

District I
1625 N French Dr, Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd, Aztec, NM 87410
District IV
1220 S St Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

Form C-102
Revised October 12, 2005

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AS DRILLED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30483	² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 35658	⁵ Property Name Carracas 18B	⁶ Well Number 1
⁷ OGRID No 162928	⁸ Operator Name Energen Resources Corporation	⁹ Elevation 7329'

¹⁰ Surface Location

UL or lot no O	Section 18	Township 32N	Range 04W	Lot 1dn	Feet from the 570	North/South line South	Feet from the 1705	East/West line East	County Rio Arriba
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no A	Section 18	Township 32N	Range 04W	Lot 1dn	Feet from the 648	North/South line North	Feet from the 713	East/West line East	County Rio Arriba
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¹² Dedicated Acres 320 E/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No R-13/19-NSL	RCVD SEP 3 '09
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OIL CONS. DIV.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

DIST. 3

¹⁶ a/10/09		¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division Signature: Vicki Donaghey Date: 09/01/09 Printed Name: Vicki Donaghey
		¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief Date of Survey: August 23, 2007 Signature and Seal of Professional Surveyer: original survey conducted and recorded by: David Russell Certificate Number: 10001

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RCVD SEP 3 09

OIL CONS. DIV.

DIST. 3

Energen Resources

Rio Arriba County, NM

Sec. 18-T32N-R4W

Carracas 18B #1

Wellbore #1

Design: Actual Field Surveys

Sperry Drilling Services Standard Report

31 July, 2009

Well Coordinates: 2,178,039.75 N, 1,335,808.86 E (36° 58' 51.53" N, 107° 17' 34.40" W)

Ground Level: 7,329.00 ft

Local Coordinate Origin:

Centered on Well Carracas 18B #1

Viewing Datum:

RKB @ 7344.00ft (Original Well Elev)

TVDs to System.

N

North Reference

True

Unit System:

API- Alt

Geodetic Scale Factor Applied

Version: 2003 16 Build: 431

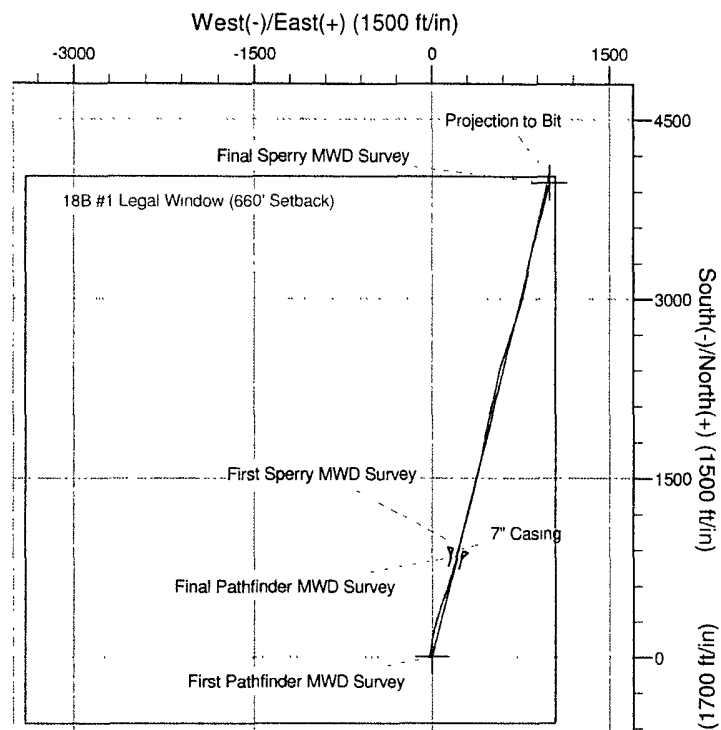
HALLIBURTON

Project: Rio Arriba County, NM
 Site: Sec. 18-T32N-R4W
 Well: Carracas 18B #1
 Wellbore: Wellbore #1
 Plan: Actual Field Surveys

