

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T2N-R65W

Cook 37N-W3HZ

Plan C Rev 0

Design: Actual Field Surveys

Sperry Drilling Services Standard Report

31 October, 2012

Well Coordinates: 1,297,706.47 N, 3,237,820.80 E (40° 08' 50.88" N, 104° 38' 57.31" W)

Ground Level: 4,869.00 ft

Local Coordinate Origin:

Centered on Well Cook 37N-W3HZ

Viewing Datum:

RKB=25ft @ 4894.00ft (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

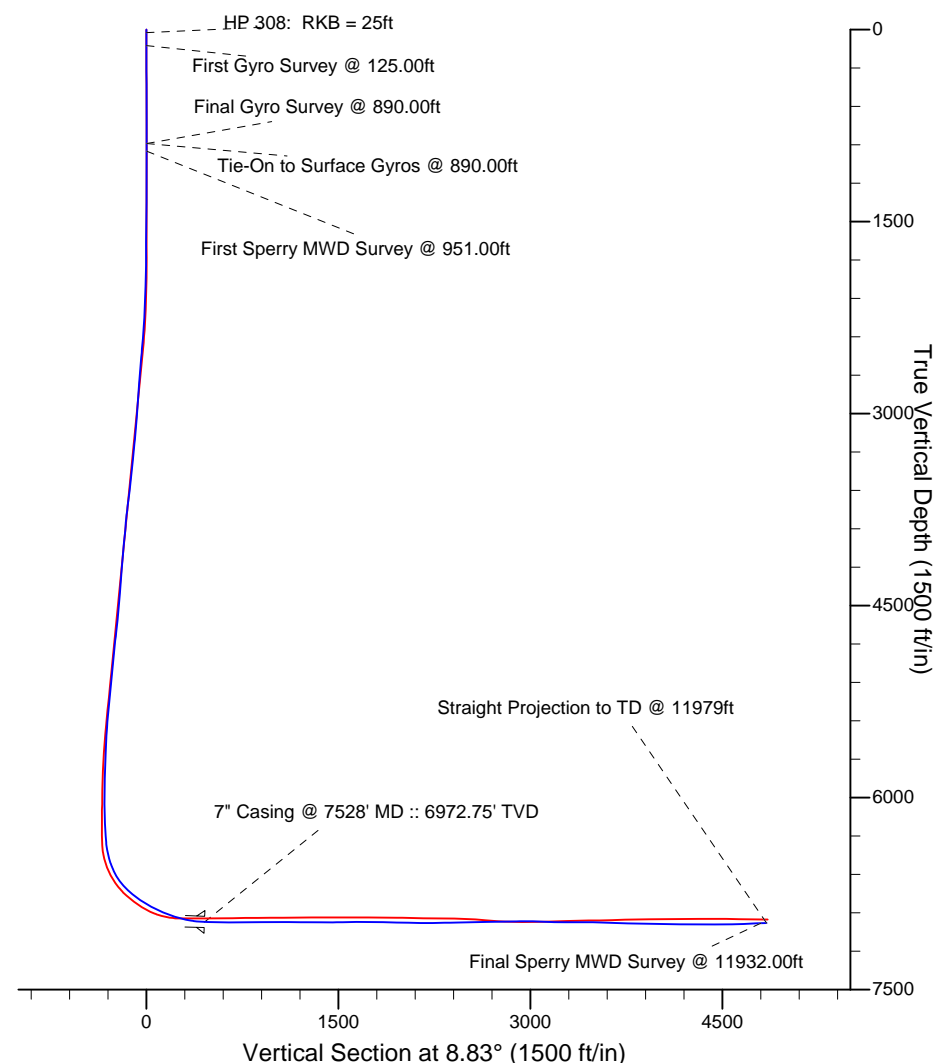
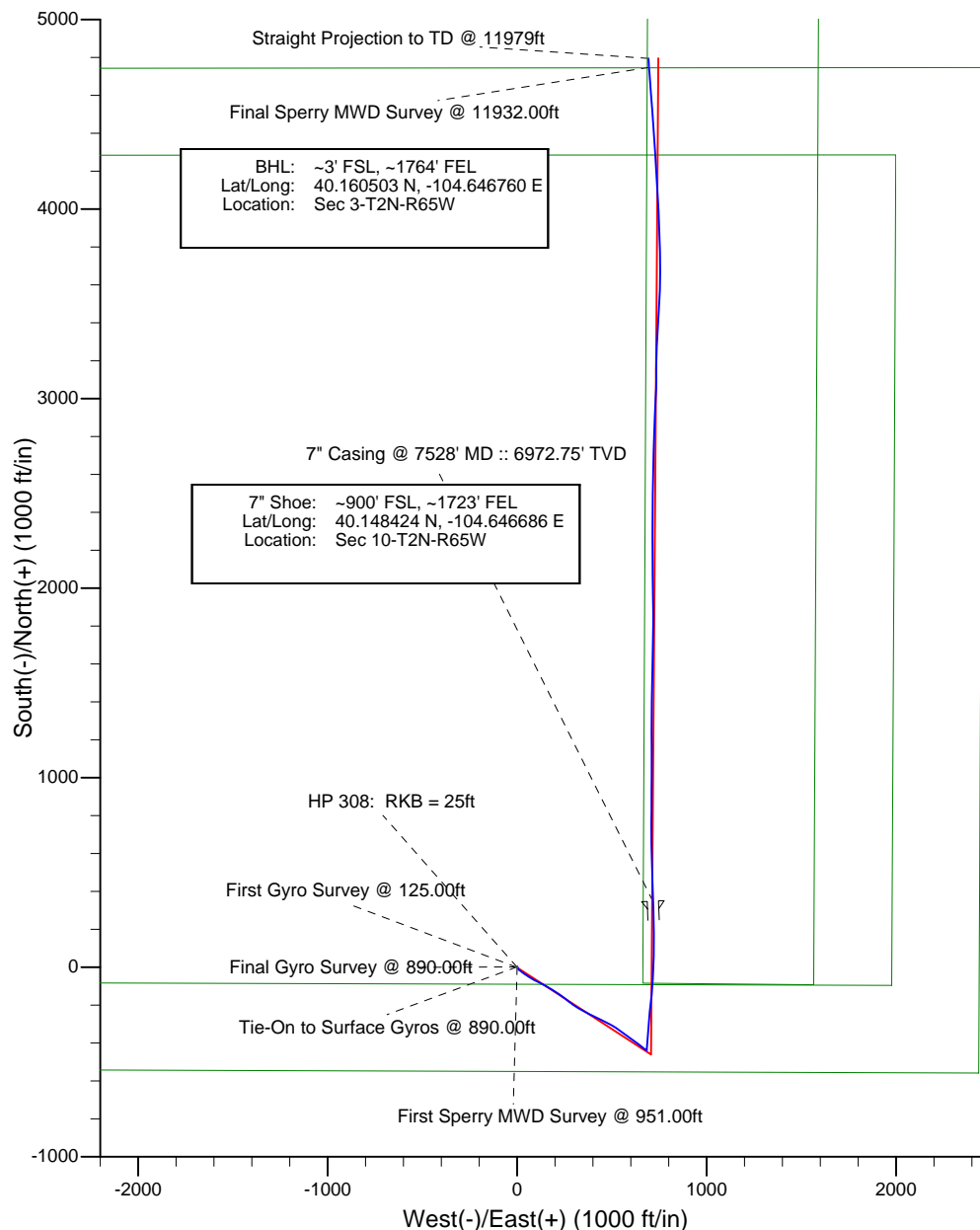
Project: Weld County, CO (NAD 83)
Site: Sec. 10-T2N-R65W
Well: Cook 37N-W3HZ



