

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T2N-R65W

Nichols 2N-5HZ

Plan E Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

02 January, 2013

Well Coordinates: 1,299,879.72 N, 3,227,599.72 E (40° 09' 13.31" N, 104° 41' 08.67" W)

Ground Level: 4,911.00 ft

Local Coordinate Origin:	Centered on Well Nichols 2N-5HZ
Viewing Datum:	RKB=16 @ 4927.00ft (Xtreme 22)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

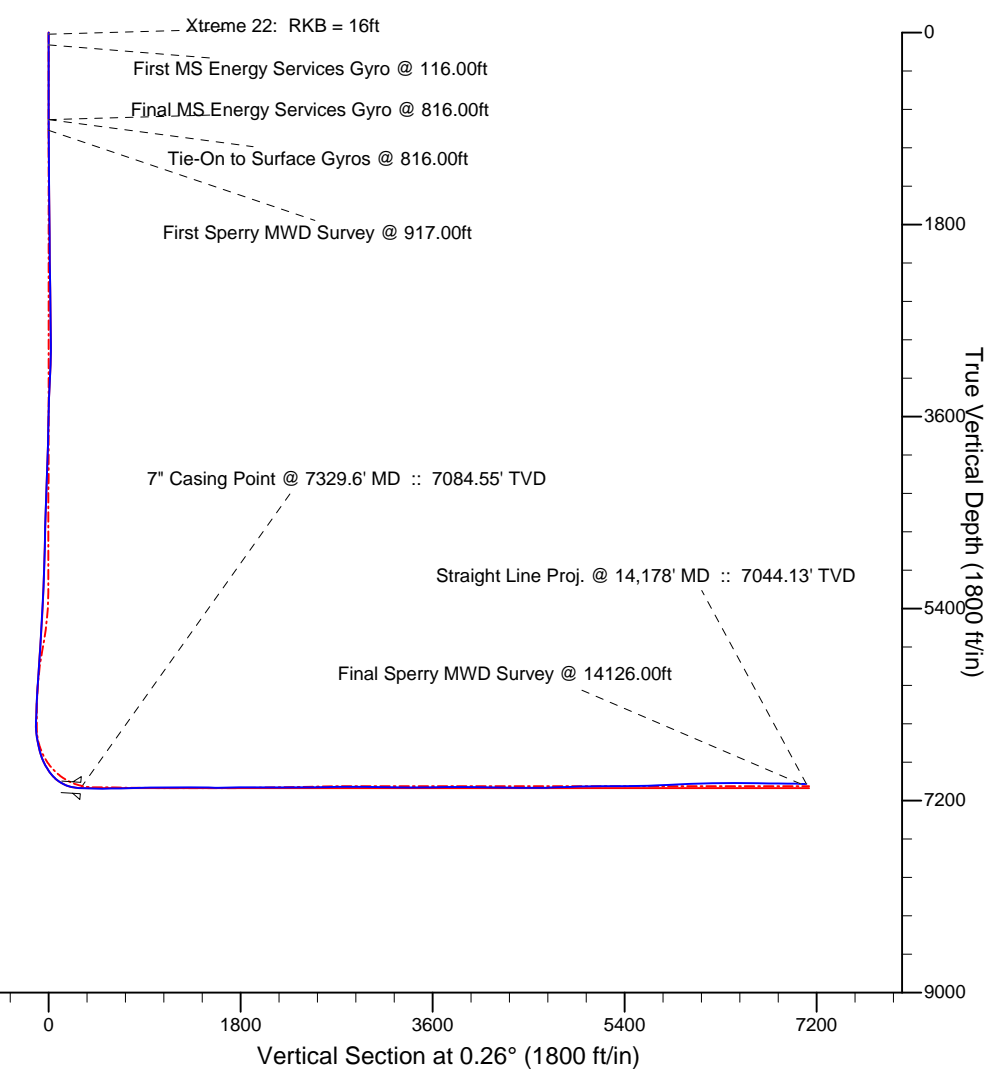
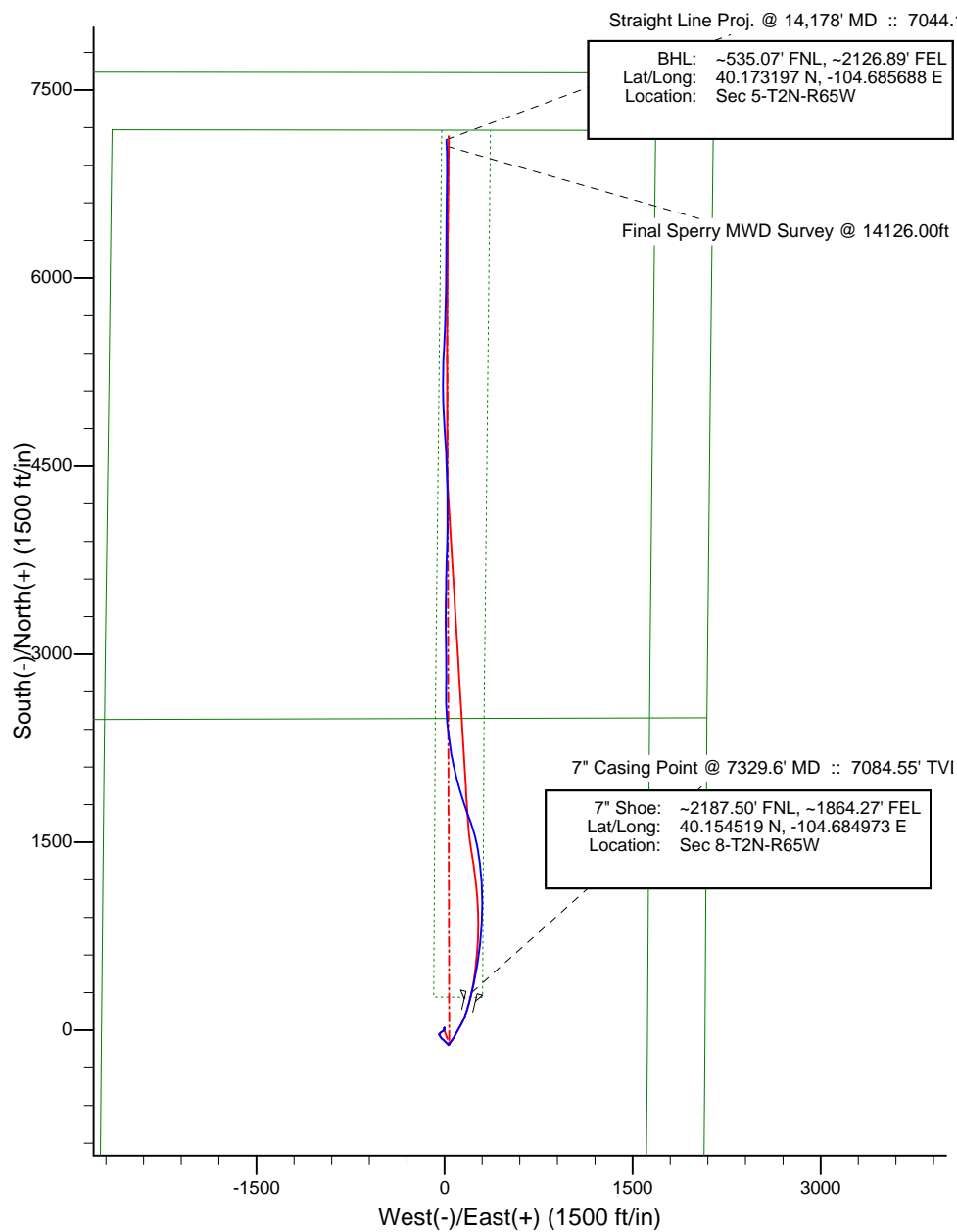
HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T2N-R65W
 Well: Nichols 2N-5HZ



