

Energen Resources

Carson Natl Forest - S13, T32N, R5W

Carracas Mesa

Carracas 13 A #6

Carracas 13 A #6

30 039 29932

Surface: 960/N 1725/E sec 14

BHL 1254/N 699/W sec 13 MD 4725
724 4005

BHL 2 1516/N 1866/W sec 13 MD 5423
724 4007

Plan: Main Lateral

Final Survey


25 June, 2007

RCVD JUL 5 '07
OIL CONS. DIV.
DIST. 3

B 7/10



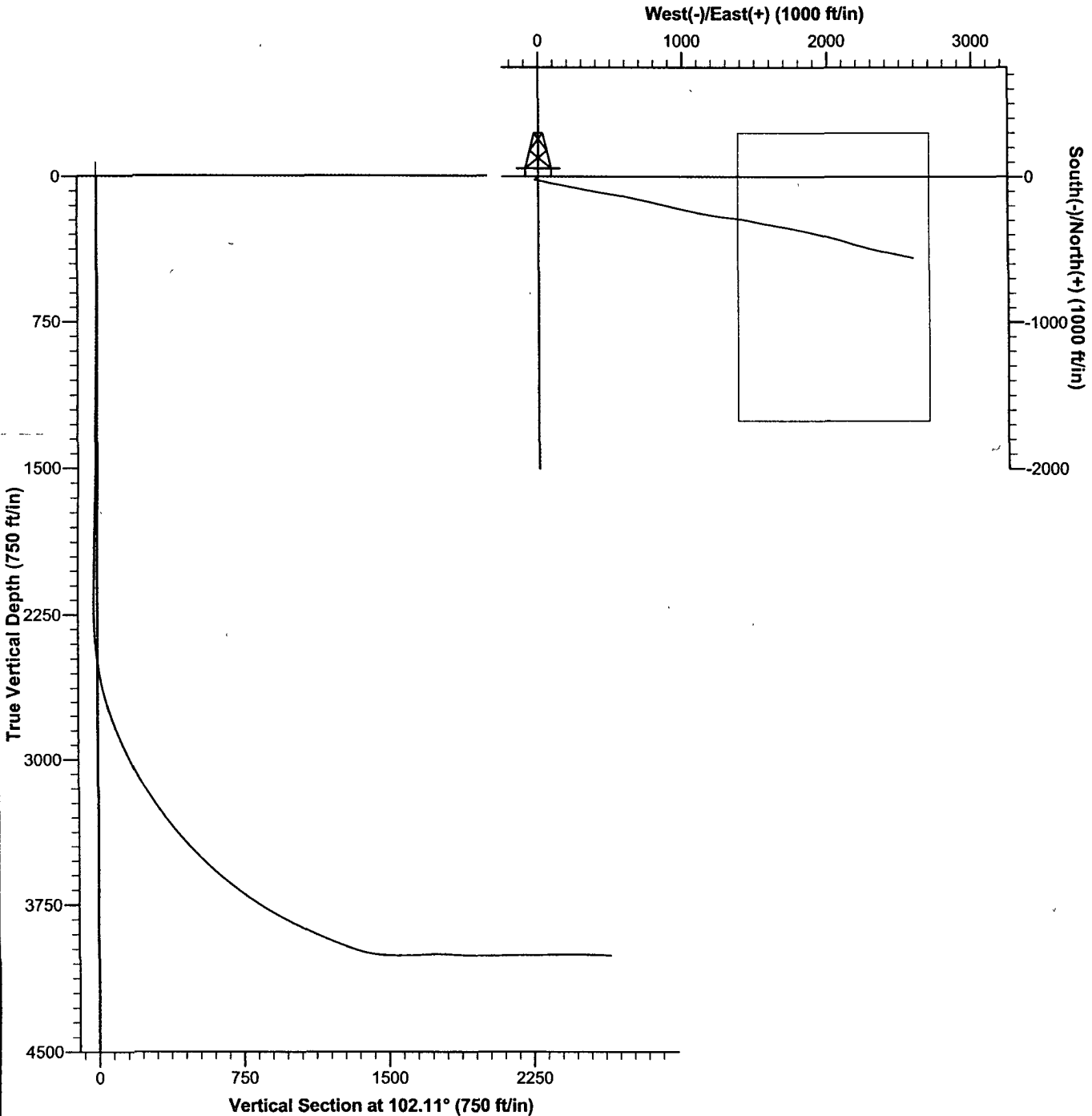
Project: Carson Natl Forest - S13, T32N, R5W
 Site: Carracas Mesa
 Well: Carracas 13 A #6
 Wellbore: Carracas 13 A #6
 Plan: Final Survey (Carracas 13 A #6/Carracas 13 A #6)