HALLIBURTON
Sperry Drilling

LEGEND

- Cook 37N-W3HZ, Plan C Rev 0, Plan C Rev 0 Proposal V0
- Actual Field Surveys



Design Report for Cook 37N-W3HZ - 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
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
HP 308: RKB = 25ft							
125.00	0.17	231.45	125.00	-0.09	-0.12	-0.11	0.17
First Gyro Survey @ 125.00ft							
225.00	0.05	220.62	225.00	-0.22	-0.26	-0.26	0.12
325.00	0.37	24.31	325.00	0.04	-0.16	0.02	0.42
425.00	0.25	33.71	425.00	0.52	0.10	0.53	0.13
525.00	0.36	63.25	525.00	0.84	0.50	0.91	0.19
625.00	0.33	1.79	624.99	1.27	0.79	1.38	0.35
725.00	0.28	33.05	724.99	1.76	0.93	1.89	0.17
825.00	0.32	302.45	824.99	2.12	0.83	2.22	0.43
890.00	0.14	248.03	889.99	2.19	0.60	2.25	0.41
Final Gyro Survey @ 890.00ft - Tie-On to Surface Gyros @ 890.00ft							
951.00	0.37	149.83	950.99	1.99	0.63	2.06	0.68
First Sperry MWD Survey @ 951.00ft							
1,013.00	0.45	152.46	1,012.99	1.60	0.85	1.71	0.13
1,106.00	0.50	115.03	1,105.99	1.10	1.38	1.30	0.33
1,198.00	0.29	122.77	1,197.98	0.81	1.94	1.10	0.23
1,290.00	0.60	145.73	1,289.98	0.28	2.41	0.65	0.38
1,382.00	0.49	128.55	1,381.98	-0.36	2.99	0.10	0.21
1,474.00	0.53	166.17	1,473.97	-1.02	3.40	-0.48	0.36
1,567.00	0.11	90.04	1,566.97	-1.44	3.59	-0.87	0.55
1,659.00	0.28	147.25	1,658.97	-1.63	3.80	-1.02	0.26
1,751.00	0.15	118.71	1,750.97	-1.87	4.03	-1.23	0.18
1,844.00	0.42	206.89	1,843.97	-2.23	3.98	-1.60	0.47
1,936.00	2.35	187.07	1,935.94	-4.41	3.59	-3.80	2.13
2,029.00	2.26	147.07	2,028.87	-7.84	4.36	-7.08	1.70
2,121.00	4.04	131.07	2,120.73	-11.49	7.79	-10.16	2.14
2,216.00	5.74	123.90	2,215.38	-16.34	14.25	-13.96	1.90
2,311.00	8.22	126.41	2,309.67	-23.02	23.66	-19.11	2.63
2,406.00	9.73	128.89	2,403.50	-32.09	35.38	-26.28	1.64
2,500.00	11.58	122.85	2,495.88	-42.20	49.49	-34.10	2.30
2,595.00	14.20	120.94	2,588.48	-53.36	67.50	-42.36	2.79
2,690.00	11.22	119.49	2,681.14	-63.91	85.54	-50.01	3.15
2,785.00	13.94	117.11	2,773.85	-73.67	103.77	-56.86	2.91
2,879.00	12.83	116.71	2,865.30	-83.52	123.17	-63.62	1.18
2,974.00	11.94	116.05	2,958.09	-92.58	141.43	-69.76	0.95
3,069.00	13.95	121.88	3,050.67	-102.95	159.98	-77.15	2.52
3,164.00	12.36	119.57	3,143.18	-114.01	178.55	-85.24	1.76
3,260.00	14.22	123.96	3,236.60	-125.67	197.27	-93.88	2.20
3,355.00	11.18	122.42	3,329.27	-137.13	214.72	-102.52	3.22
3,450.00	12.20	125.39	3,422.30	-147.88	230.68	-110.70	1.25
3,545.00	13.45	126.75	3,514.93	-160.30	247.72	-120.36	1.35
3,640.00	15.62	129.58	3,606.88	-175.07	266.43	-132.07	2.40
3,735.00	13.53	127.34	3,698.82	-189.96	285.13	-143.91	2.28
3,830.00	15.46	121.21	3,790.80	-203.26	304.79	-154.04	2.59
3,925.00	13.04	120.18	3,882.87	-215.21	324.89	-162.76	2.56
4,021.00	15.72	119.73	3,975.85	-227.11	345.55	-171.34	2.79
4,116.00	15.93	117.66	4,067.25	-239.54	368.27	-180.14	0.63

Design Report for Cook 37N-W3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,211.00	15.38	117.37	4,158.73	-251.39	391.01	-188.35	0.58
4,306.00	13.83	115.79	4,250.66	-262.12	412.42	-195.67	1.68
4,401.00	14.90	117.64	4,342.68	-272.72	433.47	-202.92	1.23
4,496.00	14.13	112.88	4,434.65	-282.90	454.97	-209.67	1.49
4,592.00	16.01	117.55	4,527.35	-293.58	477.51	-216.76	2.33
4,687.00	16.05	116.58	4,618.66	-305.52	500.87	-224.97	0.29
4,782.00	15.20	128.71	4,710.17	-319.18	522.33	-235.18	3.55
4,877.00	12.86	126.59	4,802.33	-333.28	540.54	-246.31	2.52
4,972.00	11.23	124.74	4,895.24	-344.85	556.64	-255.27	1.76
5,067.00	13.31	125.91	4,988.06	-356.54	573.10	-264.29	2.20
5,162.00	12.26	121.69	5,080.71	-368.25	590.54	-273.19	1.48
5,257.00	13.12	127.14	5,173.39	-380.06	607.72	-282.22	1.55
5,352.00	10.96	127.93	5,266.30	-392.12	623.44	-291.72	2.28
5,448.00	9.65	128.95	5,360.74	-402.79	636.89	-300.20	1.38
5,543.00	8.28	127.56	5,454.58	-411.97	648.51	-307.48	1.46
5,638.00	6.28	127.44	5,548.81	-419.30	658.06	-313.26	2.11
5,733.00	5.05	129.07	5,643.35	-425.09	665.43	-317.85	1.31
5,828.00	4.10	124.64	5,738.04	-429.66	671.47	-321.44	1.07
5,923.00	3.40	125.14	5,832.84	-433.21	676.57	-324.16	0.74
6,019.00	2.75	117.71	5,928.70	-435.92	680.93	-326.17	0.79
6,114.00	2.29	103.55	6,023.61	-437.42	684.80	-327.06	0.81
6,209.00	1.90	322.93	6,118.58	-436.61	685.69	-326.12	4.15
6,304.00	3.02	1.02	6,213.50	-432.85	684.79	-322.55	2.02
6,399.00	2.87	8.16	6,308.37	-427.99	685.17	-317.69	0.42
6,431.00	5.04	7.14	6,340.30	-425.81	685.46	-315.48	6.78
6,463.00	7.87	4.39	6,372.09	-422.23	685.80	-311.89	8.89
6,495.00	9.88	5.09	6,403.70	-417.31	686.21	-306.97	6.29
6,526.00	11.91	5.68	6,434.14	-411.47	686.76	-301.12	6.56
6,558.00	14.20	5.04	6,465.32	-404.28	687.44	-293.91	7.17
6,590.00	17.44	4.77	6,496.10	-395.59	688.18	-285.20	10.13
6,621.00	20.43	3.88	6,525.42	-385.56	688.93	-275.18	9.69
6,653.00	23.43	3.49	6,555.10	-373.63	689.70	-263.28	9.39
6,685.00	26.22	2.73	6,584.14	-360.22	690.42	-249.91	8.78
6,717.00	30.06	3.22	6,612.35	-345.15	691.21	-234.90	12.02
6,748.00	33.85	4.26	6,638.65	-328.78	692.29	-218.56	12.35
6,780.00	37.99	4.74	6,664.56	-310.07	693.76	-199.85	12.97
6,812.00	43.09	5.72	6,688.87	-289.37	695.67	-179.09	16.06
6,844.00	45.53	6.09	6,711.77	-267.13	697.97	-156.77	7.67
6,875.00	48.02	5.71	6,733.00	-244.67	700.29	-134.21	8.08
6,907.00	49.86	5.36	6,754.01	-220.65	702.62	-110.13	5.81
6,938.00	51.20	5.79	6,773.72	-196.83	704.94	-86.24	4.45
6,970.00	54.65	5.57	6,793.01	-171.43	707.47	-60.75	10.80
7,001.00	56.88	6.04	6,810.45	-145.94	710.06	-35.16	7.30
7,033.00	59.57	5.61	6,827.30	-118.88	712.82	-7.99	8.48
7,065.00	60.81	4.50	6,843.20	-91.22	715.26	19.71	4.91
7,096.00	62.00	3.44	6,858.04	-64.07	717.15	46.83	4.87
7,128.00	64.80	2.46	6,872.37	-35.49	718.62	75.29	9.17
7,159.00	66.20	2.19	6,885.22	-7.31	719.76	103.32	4.59
7,191.00	67.47	1.91	6,897.81	22.09	720.81	132.53	4.05
7,223.00	69.03	1.33	6,909.67	51.80	721.65	162.02	5.16
7,254.00	70.67	0.66	6,920.35	80.90	722.16	190.84	5.67