LEGEND

- ▲- Nichols 2N-5HZ, Plan D Rev 0, Plan D Rev 0 Proposal V0
- Nichols 2N-5HZ, Plan E Rev 0, Plan E Rev 0 Proposal V0
- Actual Field Surveys



Design Report for Nichols 2N-5HZ - 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
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
Xtreme 22: RKB = 16ft							
116.00	0.24	203.06	116.00	-0.19	-0.08	-0.19	0.24
First MS Energy Services Gyro @ 116.00ft							
216.00	0.02	285.53	216.00	-0.38	-0.18	-0.38	0.24
316.00	0.04	50.03	316.00	-0.35	-0.17	-0.35	0.05
416.00	0.08	88.30	416.00	-0.33	-0.07	-0.33	0.05
516.00	0.20	34.14	516.00	-0.18	0.09	-0.18	0.17
616.00	0.07	11.07	616.00	0.02	0.20	0.02	0.14
716.00	0.02	331.04	716.00	0.10	0.21	0.10	0.06
816.00	0.04	231.48	816.00	0.09	0.17	0.09	0.05
Tie-On to Surface Gyros @ 816.00ft - Final MS Energy Services Gyro @ 816.00ft							
917.00	0.45	311.79	917.00	0.33	-0.15	0.33	0.44
First Sperry MWD Survey @ 917.00ft							
1,009.00	0.61	345.34	1,008.99	1.05	-0.55	1.04	0.37
1,070.00	0.33	348.11	1,069.99	1.53	-0.66	1.53	0.46
1,163.00	0.52	334.53	1,162.99	2.18	-0.90	2.17	0.23
1,255.00	0.70	330.16	1,254.98	3.04	-1.36	3.03	0.20
1,346.00	0.51	354.84	1,345.98	3.93	-1.67	3.92	0.35
1,618.00	0.62	0.47	1,617.97	6.60	-1.77	6.60	0.05
1,894.00	0.26	343.00	1,893.96	8.70	-1.94	8.69	0.14
2,151.00	0.92	19.94	2,150.94	11.19	-1.41	11.19	0.28
2,408.00	0.91	16.64	2,407.91	15.09	-0.12	15.09	0.02
2,666.00	0.43	352.22	2,665.89	18.01	0.34	18.01	0.21
2,923.00	0.86	318.67	2,922.88	20.41	-1.07	20.41	0.22
3,181.00	3.15	187.95	3,180.76	14.85	-3.33	14.83	1.46
3,438.00	1.82	189.64	3,437.51	3.83	-4.99	3.81	0.52
3,695.00	1.46	222.49	3,694.41	-2.61	-7.88	-2.65	0.39
3,953.00	3.45	238.35	3,952.16	-9.11	-16.71	-9.18	0.81
4,210.00	3.34	232.38	4,208.71	-17.74	-29.23	-17.87	0.14
4,467.00	2.76	218.52	4,465.35	-27.15	-39.01	-27.33	0.36
4,724.00	0.65	211.97	4,722.22	-33.22	-43.64	-33.43	0.82
4,981.00	3.07	154.00	4,979.08	-40.65	-41.39	-40.84	1.08
5,238.00	2.28	141.45	5,235.80	-50.83	-35.19	-50.99	0.38
5,496.00	3.93	142.12	5,493.41	-61.82	-26.56	-61.95	0.64
5,753.00	6.11	128.88	5,749.42	-77.36	-10.50	-77.41	0.96
6,010.00	5.55	134.91	6,005.09	-94.72	8.95	-94.68	0.32
6,267.00	3.81	138.57	6,261.23	-109.90	23.40	-109.79	0.69
6,416.00	2.84	144.21	6,409.98	-116.61	28.83	-116.47	0.69
6,444.00	2.99	144.27	6,437.94	-117.76	29.67	-117.62	0.54
6,487.00	1.52	111.07	6,480.91	-118.88	30.85	-118.73	4.44
6,530.00	4.28	57.77	6,523.85	-118.23	32.74	-118.07	8.34
6,573.00	6.70	38.86	6,566.66	-115.42	35.68	-115.25	6.95
6,616.00	10.82	28.45	6,609.15	-109.91	39.17	-109.73	10.23
6,659.00	13.13	33.17	6,651.21	-102.27	43.77	-102.07	5.83
6,702.00	15.29	32.71	6,692.89	-93.41	49.51	-93.18	5.03
6,745.00	16.94	38.23	6,734.20	-83.72	56.45	-83.46	5.23
6,787.00	20.80	34.45	6,773.94	-72.76	64.46	-72.46	9.64
6,830.00	25.76	32.46	6,813.43	-58.57	73.80	-58.23	11.68

