

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 35-T3N-R66W

Brown 27N-35HZ

Plan D Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

16 May, 2012

Well Coordinates: 1,307,845.78 N, 3,213,182.49 E (40° 10' 33.29" N, 104° 44' 13.47" W)

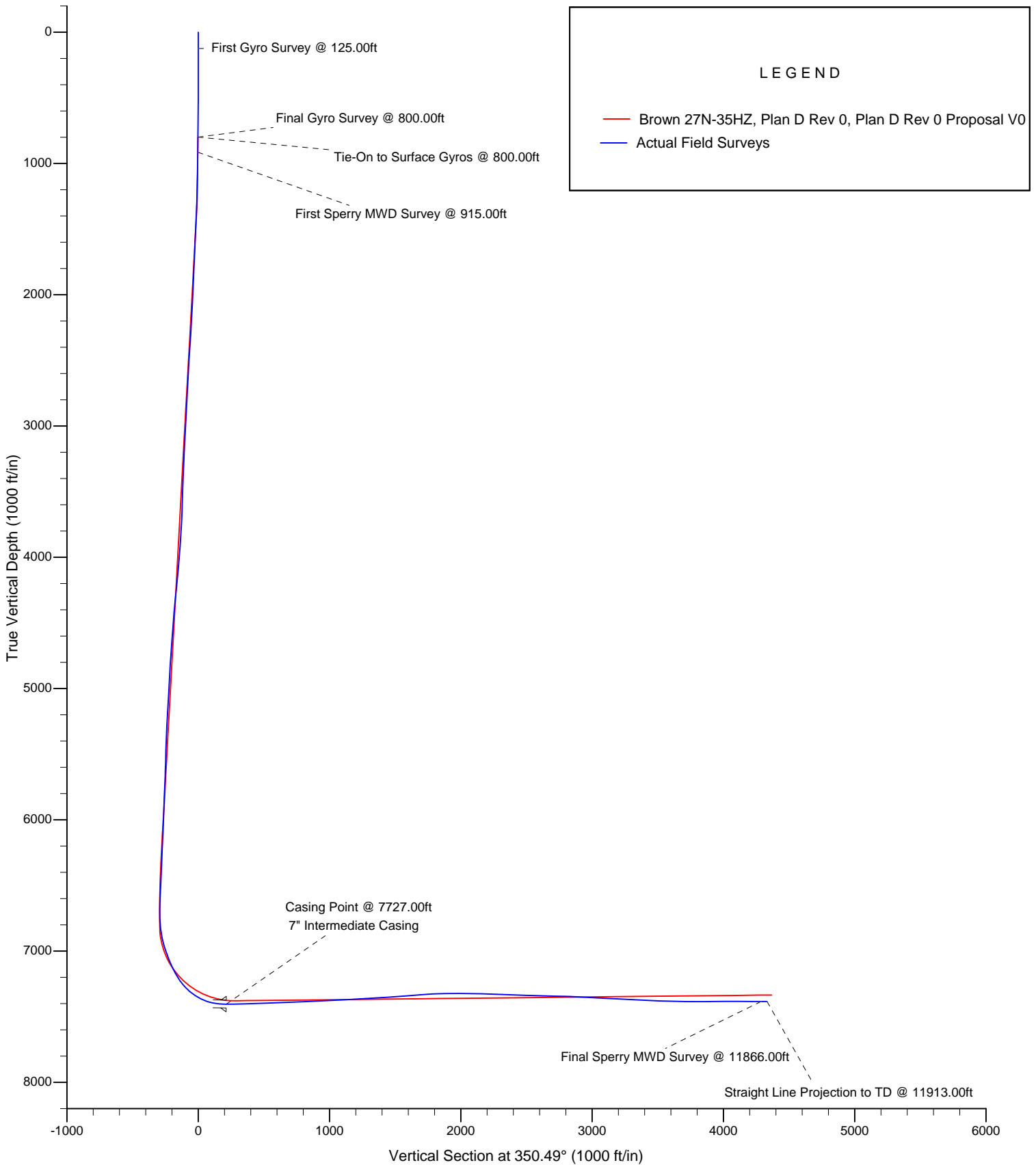
Ground Level: 5,055.00 ft

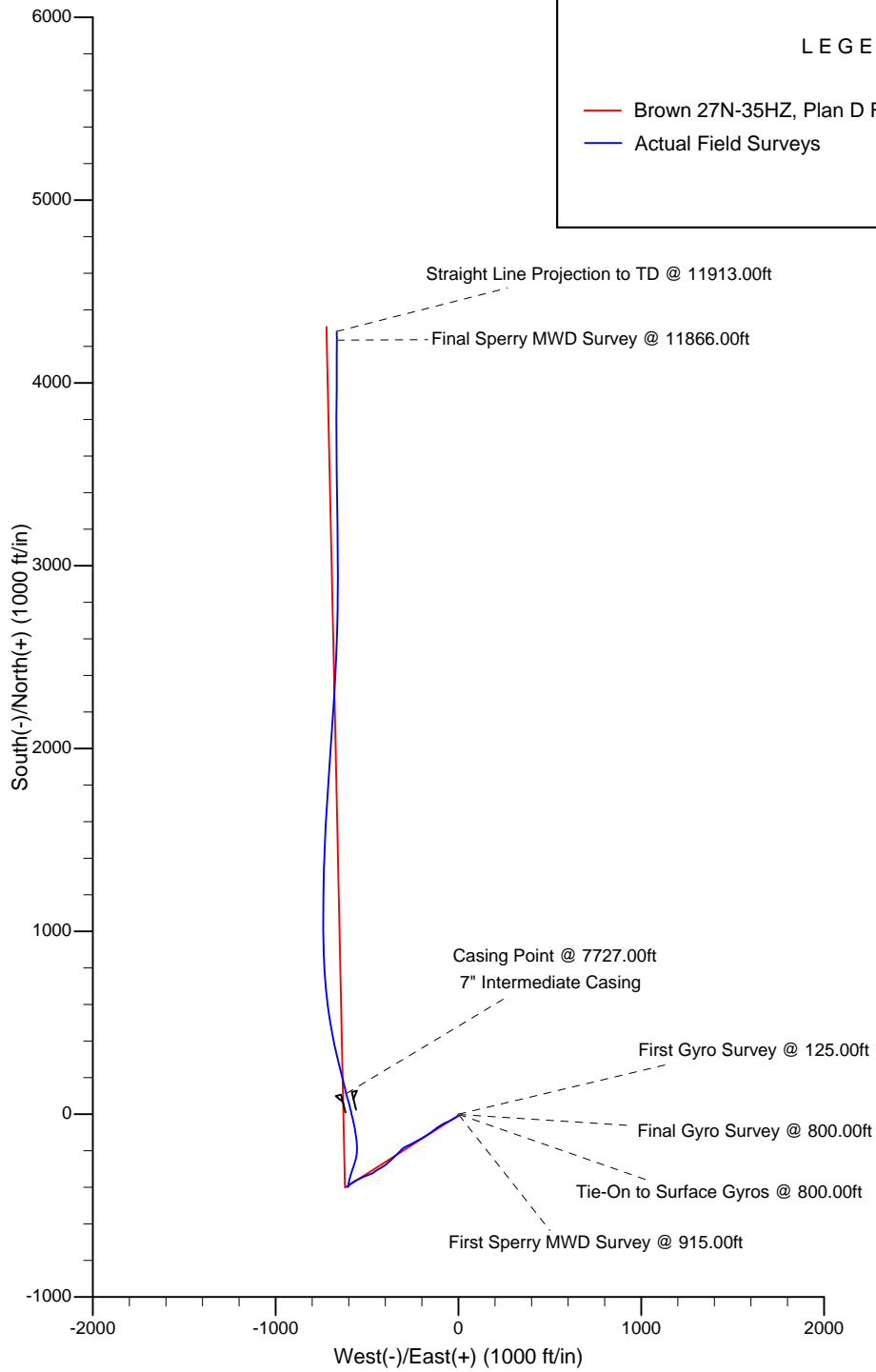
Local Coordinate Origin:	Centered on Well Brown 27N-35HZ
Viewing Datum:	RKB=25' @ 5080.00ft (HP 308)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON





Design Report for Brown 27N-35HZ - 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	0.00	0.00	0.00	0.00	0.00	0.00
Brown 27N-35HZ_SHL - Brown 4 Pad_Sec 35 Lines - Brown Pad_Sec 35 460' Setback Lines - Closed							
125.00	0.37	64.84	125.00	0.17	0.37	0.11	0.30
First Gyro Survey @ 125.00ft							
225.00	0.42	67.84	225.00	0.45	1.00	0.28	0.05
325.00	0.18	8.04	325.00	0.74	1.36	0.51	0.36
425.00	0.11	267.86	425.00	0.89	1.28	0.67	0.23
525.00	0.39	199.91	524.99	0.57	1.07	0.38	0.36
625.00	0.60	151.47	624.99	-0.21	1.21	-0.41	0.45
725.00	0.52	160.85	724.99	-1.10	1.61	-1.35	0.12
800.00	0.75	204.51	799.98	-1.87	1.51	-2.09	0.69
Final Gyro Survey @ 800.00ft - Tie-On to Surface Gyros @ 800.00ft							
915.00	0.94	181.24	914.97	-3.50	1.18	-3.64	0.34
First Sperry MWD Survey @ 915.00ft							
1,005.00	0.68	164.11	1,004.96	-4.75	1.31	-4.90	0.39
1,095.00	0.75	159.71	1,094.95	-5.81	1.66	-6.01	0.10
1,185.00	2.25	219.93	1,184.92	-7.72	0.73	-7.74	2.21
1,274.00	3.77	230.61	1,273.80	-10.92	-2.65	-10.33	1.81
1,365.00	6.13	238.85	1,364.45	-15.33	-9.12	-13.61	2.70
1,455.00	8.22	240.87	1,453.75	-20.95	-18.86	-17.54	2.34
1,546.00	7.92	237.70	1,543.84	-27.47	-29.84	-22.16	0.59
1,636.00	7.39	243.52	1,633.04	-33.36	-40.26	-26.25	1.04
1,727.00	7.30	243.22	1,723.30	-38.57	-50.66	-29.67	0.11
1,818.00	8.79	247.55	1,813.40	-43.83	-62.25	-32.94	1.77
1,908.00	8.09	247.88	1,902.42	-48.84	-74.47	-35.87	0.78
1,998.00	8.93	238.25	1,991.44	-54.91	-86.28	-39.89	1.83
2,088.00	8.72	238.46	2,080.37	-62.15	-98.03	-45.09	0.24
2,183.00	7.56	234.23	2,174.41	-69.57	-109.24	-50.56	1.37
2,278.00	7.39	232.64	2,268.61	-76.93	-119.17	-56.18	0.28
2,373.00	6.59	232.93	2,362.90	-83.92	-128.37	-61.55	0.84
2,468.00	9.37	234.28	2,456.97	-91.73	-139.00	-67.49	2.93
2,563.00	7.38	236.56	2,550.95	-99.60	-150.37	-73.38	2.12
2,658.00	6.74	237.88	2,645.23	-105.93	-160.19	-78.00	0.69
2,754.00	7.20	234.94	2,740.52	-112.38	-169.88	-82.76	0.61
2,849.00	8.31	236.29	2,834.65	-119.61	-180.47	-88.14	1.18
2,944.00	8.00	237.52	2,928.69	-126.97	-191.75	-93.54	0.37
3,039.00	7.66	239.90	3,022.81	-133.70	-202.81	-98.34	0.49
3,134.00	8.55	241.87	3,116.86	-140.20	-214.51	-102.82	0.98
3,229.00	7.60	237.35	3,210.91	-146.92	-226.03	-107.55	1.20
3,325.00	8.20	244.63	3,306.01	-153.28	-237.56	-111.91	1.21
3,420.00	7.37	244.21	3,400.13	-158.83	-249.17	-115.47	0.88
3,516.00	8.14	247.10	3,495.25	-164.16	-260.98	-118.77	0.90
3,611.00	6.10	246.40	3,589.51	-168.80	-271.80	-121.56	2.15
3,707.00	8.53	241.99	3,684.73	-174.18	-282.76	-125.06	2.60
3,802.00	7.10	240.39	3,778.84	-180.39	-294.09	-129.31	1.52
3,898.00	8.41	227.73	3,873.97	-188.05	-304.44	-135.15	2.23
3,993.00	6.84	226.39	3,968.12	-196.62	-313.68	-142.08	1.66
4,088.00	8.38	223.11	4,062.29	-205.58	-322.50	-149.45	1.68
4,184.00	10.25	224.81	4,157.02	-216.75	-333.31	-158.68	1.97
4,279.00	10.16	225.55	4,250.51	-228.61	-345.24	-168.41	0.17

