

"As Drilled"

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

Form C-102
Revised July 16, 2010
Submit one copy to appropriate
District Office
☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30824	² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 35654	⁵ Property Name Carracas 16A	⁶ Well Number 1H
⁷ OGRID No. 162928	⁸ Operator Name Energen Resources Corporation	⁹ Elevation 7223'

¹⁰ Surface Location

UL or lot no. B	Section 16	Township 32N	Range 5W	Lot Idn	Feet from the 98'	North/South line North	Feet from the 2374'	East/West line East	County Rio Arriba
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. K	Section 16	Township 32N	Range 5W	Lot Idn	Feet from the 1568'	North/South line South	Feet from the 1498'	East/West line West	County Rio Arriba
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¹² Dedicated Acres 320 W/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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RCVD OCT 20 '10
OIL CONS. DIV.

DIST. 3

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.

2644.32'	2643.41'			
16	774'	98'	SHL	2374'
1735'	Entry Point			
5280.54'	16	5267.68'		
1498'	BHL			
5285.20'	1568'			

Producing Interval:
From 7" Intermediate Casing Pt. @
887'FNL, 1723'FWL; To TD of well @
BHL pt.

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.
 9/28/2010
Signature Date
Stephen Byers
Printed Name
sbyers@energen.com
E-mail Address

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.
November 24, 2008
Date of Survey
Signature and Seal of Professional Surveyor:

David Russell
Certificate Number 10201

RCVD OCT 20 '10
OIL CONS. DIV.
DIST. 3

Energen Resources

Rio Arriba County, NM

Sec. 16-T32N-R5W

Carracas 16A #1H

Plan #2

Design: Pathfinder MWD and Sperry MWD Survey

Sperry Drilling Services Standard Report

31 August, 2010

Well Coordinates: 2,180,549.12 N, 1,314,247.02 E (36° 59' 13.92" N, 107° 22' 00.48" W)
Ground Level: 7,223.00 ft

Local Coordinate Origin:	Centered on Well Carracas 16A #1H
Viewing Datum:	KB @ 7236.00ft (D&J 2)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied
Version: 2003.16 Build: 43I