Design Report for Nichols 2N-5HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,873.00	29.91	27.88	6,851.45	-41.20	83.83	-40.81	10.85
6,916.00	34.36	28.43	6,887.85	-21.04	94.63	-20.61	10.37
6,959.00	37.45	30.13	6,922.68	0.94	106.97	1.43	7.55
7,002.00	42.82	28.02	6,955.54	25.17	120.41	25.72	12.88
7,045.00	49.30	28.16	6,985.36	52.47	134.98	53.09	15.07
7,088.00	55.10	23.82	7,011.72	83.00	149.81	83.69	15.66
7,130.00	60.91	20.58	7,033.96	115.97	163.23	116.73	15.30
7,173.00	67.11	18.47	7,052.80	152.39	176.12	153.20	15.08
7,216.00	73.21	15.55	7,067.39	191.05	187.93	191.92	15.56
7,266.00	81.33	14.18	7,078.40	238.15	200.42	239.07	16.46
7,284.00	83.91	13.32	7,080.71	255.49	204.66	256.43	15.10
7,329.60	86.44	13.27	7,084.55	299.70	215.11	300.70	5.55
7" Casing Point @ 7329.6' MD :: 7084.55' TVD							
7,366.00	88.46	13.23	7,086.17	335.10	223.45	336.13	5.55
7,452.00	88.64	11.60	7,088.34	419.06	241.93	420.17	1.91
7,538.00	90.49	9.41	7,088.99	503.60	257.61	504.79	3.33
7,623.00	90.56	7.33	7,088.22	587.69	269.98	588.93	2.45
7,714.00	90.99	5.95	7,086.98	678.07	280.50	679.36	1.59
7,806.00	91.79	5.08	7,084.75	769.62	289.34	770.95	1.28
7,898.00	92.10	3.17	7,081.63	861.32	295.95	862.68	2.10
7,988.00	91.36	1.66	7,078.91	951.20	299.74	952.57	1.87
8,079.00	89.81	359.24	7,077.98	1,042.18	300.46	1,043.56	3.16
8,172.00	89.94	357.00	7,078.19	1,135.12	297.41	1,136.49	2.41
8,264.00	90.49	355.67	7,077.84	1,226.93	291.53	1,228.27	1.56
8,357.00	90.12	353.33	7,077.35	1,319.50	282.61	1,320.79	2.55
8,448.00	89.07	351.03	7,077.99	1,409.64	270.23	1,410.87	2.78
8,539.00	89.57	347.41	7,079.07	1,499.01	253.22	1,500.17	4.02
8,601.00	89.69	344.73	7,079.47	1,559.18	238.29	1,560.27	4.33
8,632.00	90.00	344.22	7,079.55	1,589.05	229.99	1,590.10	1.93
8,663.00	90.25	342.57	7,079.49	1,618.76	221.14	1,619.76	5.38
8,724.00	90.86	339.06	7,078.90	1,676.36	201.09	1,677.27	5.84
8,815.00	89.94	341.07	7,078.26	1,761.90	170.07	1,762.66	2.43
8,907.00	90.80	342.81	7,077.67	1,849.36	141.55	1,849.99	2.11
8,998.00	90.93	343.68	7,076.29	1,936.48	115.32	1,937.00	0.97
9,087.00	89.57	346.15	7,075.90	2,022.41	92.16	2,022.81	3.17
9,180.00	89.07	347.85	7,077.01	2,113.01	71.24	2,113.32	1.91
9,271.00	89.63	350.79	7,078.04	2,202.42	54.38	2,202.65	3.29
9,363.00	90.74	351.60	7,077.74	2,293.34	40.30	2,293.50	1.49
9,455.00	90.74	352.90	7,076.55	2,384.49	27.89	2,384.59	1.41
9,540.00	90.19	355.35	7,075.86	2,469.03	19.20	2,469.09	2.95
9,626.00	90.56	357.77	7,075.30	2,554.87	14.04	2,554.90	2.85
9,712.00	91.61	359.54	7,073.67	2,640.82	12.02	2,640.85	2.39
9,798.00	90.74	0.69	7,071.91	2,726.80	12.19	2,726.83	1.68
9,883.00	89.69	0.69	7,071.59	2,811.79	13.21	2,811.82	1.24
9,969.00	89.75	359.53	7,072.01	2,897.79	13.38	2,897.82	1.35
10,055.00	89.32	359.14	7,072.71	2,983.78	12.38	2,983.81	0.68
10,141.00	89.14	358.97	7,073.86	3,069.76	10.96	3,069.78	0.29
10,227.00	88.89	359.15	7,075.34	3,155.74	9.55	3,155.75	0.36
10,313.00	89.20	359.64	7,076.78	3,241.72	8.64	3,241.73	0.67
10,398.00	89.69	0.66	7,077.60	3,326.72	8.87	3,326.72	1.33
10,484.00	89.26	0.63	7,078.39	3,412.71	9.83	3,412.72	0.50