Design Report for Brown 27N-35HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,375.00	9.42	226.06	4,345.11	-239.99	-356.95	-177.70	0.78
4,470.00	8.56	230.24	4,438.95	-249.91	-367.98	-185.66	1.14
4,566.00	7.71	227.01	4,533.98	-258.87	-378.18	-192.81	1.00
4,661.00	7.36	226.49	4,628.16	-267.40	-387.26	-199.73	0.38
4,757.00	9.07	233.23	4,723.17	-276.17	-397.78	-206.63	2.04
4,852.00	8.64	234.88	4,817.04	-284.75	-409.61	-213.14	0.53
4,947.00	9.11	240.13	4,910.91	-292.61	-421.97	-218.84	0.99
5,043.00	7.86	240.94	5,005.85	-299.58	-434.30	-223.69	1.31
5,138.00	8.58	239.87	5,099.88	-306.29	-446.11	-228.35	0.77
5,234.00	7.23	229.69	5,194.97	-313.79	-456.91	-233.97	2.02
5,329.00	7.83	237.70	5,289.15	-321.12	-466.94	-239.54	1.27
5,424.00	9.01	250.16	5,383.13	-327.10	-479.41	-243.38	2.28
5,519.00	7.88	247.86	5,477.10	-332.08	-492.44	-246.13	1.24
5,615.00	6.76	248.11	5,572.32	-336.67	-503.77	-248.78	1.17
5,710.00	8.70	246.58	5,666.45	-341.61	-515.56	-251.71	2.05
5,805.00	11.31	247.05	5,760.00	-348.10	-530.73	-255.60	2.75
5,901.00	7.47	244.19	5,854.69	-354.49	-545.02	-259.54	4.03
5,995.00	6.24	242.29	5,948.02	-359.53	-555.05	-262.85	1.33
6,091.00	5.68	236.82	6,043.50	-364.55	-563.64	-266.39	0.83
6,185.00	7.67	241.67	6,136.86	-370.07	-573.06	-270.28	2.20
6,280.00	7.16	238.28	6,231.07	-376.20	-583.67	-274.56	0.71
6,374.00	5.39	236.44	6,324.50	-381.72	-592.34	-278.58	1.89
6,469.00	4.50	221.78	6,419.15	-386.96	-598.54	-282.73	1.62
6,564.00	3.62	215.20	6,513.91	-392.19	-602.75	-287.19	1.05
6,659.00	1.28	167.48	6,608.82	-395.68	-604.25	-290.38	3.07
6,754.00	0.80	195.11	6,703.81	-397.36	-604.19	-292.04	0.72
6,785.00	0.33	279.37	6,734.81	-397.55	-604.34	-292.21	2.69
6,817.00	1.91	3.75	6,766.80	-397.00	-604.39	-291.66	5.96
6,849.00	4.62	13.83	6,798.75	-395.22	-604.05	-289.96	8.62
6,880.00	7.65	9.63	6,829.56	-391.97	-603.41	-286.86	9.87
6,912.00	9.89	9.81	6,861.19	-387.16	-602.58	-282.26	7.00
6,943.00	12.14	12.79	6,891.62	-381.36	-601.41	-276.73	7.48
6,975.00	14.85	13.14	6,922.73	-374.09	-599.73	-269.83	8.47
7,007.00	17.46	11.60	6,953.46	-365.39	-597.83	-261.56	8.26
7,038.00	19.50	12.98	6,982.86	-355.79	-595.73	-252.44	6.73
7,070.00	21.14	15.75	7,012.87	-345.03	-592.97	-242.29	5.94
7,102.00	22.88	16.36	7,042.54	-333.51	-589.65	-231.47	5.48
7,133.00	24.12	18.38	7,070.97	-321.71	-585.95	-220.45	4.77
7,165.00	26.36	19.03	7,099.91	-308.79	-581.57	-208.43	7.05
7,197.00	28.70	18.16	7,128.28	-294.77	-576.86	-195.38	7.42
7,228.00	30.78	18.00	7,155.20	-280.15	-572.09	-181.75	6.71
7,260.00	32.88	18.51	7,182.39	-264.13	-566.80	-166.82	6.62
7,292.00	34.87	14.17	7,208.96	-247.02	-561.80	-150.77	9.79
7,324.00	38.00	9.60	7,234.70	-228.43	-557.92	-133.08	12.94
7,355.00	42.02	4.89	7,258.45	-208.67	-555.44	-114.00	16.23
7,387.00	45.28	0.43	7,281.60	-186.62	-554.44	-92.42	14.01
7,419.00	48.13	355.93	7,303.55	-163.35	-555.21	-69.35	13.56
7,451.00	53.12	352.46	7,323.85	-138.76	-557.73	-44.68	17.70
7,483.00	57.09	351.19	7,342.15	-112.79	-561.47	-18.45	12.83
7,514.00	61.49	350.20	7,357.98	-86.49	-565.78	8.20	14.46
7,546.00	66.52	348.91	7,372.00	-58.22	-571.00	36.95	16.13