Energen Resources

HALLIBURTON

Drilling and Formation
Evaluation

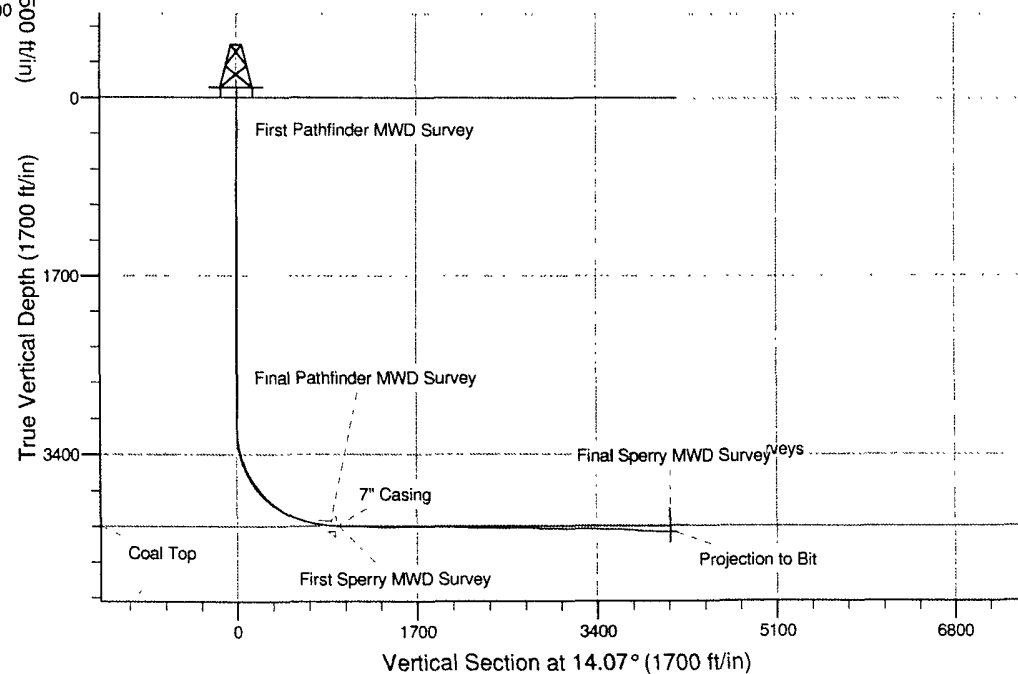


WELL DETAILS: Carracas 18B #1

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	2178039.75	1335808.86	36° 58' 51.528 N	107° 17' 34.404 W

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
18B #1 Legal Window	0.00	0.00	0.00	36° 58' 51.528 N	107° 17' 34.404 W	Polygon
18B #1 TD	4081.00	3970.60	995.00	36° 59' 30.787 N	107° 17' 22.140 W	Point