Azimuths to True North
 Magnetic North: 10.22°
 Magnetic Field
 Strength: 51347.0snT
 Dip Angle: 63.86°
 Date: 6/7/2007
 Model: IGRF200510

PROJECT DETAILS: Carson Natl Forest - S13, T32N, R5W
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
System Datum: Mean Sea Level

SURFACE LOCATION	
Easting:	1326607.50
Northing:	2179504.67



Energen
Final Survey



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Site: Carracas Mesa
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Design: Final Survey

Local Co-ordinate Reference: Well Carracas 13 A #6
TVD Reference: KB @ 7396.0ft (Patterson 749)
MD Reference: KB @ 7396.0ft (Patterson 749)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Carson Natl Forest - S13, T32N, R5W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Carracas Mesa		
Site Position:		Northing:	2,179,504.67 ft
From:	Lat/Long	Easting:	1,326,607.50 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	36° 59' 5.000 N
		Longitude:	107° 19' 28.000 W
		Grid Convergence:	-0.65 °

Well	Carracas 13 A #6		
Well Position	+N/-S	0.0 ft	Northing: 2,179,504.67 ft
	+E/-W	0.0 ft	Easting: 1,326,607.50 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,381.0 ft
		Latitude:	36° 59' 5.000 N
		Longitude:	107° 19' 28.000 W
		Ground Level:	7,381.0 ft

Wellbore	Carracas 13 A #6				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	6/7/2007	(°) 10.22	(°) 63.86	(nT) 51,347

Design	Final Survey		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction (°) 102.11

Survey Tool Program	Date 6/18/2007		
From	To	Survey (Wellbore)	Tool Name
(ft) 0.0	(ft) 5,923.0	Final Survey (Carracas 13 A #6)	MWD
			Description
			MWD - Standard

RCVD JUL 5 '07
OIL CONS. DIV.
DIST. 2

Planned Survey							
MD	TVD	Inc	Azi	V. Sec	N/S	E/W	
(ft)	(ft)	(°)	(°)	(ft)	(ft)	(ft)	
0.0	0.0	0.00	0.00	0.0	0.0	0.0	
100.0	100.0	0.34	223.62	-0.2	-0.2	-0.2	
200.0	200.0	0.68	223.62	-0.6	-0.9	-0.8	
286.0	286.0	0.97	223.62	-1.3	-1.8	-1.7	
300.0	300.0	0.96	223.41	-1.4	-1.9	-1.8	
400.0	400.0	0.90	221.75	-2.2	-3.1	-2.9	
500.0	500.0	0.84	219.86	-2.9	-4.3	-3.9	
600.0	599.9	0.78	217.69	-3.6	-5.4	-4.8	
700.0	699.9	0.72	215.16	-4.1	-6.4	-5.6	
743.0	742.9	0.70	213.95	-4.3	-6.9	-5.9	
800.0	799.9	0.72	216.21	-4.6	-7.4	-6.3	
900.0	899.9	0.76	219.89	-5.2	-8.5	-7.1	

