

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 35-T3N-R66W

Brown 37C-26HZ

Plan B Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

07 May, 2012

Well Coordinates: 1,307,836.10 N, 3,213,201.30 E (40° 10' 33.20" N, 104° 44' 13.23" W)

Ground Level: 5,053.00 ft

Local Coordinate Origin:	Centered on Well Brown 37C-26HZ
Viewing Datum:	RKB=25' @ 5078.00ft (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 37C-26HZ - 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
125.00	0.43	16.04	125.00	0.45	0.13	0.44	0.34
First Gyro Survey @ 125.00ft							
225.00	0.32	17.18	225.00	1.08	0.32	1.06	0.11
325.00	0.79	99.87	324.99	1.23	1.08	1.15	0.81
425.00	1.25	102.45	424.98	0.87	2.82	0.69	0.46
525.00	1.80	95.99	524.94	0.47	5.45	0.12	0.58
625.00	2.79	96.88	624.86	0.02	9.43	-0.59	0.99
725.00	3.38	107.29	724.71	-1.15	14.66	-2.09	0.81
795.00	3.92	111.77	794.57	-2.65	18.85	-3.86	0.87
Final Gyro Survey @ 795.00ft - Tie-On to Surface Gyros @ 795.00ft							
887.00	4.51	144.65	886.34	-6.77	23.86	-8.30	2.66
First Sperry MWD Survey @ 887.00ft							
917.00	4.69	149.97	916.24	-8.79	25.16	-10.40	1.54
1,007.00	4.07	187.41	1,005.99	-15.14	26.59	-16.83	3.19
1,097.00	3.48	222.12	1,095.81	-20.34	24.35	-21.87	2.58
1,186.00	5.74	218.27	1,184.52	-25.84	19.78	-27.06	2.56
1,276.00	5.35	220.99	1,274.10	-32.54	14.24	-33.39	0.52
1,366.00	4.81	214.83	1,363.74	-38.80	9.33	-39.32	0.85
1,457.00	6.74	216.85	1,454.28	-46.21	3.95	-46.37	2.13
1,547.00	7.06	217.50	1,543.62	-54.82	-2.59	-54.54	0.37
1,638.00	7.09	214.84	1,633.93	-63.87	-9.20	-63.14	0.36
1,728.00	6.61	219.72	1,723.29	-72.41	-15.68	-71.25	0.84
1,819.00	6.58	217.20	1,813.69	-80.59	-22.18	-78.99	0.32
1,909.00	6.48	223.19	1,903.11	-88.40	-28.78	-86.36	0.76
1,999.00	5.66	233.11	1,992.60	-94.77	-35.80	-92.26	1.48
2,089.00	5.98	226.68	2,082.14	-100.65	-42.76	-97.68	0.81
2,184.00	5.62	220.06	2,176.65	-107.61	-49.36	-104.19	0.80
2,279.00	5.72	221.50	2,271.19	-114.71	-55.49	-110.88	0.18
2,374.00	5.22	233.29	2,365.76	-120.84	-62.09	-116.57	1.29
2,470.00	5.02	237.81	2,461.38	-125.69	-69.14	-120.96	0.47
2,564.00	5.15	234.58	2,555.01	-130.33	-76.06	-125.13	0.33
2,660.00	4.05	238.56	2,650.70	-134.59	-82.47	-128.98	1.19
2,755.00	4.28	228.38	2,745.45	-138.70	-87.98	-132.72	0.81
2,850.00	6.95	230.20	2,839.98	-144.73	-95.05	-138.28	2.82
2,946.00	6.89	229.85	2,935.28	-152.16	-103.91	-145.12	0.08
3,041.00	6.36	224.93	3,029.65	-159.56	-111.98	-151.99	0.82
3,136.00	6.26	226.91	3,124.07	-166.82	-119.48	-158.75	0.25
3,231.00	5.77	225.35	3,218.55	-173.72	-126.66	-165.17	0.54
3,326.00	4.85	226.19	3,313.14	-179.85	-132.95	-170.88	0.97
3,422.00	4.23	223.85	3,408.84	-185.22	-138.34	-175.89	0.67
3,517.00	3.90	225.00	3,503.60	-190.03	-143.05	-180.38	0.36
3,613.00	4.85	223.65	3,599.32	-195.27	-148.16	-185.29	1.00
3,708.00	5.61	217.43	3,693.93	-201.87	-153.75	-191.50	1.00
3,804.00	4.56	213.26	3,789.55	-208.78	-158.70	-198.09	1.16
3,899.00	5.26	212.68	3,884.20	-215.61	-163.12	-204.61	0.74
3,994.00	4.43	211.68	3,978.86	-222.39	-167.40	-211.11	0.88
4,090.00	6.72	233.28	4,074.41	-228.91	-173.85	-217.19	3.20
4,185.00	6.42	229.44	4,168.78	-235.69	-182.34	-223.41	0.56
4,281.00	6.35	227.73	4,264.19	-242.75	-190.35	-229.93	0.21