Design Report for Carracas 18B #1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
18B #1 Legal Window							
298.00	0.79	60.310	297.99	1.02	1.78	1.42	0.27
First Pathfinder MWD Survey							
388.00	0.79	97.690	387.98	1.24	2.94	1.92	0.56
480.00	1.32	182.420	479.97	0.10	3.52	0.95	1.60
571.00	1.41	199.380	570.95	-2.01	3.11	-1.19	0.45
662.00	0.88	284.020	661.93	-2.89	2.06	-2.31	1.75
753.00	0.97	260.390	752.92	-2.85	0.62	-2.62	0.43
845.00	0.79	183.790	844.91	-3.61	-0.19	-3.55	1.20
939.00	0.09	10.190	938.91	-4.19	-0.22	-4.12	0.94
1,030.00	2.20	0.060	1,029.89	-2.37	-0.21	-2.35	2.32
1,121.00	4.22	321.180	1,120.75	1.99	-2.30	1.37	3.14
1,208.00	2.37	354.730	1,207.61	6.27	-4.48	5.00	2.99
1,297.00	0.09	4.240	1,296.58	8.17	-4.64	6.80	2.56
1,387.00	0.09	333.870	1,386.58	8.31	-4.66	6.92	0.05
1,478.00	0.44	160.910	1,477.58	8.04	-4.58	6.69	0.58
1,573.00	0.26	148.800	1,572.58	7.51	-4.35	6.23	0.20
1,664.00	0.26	203.560	1,663.58	7.15	-4.33	5.88	0.26
1,756.00	0.35	153.210	1,755.58	6.70	-4.28	5.46	0.30
1,848.00	0.26	53.040	1,847.58	6.58	-3.99	5.41	0.51
1,941.00	0.26	191.020	1,940.58	6.50	-3.86	5.37	0.52
2,033.00	0.79	168.330	2,032.57	5.67	-3.77	4.59	0.61
2,126.00	0.26	152.890	2,125.57	4.86	-3.55	3.85	0.58
2,220.00	0.09	32.010	2,219.57	4.73	-3.41	3.76	0.34
2,312.00	0.09	53.210	2,311.57	4.83	-3.32	3.88	0.04
2,405.00	0.09	17.790	2,404.57	4.95	-3.23	4.01	0.06
2,499.00	0.09	268.630	2,498.57	5.02	-3.29	4.07	0.16
2,590.00	0.18	0.200	2,589.57	5.16	-3.36	4.19	0.22
2,683.00	0.09	47.920	2,682.57	5.35	-3.30	4.39	0.15
2,776.00	0.18	343.120	2,775.57	5.54	-3.29	4.58	0.18
2,870.00	0.09	221.920	2,869.57	5.63	-3.38	4.64	0.25
2,964.00	1.23	206.200	2,963.56	4.67	-3.88	3.58	1.22
3,026.00	1.76	224.240	3,025.54	3.39	-4.84	2.11	1.13
3,058.00	1.93	227.730	3,057.52	2.67	-5.58	1.24	0.64
3,089.00	2.29	246.390	3,088.50	2.07	-6.53	0.42	2.49
3,120.00	2.81	273.630	3,119.47	1.87	-7.86	-0.09	4.20
3,152.00	3.34	298.630	3,151.43	2.37	-9.46	0.00	4.46
3,183.00	3.78	316.470	3,182.37	3.54	-10.95	0.78	3.83
3,214.00	4.13	327.620	3,213.29	5.23	-12.26	2.09	2.72
3,245.00	4.84	344.250	3,244.20	7.43	-13.21	4.00	4.76
3,276.00	5.28	354.740	3,275.08	10.11	-13.69	6.48	3.30
3,305.00	6.24	1.260	3,303.93	13.01	-13.78	9.27	4.00
3,335.00	7.30	6.220	3,333.72	16.54	-13.54	12.75	4.03
3,366.00	9.32	6.480	3,364.40	20.99	-13.04	17.19	6.52
3,398.00	11.87	6.430	3,395.85	26.84	-12.38	23.02	7.97
3,460.00	17.94	8.810	3,455.74	42.62	-10.20	38.87	9.84
3,491.00	20.40	10.360	3,485.01	52.66	-8.50	49.01	8.10
3,522.00	21.28	7.710	3,513.99	63.55	-6.77	60.00	4.16
3,554.00	22.95	5.850	3,543.63	75.51	-5.36	71.94	5.66