Design Report for Cook 37N-W3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,286.00	72.13	0.39	6,930.55	111.22	722.43	220.85	4.63
7,317.00	73.94	359.28	6,939.60	140.87	722.35	250.14	6.77
7,349.00	76.50	359.05	6,947.76	171.81	721.90	280.64	8.03
7,380.00	78.04	358.64	6,954.59	202.04	721.29	310.42	5.13
7,412.00	79.92	358.85	6,960.71	233.44	720.60	341.34	5.91
7,443.00	82.04	358.65	6,965.57	264.05	719.93	371.48	6.87
7,475.00	84.52	358.82	6,969.31	295.82	719.23	402.77	7.77
7,500.00	86.24	358.20	6,971.33	320.73	718.58	427.28	7.31
7,528.00	87.94	358.09	6,972.75	348.67	717.67	454.76	6.08
7" Casing @ 7528' MD :: 6972.75' TVD							
7,563.00	90.06	357.95	6,973.36	383.65	716.47	489.13	6.08
7,627.00	90.12	358.71	6,973.26	447.62	714.60	552.06	1.19
7,721.00	89.38	358.63	6,973.67	541.59	712.42	644.58	0.79
7,816.00	89.26	358.58	6,974.80	636.56	710.11	738.06	0.14
7,911.00	90.19	0.12	6,975.25	731.55	709.03	831.76	1.89
8,006.00	90.56	0.14	6,974.63	826.54	709.24	925.66	0.39
8,100.00	90.99	0.22	6,973.36	920.53	709.54	1,018.58	0.47
8,195.00	89.57	0.63	6,972.90	1,015.53	710.24	1,112.56	1.56
8,290.00	88.76	359.83	6,974.28	1,110.52	710.63	1,206.48	1.20
8,384.00	90.56	0.31	6,974.84	1,204.51	710.74	1,299.37	1.98
8,479.00	88.95	359.77	6,975.25	1,299.51	710.81	1,393.25	1.79
8,574.00	91.73	0.44	6,974.68	1,394.49	710.98	1,487.14	3.01
8,669.00	90.37	1.01	6,972.94	1,489.47	712.18	1,581.17	1.55
8,763.00	90.56	1.43	6,972.18	1,583.44	714.18	1,674.34	0.49
8,858.00	89.32	1.42	6,972.28	1,678.41	716.55	1,768.55	1.31
8,953.00	88.39	0.88	6,974.18	1,773.37	718.45	1,862.67	1.13
9,047.00	88.21	359.32	6,976.96	1,867.33	718.62	1,955.54	1.67
9,142.00	88.89	359.36	6,979.37	1,962.29	717.52	2,049.21	0.72
9,237.00	89.88	359.50	6,980.39	2,057.28	716.58	2,142.92	1.05
9,331.00	90.62	359.58	6,979.98	2,151.27	715.82	2,235.69	0.79
9,426.00	90.12	359.33	6,979.36	2,246.27	714.92	2,329.41	0.59
9,520.00	91.61	359.96	6,977.95	2,340.25	714.34	2,422.19	1.72
9,615.00	91.61	1.61	6,975.28	2,435.20	715.64	2,516.22	1.74
9,710.00	91.36	1.15	6,972.81	2,530.14	717.92	2,610.38	0.55
9,805.00	90.68	0.65	6,971.12	2,625.11	719.42	2,704.46	0.89
9,900.00	91.05	1.01	6,969.69	2,720.09	720.79	2,798.52	0.54
9,994.00	91.61	2.04	6,967.51	2,814.03	723.29	2,891.73	1.25
10,089.00	88.64	2.58	6,967.30	2,908.95	727.12	2,986.10	3.18
10,184.00	88.15	2.64	6,969.96	3,003.81	731.45	3,080.51	0.52
10,278.00	88.95	0.84	6,972.34	3,097.73	734.30	3,173.75	2.09
10,373.00	89.20	1.17	6,973.87	3,192.70	735.97	3,267.86	0.44
10,468.00	89.69	1.29	6,974.79	3,287.68	738.00	3,362.02	0.53
10,562.00	90.68	4.46	6,974.49	3,381.55	742.72	3,455.49	3.53
10,657.00	88.45	3.23	6,975.21	3,476.32	749.09	3,550.12	2.68
10,751.00	87.65	1.96	6,978.41	3,570.17	753.34	3,643.51	1.60
10,846.00	87.96	0.09	6,982.05	3,665.08	755.04	3,737.56	1.99
10,941.00	87.96	358.75	6,985.43	3,760.01	754.08	3,831.21	1.41
11,036.00	88.89	358.26	6,988.04	3,854.94	751.60	3,924.64	1.11
11,132.00	89.20	358.04	6,989.64	3,950.88	748.50	4,018.96	0.40
11,227.00	89.14	357.03	6,991.02	4,045.78	744.42	4,112.11	1.06
11,322.00	90.12	356.12	6,991.63	4,140.60	738.74	4,204.94	1.41

Design Report for Cook 37N-W3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,417.00	91.05	356.72	6,990.66	4,235.41	732.81	4,297.71	1.16
11,512.00	89.44	355.97	6,990.26	4,330.22	726.75	4,390.46	1.87
11,607.00	89.81	356.05	6,990.88	4,424.98	720.14	4,483.09	0.40
11,702.00	91.11	355.81	6,990.11	4,519.74	713.40	4,575.68	1.39
11,797.00	92.16	355.70	6,987.40	4,614.44	706.37	4,668.18	1.11
11,892.00	92.60	356.20	6,983.46	4,709.12	699.67	4,760.71	0.70
11,932.00	92.47	355.98	6,981.69	4,748.99	696.94	4,799.68	0.64
Final Sperry MWD Survey @ 11932.00ft							
11,979.00	92.47	355.98	6,979.66	4,795.83	693.65	4,845.46	0.00
Straight Projection to TD @ 11979ft							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.00	0.00	HP 308: RKB = 25ft
125.00	125.00	-0.09	-0.12	First Gyro Survey @ 125.00ft
890.00	889.99	2.19	0.60	Final Gyro Survey @ 890.00ft
890.00	889.99	2.19	0.60	Tie-On to Surface Gyros @ 890.00ft
951.00	950.99	1.99	0.63	First Sperry MWD Survey @ 951.00ft
11,932.00	6,981.69	4,748.99	696.94	Final Sperry MWD Survey @ 11932.00ft
11,979.00	6,979.66	4,795.83	693.65	Straight Projection to TD @ 11979ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Cook 37N-W3HZ_BHL revised	8.83	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	890.00	Surface Gyros	NS-GYRO-MS
951.00	7,500.00	Sperry MWD Surveys - Vert/Build	MWD+SC
7,563.00	11,932.00	Sperry MWD Surveys - Lateral	MWD+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,528.00	6,972.75	7" Casing @ 7528' MD :: 6972.75' TVD	7	8-3/4