Design Report for Brown 37C-26HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,376.00	5.22	227.04	4,358.70	-249.23	-197.40	-235.94	1.19
4,472.00	4.31	228.54	4,454.37	-254.59	-203.30	-240.92	0.96
4,567.00	5.39	220.63	4,549.03	-260.34	-208.88	-246.29	1.33
4,663.00	5.52	224.61	4,644.59	-267.05	-215.05	-252.59	0.42
4,758.00	4.70	241.49	4,739.22	-272.16	-221.68	-257.26	1.79
4,853.00	7.45	225.32	4,833.69	-278.35	-229.49	-262.93	3.38
4,949.00	7.01	227.32	4,928.92	-286.70	-238.22	-270.70	0.53
5,044.00	6.64	224.52	5,023.25	-294.54	-246.33	-278.00	0.52
5,140.00	6.45	218.73	5,118.62	-302.71	-253.60	-285.68	0.72
5,235.00	6.16	208.70	5,213.05	-311.34	-259.38	-293.92	1.20
5,331.00	6.99	216.22	5,308.42	-320.57	-265.31	-302.75	1.24
5,426.00	6.61	214.46	5,402.75	-329.74	-271.82	-311.48	0.46
5,521.00	6.00	210.58	5,497.18	-338.53	-277.44	-319.88	0.78
5,616.00	6.20	224.95	5,591.65	-346.43	-283.59	-327.37	1.62
5,711.00	5.42	226.07	5,686.16	-353.18	-290.44	-333.66	0.83
5,807.00	4.46	227.23	5,781.80	-358.86	-296.45	-338.94	1.01
5,902.00	5.80	230.36	5,876.42	-364.43	-302.86	-344.09	1.44
5,997.00	4.90	228.21	5,971.00	-370.19	-309.58	-349.40	0.97
6,092.00	4.51	223.22	6,065.68	-375.62	-315.16	-354.46	0.59
6,187.00	6.42	220.92	6,160.25	-382.36	-321.20	-360.79	2.02
6,282.00	5.14	218.94	6,254.76	-389.68	-327.35	-367.70	1.36
6,376.00	4.18	211.08	6,348.45	-395.89	-331.77	-373.61	1.22
6,471.00	3.17	198.49	6,443.26	-401.35	-334.39	-378.89	1.35
6,565.00	1.05	320.46	6,537.21	-403.15	-335.76	-380.60	4.08
6,660.00	0.89	345.02	6,632.20	-401.76	-336.51	-379.17	0.46
6,758.00	0.98	329.06	6,730.19	-400.31	-337.13	-377.67	0.28
6,790.00	1.09	306.47	6,762.18	-399.89	-337.52	-377.23	1.31
6,821.00	1.77	333.84	6,793.17	-399.29	-337.97	-376.60	3.05
6,853.00	4.98	349.02	6,825.11	-397.48	-338.45	-374.77	10.33
6,884.00	10.39	348.67	6,855.82	-393.42	-339.26	-370.66	17.45
6,916.00	13.64	350.29	6,887.12	-386.87	-340.46	-364.04	10.21
6,948.00	18.07	347.51	6,917.89	-378.30	-342.17	-355.38	14.04
6,979.00	21.23	349.49	6,947.08	-368.08	-344.23	-345.06	10.42
7,011.00	23.98	354.42	6,976.62	-355.91	-345.92	-332.80	10.43
7,043.00	26.84	359.25	7,005.53	-342.21	-346.65	-319.08	11.03
7,075.00	30.13	1.26	7,033.65	-326.95	-346.57	-303.86	10.71
7,107.00	33.60	0.56	7,060.83	-310.06	-346.31	-287.03	10.90
7,138.00	35.13	1.04	7,086.41	-292.57	-346.06	-269.58	5.01
7,170.00	36.82	359.35	7,112.31	-273.77	-346.00	-250.83	6.12
7,202.00	39.31	358.81	7,137.50	-254.05	-346.32	-231.12	7.85
7,234.00	41.98	357.92	7,161.78	-233.21	-346.92	-210.30	8.54
7,266.00	44.40	357.33	7,185.11	-211.33	-347.83	-188.40	7.67
7,297.00	46.61	358.36	7,206.84	-189.24	-348.66	-166.30	7.51
7,329.00	48.89	359.17	7,228.35	-165.56	-349.16	-142.64	7.37
7,361.00	51.31	0.37	7,248.88	-141.01	-349.26	-118.14	8.09
7,393.00	53.36	1.05	7,268.43	-115.68	-348.94	-92.88	6.62
7,425.00	54.01	1.19	7,287.38	-89.90	-348.44	-67.19	2.06
7,457.00	54.32	0.09	7,306.11	-63.96	-348.15	-41.32	2.95
7,489.00	55.92	359.45	7,324.41	-37.71	-348.26	-15.12	5.26
7,521.00	56.38	358.59	7,342.24	-11.14	-348.71	11.43	2.65
7,552.00	56.80	358.37	7,359.31	14.72	-349.40	37.28	1.48