Design Report for Brown 27N-35HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,578.00	71.59	347.37	7,383.44	-28.98	-577.15	66.80	16.47
7,610.00	75.89	346.39	7,392.40	0.93	-584.12	97.45	13.76
7,642.00	81.24	344.96	7,398.74	31.30	-591.88	128.69	17.28
7,673.00	85.06	345.78	7,402.44	61.08	-599.66	159.34	12.60
7,688.00	86.86	345.88	7,403.49	75.59	-603.32	174.25	12.02
7,727.00	89.26	345.78	7,404.81	113.38	-612.86	213.10	6.16
Casing Point @ 7727.00ft - 7" Intermediate Casing							
7,753.00	90.86	345.72	7,404.79	138.57	-619.26	239.01	6.16
7,785.00	90.99	345.67	7,404.27	169.58	-627.16	270.89	0.44
7,880.00	91.67	345.62	7,402.06	261.59	-650.71	365.53	0.72
7,976.00	91.79	347.64	7,399.17	354.94	-672.90	461.26	2.11
8,071.00	91.79	349.87	7,396.20	448.06	-691.41	556.17	2.35
8,167.00	92.41	351.11	7,392.68	542.68	-707.26	652.10	1.44
8,262.00	92.90	353.54	7,388.28	636.72	-719.94	746.94	2.61
8,357.00	92.66	355.70	7,383.67	731.18	-728.83	841.58	2.29
8,453.00	92.04	357.33	7,379.73	826.92	-734.66	936.96	1.82
8,548.00	92.91	358.97	7,375.63	921.78	-737.73	1,031.02	1.95
8,644.00	93.03	359.82	7,370.66	1,017.64	-738.74	1,125.74	0.89
8,739.00	93.28	359.72	7,365.43	1,112.50	-739.12	1,219.35	0.28
8,835.00	92.97	1.33	7,360.19	1,208.35	-738.24	1,313.74	1.71
8,930.00	93.71	0.95	7,354.66	1,303.17	-736.36	1,406.94	0.88
9,026.00	93.58	2.21	7,348.56	1,398.93	-733.71	1,500.95	1.32
9,121.00	94.82	2.37	7,341.60	1,493.60	-729.93	1,593.69	1.32
9,216.00	94.57	3.32	7,333.82	1,588.16	-725.23	1,686.18	1.03
9,312.00	93.03	3.40	7,327.46	1,683.79	-719.61	1,779.56	1.61
9,407.00	91.48	3.40	7,323.72	1,778.54	-713.98	1,872.08	1.63
9,503.00	89.69	3.74	7,322.74	1,874.35	-708.01	1,965.58	1.90
9,598.00	88.33	4.24	7,324.38	1,969.10	-701.40	2,057.94	1.53
9,693.00	88.83	4.20	7,326.74	2,063.81	-694.41	2,150.20	0.53
9,788.00	89.07	4.57	7,328.48	2,158.52	-687.15	2,242.40	0.46
9,884.00	87.78	2.93	7,331.12	2,254.27	-680.87	2,335.80	2.17
9,979.00	87.96	2.73	7,334.65	2,349.09	-676.18	2,428.54	0.28
10,074.00	87.90	2.36	7,338.08	2,443.94	-671.97	2,521.38	0.39
10,170.00	88.64	2.16	7,340.98	2,539.82	-668.18	2,615.32	0.80
10,264.00	88.70	2.19	7,343.16	2,633.72	-664.62	2,707.35	0.07
10,360.00	88.76	1.40	7,345.29	2,729.65	-661.61	2,801.46	0.83
10,454.00	86.91	359.88	7,348.84	2,823.57	-660.56	2,893.91	2.55
10,549.00	86.91	0.26	7,353.96	2,918.43	-660.45	2,987.45	0.40
10,644.00	86.78	0.13	7,359.19	3,013.29	-660.12	3,080.95	0.19
10,738.00	86.85	359.70	7,364.41	3,107.14	-660.26	3,173.54	0.46
10,833.00	87.22	359.39	7,369.33	3,202.01	-661.02	3,267.23	0.51
10,928.00	87.47	359.51	7,373.73	3,296.91	-661.93	3,360.96	0.29
11,023.00	88.08	359.13	7,377.41	3,391.83	-663.05	3,454.77	0.76
11,118.00	88.21	359.19	7,380.49	3,486.77	-664.45	3,548.63	0.15
11,212.00	88.33	359.07	7,383.33	3,580.71	-665.87	3,641.52	0.18
11,307.00	88.83	358.93	7,385.68	3,675.67	-667.53	3,735.45	0.55
11,402.00	91.11	0.20	7,385.73	3,770.66	-668.25	3,829.25	2.75
11,497.00	90.43	1.08	7,384.45	3,865.64	-667.19	3,922.75	1.17
11,593.00	90.12	0.63	7,383.99	3,961.63	-665.76	4,017.18	0.57
11,688.00	89.88	359.87	7,383.99	4,056.63	-665.34	4,110.80	0.84
11,784.00	90.00	0.34	7,384.09	4,152.63	-665.17	4,205.46	0.51