Design Report for Cook 37N-W3HZ - 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
Cook 37N-W3HZ_SI - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Cook 37N-W3HZ_W - actual wellpath misses target center by 40.61ft at 11113.90ft MD (6989.38 TVD, 3932.79 N, 749.11 E) - Point	0.00	0.00	6,950.00	3,933.13	739.22	1,301,646.35	3,238,522.22	40.158263	-104.646608
Cook 37N-W3HZ_W - actual wellpath misses target center by 16.99ft at 10607.47ft MD (6974.37 TVD, 3426.90 N, 746.02 E) - Point	0.00	0.00	6,961.00	3,427.70	735.58	1,301,140.93	3,238,523.43	40.156876	-104.646621
Cook 37N-W3HZ_W - actual wellpath misses target center by 34.60ft at 8080.45ft MD (6973.68 TVD, 900.99 N, 709.47 E) - Point	0.00	0.00	6,940.00	900.51	717.38	1,298,613.79	3,238,529.48	40.149939	-104.646687
Cook 37N-W3HZ_Si - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1				2,436.87	-557.31	1,297,172.59	3,240,262.80		
Point 2				2,448.06	2,094.14	1,299,823.92	3,240,248.56		
Point 3				2,461.01	4,747.00	1,302,476.67	3,240,236.05		
Point 4				2,487.84	7,393.88	1,305,123.57	3,240,237.49		
Point 5				2,530.40	9,873.20	1,307,603.08	3,240,256.26		
Point 6				-116.68	9,890.18	1,307,594.67	3,237,609.25		
Point 7				-2,763.71	9,906.90	1,307,585.99	3,234,962.29		
Point 8				-2,788.16	7,399.18	1,305,078.26	3,234,961.90		
Point 9				-2,814.06	4,743.83	1,302,422.89	3,234,961.48		
Point 10				-2,854.07	2,088.37	1,299,767.28	3,234,946.95		
Point 11				-2,907.47	-539.88	1,297,138.75	3,234,918.76		
Point 12				-235.43	-548.55	1,297,155.71	3,237,590.65		
Cook 37N-W3HZ_W - actual wellpath misses target center by 38.76ft at 9090.03ft MD (6978.19 TVD, 1910.34 N, 718.11 E) - Point	0.00	0.00	6,940.00	1,911.38	724.66	1,299,624.64	3,238,527.06	40.152714	-104.646661
Cook 37N-W3HZ_Li - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1				691.27	5,624.06	1,303,336.67	3,238,458.06		
Point 2				663.26	-83.17	1,297,629.67	3,238,484.80		
Point 3				1,565.26	-91.82	1,297,629.68	3,239,386.80		
Point 4				1,593.26	5,615.40	1,303,336.67	3,239,360.05		
Cook 37N-W3HZ_Si - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1				-2,814.06	4,743.83	1,302,422.89	3,234,961.48		
Point 2				2,461.01	4,747.00	1,302,476.67	3,240,236.05		
Cook 37N-W3HZ_W - actual wellpath misses target center by 29.82ft at 9597.54ft MD (6975.77 TVD, 2417.75 N, 715.19 E) - Point	0.00	0.00	6,949.00	2,416.82	728.30	1,300,130.07	3,238,525.85	40.154101	-104.646648
Cook 37N-W3HZ_W - actual wellpath misses target center by 29.44ft at 7574.54ft MD (6973.35 TVD, 395.18 N, 716.07 E) - Point	0.00	0.00	6,944.00	395.07	713.75	1,298,108.36	3,238,530.70	40.148551	-104.646700
Cook 37N-W3HZ_Bi - actual wellpath misses target center by 414.40ft at 11979.00ft MD (6979.66 TVD, 4795.83 N, 693.65 E) - Point	0.00	0.00	6,954.00	5,206.17	745.43	1,302,919.34	3,238,516.22	40.161758	-104.646586
Cook 37N-W3HZ_Si - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1				1,977.70	-95.79	1,297,629.66	3,239,799.25		
Point 2				1,988.03	2,093.64	1,299,819.00	3,239,788.57		
Point 3				1,998.37	4,286.70	1,302,011.97	3,239,777.87		

Design Report for Cook 37N-W3HZ - Actual Field Surveys

Point 4				-181.65	4,285.39	1,301,989.75	3,237,598.05		
Point 5				-2,360.92	4,284.08	1,301,967.53	3,235,418.99		
Point 6				-2,393.99	2,088.87	1,299,772.19	3,235,406.98		
Point 7				-2,438.04	-81.38	1,297,601.71	3,235,383.75		
Point 8				-230.32	-88.55	1,297,615.72	3,237,591.35		
Cook 37N-W3HZ_BI	0.00	0.00	6,953.00	4,796.17	745.43	1,302,509.37	3,238,520.15	40.160633	-104.646586
- actual wellpath misses target center by 58.20ft at 11976.86ft MD (6979.76 TVD, 4793.70 N, 693.80 E)									
- Point									
Cook 37N-W3HZ_W	0.00	0.00	6,936.00	1,405.95	721.02	1,299,119.22	3,238,528.27	40.151326	-104.646674
- actual wellpath misses target center by 39.61ft at 8586.29ft MD (6974.33 TVD, 1406.78 N, 711.08 E)									
- Point									
Cook 37N-W3HZ_W	0.00	0.00	6,972.00	2,922.26	731.94	1,300,635.50	3,238,524.64	40.155489	-104.646635
- actual wellpath misses target center by 6.07ft at 10102.65ft MD (6967.63 TVD, 2922.57 N, 727.74 E)									
- Point									
Cook 37N-W3HZ_Si	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
- actual wellpath hits target center									
- Polygon									
Point 1				2,005.65	5,206.74	1,302,932.00	3,239,776.32		
Point 2				2,027.89	7,394.28	1,305,119.56	3,239,777.58		
Point 3				2,062.51	9,416.08	1,307,141.52	3,239,792.80		
Point 4				-121.93	9,430.02	1,307,134.50	3,237,608.41		
Point 5				-2,308.04	9,443.98	1,307,127.48	3,235,422.36		
Point 6				-2,328.01	7,398.88	1,305,082.37	3,235,422.01		
Point 7				-2,349.51	5,204.13	1,302,887.61	3,235,421.57		
Point 8				-171.17	5,205.44	1,302,909.82	3,237,599.71		
Cook 37N-W3HZ_W	0.00	0.00	6,949.00	4,438.57	742.86	1,302,151.78	3,238,521.01	40.159651	-104.646595
- actual wellpath misses target center by 48.09ft at 11619.28ft MD (6990.90 TVD, 4437.23 N, 719.30 E)									
- Point									

North Reference Sheet for Sec. 10-T2N-R65W - Cook 37N-W3HZ - Plan C 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=25ft @ 4894.00ft (HP 308). Northing and Easting are relative to Cook 37N-W3HZ

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: 0.99995846

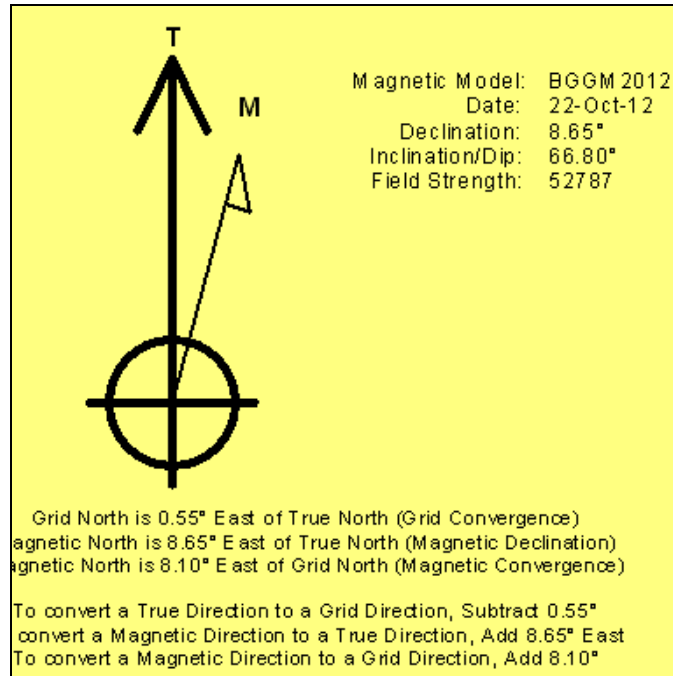
Grid Coordinates of Well: 1,297,706.47 ft N, 3,237,820.80 ft E

Geographical Coordinates of Well: 40° 08' 50.88" N, 104° 38' 57.31" W

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,979.00ft the Bottom Hole Displacement is 4,845.73ft in the Direction of 8.23° (True).