Design Report for Nichols 2N-5HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,570.00	90.86	1.26	7,078.30	3,498.69	11.25	3,498.71	2.00
10,656.00	91.67	0.26	7,076.40	3,584.66	12.39	3,584.68	1.50
10,742.00	90.87	1.97	7,074.49	3,670.62	14.07	3,670.65	2.19
10,827.00	90.93	1.46	7,073.16	3,755.57	16.61	3,755.61	0.60
10,913.00	89.26	1.76	7,073.02	3,841.53	19.03	3,841.58	1.97
10,999.00	89.13	1.46	7,074.22	3,927.49	21.44	3,927.55	0.38
11,085.00	89.32	1.25	7,075.39	4,013.46	23.48	4,013.52	0.33
11,171.00	89.51	0.04	7,076.26	4,099.45	24.44	4,099.52	1.42
11,256.00	89.51	359.37	7,076.99	4,184.44	24.01	4,184.51	0.79
11,342.00	89.01	358.93	7,078.10	4,270.43	22.73	4,270.48	0.77
11,428.00	88.95	357.80	7,079.63	4,356.38	20.28	4,356.42	1.32
11,514.00	90.00	358.47	7,080.42	4,442.32	17.48	4,442.36	1.45
11,599.00	90.00	358.17	7,080.42	4,527.29	14.99	4,527.31	0.35
11,685.00	89.94	357.29	7,080.47	4,613.22	11.58	4,613.22	1.03
11,771.00	92.22	356.70	7,078.85	4,699.08	7.07	4,699.06	2.74
11,857.00	91.85	355.98	7,075.79	4,784.85	1.59	4,784.81	0.94
11,942.00	91.61	355.88	7,073.23	4,869.60	-4.44	4,869.52	0.31
12,028.00	92.16	357.62	7,070.40	4,955.41	-9.32	4,955.31	2.12
12,113.00	91.36	359.10	7,067.79	5,040.33	-11.75	5,040.22	1.98
12,199.00	90.00	359.61	7,066.77	5,126.32	-12.72	5,126.20	1.69
12,285.00	90.56	0.81	7,066.34	5,212.31	-12.40	5,212.20	1.54
12,371.00	90.12	1.06	7,065.83	5,298.30	-11.00	5,298.19	0.59
12,456.00	89.88	3.69	7,065.83	5,383.22	-7.48	5,383.13	3.11
12,542.00	91.36	3.10	7,064.90	5,469.06	-2.38	5,468.99	1.85
12,628.00	91.24	2.52	7,062.95	5,554.93	1.83	5,554.88	0.69
12,714.00	92.04	1.94	7,060.49	5,640.83	5.18	5,640.80	1.15
12,799.00	92.28	1.48	7,057.29	5,725.73	7.71	5,725.71	0.61
12,885.00	93.03	0.99	7,053.30	5,811.62	9.56	5,811.60	1.04
12,971.00	92.04	0.41	7,049.50	5,897.53	10.61	5,897.52	1.33
13,057.00	92.35	0.08	7,046.21	5,983.47	10.98	5,983.45	0.53
13,142.00	92.53	0.59	7,042.59	6,068.39	11.48	6,068.37	0.64
13,228.00	91.73	2.01	7,039.39	6,154.30	13.43	6,154.30	1.89
13,314.00	90.25	359.97	7,037.91	6,240.27	14.91	6,240.27	2.93
13,400.00	90.43	0.03	7,037.40	6,326.27	14.91	6,326.27	0.22
13,485.00	90.62	359.71	7,036.62	6,411.26	14.72	6,411.26	0.44
13,571.00	90.31	1.68	7,035.92	6,497.25	15.76	6,497.25	2.32
13,657.00	88.76	0.44	7,036.62	6,583.23	17.35	6,583.24	2.31
13,742.00	88.89	0.00	7,038.36	6,668.21	17.68	6,668.22	0.54
13,828.00	88.83	0.90	7,040.07	6,754.19	18.35	6,754.20	1.05
13,914.00	89.26	359.88	7,041.50	6,840.17	18.94	6,840.19	1.29
14,000.00	89.44	359.69	7,042.48	6,926.17	18.62	6,926.18	0.30
14,086.00	89.44	358.70	7,043.32	7,012.15	17.41	7,012.16	1.15
14,126.00	89.51	358.77	7,043.69	7,052.14	16.53	7,052.14	0.25
Final Sperry MWD Survey @ 14126.00ft							
14,178.00	89.51	358.77	7,044.13	7,104.13	15.41	7,104.12	0.00
Straight Line Proj. @ 14,178' MD :: 7044.13' TVD							

