

Energen Resources

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Carson National Forest; S15, T32N, R4W

Carracas Canyon

Carracas Canyon ~~15 B~~ #14

Final Survey

Surface : 790/S 1820/W
BH₁ 1004/S 1570/W Md 3840 Twd 3616
BH₂ 1743/S 832/W Md 4870 Twd 3614

Plan: Final Survey

Energen Resources - Survey

09 October, 2006



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Company: Energen Resources
Project: Carson National Forest; S15, T32N, R4W
Site: Carracas Canyon
Well: Carracas Canyon Unit 15 B #14
Wellbore: Final Survey
Design: Final Survey

Local Co-ordinate Reference: Well Carracas Canyon Unit 15 B #14
TVD Reference: Rig Floor @ 6750.0ft (AWS 56)
MD Reference: Rig Floor @ 6750.0ft (AWS 56)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Carson National Forest; S15, T32N, R4W, Carracas Canyon		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Carracas Canyon		
Site Position:	Northing:	2,177,129.79 ft	Latitude: 36° 58' 53.400 N
From: Lat/Long	Easting:	2,895,165.90 ft	Longitude: 107° 14' 39.120 W
Position Uncertainty: 0.0 ft	Slot Radius:	"	Grid Convergence: 0.35 °

Well	Carracas Canyon Unit 15 B #14		
Well Position	+N-S 0.0 ft	Northing: 2,177,129.79 ft	Latitude: 36° 58' 53.400 N
	+E-W 0.0 ft	Easting: 2,895,165.90 ft	Longitude: 107° 14' 39.120 W
Position Uncertainty	0.0 ft	Wellhead Elevation: 6,735.0 ft	Ground Level: 6,735.0 ft

Wellbore	Final Survey				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/9/2006	10.26	63.89	51,425

Design	Final Survey			
Audit Notes:				
Version: 1	Phase:	PROTOTYPE	Tie On Depth:	200.0
Vertical Section:	Depth From (TVD) (ft)	+N-S (ft)	+E-W (ft)	Direction (°)
	0.0	0.0	0.0	313.94

Survey Tool Program	Date	10/9/2006		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	200.0	Preliminary (Preliminary Wellplan)	MWD	MWD - Standard
200.0	4,870.0	Final Survey (Final Survey)		

Planned Survey	MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
	0.0	0.0	0.00	0.00	0.0	0.0	0.0
	100.0	100.0	0.00	0.00	0.0	0.0	0.0
	200.0	200.0	0.00	0.00	0.0	0.0	0.0
	300.0	300.0	0.89	203.20	-0.3	-0.7	-0.3
	400.0	400.0	1.78	203.20	-1.1	-2.9	-1.2
	500.0	499.9	1.87	199.18	-2.3	-5.8	-2.4
	600.0	599.9	1.96	195.53	-3.8	-9.0	-3.4
	700.0	699.8	1.75	198.08	-5.3	-12.1	-4.3
	800.0	799.8	1.54	201.32	-6.5	-14.8	-5.3
	900.0	899.7	1.33	200.14	-7.5	-17.1	-6.1
	1,000.0	999.7	1.13	198.53	-8.4	-19.2	-6.9

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Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas Canyon Unit 15 B #14
Project:	Carson National Forest; S15, T32N, R4W	TVD Reference:	Rig Floor @ 6750.0ft (AWS 56)
Site:	Carracas Canyon	MD Reference:	Rig Floor @ 6750.0ft (AWS 56)
Well:	Carracas Canyon Unit 15 B #14	North Reference:	Grid
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	Database:	EDM 2003.16 Single User Db