Design Report for Brown 27N-35HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,866.00	89.44	359.92	7,384.49	4,234.63	-664.98	4,286.30	0.85
Final Sperry MWD Survey @ 11866.00ft							
11,913.00	89.44	359.92	7,384.95	4,281.62	-665.05	4,332.66	0.00
Straight Line Projection to TD @ 11913.00ft - Brown 27N-35HZ_BHL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
125.00	125.00	0.17	0.37	First Gyro Survey @ 125.00ft
800.00	799.98	-1.87	1.51	Final Gyro Survey @ 800.00ft
800.00	799.98	-1.87	1.51	Tie-On to Surface Gyros @ 800.00ft
915.00	914.97	-3.50	1.18	First Sperry MWD Survey @ 915.00ft
7,727.00	7,404.81	113.38	-612.86	Casing Point @ 7727.00ft
11,866.00	7,384.49	4,234.63	-664.98	Final Sperry MWD Survey @ 11866.00ft
11,913.00	7,384.95	4,281.62	-665.05	Straight Line Projection to TD @ 11913.00ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	Brown 27N-35HZ_BHL	350.49	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
125.00	800.00	Anadarko Supplied Surveys	NS-GYRO-MS
915.00	11,913.00	Sperry MWD Surveys	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,727.00	7,404.81	7" Intermediate Casing	7	8-3/4

