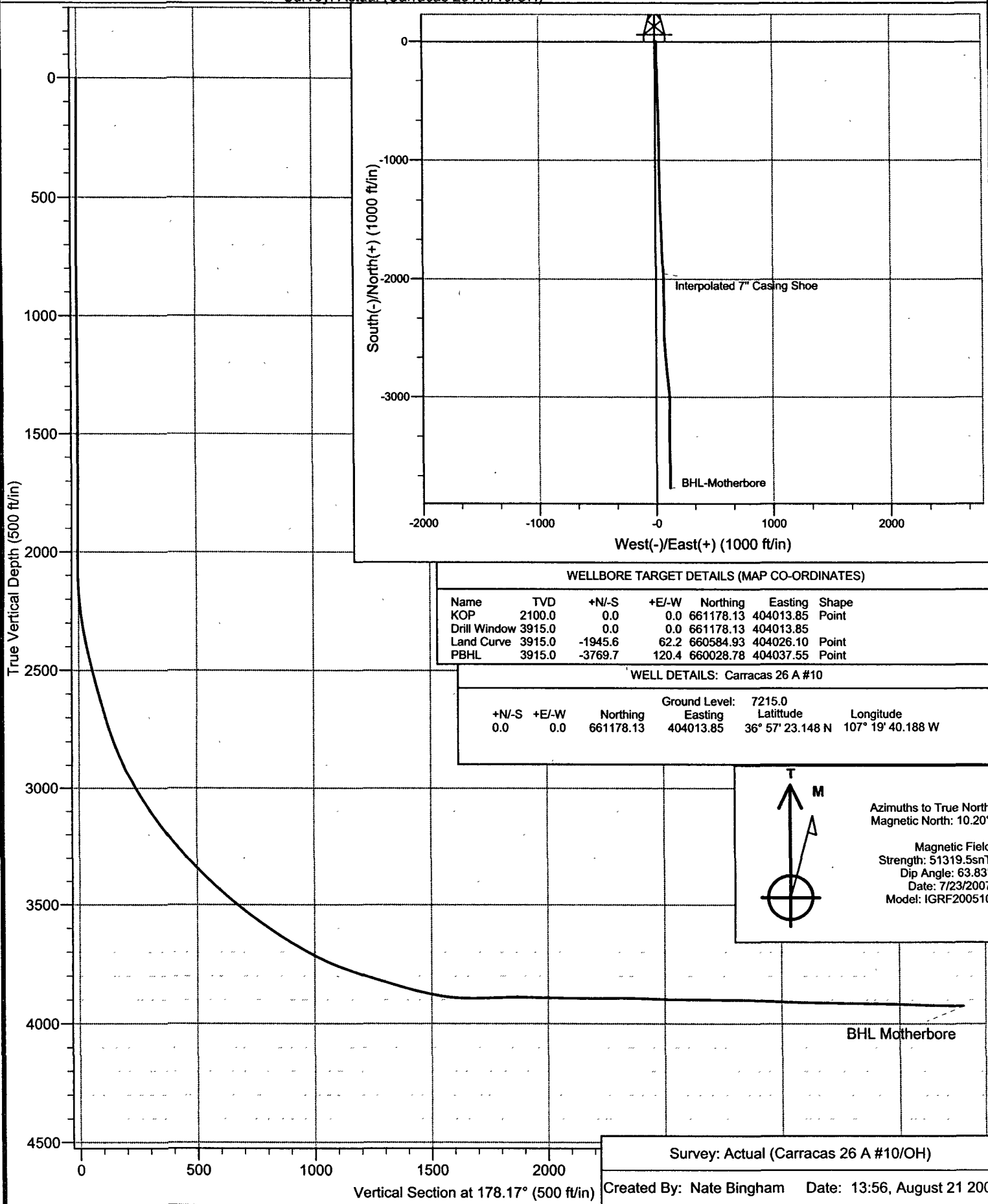
End of Well Survey

21 August, 2007

PATHFINDER
ENERGY SERVICES

8

Survey: Actual (Carracas 26 A #10/OH)



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
KOP	2100.0	0.0	0.0	661178.13	404013.85	Point
Drill Window	3915.0	0.0	0.0	661178.13	404013.85	
Land Curve	3915.0	-1945.6	62.2	660584.93	404026.10	Point
PBHL	3915.0	-3769.7	120.4	660028.78	404037.55	Point

