

Energen Resources

Carson Natl Forest - S13, T32N, R5W

Carracas Mesa

Carracas 13 A #⁰⁷~~6~~

Carracas 13 A #⁰⁷~~6~~ side lateral

30-039-29485

Surface: 995/N 1755/W
C

BHL 1 1259/N 2303/E 4489, 3947
B

BHL 2 2038/N 1439/E 5688, 3992
G

Final Survey

25 June, 2007

RCVD JUL 5 '07

OIL CONS. DIV.

DIST. 3

b



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



Azimuths to True North
Magnetic North: 10.21°

Magnetic Field
Strength: 51342.3snT
Dip Angle: 63.86°
Date: 6/25/2007
Model: IGRF200510

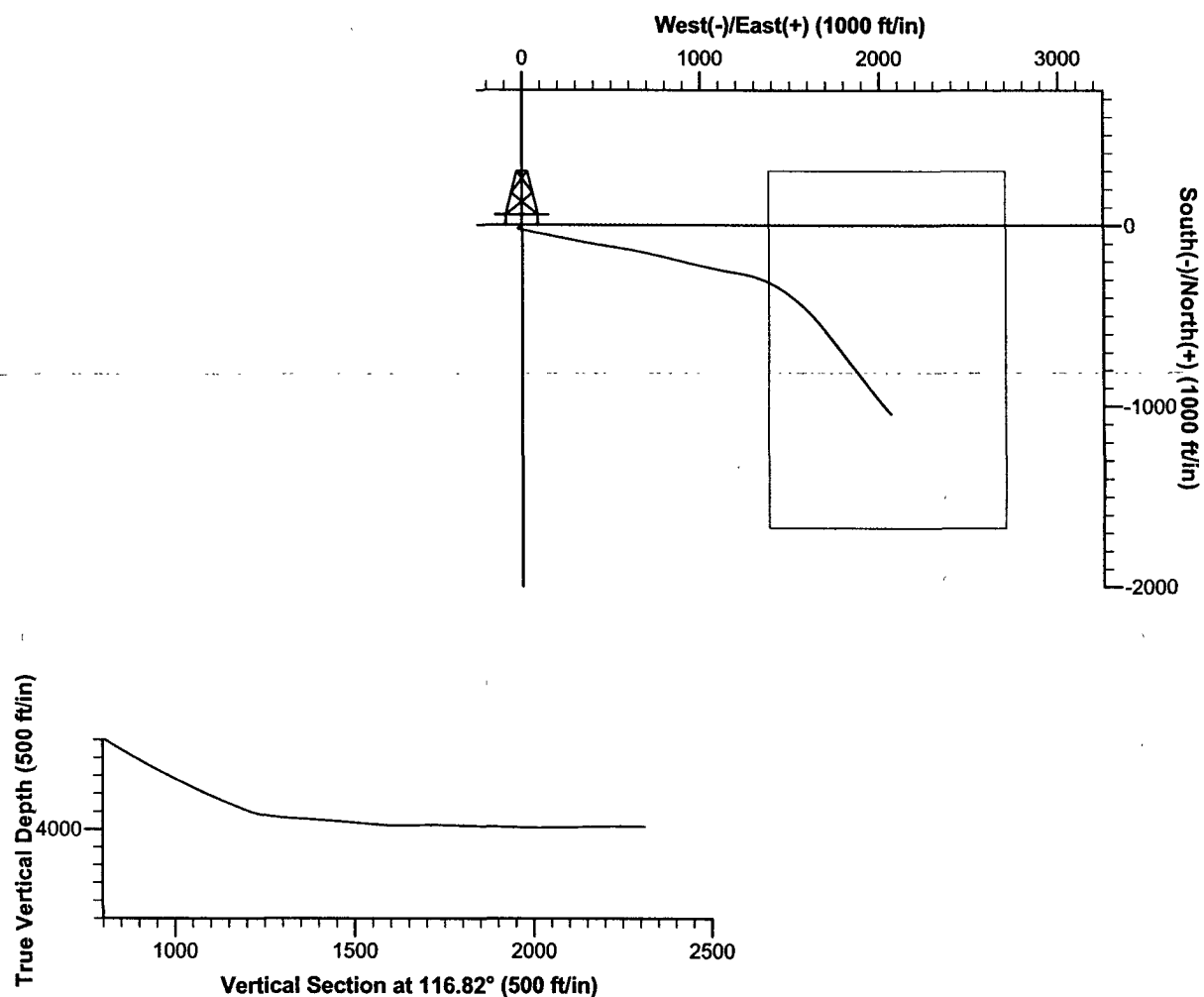
PROJECT DETAILS: Carson Natl Forest - S13, T32N, R5W

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



Company: Energen Resources
Project: Carson Natl Forest - S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #6
Wellbore: Carracas 13 A #6 side lateral
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 side lateral		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	6/25/2007	(°)
			10.21
			Dip Angle
			(°)
			63.86
			Field Strength
			(nT)
			51,342

Design	Final Survey		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 4,489.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction
			(°)
			116.82

Survey Tool Program	Date 6/25/2007		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
0.0	4,489.0	Final Survey (Carracas 13 A #6)	MWD
4,489.0	5,688.0	Final Survey (Carracas 13 A #6 side latera	
			Description
			MWD - Standard

