

Energen Resources

Carson National Forest; NE S13, T32N, R5W

Carracas Mesa

Carracas 13 A #7

30 039 29485

Plan: Final Survey

Energen Resources

08 June, 2007

Surface 995/N 1755/W
BHL1 1014/N 1873/E MD 5175 Tvd 4105
BHL2 1141/N 957/E MD 6304 Tvd 4115

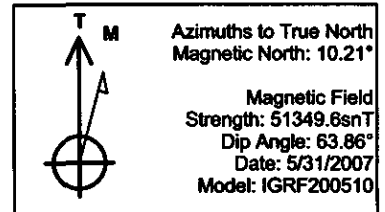
RCVD JUN15'07
OIL CONS. DIV.

DIST. 3

8

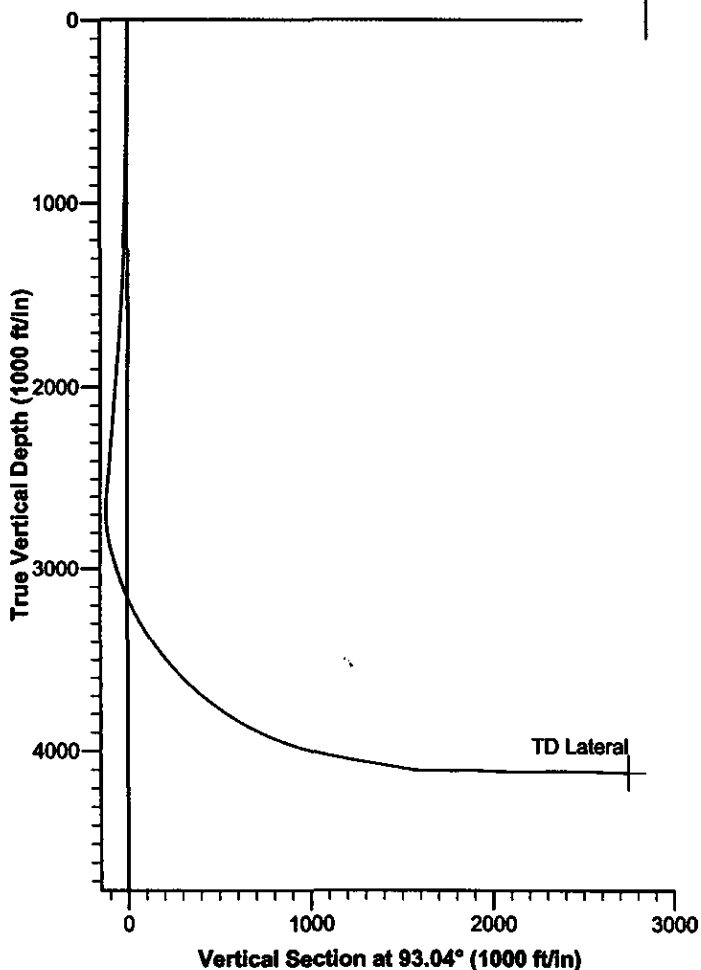
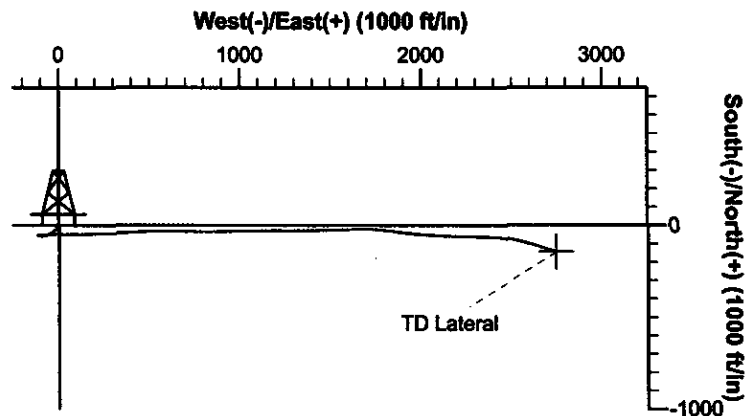