Magnetic Convergence at surface is: -8.10° (22 October 2012, , BGGM2012)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T2N-R65W

Cook 37N-W3HZ

Plan C Rev 0

Design: Actual Field Surveys

Survey Report - Geographic

31 October, 2012

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Project	Weld County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Sec. 10-T2N-R65W				
Site Position:		Northing:	1,297,730.72 ft	Latitude:	40.147534
From:	Lat/Long	Easting:	3,237,802.96 ft	Longitude:	-104.649316
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Cook 37N-W3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,297,706.47 ft	Latitude:	40.147467
	+E/-W	0.00 ft	Easting:	3,237,820.80 ft	Longitude:	-104.649253
Position Uncertainty		3.28 ft	Wellhead Elevation:	ft	Ground Level:	4,869.00 ft

Wellbore	Plan C Rev 0				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2012-10-22	8.65	66.80	52,787

Design	Actual Field Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N-S (ft)	+E-W (ft)	Direction (°)	
	0.00	0.00	0.00	8.83	

Survey Program	Date	2012-10-31			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	890.00	Surface Gyros (Plan C Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s	
951.00	7,500.00	Sperry MWD Surveys - Vert/Build (Plan C	MWD+SC	Fixed:v2:standard dec & axial correction	
7,563.00	11,932.00	Sperry MWD Surveys - Lateral (Plan C Re	MWD+SC	Fixed:v2:standard dec & axial correction	

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
25.00	0.00	0.00	25.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
HP 308: RKB = 25ft									
125.00	0.17	231.45	125.00	-0.09	-0.12	1,297,706.38	3,237,820.69	40.147467	-104.649253
First Gyro Survey @ 125.00ft									
225.00	0.05	220.62	225.00	-0.22	-0.26	1,297,706.25	3,237,820.54	40.147466	-104.649254
325.00	0.37	24.31	325.00	0.04	-0.16	1,297,706.52	3,237,820.64	40.147467	-104.649254
425.00	0.25	33.71	425.00	0.52	0.10	1,297,706.99	3,237,820.89	40.147468	-104.649253
525.00	0.36	63.25	525.00	0.84	0.50	1,297,707.32	3,237,821.29	40.147469	-104.649251
625.00	0.33	1.79	624.99	1.27	0.79	1,297,707.75	3,237,821.58	40.147470	-104.649250
725.00	0.28	33.05	724.99	1.76	0.93	1,297,708.25	3,237,821.71	40.147472	-104.649250
825.00	0.32	302.45	824.99	2.12	0.83	1,297,708.60	3,237,821.61	40.147473	-104.649250
890.00	0.14	248.03	889.99	2.19	0.60	1,297,708.66	3,237,821.38	40.147473	-104.649251
Final Gyro Survey @ 890.00ft - Tie-On to Surface Gyros @ 890.00ft									
951.00	0.37	149.83	950.99	1.99	0.63	1,297,708.47	3,237,821.41	40.147472	-104.649251
First Sperry MWD Survey @ 951.00ft									
1,013.00	0.45	152.46	1,012.99	1.60	0.85	1,297,708.08	3,237,821.63	40.147471	-104.649250
1,106.00	0.50	115.03	1,105.99	1.10	1.38	1,297,707.59	3,237,822.17	40.147470	-104.649248
1,198.00	0.29	122.77	1,197.98	0.81	1.94	1,297,707.30	3,237,822.73	40.147469	-104.649246
1,290.00	0.60	145.73	1,289.98	0.28	2.41	1,297,706.78	3,237,823.21	40.147468	-104.649244
1,382.00	0.49	128.55	1,381.98	-0.36	2.99	1,297,706.14	3,237,823.79	40.147466	-104.649242
1,474.00	0.53	166.17	1,473.97	-1.02	3.40	1,297,705.49	3,237,824.21	40.147464	-104.649241
1,567.00	0.11	90.04	1,566.97	-1.44	3.59	1,297,705.07	3,237,824.40	40.147463	-104.649240
1,659.00	0.28	147.25	1,658.97	-1.63	3.80	1,297,704.88	3,237,824.61	40.147462	-104.649239
1,751.00	0.15	118.71	1,750.97	-1.87	4.03	1,297,704.64	3,237,824.84	40.147462	-104.649239
1,844.00	0.42	206.89	1,843.97	-2.23	3.98	1,297,704.28	3,237,824.80	40.147461	-104.649239
1,936.00	2.35	187.07	1,935.94	-4.41	3.59	1,297,702.10	3,237,824.44	40.147455	-104.649240
2,029.00	2.26	147.07	2,028.87	-7.84	4.36	1,297,698.68	3,237,825.23	40.147445	-104.649237
2,121.00	4.04	131.07	2,120.73	-11.49	7.79	1,297,695.06	3,237,828.70	40.147435	-104.649225
2,216.00	5.74	123.90	2,215.38	-16.34	14.25	1,297,690.27	3,237,835.21	40.147422	-104.649202
2,311.00	8.22	126.41	2,309.67	-23.02	23.66	1,297,683.68	3,237,844.68	40.147404	-104.649168
2,406.00	9.73	128.89	2,403.50	-32.09	35.38	1,297,674.72	3,237,856.48	40.147379	-104.649126
2,500.00	11.58	122.85	2,495.88	-42.20	49.49	1,297,664.75	3,237,870.69	40.147351	-104.649076
2,595.00	14.20	120.94	2,588.48	-53.36	67.50	1,297,653.76	3,237,888.80	40.147320	-104.649012
2,690.00	11.22	119.49	2,681.14	-63.91	85.54	1,297,643.39	3,237,906.94	40.147292	-104.648947
2,785.00	13.94	117.11	2,773.85	-73.67	103.77	1,297,633.80	3,237,925.27	40.147265	-104.648882
2,879.00	12.83	116.71	2,865.30	-83.52	123.17	1,297,624.14	3,237,944.77	40.147238	-104.648812
2,974.00	11.94	116.05	2,958.09	-92.58	141.43	1,297,615.26	3,237,963.10	40.147213	-104.648747
3,069.00	13.95	121.88	3,050.67	-102.95	159.98	1,297,605.07	3,237,981.76	40.147184	-104.648681
3,164.00	12.36	119.57	3,143.18	-114.01	178.55	1,297,594.18	3,238,000.43	40.147154	-104.648614
3,260.00	14.22	123.96	3,236.60	-125.67	197.27	1,297,582.71	3,238,019.26	40.147122	-104.648547
3,355.00	11.18	122.42	3,329.27	-137.13	214.72	1,297,571.42	3,238,036.82	40.147091	-104.648485
3,450.00	12.20	125.39	3,422.30	-147.88	230.68	1,297,560.82	3,238,052.88	40.147061	-104.648428
3,545.00	13.45	126.75	3,514.93	-160.30	247.72	1,297,548.56	3,238,070.04	40.147027	-104.648367
3,640.00	15.62	129.58	3,606.88	-175.07	266.43	1,297,533.98	3,238,088.89	40.146986	-104.648300
3,735.00	13.53	127.34	3,698.82	-189.96	285.13	1,297,519.27	3,238,107.72	40.146946	-104.648233
3,830.00	15.46	121.21	3,790.80	-203.26	304.79	1,297,506.15	3,238,127.52	40.146909	-104.648163
3,925.00	13.04	120.18	3,882.87	-215.21	324.89	1,297,494.40	3,238,147.73	40.146876	-104.648091
4,021.00	15.72	119.73	3,975.85	-227.11	345.55	1,297,482.70	3,238,168.50	40.146844	-104.648017
4,116.00	15.93	117.66	4,067.25	-239.54	368.27	1,297,470.49	3,238,191.34	40.146809	-104.647936
4,211.00	15.38	117.37	4,158.73	-251.39	391.01	1,297,458.86	3,238,214.19	40.146777	-104.647854
4,306.00	13.83	115.79	4,250.66	-262.12	412.42	1,297,448.34	3,238,235.70	40.146747	-104.647778
4,401.00	14.90	117.64	4,342.68	-272.72	433.47	1,297,437.93	3,238,256.84	40.146718	-104.647702
4,496.00	14.13	112.88	4,434.65	-282.90	454.97	1,297,427.96	3,238,278.44	40.146690	-104.647626
4,592.00	16.01	117.55	4,527.35	-293.58	477.51	1,297,417.50	3,238,301.08	40.146661	-104.647545