WELL DETAILS: Carracas 26 A #10

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude
0.0	0.0	661178.13	404013.85	7215.0	36° 57' 23.148 N	107° 19' 40.188 W



Azimuths to True North
Magnetic North: 10.20°

Magnetic Field:
Strength: 51319.5snT
Dip Angle: 63.83°
Date: 7/23/2007
Model: IGRF200510

BHL Motherbore

Survey: Actual (Carracas 26 A #10/OH)

Vertical Section at 178.17° (500 ft/in)

Created By: Nate Bingham Date: 13:56, August 21 2007

Company: Energen Resources
Project: Carson National Forest-S26, 32N,5W 26A #10
Site: Middle Mesa
Well: Carracas 26 A #10
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Carracas 26 A #10
TVD Reference: WELL @ 7230.0ft (Patterson #749)
MD Reference: WELL @ 7230.0ft (Patterson #749)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Carson National Forest-S26, 32N,5W 26A #10		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Middle Mesa		
Site Position:		Northing:	661,178.13 m
From:	Lat/Long	Easting:	404,013.85 m
Position Uncertainty:	0.0 ft	Slot Radius:	in
		Latitude:	36° 57' 23.148 N
		Longitude:	107° 19' 40.188 W
		Grid Convergence:	-0.65

Well	Carracas 26 A #10		
Well Position	+N/-S	0.0 ft	Northing: 661,178.13 m
	+E/-W	0.0 ft	Easting: 404,013.85 m
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,230.0 ft
		Ground Level:	7,215.0 ft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	7/23/2007	10.20
			Dip Angle
			63.83
			Field Strength
			51,320

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction
			178.17

Survey Program	Date 8/21/2007		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
272.0	6,897.0	Actual (OH)	Pathfinder
			Description
			Pathfinder MWD

Survey							
MD	Inc	Azi	TVD	N/S	E/W	DLeg	V. Sec
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
272.0	0.62	312.54	272.0	1.0	-1.1	0.23	-1.0
555.0	0.53	89.13	555.0	2.1	-0.9	0.38	-2.1
806.0	0.18	68.82	806.0	2.2	0.6	0.15	-2.2
1,054.0	0.79	109.16	1,054.0	1.8	2.6	0.27	-1.7
1,300.0	0.79	115.49	1,300.0	0.5	5.7	0.04	-0.3
1,520.0	1.06	87.10	1,519.9	0.0	9.1	0.24	0.3
1,764.0	0.70	73.31	1,763.9	0.5	12.8	0.17	-0.1
1,976.0	0.88	45.36	1,975.9	2.0	15.2	0.20	-1.5
2,007.0	0.70	64.52	2,006.9	2.3	15.6	1.02	-1.8
2,068.0	0.79	108.02	2,067.9	2.3	16.3	0.92	-1.8
2,129.0	2.29	169.37	2,128.8	1.0	16.9	3.33	-0.4