Project: Carson National Forest; NE S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #7
Wellbore: Final Survey
Plan: Plan #1 (Carracas 13 A #7/Final Survey)



PROJECT DETAILS: Carson National Forest; NE 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:	1328907.40
Northing:	2179478.01



Energen
Energen Resources - Survey



Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas 13 A #7
Project:	Carson National Forest; NE S13, T32N, R5W	TVD Reference:	KB @ 7441.0ft (AWS 222)
Site:	Carracas Mesa	MD Reference:	KB @ 7441.0ft (AWS 222)
Well:	Carracas 13 A #7	North Reference:	True
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Project	Carson National Forest; NE 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:	2,179,478.01 ft	Latitude:	36° 59' 4.992 N
From:	Lat/Long	Easting:	1,328,907.40 ft	Longitude:	107° 18' 59.652 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-0.64 °

Well	Carracas 13 A #7					
Well Position	+N-S	0.0 ft	Northing:	2,179,478.01 ft	Latitude:	36° 59' 4.992 N
	+E-W	0.0 ft	Easting:	1,328,907.40 ft	Longitude:	107° 18' 59.652 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	7,426.0 ft	Ground Level:	7,426.0 ft	

Wellbore Final Survey

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	5/31/2007	10.22	63.86	51,350

Design Plan #1

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
-----------------	---------------	-----------	----------------------	-----

Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	93.04

Survey Tool Program Date 6/7/2007

From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0.0	6,304.0	Plan #1 (Final Survey)	MWD	MWD - Standard

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	0.29	215.04	-0.1	-0.2	-0.1
200.0	200.0	0.58	215.04	-0.5	-0.8	-0.6
300.0	300.0	0.87	215.04	-1.2	-1.9	-1.3
400.0	400.0	1.16	215.04	-2.2	-3.3	-2.3
423.0	423.0	1.23	215.04	-2.4	-3.7	-2.6
500.0	499.9	1.32	215.99	-3.3	-5.1	-3.6
600.0	599.9	1.44	217.03	-4.7	-7.1	-5.0
700.0	699.9	1.56	217.92	-6.1	-9.1	-6.6
800.0	799.8	1.69	218.68	-7.8	-11.4	-8.4
861.0	860.8	1.76	219.09	-8.9	-12.8	-9.5
900.0	899.8	1.91	220.80	-9.6	-13.7	-10.3

Energen

Energen Resources - Survey



Company: Energen Resources
Project: Carson National Forest; NE S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #7
Wellbore: Final Survey
Design: Plan #1