Energen
Final Survey



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Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
1,000.0	999.9	0.80	223.22	-5.8	-9.5	-8.0
1,100.0	1,099.9	0.84	226.23	-6.6	-10.5	-9.0
1,198.0	1,197.9	0.88	228.89	-7.5	-11.5	-10.1
1,200.0	1,199.9	0.88	228.86	-7.5	-11.5	-10.1
1,300.0	1,299.9	0.92	227.27	-8.4	-12.5	-11.3
1,400.0	1,399.9	0.96	225.81	-9.3	-13.7	-12.5
1,500.0	1,499.9	1.01	224.48	-10.3	-14.9	-13.7
1,600.0	1,599.8	1.05	223.26	-11.2	-16.2	-14.9
1,629.0	1,628.8	1.06	222.92	-11.5	-16.6	-15.3
1,700.0	1,699.8	1.14	233.47	-12.3	-17.5	-16.3
1,760.0	1,759.8	1.23	241.13	-13.2	-18.1	-17.3
1,800.0	1,799.8	1.21	241.82	-13.8	-18.5	-18.1
1,900.0	1,899.8	1.16	243.64	-15.4	-19.5	-19.9
2,000.0	1,999.8	1.12	245.61	-17.0	-20.3	-21.7
2,100.0	2,099.7	1.07	247.75	-18.5	-21.1	-23.5
2,133.0	2,132.7	1.06	248.49	-19.1	-21.3	-24.1
2,141.0	2,140.7	1.23	237.94	-19.2	-21.4	-24.2
2,173.0	2,172.7	0.79	229.95	-19.6	-21.7	-24.7
2,192.0	2,191.7	0.68	220.56	-19.7	-21.9	-24.8
2,204.0	2,203.7	0.62	212.98	-19.7	-22.0	-24.9
2,235.0	2,234.7	0.62	114.63	-19.6	-22.2	-24.9
2,267.0	2,266.7	1.49	111.82	-19.1	-22.4	-24.3
2,298.0	2,297.7	2.46	99.17	-18.0	-22.7	-23.3
2,300.0	2,299.7	2.51	99.33	-17.9	-22.7	-23.2
2,329.0	2,328.7	3.25	101.10	-16.5	-23.0	-21.8
2,361.0	2,360.6	4.13	98.37	-14.4	-23.3	-19.7
2,392.0	2,391.5	5.19	94.16	-11.9	-23.6	-17.2
2,400.0	2,399.5	5.39	94.11	-11.2	-23.6	-16.5
2,424.0	2,423.3	5.98	93.98	-8.8	-23.8	-14.1
2,455.0	2,454.1	6.77	96.35	-5.4	-24.1	-10.7
2,486.0	2,484.9	8.00	100.97	-1.4	-24.7	-6.8
2,500.0	2,498.7	8.60	101.76	0.6	-25.1	-4.8
2,517.0	2,515.5	9.32	102.59	3.2	-25.7	-2.2
2,549.0	2,547.1	10.38	104.35	8.7	-27.0	3.1
2,580.0	2,577.5	11.43	102.86	14.6	-28.3	8.8
2,600.0	2,597.1	12.04	102.58	18.6	-29.2	12.8
2,612.0	2,608.8	12.40	102.42	21.2	-29.8	15.3
2,643.0	2,639.0	13.63	102.33	28.2	-31.3	22.1
2,673.0	2,668.1	14.77	101.27	35.5	-32.8	29.3
2,705.0	2,699.0	15.83	101.80	44.0	-34.5	37.6
2,734.0	2,726.8	16.97	101.80	52.2	-36.1	45.6
2,765.0	2,756.4	17.76	101.01	61.4	-38.0	54.7
2,797.0	2,786.7	18.91	101.45	71.5	-39.9	64.5
2,800.0	2,789.6	19.03	101.41	72.4	-40.1	65.5