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
4,687.00	16.05	116.58	4,618.66	-305.52	500.87	1,297,405.79	3,238,324.55	40.146628	-104.647461
4,782.00	15.20	128.71	4,710.17	-319.18	522.33	1,297,392.33	3,238,346.15	40.146591	-104.647385
4,877.00	12.86	126.59	4,802.33	-333.28	540.54	1,297,378.41	3,238,364.49	40.146552	-104.647319
4,972.00	11.23	124.74	4,895.24	-344.85	556.64	1,297,366.99	3,238,380.70	40.146520	-104.647262
5,067.00	13.31	125.91	4,988.06	-356.54	573.10	1,297,355.47	3,238,397.27	40.146488	-104.647203
5,162.00	12.26	121.69	5,080.71	-368.25	590.54	1,297,343.92	3,238,414.82	40.146456	-104.647141
5,257.00	13.12	127.14	5,173.39	-380.06	607.72	1,297,332.28	3,238,432.11	40.146424	-104.647079
5,352.00	10.96	127.93	5,266.30	-392.12	623.44	1,297,320.37	3,238,447.94	40.146391	-104.647023
5,448.00	9.65	128.95	5,360.74	-402.79	636.89	1,297,309.83	3,238,461.50	40.146361	-104.646975
5,543.00	8.28	127.56	5,454.58	-411.97	648.51	1,297,300.76	3,238,473.20	40.146336	-104.646933
5,638.00	6.28	127.44	5,548.81	-419.30	658.06	1,297,293.53	3,238,482.82	40.146316	-104.646899
5,733.00	5.05	129.07	5,643.35	-425.09	665.43	1,297,287.80	3,238,490.25	40.146300	-104.646873
5,828.00	4.10	124.64	5,738.04	-429.66	671.47	1,297,283.30	3,238,496.33	40.146288	-104.646851
5,923.00	3.40	125.14	5,832.84	-433.21	676.57	1,297,279.79	3,238,501.46	40.146278	-104.646833
6,019.00	2.75	117.71	5,928.70	-435.92	680.93	1,297,277.13	3,238,505.86	40.146270	-104.646817
6,114.00	2.29	103.55	6,023.61	-437.42	684.80	1,297,275.66	3,238,509.73	40.146266	-104.646803
6,209.00	1.90	322.93	6,118.58	-436.61	685.69	1,297,276.48	3,238,510.62	40.146268	-104.646800
6,304.00	3.02	1.02	6,213.50	-432.85	684.79	1,297,280.23	3,238,509.68	40.146279	-104.646804
6,399.00	2.87	8.16	6,308.37	-427.99	685.17	1,297,285.09	3,238,510.02	40.146292	-104.646802
6,431.00	5.04	7.14	6,340.30	-425.81	685.46	1,297,287.28	3,238,510.28	40.146298	-104.646801
6,463.00	7.87	4.39	6,372.09	-422.23	685.80	1,297,290.86	3,238,510.59	40.146308	-104.646800
6,495.00	9.88	5.09	6,403.70	-417.31	686.21	1,297,295.79	3,238,510.96	40.146321	-104.646798
6,526.00	11.91	5.68	6,434.14	-411.47	686.76	1,297,301.62	3,238,511.45	40.146337	-104.646796
6,558.00	14.20	5.04	6,465.32	-404.28	687.44	1,297,308.83	3,238,512.05	40.146357	-104.646794
6,590.00	17.44	4.77	6,496.10	-395.59	688.18	1,297,317.52	3,238,512.71	40.146381	-104.646791
6,621.00	20.43	3.88	6,525.42	-385.56	688.93	1,297,327.56	3,238,513.37	40.146409	-104.646789
6,653.00	23.43	3.49	6,555.10	-373.63	689.70	1,297,339.49	3,238,514.02	40.146441	-104.646786
6,685.00	26.22	2.73	6,584.14	-360.22	690.42	1,297,352.91	3,238,514.62	40.146478	-104.646783
6,717.00	30.06	3.22	6,612.35	-345.15	691.21	1,297,367.99	3,238,515.26	40.146519	-104.646781
6,748.00	33.85	4.26	6,638.65	-328.78	692.29	1,297,384.36	3,238,516.18	40.146564	-104.646777
6,780.00	37.99	4.74	6,664.56	-310.07	693.76	1,297,403.09	3,238,517.48	40.146616	-104.646771
6,812.00	43.09	5.72	6,688.87	-289.37	695.67	1,297,423.81	3,238,519.18	40.146673	-104.646765
6,844.00	45.53	6.09	6,711.77	-267.13	697.97	1,297,446.06	3,238,521.27	40.146734	-104.646756
6,875.00	48.02	5.71	6,733.00	-244.67	700.29	1,297,468.55	3,238,523.38	40.146795	-104.646748
6,907.00	49.86	5.36	6,754.01	-220.65	702.62	1,297,492.58	3,238,525.47	40.146861	-104.646740
6,938.00	51.20	5.79	6,773.72	-196.83	704.94	1,297,516.42	3,238,527.57	40.146927	-104.646731
6,970.00	54.65	5.57	6,793.01	-171.43	707.47	1,297,541.84	3,238,529.85	40.146996	-104.646722
7,001.00	56.88	6.04	6,810.45	-145.94	710.06	1,297,567.36	3,238,532.20	40.147066	-104.646713
7,033.00	59.57	5.61	6,827.30	-118.88	712.82	1,297,594.45	3,238,534.70	40.147141	-104.646703
7,065.00	60.81	4.50	6,843.20	-91.22	715.26	1,297,622.12	3,238,536.88	40.147217	-104.646694
7,096.00	62.00	3.44	6,858.04	-64.07	717.15	1,297,649.29	3,238,538.50	40.147291	-104.646688
7,128.00	64.80	2.46	6,872.37	-35.49	718.62	1,297,677.88	3,238,539.69	40.147369	-104.646682
7,159.00	66.20	2.19	6,885.22	-7.31	719.76	1,297,706.07	3,238,540.57	40.147447	-104.646678
7,191.00	67.47	1.91	6,897.81	22.09	720.81	1,297,735.48	3,238,541.34	40.147528	-104.646675
7,223.00	69.03	1.33	6,909.67	51.80	721.65	1,297,765.19	3,238,541.89	40.147609	-104.646672
7,254.00	70.67	0.66	6,920.35	80.90	722.16	1,297,794.29	3,238,542.12	40.147689	-104.646670
7,286.00	72.13	0.39	6,930.55	111.22	722.43	1,297,824.62	3,238,542.10	40.147772	-104.646669
7,317.00	73.94	359.28	6,939.60	140.87	722.35	1,297,854.26	3,238,541.73	40.147854	-104.646669
7,349.00	76.50	359.05	6,947.76	171.81	721.90	1,297,885.19	3,238,540.98	40.147939	-104.646671
7,380.00	78.04	358.64	6,954.59	202.04	721.29	1,297,915.41	3,238,540.08	40.148022	-104.646673
7,412.00	79.92	358.85	6,960.71	233.44	720.60	1,297,946.81	3,238,539.10	40.148108	-104.646675
7,443.00	82.04	358.65	6,965.57	264.05	719.93	1,297,977.40	3,238,538.13	40.148192	-104.646678
7,475.00	84.52	358.82	6,969.31	295.82	719.23	1,298,009.16	3,238,537.13	40.148279	-104.646680
7,500.00	86.24	358.20	6,971.33	320.73	718.58	1,298,034.07	3,238,536.24	40.148347	-104.646683