Local Co-ordinate Reference: Well Carracas 13 A #7
TVD Reference: KB @ 7441.0ft (AWS 222)
MD Reference: KB @ 7441.0ft (AWS 222)
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)
1,000.0	999.7	2.31	224.15	-12.0	-16.5	-12.8
1,100.0	1,099.6	2.71	226.52	-14.9	-19.5	-16.0
1,200.0	1,199.5	3.11	228.27	-18.5	-23.0	-19.7
1,300.0	1,299.3	3.52	229.62	-22.6	-26.8	-24.1
1,400.0	1,399.1	3.83	231.90	-27.4	-30.8	-29.0
1,500.0	1,498.9	4.15	233.84	-32.7	-35.0	-34.6
1,600.0	1,598.6	4.47	235.50	-38.6	-39.3	-40.7
1,700.0	1,698.3	4.80	236.93	-45.0	-43.8	-47.4
1,738.0	1,736.1	4.92	237.43	-47.7	-45.6	-50.1
1,800.0	1,797.9	4.80	240.87	-52.0	-48.3	-54.6
1,900.0	1,897.6	4.64	246.77	-59.2	-51.9	-62.0
2,000.0	1,997.3	4.53	253.02	-66.5	-54.6	-69.5
2,100.0	2,097.0	4.48	259.48	-74.0	-56.5	-77.1
2,168.0	2,164.7	4.48	263.92	-79.2	-57.3	-82.4
2,200.0	2,196.6	4.48	264.79	-81.7	-57.5	-84.9
2,300.0	2,296.3	4.50	267.50	-89.5	-58.1	-92.7
2,400.0	2,396.0	4.53	270.18	-97.3	-58.2	-100.6
2,506.0	2,501.7	4.57	272.98	-105.7	-58.0	-109.0
2,528.0	2,523.6	4.66	273.77	-107.5	-57.9	-110.7
2,558.0	2,553.5	5.01	275.06	-110.0	-57.7	-113.2
2,589.0	2,584.4	4.75	274.32	-112.7	-57.5	-115.9
2,600.0	2,595.4	4.38	276.32	-113.5	-57.4	-116.7
2,618.0	2,613.3	3.78	280.42	-114.8	-57.2	-118.0
2,648.0	2,643.3	2.64	283.86	-116.5	-56.9	-119.7
2,678.0	2,673.3	1.06	305.69	-117.4	-56.5	-120.5
2,700.0	2,695.3	0.90	41.01	-117.4	-56.3	-120.6
2,708.0	2,703.3	1.32	57.95	-117.3	-56.2	-120.5
2,739.0	2,734.2	3.69	77.15	-116.1	-55.8	-119.2
2,750.0	2,745.2	4.32	78.42	-115.3	-55.6	-118.5
2,768.0	2,763.1	5.36	79.86	-113.9	-55.3	-117.0
2,799.0	2,793.9	7.91	82.38	-110.4	-54.8	-113.4
2,800.0	2,794.9	7.99	82.46	-110.2	-54.8	-113.3
2,830.0	2,824.5	10.46	84.24	-105.5	-54.2	-108.5
2,850.0	2,844.1	11.93	84.87	-101.6	-53.9	-104.6
2,860.0	2,853.9	12.66	85.13	-99.5	-53.7	-102.5
2,891.0	2,884.1	14.07	85.00	-92.4	-53.1	-95.4
2,900.0	2,892.8	14.38	84.68	-90.2	-52.9	-93.2
2,921.0	2,913.1	15.12	83.98	-85.0	-52.3	-87.9
2,952.0	2,943.0	15.92	83.88	-76.8	-51.4	-79.6
2,982.0	2,971.8	16.62	84.73	-68.5	-50.6	-71.2
3,000.0	2,989.0	17.36	85.91	-63.3	-50.2	-66.0
3,012.0	3,000.4	17.85	86.65	-59.6	-50.0	-62.4
3,043.0	3,029.8	18.99	87.94	-49.9	-49.5	-52.6
3,073.0	3,058.1	20.05	88.69	-39.9	-49.2	-42.6

Energen

Energen Resources - Survey



Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas 13 A #7
Project:	Carson National Forest; NE S13, T32N, R5W	TVD Reference:	KB @ 7441.0ft (AWS 222)
Site:	Carracas Mesa	MD Reference:	KB @ 7441.0ft (AWS 222)
Well:	Carracas 13 A #7	North Reference:	True
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Planned Survey

MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
3,104.0	3,087.1	21.10	88.13	-29.1	-48.9	-31.7
3,135.0	3,115.9	22.42	88.69	-17.6	-48.6	-20.2
3,165.0	3,143.5	23.57	89.13	-5.9	-48.4	-8.5
3,195.0	3,170.9	24.71	89.59	6.3	-48.2	3.8
3,200.0	3,175.5	24.86	89.77	8.4	-48.2	5.9
3,225.0	3,198.1	25.59	90.64	19.1	-48.2	16.5
3,255.0	3,225.0	26.56	90.35	32.2	-48.4	29.7
3,286.0	3,252.6	27.79	91.26	46.4	-48.6	43.9
3,300.0	3,264.9	28.40	91.08	53.0	-48.7	50.5
3,318.0	3,280.7	29.19	90.86	61.6	-48.8	59.1
3,349.0	3,307.6	30.42	90.75	77.0	-49.1	74.5
3,380.0	3,334.2	31.66	90.72	93.0	-49.3	90.5
3,400.0	3,351.1	32.26	90.13	103.6	-49.3	101.1
3,412.0	3,361.3	32.62	89.78	110.0	-49.3	107.5
3,443.0	3,387.2	33.68	89.08	126.9	-49.2	124.5
3,474.0	3,412.8	35.00	87.80	144.4	-48.7	142.0
3,506.0	3,438.9	36.14	87.31	162.9	-47.9	160.6
3,537.0	3,463.7	37.11	87.93	181.3	-47.1	179.0
3,568.0	3,488.3	38.34	87.92	200.2	-46.4	198.0
3,600.0	3,513.1	39.66	88.69	220.3	-45.8	218.1
3,631.0	3,536.8	40.80	88.81	240.2	-45.4	238.2
3,662.0	3,560.0	42.21	88.74	260.7	-45.0	258.7
3,694.0	3,583.5	43.53	88.00	282.4	-44.3	280.4
3,700.0	3,587.8	43.82	87.95	286.5	-44.2	284.6
3,725.0	3,605.7	45.02	87.74	304.0	-43.5	302.1
3,757.0	3,628.0	46.52	87.39	326.8	-42.6	325.0
3,788.0	3,649.0	47.84	87.39	349.4	-41.5	347.7
3,800.0	3,657.1	48.27	87.32	358.3	-41.1	356.6
3,820.0	3,670.3	48.98	87.21	373.2	-40.4	371.6
3,851.0	3,690.4	50.21	87.39	396.7	-39.3	395.2
3,883.0	3,710.7	51.00	87.21	421.3	-38.1	419.9
3,900.0	3,721.3	51.58	87.12	434.5	-37.5	433.1
3,914.0	3,730.0	52.06	87.04	445.5	-36.9	444.1
3,946.0	3,749.4	53.02	87.30	470.7	-35.7	469.5
3,977.0	3,767.8	54.43	87.74	495.6	-34.6	494.5
4,008.0	3,785.6	55.49	88.00	520.9	-33.6	519.8
4,040.0	3,803.4	56.63	88.53	547.3	-32.8	546.4
4,070.0	3,819.7	57.60	89.06	572.5	-32.3	571.5
4,100.0	3,835.5	58.92	89.41	597.9	-32.0	597.1
4,131.0	3,851.2	60.15	89.85	624.6	-31.8	623.8
4,163.0	3,866.8	61.55	91.08	652.5	-32.0	651.7
4,194.0	3,881.2	63.22	91.17	680.0	-32.6	679.2
4,200.0	3,883.9	63.44	91.24	685.3	-32.7	684.5
4,225.0	3,894.9	64.37	91.52	707.8	-33.2	707.0

Energen
Energen Resources - Survey



Company: Energen Resources
Project: Carson National Forest; NE S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #7
Wellbore: Final Survey
Design: Plan #1