HALLIBURTON

HALLIBURTON

Design Report for Carracas 16A #1H - Pathfinder MWD and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
318.00	0.53	15.88	318.00	1.41	0.40	-1.47	0.17
Surveys from 318.00ft to 4641.00ft are Pathfinder MWD Surveys							
349.00	0.26	8.01	348.99	1.62	0.45	-1.68	0.89
379.00	0.26	4.43	378.99	1.76	0.47	-1.81	0.05
409.00	0.09	138.23	408.99	1.81	0.49	-1.87	1.10
439.00	0.09	119.42	438.99	1.78	0.52	-1.85	0.10
469.00	0.09	76.90	468.99	1.77	0.57	-1.86	0.22
500.00	0.09	234.35	499.99	1.76	0.57	-1.85	0.57
529.00	0.01	66.21	528.99	1.75	0.55	-1.84	0.34
559.00	0.09	329.21	558.99	1.77	0.54	-1.85	0.31
589.00	0.01	253.60	588.99	1.79	0.53	-1.87	0.29
619.00	0.09	61.75	618.99	1.80	0.55	-1.88	0.33
650.00	0.09	27.13	649.99	1.84	0.58	-1.93	0.17
679.00	0.09	307.87	678.99	1.87	0.57	-1.96	0.40
771.00	0.09	297.58	770.99	1.95	0.45	-1.99	0.02
860.00	0.09	331.46	859.99	2.04	0.36	-2.05	0.06
951.00	0.09	29.84	950.99	2.17	0.36	-2.17	0.10
1,042.00	0.09	47.43	1,041.99	2.28	0.45	-2.30	0.03
1,133.00	0.09	250.92	1,132.99	2.30	0.43	-2.32	0.19
1,224.00	0.00	16.60	1,223.99	2.28	0.36	-2.28	0.10
1,315.00	0.09	95.26	1,314.99	2.27	0.44	-2.29	0.10
1,411.00	0.09	227.60	1,410.99	2.21	0.45	-2.24	0.17
1,507.00	0.09	301.16	1,506.99	2.20	0.33	-2.19	0.11
1,603.00	0.18	262.33	1,602.99	2.22	0.12	-2.14	0.13
1,697.00	0.18	194.36	1,696.99	2.06	-0.06	-1.93	0.21
1,793.00	0.09	354.22	1,792.99	1.99	-0.11	-1.85	0.28
1,888.00	0.18	40.79	1,887.99	2.17	-0.02	-2.06	0.14
1,984.00	0.09	5.72	1,983.99	2.36	0.09	-2.27	0.12
2,048.00	0.00	297.74	2,047.99	2.41	0.09	-2.32	0.14
2,112.00	0.88	263.08	2,111.99	2.35	-0.39	-2.11	1.37
2,144.00	2.55	266.49	2,143.97	2.28	-1.35	-1.73	5.23
2,175.00	3.34	272.44	2,174.93	2.28	-2.94	-1.23	2.73
2,207.00	3.87	272.07	2,206.87	2.36	-4.95	-0.66	1.66
2,239.00	4.04	272.73	2,238.79	2.45	-7.15	-0.05	0.55
2,271.00	4.31	271.99	2,270.71	2.54	-9.48	0.60	0.86
2,302.00	4.57	271.14	2,301.62	2.61	-11.88	1.30	0.87
2,333.00	4.75	271.39	2,332.51	2.67	-14.40	2.05	0.58
2,365.00	5.01	270.00	2,364.40	2.70	-17.12	2.88	0.89
2,396.00	5.72	273.89	2,395.26	2.80	-20.02	3.70	2.57
2,428.00	6.77	274.74	2,427.07	3.07	-23.49	4.55	3.29
2,460.00	8.00	274.12	2,458.80	3.38	-27.59	5.56	3.85
2,492.00	9.15	273.61	2,490.45	3.70	-32.35	6.76	3.60
2,524.00	10.29	274.42	2,521.99	4.08	-37.74	8.11	3.59
2,555.00	11.26	275.05	2,552.44	4.56	-43.51	9.49	3.15
2,587.00	12.13	275.53	2,583.77	5.16	-49.97	10.98	2.74
2,619.00	13.01	273.97	2,615.01	5.73	-56.91	12.64	2.95
2,651.00	14.60	273.76	2,646.08	6.25	-64.53	14.57	4.97
2,682.00	16.44	273.98	2,675.95	6.81	-72.81	16.67	5.94
2,713.00	17.85	273.57	2,705.57	7.41	-81.92	18.99	4.57