Planned Survey						
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
1,100.0	1,099.7	0.96	202.42	-9.1	-20.9	-7.5
1,200.0	1,199.7	0.79	207.99	-9.6	-22.3	-8.1
1,300.0	1,299.7	0.59	192.91	-10.0	-23.4	-8.6
1,400.0	1,399.7	0.46	166.37	-10.7	-24.3	-8.6
1,500.0	1,499.7	0.55	171.00	-11.4	-25.1	-8.4
1,600.0	1,599.7	0.64	174.33	-12.2	-26.2	-8.3
1,700.0	1,699.7	0.69	161.65	-13.1	-27.3	-8.0
1,800.0	1,799.6	0.77	151.14	-14.3	-28.4	-7.5
1,900.0	1,899.6	1.07	141.63	-15.9	-29.8	-6.6
2,000.0	1,999.6	1.39	136.38	-18.0	-31.4	-5.2
2,100.0	2,099.6	1.73	145.59	-20.7	-33.5	-3.5
2,200.0	2,199.5	2.09	151.70	-23.9	-36.3	-1.8
2,300.0	2,299.5	2.10	155.95	-27.4	-39.6	-0.2
2,400.0	2,399.4	2.12	160.14	-30.7	-43.0	1.2
2,500.0	2,499.3	1.91	159.41	-33.9	-46.3	2.4
2,600.0	2,599.3	1.70	158.50	-36.7	-49.3	3.5
2,700.0	2,699.2	1.65	160.00	-39.4	-52.0	4.6
2,800.0	2,799.2	1.60	161.59	-41.9	-54.7	5.5
2,900.0	2,899.2	1.45	160.82	-44.3	-57.2	6.3
3,000.0	2,999.1	1.31	159.88	-46.4	-59.5	7.2
3,100.0	3,099.1	0.67	179	-47.1	-60.0	7.6
3,200.0	3,199.1	2.60	350.95	-44.9	-57.1	7.2
3,250.0	3,248.9	5.50	325.89	-41.6	-54.0	5.7
3,300.0	3,298.6	8.72	318.61	-35.5	-49.2	1.9
3,350.0	3,347.7	12.00	315.26	-26.5	-42.7	-4.3
3,380.0	3,377.0	13.98	314.00	-19.8	-37.9	-9.1
3,390.0	3,386.6	17.33	315.56	-17.1	-36.0	-11.0
3,400.0	3,396.0	20.68	316.62	-13.8	-33.7	-13.3
3,410.0	3,405.3	24.04	317.40	-10.0	-30.9	-15.9
3,412.0	3,407.1	24.71	317.53	-9.2	-30.3	-16.4
3,420.0	3,414.3	27.42	318.90	-5.7	-27.7	-18.8
3,430.0	3,423.0	30.82	320.30	-0.8	-24.0	-21.9
3,440.0	3,431.5	34.23	321.45	4.5	-19.8	-25.3
3,443.0	3,433.9	35.26	321.75	6.2	-18.5	-26.4
3,450.0	3,439.6	36.36	320.60	10.2	-15.3	-28.9
3,474.0	3,458.5	40.19	317.09	25.1	-4.1	-38.7
3,475.0	3,459.2	40.30	316.94	25.7	-3.6	-39.2
3,500.0	3,477.9	43.15	313.48	42.3	8.2	-50.9
3,504.0	3,480.8	43.62	312.96	45.1	10.1	-52.9
3,525.0	3,495.7	46.09	310.54	59.9	19.9	-64.0
3,536.0	3,503.2	47.40	309.35	67.9	25.1	-70.1
3,550.0	3,512.4	49.94	310.10	78.3	31.8	-78.2
3,567.0	3,523.0	53.02	310.93	91.6	40.4	-88.3
3,599.0	3,541.6	56.10	311.38	117.7	57.6	-107.9

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Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	Database:	EDM 2003.16 Single User Db