Local Co-ordinate Reference: Well Carracas 13 A #7
TVD Reference: KB @ 7441.0ft (AWS 222)
MD Reference: KB @ 7441.0ft (AWS 222)
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)
4,256.0	3,908.0	65.42	91.34	735.8	-33.9	735.1
4,288.0	3,920.9	67.01	90.90	765.1	-34.5	764.3
4,300.0	3,925.6	67.59	90.83	776.1	-34.7	775.4
4,319.0	3,932.7	68.50	90.73	793.8	-34.9	793.0
4,351.0	3,944.1	69.73	90.29	823.6	-35.2	822.9
4,382.0	3,954.6	70.61	89.76	852.7	-35.2	852.1
4,400.0	3,960.5	71.05	89.37	869.7	-35.0	869.1
4,414.0	3,965.0	71.40	89.06	882.9	-34.9	882.3
4,445.0	3,974.6	72.63	88.62	912.3	-34.3	911.8
4,476.0	3,983.6	73.60	88.00	941.9	-33.4	941.5
4,508.0	3,992.4	74.30	87.92	972.5	-32.3	972.2
4,539.0	4,000.6	75.27	87.92	1,002.3	-31.2	1,002.1
4,571.0	4,008.3	76.59	88.53	1,033.3	-30.2	1,033.1
4,602.0	4,015.2	77.82	88.88	1,063.4	-29.6	1,063.3
4,634.0	4,021.7	78.79	89.23	1,094.7	-29.0	1,094.7
4,665.0	4,027.6	79.32	89.23	1,125.0	-28.6	1,125.1
4,697.0	4,033.3	80.20	89.15	1,156.4	-28.2	1,156.6
4,700.0	4,033.8	80.15	89.18	1,159.4	-28.1	1,159.5
4,728.0	4,038.7	79.67	89.50	1,186.9	-27.8	1,187.1
4,759.0	4,044.2	79.67	89.94	1,217.4	-27.7	1,217.6
4,789.0	4,049.3	80.81	89.85	1,246.9	-27.6	1,247.2
4,800.0	4,051.1	80.90	89.91	1,257.7	-27.6	1,258.0
4,821.0	4,054.4	81.07	90.02	1,278.4	-27.6	1,278.8
4,850.0	4,059.2	79.93	90.02	1,307.0	-27.6	1,307.4
4,882.0	4,064.6	80.64	89.41	1,338.5	-27.4	1,338.9
4,900.0	4,067.5	80.33	89.15	1,356.2	-27.2	1,356.7
4,913.0	4,069.7	80.11	88.97	1,369.0	-27.0	1,369.5
4,944.0	4,075.0	80.46	88.88	1,399.4	-26.4	1,400.0
4,976.0	4,080.3	80.37	88.88	1,430.9	-25.8	1,431.6
5,007.0	4,085.5	80.46	88.35	1,461.4	-25.1	1,462.1
5,038.0	4,090.5	80.81	88.09	1,491.9	-24.1	1,492.7
5,068.0	4,095.3	80.81	88.02	1,521.4	-23.1	1,522.3
5,070.0	4,095.6	80.81	88.00	1,523.3	-23.1	1,524.3
5,099.0	4,099.8	82.75	87.39	1,551.9	-21.9	1,552.9
5,100.0	4,099.9	82.84	87.39	1,552.9	-21.9	1,553.9
5,119.0	4,102.0	84.50	87.39	1,571.7	-21.0	1,572.8
5,150.0	4,104.3	86.99	88.18	1,602.5	-19.8	1,603.7
5,175.0	4,105.2	88.99	88.82	1,627.4	-19.2	1,628.7
5,197.0	4,105.2	90.84	91.26	1,649.4	-19.2	1,650.7
5,200.0	4,105.1	90.74	91.22	1,652.4	-19.2	1,653.7
5,228.0	4,105.0	89.78	90.82	1,680.3	-19.7	1,681.7
5,259.0	4,105.0	90.48	90.46	1,711.3	-20.1	1,712.6
5,290.0	4,104.4	91.54	92.75	1,742.3	-20.9	1,743.6
5,300.0	4,104.2	91.06	94.00	1,752.3	-21.5	1,753.6
5,321.0	4,104.0	90.04	96.62	1,773.3	-23.5	1,774.5

Energen
Energen Resources - Survey



Company: Energen Resources
Project: Carson National Forest; NE S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #7
Wellbore: Final Survey
Design: Plan #1