Energen
Final Survey



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North Reference: True
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Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	EW (ft)
2,828.0	2,816.0	20.14	101.10	81.8	-42.0	74.7
2,859.0	2,844.9	21.37	101.19	92.8	-44.1	85.5
2,891.0	2,874.6	22.34	101.45	104.7	-46.4	97.1
2,900.0	2,883.0	22.62	101.37	108.2	-47.1	100.5
2,922.0	2,903.2	23.30	101.19	116.7	-48.8	108.9
2,953.0	2,931.6	24.27	101.63	129.2	-51.3	121.2
2,985.0	2,960.7	24.97	101.19	142.6	-53.9	134.3
3,000.0	2,974.3	25.40	101.19	149.0	-55.1	140.5
3,016.0	2,988.7	25.85	101.19	155.9	-56.5	147.3
3,048.0	3,017.4	26.82	100.75	170.1	-59.2	161.2
3,078.0	3,044.0	27.96	100.84	183.9	-61.8	174.8
3,100.0	3,063.4	28.63	100.84	194.3	-63.7	185.0
3,110.0	3,072.1	28.93	100.84	199.1	-64.6	189.8
3,141.0	3,099.2	29.63	100.75	214.3	-67.5	204.7
3,171.0	3,125.1	30.42	100.57	229.3	-70.2	219.4
3,203.0	3,152.6	31.30	100.84	245.7	-73.3	235.5
3,233.0	3,178.1	32.27	101.63	261.5	-76.4	251.0
3,265.0	3,205.1	33.06	101.36	278.7	-79.8	268.0
3,296.0	3,230.9	34.12	101.27	295.9	-83.2	284.8
3,300.0	3,234.2	34.23	101.26	298.1	-83.6	287.0
3,327.0	3,256.4	35.00	101.19	313.5	-86.6	302.0
3,358.0	3,281.7	35.79	100.57	331.4	-90.0	319.7
3,390.0	3,307.4	36.93	99.96	350.4	-93.4	338.3
3,400.0	3,315.4	37.13	100.02	356.4	-94.4	344.3
3,421.0	3,332.1	37.55	100.13	369.1	-96.6	356.8
3,453.0	3,357.3	38.51	99.96	388.8	-100.1	376.2
3,484.0	3,381.4	39.48	99.60	408.3	-103.4	395.4
3,500.0	3,393.7	40.14	99.29	418.6	-105.1	405.5
3,516.0	3,405.9	40.80	98.99	428.9	-106.7	415.8
3,548.0	3,429.9	41.94	98.99	450.1	-110.0	436.7
3,579.0	3,452.8	42.82	99.34	470.9	-113.4	457.3
3,600.0	3,468.1	43.34	99.23	485.2	-115.7	471.5
3,611.0	3,476.1	43.62	99.17	492.8	-116.9	478.9
3,642.0	3,498.3	45.11	98.77	514.4	-120.3	500.4
3,672.0	3,519.2	46.43	99.26	535.9	-123.6	521.6
3,703.0	3,540.4	47.31	99.32	558.5	-127.3	543.9
3,735.0	3,562.0	48.01	99.41	582.1	-131.1	567.2
3,765.0	3,581.9	48.72	99.48	604.5	-134.8	589.4
3,796.0	3,602.1	49.68	99.95	628.0	-138.8	612.5
3,800.0	3,604.7	49.80	100.09	631.0	-139.3	615.5
3,828.0	3,622.6	50.65	101.08	652.5	-143.3	636.7
3,860.0	3,642.6	51.97	101.43	677.5	-148.1	661.1
3,891.0	3,661.5	53.20	102.23	702.1	-153.2	685.2
3,900.0	3,666.8	53.52	102.27	709.4	-154.7	692.3