Design Report for Brown 37C-26HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,584.00	57.06	357.61	7,376.77	41.52	-350.34	64.09	2.15
7,616.00	57.53	356.98	7,394.06	68.42	-351.61	91.01	2.21
7,648.00	58.11	356.88	7,411.10	95.47	-353.06	118.09	1.83
7,679.00	59.76	357.27	7,427.10	121.98	-354.41	144.64	5.43
7,711.00	60.76	358.36	7,442.97	149.75	-355.47	172.42	4.30
7,742.00	63.04	359.05	7,457.57	177.09	-356.09	199.74	7.61
7,774.00	66.22	0.26	7,471.28	205.99	-356.26	228.60	10.51
7,806.00	67.79	2.01	7,483.78	235.44	-355.67	257.95	7.03
7,837.00	69.64	2.27	7,495.03	264.31	-354.59	286.68	6.02
7,869.00	73.84	1.59	7,505.06	294.67	-353.57	316.91	13.28
7,901.00	79.22	1.12	7,512.51	325.77	-352.84	347.90	16.87
7,953.00	82.81	0.48	7,520.63	377.12	-352.12	399.10	7.02
7" Intermediate Casing							
8,014.00	87.03	359.75	7,526.03	437.87	-352.00	459.71	7.02
8,109.00	88.64	0.20	7,529.62	532.79	-352.04	554.44	1.76
8,205.00	90.06	1.44	7,530.71	628.77	-350.67	650.13	1.96
8,300.00	92.22	2.25	7,528.82	723.70	-347.61	744.66	2.43
8,395.00	92.53	2.69	7,524.88	818.53	-343.52	839.03	0.57
8,490.00	93.03	1.89	7,520.27	913.34	-339.73	933.39	0.99
8,586.00	91.23	0.87	7,516.70	1,009.24	-337.42	1,028.95	2.15
8,681.00	92.35	1.87	7,513.74	1,104.17	-335.15	1,123.52	1.58
8,776.00	92.66	1.70	7,509.58	1,199.03	-332.19	1,218.00	0.37
8,872.00	91.79	0.79	7,505.86	1,294.93	-330.11	1,313.56	1.31
8,967.00	92.41	1.15	7,502.37	1,389.85	-328.50	1,408.18	0.75
9,062.00	90.74	0.89	7,499.76	1,484.80	-326.81	1,502.82	1.78
9,157.00	90.99	0.77	7,498.33	1,579.78	-325.43	1,597.51	0.29
9,252.00	90.19	0.06	7,497.35	1,674.77	-324.74	1,692.26	1.13
9,347.00	91.79	1.34	7,495.71	1,769.74	-323.58	1,786.96	2.16
9,442.00	90.43	359.76	7,493.87	1,864.72	-322.67	1,881.68	2.19
9,537.00	90.12	359.46	7,493.41	1,959.71	-323.32	1,976.52	0.45
9,633.00	90.37	0.29	7,493.00	2,055.71	-323.53	2,072.33	0.90
9,728.00	89.32	358.83	7,493.26	2,150.70	-324.26	2,167.17	1.89
9,823.00	88.64	358.36	7,494.95	2,245.66	-326.59	2,262.08	0.87
9,918.00	90.31	359.30	7,495.82	2,340.63	-328.53	2,356.97	2.02
10,013.00	91.79	359.87	7,494.08	2,435.61	-329.22	2,451.80	1.67
10,108.00	91.05	359.45	7,491.73	2,530.58	-329.78	2,546.60	0.90
10,204.00	90.99	359.25	7,490.02	2,626.56	-330.87	2,642.45	0.22
10,299.00	90.37	359.44	7,488.89	2,721.54	-331.95	2,737.31	0.68
10,395.00	90.49	359.66	7,488.17	2,817.54	-332.71	2,833.15	0.26
10,490.00	90.49	359.61	7,487.36	2,912.53	-333.31	2,927.99	0.05
10,586.00	90.62	359.77	7,486.43	3,008.53	-333.83	3,023.81	0.21
10,681.00	89.01	359.38	7,486.73	3,103.52	-334.54	3,118.65	1.74
10,777.00	89.01	359.34	7,488.39	3,199.50	-335.61	3,214.50	0.04
10,872.00	89.20	358.98	7,489.88	3,294.48	-337.00	3,309.37	0.43
10,967.00	90.12	358.10	7,490.44	3,389.44	-339.42	3,404.30	1.34
11,063.00	91.24	358.14	7,489.30	3,485.38	-342.57	3,500.24	1.17
11,158.00	91.85	358.22	7,486.74	3,580.30	-345.59	3,595.15	0.65
11,254.00	91.98	357.98	7,483.53	3,676.19	-348.77	3,691.05	0.28
11,349.00	91.61	357.58	7,480.56	3,771.07	-352.45	3,785.97	0.57
11,445.00	91.30	357.58	7,478.12	3,866.96	-356.50	3,881.92	0.32
11,540.00	90.68	356.38	7,476.48	3,961.81	-361.50	3,976.89	1.42