Pathfinder Energy Services
End of Well Survey



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Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)
2,189.0	4.66	178.86	2,188.7	-2.7	17.2	4.05	3.2
2,250.0	7.39	178.16	2,249.4	-9.1	17.4	4.48	9.6
2,309.0	9.15	180.53	2,307.8	-17.5	17.4	3.04	18.1
2,370.0	11.34	182.55	2,367.8	-28.4	17.1	3.64	28.9
2,430.0	12.84	181.06	2,426.5	-40.9	16.7	2.55	41.5
2,492.0	14.16	180.01	2,486.8	-55.4	16.6	2.17	55.9
2,552.0	14.86	180.80	2,544.8	-70.4	16.5	1.21	70.9
2,612.0	15.21	180.36	2,602.8	-86.0	16.4	0.61	86.5
2,674.0	15.83	177.72	2,662.5	-102.6	16.6	1.52	103.1
2,735.0	17.50	177.90	2,721.0	-120.1	17.3	2.74	120.6
2,797.0	20.05	179.57	2,779.7	-140.0	17.7	4.20	140.5
2,859.0	22.77	179.83	2,837.4	-162.6	17.8	4.39	163.1
2,923.0	25.32	180.62	2,895.8	-188.7	17.7	4.02	189.2
2,986.0	27.96	179.39	2,952.1	-217.0	17.7	4.28	217.4
3,049.0	30.07	179.48	3,007.2	-247.5	18.0	3.35	248.0
3,112.0	32.45	179.39	3,061.1	-280.2	18.4	3.78	280.7
3,175.0	34.12	178.95	3,113.7	-314.8	18.9	2.68	315.2
3,238.0	36.32	179.04	3,165.2	-351.1	19.5	3.49	351.5
3,301.0	38.78	178.60	3,215.1	-389.5	20.3	3.93	389.9
3,364.0	40.89	177.90	3,263.5	-429.8	21.5	3.42	430.3
3,427.0	42.38	177.37	3,310.6	-471.6	23.3	2.43	472.1
3,490.0	44.49	179.03	3,356.3	-514.9	24.6	3.81	515.5
3,553.0	46.43	178.37	3,400.5	-559.8	25.6	3.17	560.4
3,615.0	48.19	177.66	3,442.6	-605.4	27.2	2.96	605.9
3,679.0	50.47	177.46	3,484.3	-653.9	29.3	3.57	654.5
3,742.0	51.70	179.45	3,523.8	-702.9	30.6	3.14	703.5
3,805.0	53.82	179.33	3,562.0	-753.0	31.1	3.37	753.6
3,868.0	55.57	178.75	3,598.4	-804.4	32.0	2.88	805.0
3,931.0	57.51	179.01	3,633.1	-856.9	33.0	3.10	857.6
3,994.0	59.88	179.57	3,665.8	-910.8	33.7	3.84	911.4
4,057.0	61.47	179.39	3,696.7	-965.7	34.2	2.54	966.3
4,120.0	63.75	180.04	3,725.7	-1,021.6	34.5	3.73	1,022.2
4,183.0	67.53	179.14	3,751.7	-1,079.0	34.9	6.14	1,079.6
4,246.0	71.05	178.66	3,773.9	-1,137.9	36.0	5.63	1,138.5
4,307.0	71.49	178.38	3,793.5	-1,195.7	37.5	0.84	1,196.3
4,370.0	72.98	179.09	3,812.7	-1,255.6	38.8	2.60	1,256.2
4,433.0	74.30	178.81	3,830.5	-1,316.1	39.9	2.14	1,316.7
4,496.0	74.13	178.12	3,847.6	-1,376.7	41.6	1.09	1,377.3
4,559.0	75.89	178.04	3,863.9	-1,437.5	43.6	2.80	1,438.2
4,615.0	78.83	177.43	3,876.2	-1,492.1	45.8	5.36	1,492.8
4,621.0	79.14	177.36	3,877.3	-1,498.0	46.0	5.29	1,498.7
4,683.0	82.57	176.44	3,887.2	-1,559.1	49.3	5.72	1,559.9
4,745.0	86.09	177.79	3,893.3	-1,620.7	52.4	6.08	1,621.5
4,808.0	90.66	179.06	3,895.1	-1,683.6	54.2	7.53	1,684.5