Local Co-ordinate Reference: Well Carracas 13 A #7
TVD Reference: KB @ 7441.0ft (AWS 222)
MD Reference: KB @ 7441.0ft (AWS 222)
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)
5,353.0	4,104.1	89.60	98.02	1,805.2	-27.6	1,806.3
5,384.0	4,104.3	89.52	97.41	1,836.1	-31.7	1,837.0
5,400.0	4,104.5	89.43	97.27	1,852.0	-33.8	1,852.8
5,415.0	4,104.6	89.34	97.14	1,867.0	-35.6	1,867.7
5,447.0	4,105.1	89.08	96.97	1,898.9	-39.6	1,899.5
5,478.0	4,105.7	88.46	96.44	1,929.8	-43.2	1,930.3
5,500.0	4,106.3	88.64	95.19	1,951.8	-45.4	1,952.1
5,509.0	4,106.5	88.72	94.68	1,960.8	-46.2	1,961.1
5,540.0	4,107.3	88.46	94.95	1,991.8	-48.8	1,992.0
5,571.0	4,107.8	89.43	93.54	2,022.8	-51.1	2,022.9
5,603.0	4,108.4	88.55	93.01	2,054.7	-52.9	2,054.8
5,634.0	4,109.3	88.20	92.13	2,085.7	-54.3	2,085.8
5,665.0	4,110.0	89.25	93.19	2,116.7	-55.7	2,116.7
5,697.0	4,110.1	90.22	92.40	2,148.7	-57.3	2,148.7
5,700.0	4,110.1	90.25	92.45	2,151.7	-57.4	2,151.7
5,728.0	4,109.9	90.57	92.93	2,179.7	-58.7	2,179.7
5,750.0	4,109.7	90.70	91.37	2,201.7	-59.6	2,201.7
5,759.0	4,109.5	90.75	90.73	2,210.7	-59.7	2,210.7
5,791.0	4,109.0	91.10	90.29	2,242.7	-60.0	2,242.6
5,800.0	4,108.9	91.05	90.49	2,251.7	-60.1	2,251.6
5,822.0	4,108.5	90.92	90.99	2,273.6	-60.4	2,273.6
5,852.0	4,108.0	90.75	90.82	2,303.6	-60.8	2,303.6
5,884.0	4,107.8	89.96	92.13	2,335.6	-61.7	2,335.6
5,900.0	4,107.9	89.60	92.88	2,351.6	-62.4	2,351.6
5,916.0	4,108.1	89.25	93.63	2,367.6	-63.3	2,367.6
5,947.0	4,108.3	89.78	94.16	2,398.6	-65.4	2,398.5
5,978.0	4,108.6	89.34	95.74	2,429.6	-68.1	2,429.4
6,009.0	4,108.9	89.23	97.23	2,460.5	-71.6	2,460.2
6,041.0	4,109.6	88.55	99.78	2,492.4	-76.3	2,491.8
6,050.0	4,109.8	88.52	100.44	2,501.3	-77.9	2,500.7
6,072.0	4,110.4	88.46	102.07	2,523.1	-82.2	2,522.3
6,103.0	4,111.2	88.55	104.09	2,553.6	-89.2	2,552.4
6,134.0	4,111.9	88.72	105.76	2,583.9	-97.2	2,582.4
6,165.0	4,112.6	88.81	105.67	2,614.1	-105.5	2,612.2
6,196.0	4,113.2	88.90	106.72	2,644.3	-114.2	2,642.0
6,200.0	4,113.3	88.91	106.76	2,648.2	-115.3	2,645.8
6,235.0	4,113.9	88.99	107.07	2,682.2	-125.5	2,679.3
6,304.0	4,115.1	88.99	107.07	2,749.1	-145.8	2,745.2

Energen
Energen Resources - Survey



Company: Energen Resources
Project: Carson National Forest; NE S13, T32N, R5W
Site: Carracas Mesa
Well: Carracas 13 A #7
Wellbore: Final Survey
Design: Plan #1

Local Co-ordinate Reference: Well Carracas 13 A #7
TVD Reference: KB @ 7441.0ft (AWS 222)
MD Reference: KB @ 7441.0ft (AWS 222)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

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
TD Lateral - plan hits target - Point	0.00	0.00	4,115.1	-145.8	2,745.2	2,179,301.47	1,331,650.79	36° 59' 3.549 N	107° 18' 25.818 W

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------