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
7,528.00	87.94	358.09	6,972.75	348.67	717.67	1,298,062.00	3,238,535.07	40.148424	-104.646686
7" Casing @ 7528' MD :: 6972.75' TVD									
7,563.00	90.06	357.95	6,973.36	383.65	716.47	1,298,096.96	3,238,533.52	40.148520	-104.646690
7,627.00	90.12	358.71	6,973.26	447.62	714.60	1,298,160.91	3,238,531.04	40.148696	-104.646697
7,721.00	89.38	358.63	6,973.67	541.59	712.42	1,298,254.85	3,238,527.96	40.148954	-104.646705
7,816.00	89.26	358.58	6,974.80	636.56	710.11	1,298,349.79	3,238,524.74	40.149214	-104.646713
7,911.00	90.19	0.12	6,975.25	731.55	709.03	1,298,444.76	3,238,522.75	40.149475	-104.646717
8,006.00	90.56	0.14	6,974.63	826.54	709.24	1,298,539.75	3,238,522.05	40.149736	-104.646716
8,100.00	90.99	0.22	6,973.36	920.53	709.54	1,298,633.73	3,238,521.45	40.149994	-104.646715
8,195.00	89.57	0.63	6,972.90	1,015.53	710.24	1,298,728.73	3,238,521.24	40.150255	-104.646712
8,290.00	88.76	359.83	6,974.28	1,110.52	710.63	1,298,823.71	3,238,520.71	40.150515	-104.646711
8,384.00	90.56	0.31	6,974.84	1,204.51	710.74	1,298,917.70	3,238,519.92	40.150773	-104.646711
8,479.00	88.95	359.77	6,975.25	1,299.51	710.81	1,299,012.68	3,238,519.08	40.151034	-104.646710
8,574.00	91.73	0.44	6,974.68	1,394.49	710.98	1,299,107.67	3,238,518.34	40.151295	-104.646710
8,669.00	90.37	1.01	6,972.94	1,489.47	712.18	1,299,202.64	3,238,518.63	40.151556	-104.646705
8,763.00	90.56	1.43	6,972.18	1,583.44	714.18	1,299,296.63	3,238,519.73	40.151814	-104.646698
8,858.00	89.32	1.42	6,972.28	1,678.41	716.55	1,299,391.61	3,238,521.18	40.152074	-104.646690
8,953.00	88.39	0.88	6,974.18	1,773.37	718.45	1,299,486.58	3,238,522.18	40.152335	-104.646683
9,047.00	88.21	359.32	6,976.96	1,867.33	718.62	1,299,580.53	3,238,521.44	40.152593	-104.646682
9,142.00	88.89	359.36	6,979.37	1,962.29	717.52	1,299,675.48	3,238,519.43	40.152853	-104.646686
9,237.00	89.88	359.50	6,980.39	2,057.28	716.58	1,299,770.45	3,238,517.58	40.153114	-104.646690
9,331.00	90.62	359.58	6,979.98	2,151.27	715.82	1,299,864.43	3,238,515.92	40.153372	-104.646692
9,426.00	90.12	359.33	6,979.36	2,246.27	714.92	1,299,959.40	3,238,514.11	40.153633	-104.646695
9,520.00	91.61	359.96	6,977.95	2,340.25	714.34	1,300,053.37	3,238,512.62	40.153891	-104.646698
9,615.00	91.61	1.61	6,975.28	2,435.20	715.64	1,300,148.33	3,238,513.01	40.154152	-104.646693
9,710.00	91.36	1.15	6,972.81	2,530.14	717.92	1,300,243.28	3,238,514.39	40.154412	-104.646685
9,805.00	90.68	0.65	6,971.12	2,625.11	719.42	1,300,338.26	3,238,514.97	40.154673	-104.646679
9,900.00	91.05	1.01	6,969.69	2,720.09	720.79	1,300,433.24	3,238,515.43	40.154934	-104.646674
9,994.00	91.61	2.04	6,967.51	2,814.03	723.29	1,300,527.20	3,238,517.03	40.155192	-104.646665
10,089.00	88.64	2.58	6,967.30	2,908.95	727.12	1,300,622.14	3,238,519.95	40.155452	-104.646652
10,184.00	88.15	2.64	6,969.96	3,003.81	731.45	1,300,717.04	3,238,523.37	40.155712	-104.646636
10,278.00	88.95	0.84	6,972.34	3,097.73	734.30	1,300,810.98	3,238,525.32	40.155970	-104.646626
10,373.00	89.20	1.17	6,973.87	3,192.70	735.97	1,300,905.96	3,238,526.07	40.156231	-104.646620
10,468.00	89.69	1.29	6,974.79	3,287.68	738.00	1,301,000.94	3,238,527.20	40.156492	-104.646613
10,562.00	90.68	4.46	6,974.49	3,381.55	742.72	1,301,094.85	3,238,531.01	40.156749	-104.646596
10,657.00	88.45	3.23	6,975.21	3,476.32	749.09	1,301,189.68	3,238,536.47	40.157010	-104.646573
10,751.00	87.65	1.96	6,978.41	3,570.17	753.34	1,301,283.56	3,238,539.83	40.157267	-104.646558
10,846.00	87.96	0.09	6,982.05	3,665.08	755.04	1,301,378.47	3,238,540.61	40.157528	-104.646552
10,941.00	87.96	358.75	6,985.43	3,760.01	754.08	1,301,473.39	3,238,538.74	40.157788	-104.646555
11,036.00	88.89	358.26	6,988.04	3,854.94	751.60	1,301,568.29	3,238,535.35	40.158049	-104.646564
11,132.00	89.20	358.04	6,989.64	3,950.88	748.50	1,301,664.19	3,238,531.33	40.158312	-104.646575
11,227.00	89.14	357.03	6,991.02	4,045.78	744.42	1,301,759.04	3,238,526.34	40.158573	-104.646590
11,322.00	90.12	356.12	6,991.63	4,140.60	738.74	1,301,853.80	3,238,519.75	40.158833	-104.646610
11,417.00	91.05	356.72	6,990.66	4,235.41	732.81	1,301,948.55	3,238,512.91	40.159093	-104.646631
11,512.00	89.44	355.97	6,990.26	4,330.22	726.75	1,302,043.28	3,238,505.95	40.159353	-104.646653
11,607.00	89.81	356.05	6,990.88	4,424.98	720.14	1,302,137.98	3,238,498.43	40.159614	-104.646677
11,702.00	91.11	355.81	6,990.11	4,519.74	713.40	1,302,232.66	3,238,490.78	40.159874	-104.646701
11,797.00	92.16	355.70	6,987.40	4,614.44	706.37	1,302,327.28	3,238,482.84	40.160134	-104.646726
11,892.00	92.60	356.20	6,983.46	4,709.12	699.67	1,302,421.89	3,238,475.23	40.160394	-104.646750
11,932.00	92.47	355.98	6,981.69	4,748.99	696.94	1,302,461.73	3,238,472.12	40.160503	-104.646760
Final Sperry MWD Survey @ 11932.00ft									
11,979.00	92.47	355.98	6,979.66	4,795.83	693.65	1,302,508.53	3,238,468.38	40.160632	-104.646771
Straight Projection to TD @ 11979ft									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	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
Cook 37N-W3HZ_SHI - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Cook 37N-W3HZ_WP - actual wellpath misses target center by 40.61ft at 11113.90ft MD (6989.38 TVD, 3932.79 N, 749.11 E) - Point	0.00	0.00	6,950.00	3,933.13	739.22	1,301,646.35	3,238,522.22	40.158263	-104.646608
Cook 37N-W3HZ_WP - actual wellpath misses target center by 16.99ft at 10607.47ft MD (6974.37 TVD, 3426.90 N, 746.02 E) - Point	0.00	0.00	6,961.00	3,427.70	735.58	1,301,140.93	3,238,523.43	40.156876	-104.646621
Cook 37N-W3HZ_WP - actual wellpath misses target center by 34.60ft at 8080.45ft MD (6973.68 TVD, 900.99 N, 709.47 E) - Point	0.00	0.00	6,940.00	900.51	717.38	1,298,613.79	3,238,529.48	40.149939	-104.646687
Cook 37N-W3HZ_Sec - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1			0.00	-557.31	2,436.87	1,297,172.59	3,240,262.80		
Point 2			0.00	2,094.14	2,448.06	1,299,823.92	3,240,248.56		
Point 3			0.00	4,747.00	2,461.01	1,302,476.67	3,240,236.05		
Point 4			0.00	7,393.88	2,487.84	1,305,123.57	3,240,237.49		
Point 5			0.00	9,873.20	2,530.40	1,307,603.08	3,240,256.26		
Point 6			0.00	9,890.18	-116.68	1,307,594.67	3,237,609.25		
Point 7			0.00	9,906.90	-2,763.71	1,307,585.99	3,234,962.29		
Point 8			0.00	7,399.18	-2,788.16	1,305,078.26	3,234,961.90		
Point 9			0.00	4,743.83	-2,814.06	1,302,422.89	3,234,961.48		
Point 10			0.00	2,088.37	-2,854.07	1,299,767.28	3,234,946.95		
Point 11			0.00	-539.88	-2,907.47	1,297,138.75	3,234,918.76		
Point 12			0.00	-548.55	-235.43	1,297,155.71	3,237,590.65		
Cook 37N-W3HZ_WP - actual wellpath misses target center by 38.76ft at 9090.03ft MD (6978.19 TVD, 1910.34 N, 718.11 E) - Point	0.00	0.00	6,940.00	1,911.38	724.66	1,299,624.64	3,238,527.06	40.152714	-104.646661
Cook 37N-W3HZ_Lar - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1			0.00	5,624.06	691.27	1,303,336.67	3,238,458.06		
Point 2			0.00	-83.17	663.26	1,297,629.67	3,238,484.80		
Point 3			0.00	-91.82	1,565.26	1,297,629.68	3,239,386.80		
Point 4			0.00	5,615.40	1,593.26	1,303,336.67	3,239,360.05		
Cook 37N-W3HZ_Sec - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253
Point 1			0.00	4,743.83	-2,814.06	1,302,422.89	3,234,961.48		
Point 2			0.00	4,747.00	2,461.01	1,302,476.67	3,240,236.05		
Cook 37N-W3HZ_WP - actual wellpath misses target center by 29.82ft at 9597.54ft MD (6975.77 TVD, 2417.75 N, 715.19 E) - Point	0.00	0.00	6,949.00	2,416.82	728.30	1,300,130.07	3,238,525.85	40.154101	-104.646648
Cook 37N-W3HZ_WP - actual wellpath misses target center by 29.44ft at 7574.54ft MD (6973.35 TVD, 395.18 N, 716.07 E) - Point	0.00	0.00	6,944.00	395.07	713.75	1,298,108.36	3,238,530.70	40.148551	-104.646700
Cook 37N-W3HZ_BHI - actual wellpath misses target center by 414.40ft at 11979.00ft MD (6979.66 TVD, 4795.83 N, 693.65 E) - Point	0.00	0.00	6,954.00	5,206.17	745.43	1,302,919.34	3,238,516.22	40.161758	-104.646586
Cook 37N-W3HZ_Set - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80	40.147467	-104.649253