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Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	DLeg (°/100ft)	V. Sec (ft)
4,871.0	92.42	177.91	3,893.4	-1,746.6	55.8	3.34	1,747.5
4,934.0	91.98	177.61	3,891.0	-1,809.5	58.3	0.85	1,810.4
4,997.0	88.99	177.58	3,890.4	-1,872.4	60.9	4.75	1,873.4
5,041.0	88.99	177.28	3,891.2	-1,916.4	62.9	0.68	1,917.4
5,078.0	88.95	177.90	3,891.9	-1,953.3	64.5	1.68	1,954.4
Interpolated 7" Casing Shoe							
5,131.0	88.90	178.79	3,892.9	-2,006.3	66.0	1.68	2,007.4
5,193.0	89.16	179.77	3,893.9	-2,068.3	66.8	1.64	2,069.4
5,255.0	90.04	180.12	3,894.4	-2,130.3	66.8	1.53	2,131.3
5,317.0	89.43	176.87	3,894.6	-2,192.3	68.5	5.33	2,193.3
5,380.0	90.48	178.46	3,894.7	-2,255.2	71.0	3.02	2,256.3
5,441.0	90.31	180.72	3,894.3	-2,316.2	71.5	3.72	2,317.3
5,501.0	88.55	181.41	3,894.9	-2,376.2	70.4	3.15	2,377.2
5,564.0	88.11	180.18	3,896.7	-2,439.1	69.5	2.07	2,440.1
5,626.0	88.37	177.10	3,898.6	-2,501.1	71.0	4.98	2,502.1
5,688.0	89.87	175.49	3,899.6	-2,562.9	75.0	3.55	2,564.0
5,749.0	89.78	176.11	3,899.7	-2,623.8	79.4	1.03	2,625.0
5,810.0	88.72	174.83	3,900.5	-2,684.6	84.2	2.72	2,685.9
5,872.0	89.52	174.75	3,901.5	-2,746.3	89.9	1.30	2,747.8
5,937.0	90.04	174.54	3,901.7	-2,811.0	95.9	0.86	2,812.7
5,998.0	87.67	173.15	3,903.0	-2,871.7	102.5	4.50	2,873.5
6,061.0	87.67	174.24	3,905.5	-2,934.2	109.4	1.73	2,936.2
6,123.0	86.88	176.75	3,908.5	-2,996.0	114.3	4.24	2,998.1
6,186.0	88.46	179.66	3,911.0	-3,058.9	116.2	5.25	3,061.0
6,249.0	89.08	180.68	3,912.4	-3,121.9	116.0	1.89	3,124.0
6,311.0	89.34	181.78	3,913.2	-3,183.8	114.7	1.82	3,185.9
6,374.0	88.81	180.24	3,914.3	-3,246.8	113.6	2.58	3,248.8
6,436.0	88.55	179.05	3,915.7	-3,308.8	114.0	1.96	3,310.7
6,498.0	89.78	178.49	3,916.6	-3,370.8	115.3	2.18	3,372.7
6,561.0	88.55	179.97	3,917.5	-3,433.8	116.2	3.05	3,435.7
6,622.0	87.93	179.78	3,919.4	-3,494.7	116.3	1.06	3,496.7
6,684.0	87.41	179.75	3,921.9	-3,556.7	116.5	0.84	3,558.6
6,747.0	89.52	180.19	3,923.6	-3,619.7	116.6	3.42	3,621.5
6,807.0	88.81	180.22	3,924.5	-3,679.6	116.4	1.18	3,681.5
6,838.0	88.90	180.80	3,925.1	-3,710.6	116.1	1.89	3,712.5
6,847.0	88.72	180.76	3,925.3	-3,719.6	116.0	2.05	3,721.4
6,897.0	88.72	180.76	3,926.4	-3,769.6	115.3	0.00	3,771.4

Projection To Bit



Pathfinder Energy Services
End of Well Survey



Company: Energen Resources
Project: Carson National Forest-S26, 32N,5W 26A #10
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Design: OH

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Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (m)	Easting (m)	Latitude	Longitude
Drill Window - survey misses by 759.5ft at 3514.5ft MD (3373.7 TVD, -532.2 N, 24.9 E) - Rectangle (sides W1,970.0 H1,334.2 D0.0)	0.00	0.30	3,915.0	0.0	0.0	661,178.13	404,013.85	36° 57' 23.148 N	107° 19' 40.188 W
PBHL - survey misses by 12.5ft at 6896.8ft MD (3926.4 TVD, -3769.4 N, 115.3 E) - Point	0.00	0.00	3,915.0	-3,769.7	120.4	660,028.78	404,037.55	36° 56' 45.876 N	107° 19' 38.705 W
KOP - survey misses by 16.8ft at 2100.0ft MD (2099.9 TVD, 1.9 N, 16.7 E) - Point	0.00	0.30	2,100.0	0.0	0.0	661,178.13	404,013.85	36° 57' 23.148 N	107° 19' 40.188 W
Land Curve - survey misses by 23.3ft at 5070.6ft MD (3891.7 TVD, -1945.9 N, 64.2 E) - Point	0.00	0.00	3,915.0	-1,945.6	62.2	660,584.93	404,026.10	36° 57' 3.911 N	107° 19' 39.422 W

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
5,078.0	3,891.9	-1,953.3	64.5	Interpolated 7" Casing Shoe
6,897.0	3,926.4	-3,769.6	115.3	Projection To Bit

Checked By: _____ Approved By: _____ Date: _____