Design Report for Carracas 16A #1H - Pathfinder MWD and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,745.00	19.26	274.18	2,735.91	8.10	-92.08	21.57	4.45
2,777.00	21.10	274.67	2,765.94	8.95	-103.09	24.25	5.77
2,809.00	23.13	274.81	2,795.59	9.95	-115.09	27.12	6.35
2,840.00	25.15	274.85	2,823.87	11.02	-127.73	30.12	6.52
2,872.00	27.17	274.70	2,852.60	12.19	-141.78	33.47	6.32
2,904.00	28.67	273.24	2,880.87	13.22	-156.73	37.24	5.15
2,936.00	29.55	272.35	2,908.83	13.98	-172.28	41.46	3.06
2,967.00	30.60	271.56	2,935.65	14.51	-187.80	45.89	3.62
2,999.00	32.10	271.86	2,962.98	15.01	-204.45	50.71	4.71
3,031.00	33.94	270.07	2,989.81	15.29	-221.88	55.97	6.51
3,063.00	36.58	269.26	3,015.94	15.18	-240.35	61.94	8.38
3,095.00	39.13	269.11	3,041.20	14.90	-259.98	68.44	7.97
3,127.00	41.15	268.61	3,065.67	14.49	-280.61	75.39	6.39
3,159.00	42.38	268.38	3,089.53	13.93	-301.91	82.68	3.87
3,191.00	43.79	268.82	3,112.90	13.40	-323.76	90.13	4.51
3,222.00	45.55	270.26	3,134.95	13.23	-345.56	97.21	6.55
3,254.00	47.40	271.85	3,156.99	13.66	-368.75	104.17	6.81
3,286.00	48.72	272.25	3,178.37	14.51	-392.54	110.92	4.23
3,318.00	50.21	272.33	3,199.17	15.48	-416.84	117.71	4.66
3,350.00	51.53	271.73	3,219.36	16.36	-441.65	124.76	4.37
3,382.00	53.02	270.45	3,238.94	16.84	-466.95	132.34	5.63
3,414.00	52.76	267.24	3,258.25	16.33	-492.46	140.93	8.04
3,446.00	52.58	263.84	3,277.66	14.35	-517.82	150.86	8.47
3,478.00	52.14	261.16	3,297.21	11.04	-542.94	161.98	6.77
3,510.00	52.23	259.56	3,316.83	6.81	-567.86	173.90	3.96
3,541.00	53.02	258.60	3,335.65	2.14	-592.05	186.01	3.54
3,573.00	54.69	257.59	3,354.52	-3.19	-617.33	199.10	5.81
3,605.00	56.54	255.74	3,372.59	-9.29	-643.02	213.04	7.50
3,637.00	57.42	253.22	3,390.03	-16.47	-668.87	228.06	7.15
3,669.00	58.04	250.21	3,407.12	-24.96	-694.56	244.27	8.19
3,701.00	58.21	246.77	3,424.02	-34.92	-719.83	261.74	9.14
3,732.00	58.92	243.90	3,440.19	-45.96	-743.87	279.84	8.22
3,764.00	59.97	241.57	3,456.46	-58.58	-768.36	299.59	7.08
3,796.00	61.03	239.81	3,472.22	-72.22	-792.64	320.23	5.82
3,828.00	62.52	239.81	3,487.35	-86.40	-817.01	341.42	4.66
3,860.00	63.31	236.78	3,501.93	-101.37	-841.24	363.31	8.78
3,892.00	63.75	233.77	3,516.19	-117.68	-864.78	386.26	8.53
3,924.00	64.54	230.39	3,530.15	-135.38	-887.49	410.25	9.82
3,956.00	64.98	227.54	3,543.80	-154.38	-909.32	435.20	8.17
3,987.00	65.95	225.17	3,556.67	-173.85	-929.72	460.14	7.63
4,019.00	66.65	223.28	3,569.53	-194.84	-950.16	486.54	5.83
4,051.00	67.88	220.91	3,581.90	-216.74	-969.94	513.59	7.84
4,083.00	69.38	218.39	3,593.56	-239.69	-988.95	541.38	8.70
4,115.00	70.08	216.60	3,604.65	-263.50	-1,007.22	569.77	5.68
4,147.00	70.70	214.80	3,615.39	-287.98	-1,024.81	598.56	5.64
4,179.00	72.02	212.50	3,625.62	-313.22	-1,041.61	627.83	7.96
4,211.00	72.98	210.25	3,635.24	-339.27	-1,057.49	657.58	7.35
4,237.00	74.13	208.88	3,642.60	-360.96	-1,069.80	682.06	6.72
4,268.00	75.62	206.83	3,650.69	-387.42	-1,083.78	711.58	7.99
4,300.00	76.77	205.35	3,658.33	-415.33	-1,097.44	742.39	5.75
4,336.00	78.96	204.01	3,665.90	-447.31	-1,112.13	777.38	7.09