Design Report for Carracas 18B #1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,585.00	24.97	6.520	3,571.96	88.02	-4.00	84.41	6.57
3,617.00	28.05	6.850	3,600.59	102.21	-2.33	98.58	9.64
3,648.00	29.81	7.220	3,627.72	117.09	-0.50	113.46	5.71
3,679.00	31.66	8.530	3,654.37	132.78	1.68	129.21	6.35
3,711.00	33.24	9.250	3,681.37	149.74	4.33	146.31	5.08
3,741.00	34.65	9.040	3,706.26	166.28	7.00	163.00	4.72
3,803.00	39.39	12.280	3,755.75	202.94	13.95	200.24	8.27
3,865.00	44.49	15.150	3,801.86	243.16	23.82	241.66	8.79
3,896.00	46.87	15.850	3,823.51	264.53	29.75	263.83	7.85
3,928.00	48.98	15.620	3,844.96	287.39	36.19	287.57	6.62
3,958.00	51.09	15.350	3,864.22	309.55	42.33	310.55	7.07
3,990.00	53.11	16.140	3,883.88	333.85	49.18	335.79	6.61
4,021.00	55.22	16.910	3,902.03	357.94	56.33	360.90	7.10
4,052.00	56.81	17.580	3,919.36	382.49	63.96	386.56	5.43
4,084.00	58.30	17.400	3,936.52	408.24	72.07	413.52	4.68
4,115.00	59.88	17.970	3,952.45	433.58	80.15	440.06	5.34
4,146.00	61.64	18.240	3,967.59	459.29	88.56	467.04	5.73
4,177.00	63.58	18.480	3,981.85	485.41	97.23	494.49	6.30
4,208.00	65.86	19.130	3,995.09	511.95	106.26	522.42	7.60
4,239.00	68.32	18.620	4,007.15	538.96	115.50	550.87	8.08
4,270.00	70.43	18.130	4,018.07	566.50	124.64	579.80	6.97
4,301.00	72.37	17.590	4,027.96	594.46	133.65	609.12	6.47
4,332.00	74.22	17.580	4,036.87	622.76	142.62	638.75	5.97
4,363.00	76.24	17.220	4,044.77	651.37	151.59	668.68	6.61
4,395.00	78.26	16.820	4,051.84	681.21	160.72	699.84	6.43
4,426.00	80.37	15.870	4,057.58	710.44	169.29	730.28	7.44
4,457.00	80.72	16.230	4,062.68	739.82	177.75	760.84	1.61
4,488.00	80.90	15.830	4,067.63	769.24	186.20	791.43	1.40
4,519.00	81.07	15.760	4,072.48	798.70	194.53	822.03	0.59
4,543.55	82.46	15.221	4,076.00	822.11	201.02	846.32	6.08
Coal Top							
4,550.00	82.83	15.080	4,076.83	828.29	202.69	852.71	6.08
4,572.00	84.50	14.750	4,079.25	849.41	208.32	874.58	7.74
Final Pathfinder MWD Survey							
4,627.00	87.21	15.245	4,083.23	902.40	222.52	929.42	5.01
7" Casing							
4,661.00	88.89	15.550	4,084.38	935.16	231.54	963.39	5.01
First Sperry MWD Survey							
4,692.00	89.32	15.360	4,084.87	965.03	239.80	994.38	1.52
4,723.00	89.38	15.130	4,085.22	994.94	247.95	1,025.37	0.77
4,754.00	89.32	15.230	4,085.57	1,024.85	256.06	1,056.36	0.38
4,784.00	88.70	16.100	4,086.09	1,053.74	264.16	1,086.34	3.56
4,815.00	88.46	16.170	4,086.86	1,083.51	272.78	1,117.31	0.81
4,846.00	88.89	16.180	4,087.57	1,113.27	281.41	1,148.28	1.39
4,877.00	87.96	15.640	4,088.43	1,143.07	289.90	1,179.26	3.47
4,937.00	86.85	14.540	4,091.14	1,200.94	305.51	1,239.18	2.60
4,968.00	86.66	14.820	4,092.90	1,230.88	313.35	1,270.13	1.09
4,999.00	86.47	14.770	4,094.75	1,260.80	321.25	1,301.07	0.63
5,029.00	86.85	13.850	4,096.50	1,289.82	328.66	1,331.02	3.31
5,060.00	88.77	13.830	4,097.69	1,319.90	336.07	1,362.00	6.19
5,090.00	90.37	13.460	4,097.91	1,349.05	343.14	1,391.99	5.47