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 37N-W3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 37N-W3HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Point 1	0.00	-95.79	1,977.70	1,297,629.66	3,239,799.25		
Point 2	0.00	2,093.64	1,988.03	1,299,819.00	3,239,788.57		
Point 3	0.00	4,286.70	1,998.37	1,302,011.97	3,239,777.87		
Point 4	0.00	4,285.39	-181.65	1,301,989.75	3,237,598.05		
Point 5	0.00	4,284.08	-2,360.92	1,301,967.53	3,235,418.99		
Point 6	0.00	2,088.87	-2,393.99	1,299,772.19	3,235,406.98		
Point 7	0.00	-81.38	-2,438.04	1,297,601.71	3,235,383.75		
Point 8	0.00	-88.55	-230.32	1,297,615.72	3,237,591.35		
Cook 37N-W3HZ_BHI	0.00	0.00	6,953.00	4,796.17	745.43	1,302,509.37	3,238,520.15
- actual wellpath misses target center by 58.20ft at 11976.86ft MD (6979.76 TVD, 4793.70 N, 693.80 E)							
- Point							
Cook 37N-W3HZ_WP	0.00	0.00	6,936.00	1,405.95	721.02	1,299,119.22	3,238,528.27
- actual wellpath misses target center by 39.61ft at 8586.29ft MD (6974.33 TVD, 1406.78 N, 711.08 E)							
- Point							
Cook 37N-W3HZ_WP	0.00	0.00	6,972.00	2,922.26	731.94	1,300,635.50	3,238,524.64
- actual wellpath misses target center by 6.07ft at 10102.65ft MD (6967.63 TVD, 2922.57 N, 727.74 E)							
- Point							
Cook 37N-W3HZ_Set	0.00	0.00	0.00	0.00	0.00	1,297,706.47	3,237,820.80
- actual wellpath hits target center							
- Polygon							
Point 1	0.00	5,206.74	2,005.65	1,302,932.00	3,239,776.32		
Point 2	0.00	7,394.28	2,027.89	1,305,119.56	3,239,777.58		
Point 3	0.00	9,416.08	2,062.51	1,307,141.52	3,239,792.80		
Point 4	0.00	9,430.02	-121.93	1,307,134.50	3,237,608.41		
Point 5	0.00	9,443.98	-2,308.04	1,307,127.48	3,235,422.36		
Point 6	0.00	7,398.88	-2,328.01	1,305,082.37	3,235,422.01		
Point 7	0.00	5,204.13	-2,349.51	1,302,887.61	3,235,421.57		
Point 8	0.00	5,205.44	-171.17	1,302,909.82	3,237,599.71		
Cook 37N-W3HZ_WP	0.00	0.00	6,949.00	4,438.57	742.86	1,302,151.78	3,238,521.01
- actual wellpath misses target center by 48.09ft at 11619.28ft MD (6990.90 TVD, 4437.23 N, 719.30 E)							
- Point							

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,528.00	6,972.75	7" Casing @ 7528' MD :: 6972.75' TVD	7	8-3/4

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.00	0.00	HP 308: RKB = 25ft
125.00	125.00	-0.09	-0.12	First Gyro Survey @ 125.00ft
890.00	889.99	2.19	0.60	Final Gyro Survey @ 890.00ft
890.00	889.99	2.19	0.60	Tie-On to Surface Gyros @ 890.00ft
951.00	950.99	1.99	0.63	First Sperry MWD Survey @ 951.00ft
11,932.00	6,981.69	4,748.99	696.94	Final Sperry MWD Survey @ 11932.00ft
11,979.00	6,979.66	4,795.83	693.65	Straight Projection to TD @ 11979ft

Checked By: _____ Approved By: _____ Date: _____