Design Report for Carracas 16A #1H - Pathfinder MWD and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,364.00	80.46	202.98	3,670.90	-472.57	-1,123.12	804.82	6.47
4,396.00	80.90	200.69	3,676.08	-501.88	-1,134.86	836.34	7.19
4,427.00	80.46	198.49	3,681.10	-530.70	-1,145.12	866.93	7.15
4,459.00	81.34	195.98	3,686.17	-560.88	-1,154.48	898.51	8.22
4,491.00	81.60	193.63	3,690.91	-591.47	-1,162.56	930.09	7.31
4,522.00	81.60	191.12	3,695.44	-621.42	-1,169.13	960.58	8.01
4,554.00	81.07	188.55	3,700.26	-652.59	-1,174.54	991.85	8.11
4,578.00	80.94	187.37	3,704.02	-676.06	-1,177.82	1,015.15	4.87
Top of Target Coal (Interpolated Point - Not a Survey Station)							
4,586.00	80.90	186.98	3,705.28	-683.90	-1,178.81	1,022.90	4.87
4,618.00	82.22	186.47	3,709.97	-715.34	-1,182.51	1,053.88	4.42
4,641.00	83.62	185.85	3,712.81	-738.03	-1,184.96	1,076.18	6.65
Tie-On to Pathfinder MWD Survey							
4,693.00	84.87	186.20	3,718.02	-789.48	-1,190.39	1,126.69	2.50
7" Casing Point (Interpolated Point - Not a Survey Station) - 7" Csg							
4,716.00	85.43	186.35	3,719.96	-812.26	-1,192.90	1,149.09	2.50
First Sperry MWD Survey							
4,736.00	84.37	186.56	3,721.74	-832.06	-1,195.14	1,168.57	5.40
4,766.00	84.25	186.62	3,724.72	-861.71	-1,198.56	1,197.77	0.45
4,797.00	86.66	185.56	3,727.17	-892.44	-1,201.84	1,227.95	8.49
4,827.00	89.44	184.71	3,728.19	-922.30	-1,204.52	1,257.11	9.69
4,858.00	91.48	184.83	3,727.95	-953.19	-1,207.10	1,287.22	6.59
4,888.00	92.10	184.73	3,727.01	-983.07	-1,209.60	1,316.35	2.09
4,919.00	92.53	184.94	3,725.76	-1,013.93	-1,212.21	1,346.45	1.54
4,949.00	92.72	184.87	3,724.38	-1,043.79	-1,214.77	1,375.57	0.67
4,980.00	89.94	184.25	3,723.66	-1,074.68	-1,217.24	1,405.65	9.19
5,011.00	89.32	184.05	3,723.86	-1,105.60	-1,219.48	1,435.68	2.10
5,041.00	89.75	184.13	3,724.11	-1,135.52	-1,221.62	1,464.73	1.46
5,071.00	89.88	183.82	3,724.20	-1,165.45	-1,223.70	1,493.77	1.12
5,100.00	88.08	183.80	3,724.72	-1,194.38	-1,225.62	1,521.81	6.21
5,131.00	88.08	183.95	3,725.76	-1,225.29	-1,227.72	1,551.79	0.48
5,161.00	87.41	184.54	3,726.94	-1,255.18	-1,229.94	1,580.84	2.97
5,192.00	86.04	184.59	3,728.71	-1,286.03	-1,232.40	1,610.87	4.42
5,223.00	85.49	184.49	3,731.00	-1,316.85	-1,234.85	1,640.87	1.80
5,252.00	85.55	184.00	3,733.26	-1,345.68	-1,236.99	1,668.89	1.70
5,283.00	85.61	184.02	3,735.65	-1,376.52	-1,239.15	1,698.81	0.20
5,314.00	85.67	184.18	3,738.01	-1,407.35	-1,241.36	1,728.75	0.55
5,344.00	85.80	184.44	3,740.24	-1,437.18	-1,243.61	1,757.75	0.97
5,374.00	86.91	183.85	3,742.15	-1,467.04	-1,245.77	1,786.75	4.19
5,404.00	87.84	183.74	3,743.52	-1,496.94	-1,247.75	1,815.74	3.12
5,435.00	90.49	183.72	3,743.97	-1,527.87	-1,249.77	1,845.70	8.55
5,465.00	91.55	182.97	3,743.44	-1,557.81	-1,251.52	1,874.65	4.33
5,495.00	91.79	182.25	3,742.57	-1,587.77	-1,252.89	1,903.49	2.53
5,525.00	92.04	182.31	3,741.56	-1,617.73	-1,254.08	1,932.28	0.86
5,557.00	92.66	182.60	3,740.25	-1,649.67	-1,255.45	1,963.00	2.14
5,587.00	93.03	182.39	3,738.76	-1,679.61	-1,256.75	1,991.80	1.42
5,617.00	91.98	183.53	3,737.45	-1,709.54	-1,258.30	2,020.67	5.16
5,647.00	91.48	183.87	3,736.54	-1,739.46	-1,260.24	2,049.66	2.02
5,677.00	90.25	184.73	3,736.09	-1,769.37	-1,262.49	2,078.74	5.00
5,708.00	90.12	184.86	3,735.99	-1,800.27	-1,265.08	2,108.85	0.59
5,739.00	90.56	184.96	3,735.81	-1,831.15	-1,267.73	2,138.98	1.46