Planned Survey						
MD	TVD	Inc	Azi	V. Sec	N/S	E/W
(ft)	(ft)	(°)	(°)	(ft)	(ft)	(ft)
4,489.0	3,942.8	69.03	98.52	1,188.9	-263.7	1,198.9
4,500.0	3,946.6	70.75	99.42	1,198.7	-265.3	1,209.1
4,520.0	3,952.7	73.90	101.02	1,217.0	-268.7	1,227.8
4,525.0	3,954.1	74.69	101.41	1,221.6	-269.6	1,232.5
4,550.0	3,959.8	78.64	103.33	1,245.2	-274.9	1,256.3
4,575.0	3,963.9	82.61	105.19	1,269.2	-280.9	1,280.2
4,593.0	3,965.8	85.47	106.51	1,286.8	-285.8	1,297.4
4,600.0	3,966.3	85.59	106.73	1,293.7	-287.8	1,304.1
4,624.0	3,968.1	86.00	107.50	1,317.3	-294.9	1,327.0
4,625.0	3,968.1	86.01	107.62	1,318.3	-295.2	1,327.9
4,650.0	3,969.8	86.38	110.74	1,343.0	-303.4	1,351.5

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 side lateral
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

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
4,654.0	3,970.0	86.44	111.24	1,347.0	-304.8	1,355.2
4,675.0	3,971.4	86.09	113.65	1,367.8	-312.8	1,374.6
4,686.0	3,972.2	85.91	114.91	1,378.8	-317.3	1,384.6
4,700.0	3,973.2	85.79	116.60	1,392.8	-323.4	1,397.1
4,717.0	3,974.5	85.65	118.66	1,409.7	-331.2	1,412.2
4,749.0	3,976.8	86.00	122.23	1,441.6	-347.4	1,439.7
4,780.0	3,979.0	85.82	123.78	1,472.3	-364.2	1,465.6
4,800.0	3,980.6	85.23	125.67	1,492.1	-375.6	1,482.0
4,810.0	3,981.4	84.94	126.62	1,501.9	-381.5	1,490.0
4,812.0	3,981.6	84.90	126.72	1,503.8	-382.7	1,491.6
4,842.0	3,984.4	84.33	128.27	1,533.2	-400.9	1,515.3
4,850.0	3,985.2	84.58	128.68	1,541.0	-405.8	1,521.6
4,873.0	3,987.2	85.30	129.85	1,563.4	-420.3	1,539.3
4,904.0	3,988.9	88.37	130.49	1,593.5	-440.3	1,562.9
4,935.0	3,989.3	90.31	132.23	1,623.5	-460.7	1,586.2
4,950.0	3,989.1	90.74	133.74	1,637.9	-471.0	1,597.2
4,966.0	3,988.9	91.19	135.36	1,653.1	-482.2	1,608.6
4,998.0	3,988.2	91.10	138.43	1,683.2	-505.6	1,630.4
5,000.0	3,988.2	91.01	138.48	1,685.0	-507.1	1,631.8
5,030.0	3,988.0	89.60	139.15	1,712.8	-529.6	1,651.5
5,062.0	3,988.5	88.90	139.23	1,742.4	-553.8	1,672.4
5,093.0	3,989.1	88.55	140.78	1,770.9	-577.6	1,692.4
5,100.0	3,989.3	88.65	140.92	1,777.3	-583.0	1,696.8
5,124.0	3,989.8	88.99	141.41	1,799.2	-601.7	1,711.8
5,156.0	3,990.3	89.34	141.34	1,828.3	-626.7	1,731.8
5,188.0	3,990.9	88.55	141.83	1,857.3	-651.8	1,751.7
5,200.0	3,991.2	88.38	142.09	1,868.2	-661.2	1,759.1
5,220.0	3,991.8	88.11	142.52	1,886.2	-677.0	1,771.3
5,252.0	3,993.0	87.58	142.82	1,915.0	-702.5	1,790.7
5,284.0	3,994.0	88.99	142.44	1,943.8	-727.9	1,810.1
5,300.0	3,994.3	88.81	142.56	1,958.2	-740.6	1,819.8
5,315.0	3,994.6	88.64	142.67	1,971.7	-752.5	1,828.9
5,345.0	3,995.0	89.96	143.18	1,998.7	-776.4	1,847.0
5,376.0	3,994.9	90.40	142.66	2,026.5	-801.2	1,865.7
5,408.0	3,994.8	89.78	142.04	2,055.4	-826.5	1,885.3
5,440.0	3,994.7	90.75	140.98	2,084.4	-851.5	1,905.2
5,503.0	3,993.0	92.24	141.28	2,141.8	-900.6	1,944.7
5,533.0	3,992.2	91.01	141.10	2,169.1	-923.9	1,963.5
5,564.0	3,991.9	90.13	139.99	2,197.5	-947.9	1,983.2
5,600.0	3,991.8	90.13	139.99	2,230.6	-975.4	2,006.3
5,688.0	3,991.6	90.13	139.99	2,311.5	-1,042.8	2,062.9

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 side lateral
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									
Drilling 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 misses by 4129.5ft at 4489.0ft MD (3942.8 TVD, -263.7 N, 1198.9 E) - Rectangle (sides W1,970.0 H1,320.0 D0.0)									

Checked By: _____ Approved By: _____ Date: _____