Design Report for Brown 37C-26HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,636.00	90.87	356.80	7,475.18	4,057.63	-367.21	4,072.88	0.48
11,731.00	88.76	354.62	7,475.49	4,152.35	-374.32	4,167.87	3.19
11,826.00	87.47	354.27	7,478.61	4,246.85	-383.51	4,262.76	1.41
11,922.00	88.33	356.27	7,482.13	4,342.46	-391.42	4,358.68	2.27
12,017.00	90.68	357.44	7,482.95	4,437.30	-396.63	4,453.66	2.76
12,113.00	90.87	357.52	7,481.65	4,533.20	-400.85	4,549.63	0.21
12,208.00	90.06	356.81	7,480.88	4,628.08	-405.55	4,644.62	1.13
12,303.00	89.94	356.79	7,480.88	4,722.93	-410.85	4,739.61	0.13
12,398.00	89.63	356.68	7,481.24	4,817.78	-416.26	4,834.61	0.35
12,494.00	88.64	357.50	7,482.69	4,913.64	-421.14	4,930.59	1.34
12,589.00	88.45	357.46	7,485.10	5,008.52	-425.31	5,025.54	0.20
12,620.00	88.52	357.59	7,485.92	5,039.48	-426.65	5,056.52	0.48
Final Sperry MWD Survey @ 12620.00ft							
12,658.00	88.52	357.59	7,486.90	5,077.43	-428.25	5,094.50	0.00
Stright Line Projection to TD @ 12658.00ft							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
125.00	125.00	0.45	0.13	First Gyro Survey @ 125.00ft
795.00	794.57	-2.65	18.85	Final Gyro Survey @ 795.00ft
795.00	794.57	-2.65	18.85	Tie-On to Surface Gyros @ 795.00ft
887.00	886.34	-6.77	23.86	First Sperry MWD Survey @ 887.00ft
12,620.00	7,485.92	5,039.48	-426.65	Final Sperry MWD Survey @ 12620.00ft
12,658.00	7,486.90	5,077.43	-428.25	Stright Line Projection to TD @ 12658.00ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Brown 37C-26HZ_BHL ReLoc	356.29	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
125.00	795.00	Anadarko Supplied Surveys	NS-GYRO-MS
887.00	12,658.00	Sperry MWD Surveys	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,953.00	7,520.63	7" Intermediate Casing	7	8-3/4