Design Report for Carracas 16A #1H - Pathfinder MWD and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,769.00	91.23	184.76	3,735.34	-1,861.04	-1,270.27	2,168.13	2.33
5,799.00	91.92	185.23	3,734.51	-1,890.91	-1,272.88	2,197.29	2.78
5,830.00	90.12	184.76	3,733.96	-1,921.79	-1,275.58	2,227.42	6.00
5,861.00	89.26	185.71	3,734.13	-1,952.66	-1,278.41	2,257.59	4.13
5,891.00	89.81	185.55	3,734.37	-1,982.51	-1,281.35	2,286.84	1.91
5,922.00	88.76	185.12	3,734.76	-2,013.38	-1,284.23	2,317.02	3.66
5,953.00	88.77	185.71	3,735.43	-2,044.23	-1,287.16	2,347.20	1.90
5,984.00	89.20	185.55	3,735.98	-2,075.08	-1,290.20	2,377.42	1.48
6,014.00	89.75	185.46	3,736.25	-2,104.94	-1,293.08	2,406.64	1.86
6,045.00	89.88	185.40	3,736.35	-2,135.80	-1,296.01	2,436.84	0.46
6,075.00	88.77	184.98	3,736.71	-2,165.67	-1,298.72	2,466.03	3.96
6,106.00	89.26	185.17	3,737.24	-2,196.55	-1,301.47	2,496.17	1.70
6,137.00	88.09	186.18	3,737.96	-2,227.38	-1,304.53	2,526.39	4.99
6,167.00	87.96	186.47	3,738.99	-2,257.18	-1,307.83	2,555.69	1.06
6,198.00	88.33	186.87	3,739.99	-2,287.96	-1,311.43	2,586.02	1.76
6,228.00	88.64	187.47	3,740.79	-2,317.71	-1,315.18	2,615.42	2.25
6,258.00	88.08	186.95	3,741.65	-2,347.46	-1,318.94	2,644.83	2.55
6,289.00	87.41	185.47	3,742.87	-2,378.26	-1,322.29	2,675.09	5.24
6,320.00	87.65	185.30	3,744.20	-2,409.09	-1,325.20	2,705.25	0.95
6,351.00	87.96	185.32	3,745.39	-2,439.93	-1,328.06	2,735.41	1.00
6,381.00	88.39	185.56	3,746.34	-2,469.78	-1,330.91	2,764.61	1.64
6,410.00	88.27	185.52	3,747.19	-2,498.64	-1,333.70	2,792.86	0.44
6,441.00	89.07	185.77	3,747.91	-2,529.48	-1,336.75	2,823.07	2.70
6,471.00	88.76	185.62	3,748.48	-2,559.32	-1,339.73	2,852.32	1.15
6,502.00	87.59	185.91	3,749.46	-2,590.15	-1,342.84	2,882.54	3.89
6,533.00	87.47	186.20	3,750.80	-2,620.95	-1,346.11	2,912.78	1.01
6,565.00	87.46	186.29	3,752.22	-2,652.73	-1,349.59	2,944.02	0.28
6,596.00	87.90	186.99	3,753.47	-2,683.50	-1,353.17	2,974.33	2.67
6,626.00	88.27	187.00	3,754.47	-2,713.26	-1,356.82	3,003.71	1.23
6,658.00	88.58	187.09	3,755.35	-2,745.00	-1,360.74	3,035.06	1.01
6,689.00	88.83	187.26	3,756.05	-2,775.75	-1,364.61	3,065.44	0.98
6,720.00	89.07	187.44	3,756.62	-2,806.49	-1,368.58	3,095.85	0.97
6,752.00	88.83	186.90	3,757.21	-2,838.24	-1,372.57	3,127.22	1.85
6,783.00	89.20	187.15	3,757.74	-2,869.00	-1,376.36	3,157.59	1.44
6,814.00	89.07	186.73	3,758.21	-2,899.77	-1,380.11	3,187.96	1.42
6,846.00	89.38	184.64	3,758.64	-2,931.61	-1,383.28	3,219.16	6.60
6,877.00	91.11	183.80	3,758.51	-2,962.52	-1,385.56	3,249.19	6.20
6,907.00	91.42	183.93	3,757.85	-2,992.44	-1,387.58	3,278.21	1.12
6,937.00	91.98	183.86	3,756.96	-3,022.36	-1,389.62	3,307.23	1.88
6,969.00	92.53	184.23	3,755.70	-3,054.26	-1,391.87	3,338.19	2.07
7,000.00	91.23	183.36	3,754.68	-3,085.17	-1,393.92	3,368.15	5.05
7,053.00	90.00	182.43	3,754.11	-3,138.10	-1,396.60	3,419.19	2.91
7,085.00	88.27	182.83	3,754.59	-3,170.06	-1,398.07	3,449.96	5.55
7,116.00	87.96	182.94	3,755.61	-3,201.00	-1,399.63	3,479.80	1.06
7,147.00	87.71	182.86	3,756.79	-3,231.94	-1,401.19	3,509.63	0.85
7,179.00	87.59	182.76	3,758.10	-3,263.88	-1,402.76	3,540.41	0.49
7,210.00	87.40	182.66	3,759.45	-3,294.81	-1,404.23	3,570.21	0.69
7,240.00	86.97	181.94	3,760.93	-3,324.75	-1,405.43	3,598.98	2.79
7,272.00	86.91	181.72	3,762.63	-3,356.69	-1,406.45	3,629.59	0.71
7,303.00	88.02	181.89	3,764.00	-3,387.64	-1,407.42	3,659.25	3.62
7,334.00	87.65	181.92	3,765.18	-3,418.60	-1,408.45	3,688.93	1.20