Energen Final Survey



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Site: Carracas Mesa
Well: Carracas 13 A #6
Wellbore: Carracas 13 A #6
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3,923.0	3,680.4	54.34	102.37	727.9	-158.7	710.5
3,954.0	3,698.3	55.13	102.67	753.3	-164.2	735.2
3,986.0	3,716.4	56.01	102.88	779.6	-170.0	760.9
4,000.0	3,724.2	56.45	102.93	791.3	-172.6	772.3
4,017.0	3,733.5	56.98	102.99	805.5	-175.8	786.1
4,048.0	3,750.1	58.04	103.69	831.6	-181.8	811.6
4,080.0	3,766.8	59.09	103.58	858.9	-188.3	838.1
4,100.0	3,777.0	60.06	103.53	876.2	-192.3	854.8
4,111.0	3,782.4	60.59	103.51	885.7	-194.5	864.1
4,143.0	3,798.0	61.29	103.39	913.7	-201.0	891.3
4,174.0	3,812.7	61.99	102.84	941.0	-207.2	917.9
4,206.0	3,827.6	62.61	102.63	969.3	-213.5	945.5
4,237.0	3,841.6	63.49	102.18	996.9	-219.4	972.5
4,267.0	3,854.8	64.28	102.30	1,023.9	-225.1	998.9
4,299.0	3,868.5	64.98	102.38	1,052.8	-231.3	1,027.1
4,300.0	3,868.9	65.00	102.37	1,053.7	-231.5	1,028.0
4,331.0	3,881.9	65.69	102.06	1,081.9	-237.5	1,055.5
4,362.0	3,894.5	66.39	101.67	1,110.2	-243.3	1,083.3
4,394.0	3,907.1	67.01	101.05	1,139.6	-249.1	1,112.1
4,400.0	3,909.5	67.11	100.81	1,145.1	-250.1	1,117.5
4,425.0	3,919.1	67.53	99.82	1,168.2	-254.3	1,140.2
4,457.0	3,931.2	68.15	99.16	1,197.8	-259.1	1,169.4
4,489.0	3,942.8	69.03	98.52	1,227.5	-263.7	1,198.9
4,500.0	3,946.8	69.32	98.49	1,237.8	-265.2	1,209.0
4,519.0	3,953.4	69.82	98.43	1,255.5	-267.9	1,226.6
4,551.0	3,964.2	70.79	98.84	1,285.6	-272.4	1,256.4
4,582.0	3,974.2	71.58	97.23	1,314.9	-276.5	1,285.5
4,600.0	3,979.8	71.88	97.22	1,331.9	-278.6	1,302.4
4,614.0	3,984.1	72.11	97.22	1,345.2	-280.3	1,315.6
4,625.0	3,987.4	73.39	97.26	1,355.6	-281.6	1,326.1
4,645.0	3,992.7	75.71	97.34	1,374.8	-284.1	1,345.2
4,650.0	3,993.9	76.41	97.26	1,379.7	-284.7	1,350.0
4,677.0	3,999.4	80.20	96.82	1,406.0	-287.9	1,376.2
4,697.0	4,002.3	83.19	95.61	1,425.7	-290.1	1,395.9
4,700.0	4,002.6	83.38	95.96	1,428.7	-290.4	1,398.9
4,725.0	4,005.2	84.97	98.84	1,453.4	-293.6	1,423.5
4,750.0	4,007.0	86.57	101.71	1,478.4	-298.0	1,448.1
4,775.0	4,008.2	88.18	104.58	1,503.3	-303.7	1,472.4
4,778.0	4,008.3	88.37	104.92	1,506.3	-304.5	1,475.3
4,800.0	4,008.9	88.57	102.95	1,528.3	-309.8	1,496.6
4,808.0	4,009.1	88.64	102.23	1,536.3	-311.5	1,504.4
4,838.0	4,009.4	90.22	100.51	1,566.3	-317.4	1,533.8
4,850.0	4,009.2	90.98	100.14	1,578.3	-319.6	1,545.6
4,870.0	4,008.7	92.24	99.53	1,598.3	-323.0	1,565.3
4,901.0	4,007.4	92.59	98.83	1,629.2	-327.9	1,595.9