Design Report for Brown 27N-35HZ - Actual Field Surveys**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
Brown Pad_Sec 35	0.00	0.00	2.00	113.81	-4,198.27	,923.461379	8,983.578973	40.176226	-104.752098
- actual wellpath misses target center by 4199.81ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-4,203.70	4,293.02	1,312,102.29	3,208,942.19		
Point 2				-4,203.79	2,113.47	1,309,922.92	3,208,960.86		
Point 3				-4,205.48	-65.08	1,307,744.52	3,208,977.91		
Point 4				-2,049.24	-38.52	1,307,789.63	3,211,133.75		
Point 5				120.31	-12.22	1,307,834.59	3,213,302.90		
Point 6				129.57	2,148.99	1,309,995.71	3,213,293.57		
Point 7				138.46	4,310.28	1,312,156.91	3,213,283.86		
Point 8				-2,032.24	4,301.57	1,312,129.52	3,211,113.41		
Point 9				-4,203.71	4,292.02	1,312,101.29	3,208,942.19		
Brown 4 Pad_Sec 3	0.00	0.00	2.00	113.77	-4,198.27	,923.428091	8,983.579254	40.176226	-104.752098
- actual wellpath misses target center by 4199.81ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-4,663.70	4,751.19	1,312,556.48	3,208,478.29		
Point 2				-4,663.81	2,109.68	1,309,915.17	3,208,500.91		
Point 3				-4,665.86	-530.84	1,307,274.85	3,208,521.57		
Point 4				-2,043.58	-498.55	1,307,329.69	3,211,143.37		
Point 5				576.42	-468.31	1,307,382.47	3,213,762.90		
Point 6				591.32	2,154.56	1,310,005.26	3,213,755.23		
Point 7				600.39	4,772.11	1,312,622.68	3,213,741.78		
Point 8				-2,031.15	4,761.56	1,312,589.49	3,211,110.54		
Point 9				-4,663.70	4,751.19	1,312,556.48	3,208,478.29		
Brown 27N-35HZ_B	0.00	0.00	7,335.00	4,306.75	-721.68	,145.980874	2,423.822028	40.187737	-104.739657
- actual wellpath misses target center by 79.58ft at 11913.00ft MD (7384.95 TVD, 4281.62 N, -665.05 E)									
- Point									
Brown 27N-35HZ_S	0.00	0.00	0.00	-0.01	0.00	,845.770064	3,182.491742	40.175915	-104.737074
- actual wellpath hits target center									
- Point									

North Reference Sheet for Sec. 35-T3N-R66W - Brown 27N-35HZ - Plan D Rev 0

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB=25' @ 5080.00ft (HP 308). Northing and Easting are relative to Brown 27N-35HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.000644ft, False Northing: 1,000,000.001308ft, Scale Reduction: 0.99995769

Grid Coordinates of Well: 1,307,845.782547 ft N, 3,213,182.491635 ft E

Geographical Coordinates of Well: 40° 10' 33.29" N, 104° 44' 13.47" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,913.00ft the Bottom Hole Displacement is 4,332.97ft in the Direction of 351.17° (True).

Magnetic Convergence at surface is: -8.22° (7 April 2012, , BGGM2011)