Design Report for Brown 37C-26HZ - 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 37C-26HZ_B - actual wellpath misses target center by 189.50ft at 12658.00ft MD (7486.90 TVD, 5077.43 N, -428.25 E) - Point	0.00	0.00	7,494.00	5,244.88	-339.81	1,313,077.64	3,212,816.39	40.190285	-104.738223
Brown Pad_Sec 35 - actual wellpath misses target center by 4218.80ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	1.00	123.65	-4,216.99	1,307,923.46	3,208,983.58	40.176226	-104.752098
Point 1				-4,222.42	4,302.86	1,312,102.29	3,208,942.19		
Point 2				-4,222.51	2,123.31	1,309,922.92	3,208,960.85		
Point 3				-4,224.20	-55.24	1,307,744.52	3,208,977.91		
Point 4				-2,067.96	-28.68	1,307,789.63	3,211,133.75		
Point 5				101.59	-2.38	1,307,834.60	3,213,302.90		
Point 6				110.85	2,158.83	1,309,995.72	3,213,293.57		
Point 7				119.74	4,320.12	1,312,156.91	3,213,283.86		
Point 8				-2,050.96	4,311.41	1,312,129.53	3,211,113.41		
Point 9				-4,222.43	4,301.86	1,312,101.29	3,208,942.19		
Brown 37C-26HZ_S - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,307,836.10	3,213,201.30	40.175888	-104.737007
Brown 37C-26HZ_B - actual wellpath misses target center by 191.80ft at 12658.00ft MD (7486.90 TVD, 5077.43 N, -428.25 E) - Point	0.00	0.00	7,494.00	5,237.53	-533.62	1,313,068.63	3,212,622.65	40.190265	-104.738917
Brown 4 Pad_Sec 3 - actual wellpath misses target center by 4218.80ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	1.00	123.62	-4,216.99	1,307,923.43	3,208,983.58	40.176226	-104.752098
Point 1				-4,682.42	4,761.04	1,312,556.48	3,208,478.29		
Point 2				-4,682.53	2,119.53	1,309,915.17	3,208,500.90		
Point 3				-4,684.58	-520.99	1,307,274.85	3,208,521.57		
Point 4				-2,062.30	-488.70	1,307,329.70	3,211,143.37		
Point 5				557.70	-458.46	1,307,382.48	3,213,762.90		
Point 6				572.60	2,164.41	1,310,005.27	3,213,755.23		
Point 7				581.67	4,781.96	1,312,622.69	3,213,741.78		
Point 8				-2,049.87	4,771.41	1,312,589.50	3,211,110.54		
Point 9				-4,682.42	4,761.04	1,312,556.48	3,208,478.29		

North Reference Sheet for Sec. 35-T3N-R66W - Brown 37C-26HZ - Plan B 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' @ 5078.00ft (HP 308). Northing and Easting are relative to Brown 37C-26HZ

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: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995769

Grid Coordinates of Well: 1,307,836.10 ft N, 3,213,201.30 ft E

Geographical Coordinates of Well: 40° 10' 33.20" N, 104° 44' 13.23" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,658.00ft the Bottom Hole Displacement is 5,095.46ft in the Direction of 355.18° (True).

Magnetic Convergence at surface is: -8.21° (22 April 2012, , BGGM2011)