Design Report for Carracas 18B #1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,121.00	91.05	13.980	4,097.53	1,379.16	350.49	1,422.99	2.76
5,150.00	90.99	13.220	4,097.01	1,407.34	357.31	1,451.99	2.63
5,179.00	91.23	13.410	4,096.45	1,435.56	363.99	1,480.98	1.06
5,210.00	92.47	14.120	4,095.45	1,465.65	371.36	1,511.96	4.61
5,241.00	94.08	14.090	4,093.68	1,495.67	378.90	1,542.91	5.19
5,272.00	93.77	13.080	4,091.56	1,525.73	386.17	1,573.83	3.40
5,302.00	91.60	12.870	4,090.15	1,554.93	392.90	1,603.79	7.27
5,333.00	90.43	13.060	4,089.60	1,585.13	399.85	1,634.78	3.82
5,364.00	90.06	12.150	4,089.47	1,615.38	406.61	1,665.77	3.17
5,425.00	89.63	11.020	4,089.63	1,675.14	418.86	1,726.71	1.98
5,456.00	89.26	10.920	4,089.93	1,705.57	424.76	1,757.67	1.24
5,487.00	89.20	10.050	4,090.35	1,736.05	430.40	1,788.60	2.81
5,548.00	89.08	10.000	4,091.27	1,796.11	441.02	1,849.44	0.21
5,579.00	88.77	9.680	4,091.85	1,826.65	446.32	1,880.35	1.44
5,639.00	88.03	10.730	4,093.52	1,885.68	456.94	1,940.19	2.14
5,670.00	88.64	10.960	4,094.42	1,916.11	462.77	1,971.13	2.10
5,732.00	88.64	12.590	4,095.90	1,976.79	475.42	2,033.06	2.63
5,793.00	88.03	14.220	4,097.67	2,036.10	489.56	2,094.03	2.85
5,855.00	87.84	13.850	4,099.90	2,096.21	504.58	2,155.99	0.67
5,886.00	87.66	13.350	4,101.12	2,126.32	511.87	2,186.96	1.71
5,916.00	88.15	13.610	4,102.22	2,155.47	518.86	2,216.94	1.85
5,948.00	89.94	13.090	4,102.75	2,186.60	526.24	2,248.93	5.82
5,978.00	90.80	12.770	4,102.56	2,215.84	532.96	2,278.93	3.06
6,009.00	90.56	12.420	4,102.19	2,246.09	539.72	2,309.92	1.37
6,071.00	87.78	11.550	4,103.09	2,306.73	552.59	2,371.86	4.70
6,102.00	87.90	10.770	4,104.25	2,337.12	558.58	2,402.80	2.54
6,133.00	88.89	11.080	4,105.12	2,367.54	564.46	2,433.74	3.35
6,163.00	89.32	13.730	4,105.59	2,396.84	570.90	2,463.72	8.95
6,194.00	90.00	16.450	4,105.78	2,426.76	578.97	2,494.71	9.04
6,225.00	90.86	18.840	4,105.54	2,456.30	588.36	2,525.65	8.19
6,285.00	90.74	18.860	4,104.71	2,513.08	607.75	2,585.43	0.20
6,316.00	90.56	18.120	4,104.35	2,542.48	617.58	2,616.34	2.46
6,406.00	89.75	17.270	4,104.11	2,628.22	644.93	2,706.16	1.30
6,437.00	90.12	16.870	4,104.15	2,657.85	654.03	2,737.11	1.76
6,468.00	88.77	18.240	4,104.45	2,687.40	663.38	2,768.05	6.20
6,499.00	86.42	19.580	4,105.75	2,716.70	673.42	2,798.91	8.72
6,531.00	85.99	20.120	4,107.86	2,746.74	684.26	2,830.68	2.15
6,563.00	87.04	20.020	4,109.81	2,776.74	695.22	2,862.45	3.30
6,595.00	90.31	18.370	4,110.55	2,806.94	705.74	2,894.30	11.45
6,626.00	90.56	17.410	4,110.31	2,836.44	715.26	2,925.23	3.20
6,690.00	88.46	17.420	4,110.86	2,897.50	734.41	2,989.12	3.28
6,721.00	87.84	16.930	4,111.86	2,927.11	743.56	3,020.06	2.55
6,753.00	87.34	16.450	4,113.21	2,957.73	752.75	3,051.99	2.17
6,785.00	88.70	16.010	4,114.31	2,988.44	761.68	3,083.95	4.47
6,816.00	90.12	14.400	4,114.63	3,018.35	769.81	3,114.94	6.92
6,848.00	90.37	13.860	4,114.50	3,049.38	777.62	3,146.94	1.86
6,880.00	90.12	13.010	4,114.36	3,080.50	785.06	3,178.94	2.77
6,912.00	89.88	12.480	4,114.36	3,111.71	792.12	3,210.93	1.82
6,943.00	89.81	12.490	4,114.44	3,141.98	798.82	3,241.92	0.23
6,975.00	90.12	12.120	4,114.46	3,173.25	805.64	3,273.90	1.51
7,006.00	89.26	10.630	4,114.63	3,203.64	811.75	3,304.87	5.55