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4,933.0	4,006.0	92.24	100.02	1,661.1	-333.2	1,627.4
4,965.0	4,004.7	92.42	100.30	1,693.1	-338.8	1,658.9
4,997.0	4,003.5	91.98	100.97	1,725.0	-344.7	1,690.3
5,000.0	4,003.4	91.83	100.98	1,728.0	-345.3	1,693.3
5,028.0	4,002.8	90.48	101.06	1,756.0	-350.6	1,720.8
5,050.0	4,002.9	89.05	101.06	1,778.0	-354.8	1,742.4
5,059.0	4,003.1	88.46	101.06	1,787.0	-356.6	1,751.2
5,091.0	4,004.5	86.44	101.67	1,819.0	-362.9	1,782.5
5,100.0	4,005.1	86.44	101.72	1,828.0	-364.7	1,791.3
5,122.0	4,006.4	86.44	101.85	1,849.9	-369.2	1,812.8
5,153.0	4,008.2	87.15	102.05	1,880.9	-375.6	1,843.1
5,184.0	4,009.4	88.37	101.90	1,911.8	-382.0	1,873.4
5,200.0	4,009.8	88.74	101.97	1,927.8	-385.3	1,889.0
5,215.0	4,010.1	89.08	102.04	1,942.8	-388.4	1,903.7
5,247.0	4,010.4	89.87	103.29	1,974.8	-395.5	1,934.9
5,278.0	4,010.3	90.57	103.57	2,005.8	-402.7	1,965.1
5,309.0	4,009.9	90.92	104.77	2,036.8	-410.2	1,995.1
5,340.0	4,009.1	91.71	104.40	2,067.8	-418.1	2,025.1
5,370.0	4,008.2	91.89	105.65	2,097.7	-425.8	2,054.1
5,401.0	4,007.3	91.45	106.24	2,128.6	-434.3	2,083.9
5,432.0	4,006.6	91.01	107.16	2,159.5	-443.2	2,113.6
5,463.0	4,006.4	89.96	105.93	2,190.4	-452.1	2,143.3
5,495.0	4,006.4	89.78	105.31	2,222.4	-460.7	2,174.1
5,500.0	4,006.5	89.85	105.33	2,227.4	-462.0	2,178.9
5,525.0	4,006.4	90.22	105.40	2,252.3	-468.6	2,203.0
5,556.0	4,005.9	91.80	105.53	2,283.3	-476.9	2,232.9
5,587.0	4,005.0	91.36	105.62	2,314.2	-485.2	2,262.8
5,600.0	4,004.7	91.33	105.08	2,327.2	-488.7	2,275.3
5,618.0	4,004.3	91.28	104.33	2,345.1	-493.2	2,292.7
5,650.0	4,003.7	90.92	103.01	2,377.1	-500.8	2,323.8
5,680.0	4,003.4	90.13	101.98	2,407.1	-507.3	2,353.1
5,700.0	4,003.4	89.97	101.26	2,427.1	-511.3	2,372.7
5,712.0	4,003.4	89.87	100.82	2,439.1	-513.6	2,384.4
5,744.0	4,003.7	89.34	100.09	2,471.1	-519.4	2,415.9
5,775.0	4,003.8	89.96	100.22	2,502.1	-524.9	2,446.4
5,807.0	4,004.0	89.43	101.24	2,534.1	-530.8	2,477.9
5,831.0	4,004.4	88.55	102.31	2,558.1	-535.7	2,501.3
5,900.0	4,006.5	87.99	102.83	2,627.0	-550.7	2,568.7
5,923.0	4,007.4	87.80	103.00	2,650.0	-555.9	2,591.1

Energen
Final Survey



Company: Energen Resources
Project: Carson Natl Forest - S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #6
Wellbore: Carracas 13 A #6
Design: Final Survey

Local Co-ordinate Reference: Well Carracas 13 A #6
TVD Reference: KB @ 7396.0ft (Patterson 749)
MD Reference: KB @ 7396.0ft (Patterson 749)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
drill window	0.00	0.00	0.0	0.0	0.0	2,179,504.67	1,326,607.50	36° 59' 5.000 N	107° 19' 28.000 W
- plan hits target - Rectangle (sides W1,970.0 H1,320.0 D0.0)									

Checked By: _____	Approved By: _____	Date: _____
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