Design Report for Nichols 2N-5HZ - Actual Field Surveys**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
16.00	16.00	0.00	0.00	Xtreme 22: RKB = 16ft
116.00	116.00	-0.19	-0.08	First MS Energy Services Gyro @ 116.00ft
816.00	816.00	0.09	0.17	Tie-On to Surface Gyros @ 816.00ft
816.00	816.00	0.09	0.17	Final MS Energy Services Gyro @ 816.00ft
917.00	917.00	0.33	-0.15	First Sperry MWD Survey @ 917.00ft
14,126.00	7,043.69	7,052.14	16.53	Final Sperry MWD Survey @ 14126.00ft
14,178.00	7,044.13	7,104.13	15.41	Straight Line Proj. @ 14,178' MD :: 7044.13' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Nichols 2N_pEr0 BHL	0.26	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
16.00	816.00	MS Energy Services - Gyros	NS-GYRO-MS
917.00	7,284.00	Sperry MWD Surveys - Vert/Build	MWD+IFR1+SC
7,366.00	14,126.00	Sperry MWD Surveys - Lateral	MWD+IFR1+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,329.60	7,084.55	7" Casing Point @ 7329.6' MD :: 7084.55' TVD	7	8-3/4

Design Report for Nichols 2N-5HZ - 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
Nichols 2N_pEr0 WF - actual wellpath misses target center by 9.29ft at 8752.02ft MD (7078.54 TVD, 1702.58 N, 191.22 E) - Point	0.00	0.00	7,083.79	1,700.00	184.00	1,301,581.26	3,227,768.09	40.158362	-104.685085
Nichols 2N-5HZ_LD - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1				-23.07	7,175.39	1,307,054.29	3,227,510.76		
Point 2				-74.31	2,480.84	1,302,359.66	3,227,502.63		
Point 3				-86.75	265.77	1,300,144.67	3,227,510.53		
Point 4				302.25	262.19	1,300,144.66	3,227,899.53		
Point 5				314.69	2,477.26	1,302,359.66	3,227,891.63		
Point 6				365.93	7,171.82	1,307,054.29	3,227,899.76		
Nichols 2N-5HZ_8/5 - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1				-3,172.13	2,478.18	1,302,328.56	3,224,405.10		
Point 2				-539.56	2,485.11	1,302,359.66	3,227,037.38		
Point 3				2,092.97	2,492.21	1,302,390.93	3,229,669.63		
Nichols 2N-5HZ_Mi/ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1				-3,197.27	-170.00	1,299,680.37	3,224,404.27		
Point 2				2,076.30	-183.46	1,299,715.34	3,229,677.53		