Design Report for Carracas 16A #1H - Pathfinder MWD and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,365.00	87.40	181.80	3,766.51	-3,449.56	-1,409.46	3,718.61	0.89
7,397.00	87.22	181.89	3,768.02	-3,481.51	-1,410.49	3,749.23	0.63
7,428.00	86.91	182.00	3,769.60	-3,512.45	-1,411.54	3,778.90	1.06
7,459.00	86.66	182.08	3,771.34	-3,543.38	-1,412.64	3,808.58	0.85
7,491.00	86.91	183.03	3,773.14	-3,575.30	-1,414.07	3,839.30	3.07
Final Sperry MWD Survey							
7,530.00	86.91	183.03	3,775.24	-3,614.19	-1,416.12	3,876.83	0.00
Survey Projection to TD							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
318.00	318.00	1.41	0.40	Surveys from 318.00ft to 4641.00ft are Pathfinder MWD Surveys
4,578.00	3,704.02	-676.06	-1,177.82	Top of Target Coal (Interpolated Point - Not a Survey Station)
4,641.00	3,712.81	-738.03	-1,184.96	Tie-On to Pathfinder MWD Survey
4,693.00	3,718.02	-789.48	-1,190.39	7" Casing Point (Interpolated Point - Not a Survey Station)
4,716.00	3,719.96	-812.26	-1,192.90	First Sperry MWD Survey
7,491.00	3,773.14	-3,575.30	-1,414.07	Final Sperry MWD Survey
7,530.00	3,775.24	-3,614.19	-1,416.12	Survey Projection to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Carracas 16A #1H_Plan2_BHL Tgt	198.52	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
318.00	4,641.00	Pathfinder MWD Surveys	MWD
4,716.00	7,530.00	Sperry MWD Surveys	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
4,693.00	3,718.02	7" Csg	7	8-3/4

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Carracas 16A	0.00	0.00	3,730.00	-4,396.45	-1,472.64	2,176,170.14	1,312,722.88	36° 58' 30.450 N	107° 22' 18.628 W
- actual wellpath misses target center by 785.61ft at 7530.00ft MD (3775.24 TVD, -3614.19 N, -1416.12 E)									
- Point									