Design Report for Carracas 18B #1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,038.00	88.70	10.550	4,115.20	3,235.09	817.63	3,336.80	1.77
7,070.00	88.15	9.750	4,116.08	3,266.57	823.27	3,368.72	3.03
7,101.00	88.58	11.490	4,116.96	3,297.03	828.98	3,399.65	5.78
7,133.00	89.08	13.470	4,117.62	3,328.26	835.90	3,431.63	6.38
7,165.00	88.83	12.780	4,118.20	3,359.42	843.16	3,463.62	2.29
7,196.00	89.63	12.060	4,118.62	3,389.69	849.83	3,494.60	3.47
7,228.00	89.69	11.110	4,118.81	3,421.04	856.25	3,526.57	2.97
7,260.00	88.46	11.310	4,119.32	3,452.43	862.47	3,558.52	3.89
7,290.00	87.59	12.390	4,120.36	3,481.77	868.63	3,588.48	4.62
7,322.00	86.97	12.450	4,121.88	3,512.98	875.50	3,620.43	1.95
7,354.00	86.79	13.020	4,123.62	3,544.15	882.55	3,652.38	1.87
7,386.00	86.85	12.380	4,125.39	3,575.32	889.57	3,684.32	2.01
7,417.00	86.23	12.880	4,127.26	3,605.51	896.34	3,715.25	2.57
7,449.00	86.66	11.870	4,129.25	3,636.71	903.18	3,747.18	3.42
7,481.00	86.05	11.570	4,131.28	3,667.98	909.67	3,779.08	2.12
7,513.00	85.31	10.990	4,133.69	3,699.27	915.91	3,810.96	2.93
7,544.00	86.17	10.950	4,136.00	3,729.62	921.79	3,841.82	2.78
7,576.00	88.02	12.030	4,137.62	3,760.94	928.16	3,873.75	6.69
7,608.00	89.01	13.010	4,138.45	3,792.16	935.09	3,905.73	4.35
7,640.00	87.71	12.850	4,139.36	3,823.34	942.25	3,937.71	4.09
7,672.00	87.34	12.490	4,140.74	3,854.53	949.26	3,969.67	1.61
7,703.00	87.10	12.190	4,142.25	3,884.78	955.88	4,000.62	1.24
7,767.00	90.56	14.400	4,143.55	3,947.04	970.59	4,064.58	6.41
7,796.67	90.96	14.029	4,143.16	3,975.80	977.88	4,094.25	1.84
18B #1 TD							
7,799.00	90.99	14.000	4,143.12	3,978.06	978.44	4,096.58	1.84
Final Sperry MWD Survey							
7,856.00	90.99	14.000	4,142.14	4,033.36	992.23	4,153.57	0.00
Projection to Bit							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
298.00	297.99	1.02	1.78	First Pathfinder MWD Survey
4,572.00	4,079.25	849.41	208.32	Final Pathfinder MWD Survey
4,661.00	4,084.38	935.16	231.54	First Sperry MWD Survey
7,799.00	4,143.12	3,978.06	978.44	Final Sperry MWD Survey
7,856.00	4,142.14	4,033.36	992.23	Projection to Bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	18B #1 TD	14.068	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
298.00	4,572.00	Pathfinder Surveys	MWD
4,572.00	7,856.00	Sperry MWD Surveys	MWD

Design Report for Carracas 18B #1 - Actual Field Surveys

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
4,627.00	4,083.23	7" Casing	7	7

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	TVDSS (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,543.55	4,076.00	-3,268.00	Coal Top		0.000	

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
18B #1 Legal Window	0.00	0.00	0.00	0.00	0.00	2,178,039.75	1,335,808.86	36° 58' 51.528 N	107° 17' 34.404 W
- actual wellpath hits target center									
- Polygon									
Point 1			-3,402.40	4,020.60	2,182,097.39	1,332,450.67			
Point 2			-3,402.40	-560.00	2,177,517.04	1,332,400.51			
Point 3			1,045.00	-560.00	2,177,468.33	1,336,847.67			
Point 4			1,045.00	4,020.60	2,182,048.69	1,336,897.84			
18B #1 TD	0.00	0.00	4,081.00	3,970.60	995.00	2,181,999.24	1,336,847.29	36° 59' 30.787 N	107° 17' 22.140 W
- actual wellpath misses target center by 64.69ft at 7796.83ft MD (4143.16 TVD, 3975.95 N, 977.92 E)									
- Point									