Planned Survey							
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)	
3,600.0	3,542.1	56.19	311.39	118.5	58.1	-108.5	
3,631.0	3,558.8	59.00	311.81	144.6	75.5	-128.1	
3,650.0	3,568.0	62.93	312.53	161.2	86.6	-140.4	
3,662.0	3,573.2	65.42	312.96	172.0	94.0	-148.3	
3,675.0	3,578.4	67.74	313.29	184.0	102.1	-157.1	
3,694.0	3,585.0	71.14	313.75	201.7	114.4	-170.0	
3,700.0	3,587.0	71.58	313.82	207.4	118.3	-174.1	
3,725.0	3,594.5	73.42	314.10	231.3	134.9	-191.2	
3,750.0	3,601.1	75.76	314.37	255.4	151.7	-208.5	
3,757.0	3,602.8	76.41	314.45	262.2	156.4	-213.3	
3,788.0	3,609.3	79.23	315.15	292.5	177.8	-234.8	
3,800.0	3,611.4	80.66	315.66	304.3	186.2	-243.1	
3,819.0	3,614.2	82.92	316.47	323.1	199.7	-256.2	250
3,850.0	3,617.1	86.00	315.77	353.9	222.0	-277.6	
3,875.0	3,618.2	89.37	316.66	378.8	240.0	-294.8	
3,882.0	3,618.2	90.31	316.91	385.8	245.1	-299.6	
3,900.0	3,617.8	91.94	317.11	403.8	258.3	-311.9	
3,914.0	3,617.2	93.21	317.26	417.8	268.5	-321.4	
3,945.0	3,616.1	90.66	316.74	448.7	291.2	-342.5	
3,950.0	3,616.1	90.16	316.67	453.7	294.8	-346.0	
3,977.0	3,616.7	87.49	316.30	480.7	314.4	-364.6	
4,009.0	3,618.0	87.76	315.95	512.6	337.5	-386.7	
4,040.0	3,618.5	90.48	315.95	543.6	359.7	-408.3	
4,071.0	3,618.1	90.92	316.74	574.6	382.2	-429.7	
4,103.0	3,618.1	89.16	316.47	606.5	405.4	-451.6	
4,134.0	3,618.3	90.04	316.65	637.5	427.9	-473.0	
4,166.0	3,618.1	90.57	317.00	669.5	451.2	-494.9	
4,197.0	3,617.8	90.57	316.74	700.4	473.9	-516.0	
4,200.0	3,617.8	90.32	316.65	703.4	476.1	-518.1	
4,228.0	3,618.2	88.02	315.86	731.4	496.3	-537.5	
4,260.0	3,619.3	88.02	316.03	763.3	519.3	-559.7	
4,291.0	3,620.4	87.85	315.86	794.3	541.5	-581.2	
4,300.0	3,620.7	87.97	315.91	803.3	548.0	-587.5	
4,323.0	3,621.5	88.29	316.03	826.3	564.5	-603.5	
4,354.0	3,622.3	88.55	316.91	857.2	587.0	-624.8	
4,386.0	3,623.1	88.64	315.86	889.2	610.1	-646.9	
4,400.0	3,623.5	88.64	315.78	903.2	620.2	-656.6	
4,417.0	3,623.9	88.64	315.68	920.2	632.3	-668.5	
4,448.0	3,624.5	88.81	315.68	951.1	654.5	-690.2	
4,480.0	3,625.2	88.99	315.33	983.1	677.3	-712.6	
4,500.0	3,625.5	89.10	315.50	1,003.1	691.6	-726.6	
4,510.0	3,625.6	89.16	315.59	1,013.1	698.7	-733.6	
4,541.0	3,626.1	89.16	315.24	1,044.1	720.8	-755.4	
4,572.0	3,626.5	89.34	315.59	1,075.1	742.9	-777.1	
4,604.0	3,626.7	89.87	314.89	1,107.1	765.6	-799.7	

Energen
Energen Resources - Survey



Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas Canyon Unit 15 B #14
Project:	Carson National Forest; S15, T32N, R4W	TVD Reference:	Rig Floor @ 6750.0ft (AWS 56)
Site:	Carracas Canyon	MD Reference:	Rig Floor @ 6750.0ft (AWS 56)
Well:	Carracas Canyon Unit 15 B #14	North Reference:	Grid
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	Database:	EDM 2003.16 Single User Db

Planned Survey						
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
4,635.0	3,626.4	91.36	315.24	1,138.1	787.5	-821.6
4,666.0	3,625.5	91.98	314.72	1,169.0	809.4	-843.5
4,698.0	3,624.4	91.98	314.72	1,201.0	831.9	-866.2
4,700.0	3,624.3	92.01	314.71	1,203.0	833.4	-867.6
4,730.0	3,623.1	92.51	314.54	1,233.0	854.4	-889.0
4,760.0	3,621.7	92.77	314.72	1,263.0	875.5	-910.3
4,792.0	3,620.1	93.21	314.54	1,294.9	897.9	-933.0
4,800.0	3,619.6	93.54	314.56	1,302.9	903.5	-938.7
4,824.0	3,617.9	94.53	314.63	1,326.8	920.3	-955.8
4,870.0	3,614.3	94.53	314.63	1,372.7	952.5	-988.4

Checked By: _____ Approved By: _____ Date: _____