Nichols 2N_pEr0 BH - actual wellpath misses target center by 50.09ft at 14178.00ft MD (7044.13 TVD, 7104.13 N, 15.41 E) - Point	0.00	0.00	7,083.79	7,129.20	32.96	1,307,008.62	3,227,567.21	40.173266	-104.685625
B&M 31-5 - actual wellpath misses target center by 192.37ft at 14178.00ft MD (7044.13 TVD, 7104.13 N, 15.41 E) - Circle (radius 160.00)	0.00	0.00	7,083.79	7,291.77	30.46	1,307,171.15	3,227,563.22	40.173712	-104.685634
Nichols 2N-5HZ_Sec - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1				-3,107.25	7,642.31	1,307,492.85	3,224,422.55		
Point 2				-3,135.92	5,127.43	1,304,977.92	3,224,416.98		
Point 3				-3,172.13	2,478.18	1,302,328.56	3,224,405.10		
Point 4				-3,197.27	-170.00	1,299,680.37	3,224,404.27		
Point 5				-3,222.36	-2,818.09	1,297,032.27	3,224,403.50		
Point 6				-583.74	-2,818.06	1,297,056.53	3,227,041.90		
Point 7				2,054.75	-2,818.40	1,297,080.42	3,229,680.17		
Point 8				2,076.30	-183.46	1,299,715.34	3,229,677.53		
Point 9				2,092.97	2,492.21	1,302,390.93	3,229,669.63		
Point 10				2,119.58	5,119.53	1,305,018.28	3,229,672.11		
Point 11				2,148.35	7,636.97	1,307,535.77	3,229,677.76		
Point 12				-479.46	7,639.64	1,307,514.31	3,227,050.15		
Nichols 2N-5HZ_SH - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Nichols 2N_pEr0 WF - actual wellpath misses target center by 30.31ft at 12835.61ft MD (7055.73 TVD, 5762.30 N, 8.59 E) - Point	0.00	0.00	7,083.79	5,763.36	20.00	1,305,642.78	3,227,566.79	40.169516	-104.685671
Nichols 2N-5HZ_SB - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1				-2,652.45	7,181.82	1,307,036.58	3,224,881.54		
Point 2				-2,675.88	5,126.75	1,304,981.47	3,224,876.99		
Point 3				-2,705.76	2,939.43	1,302,794.05	3,224,867.19		
Point 4				-2,716.45	2,019.36	1,301,873.96	3,224,864.95		
Point 5				-2,737.25	-171.17	1,299,683.43	3,224,864.27		
Point 6				-2,757.97	-2,358.07	1,297,496.52	3,224,863.63		

Design Report for Nichols 2N-5HZ - Actual Field Surveys

Point 7				-579.91	-2,358.04	1,297,516.55	3,227,041.51		
Point 8				1,598.49	-2,358.32	1,297,536.27	3,229,219.73		
Point 9				1,616.28	-182.29	1,299,712.28	3,229,217.53		
Point 10				1,630.07	2,030.94	1,301,925.45	3,229,211.00		
Point 11				1,637.58	2,951.01	1,302,845.51	3,229,210.06		
Point 12				1,659.55	5,120.23	1,305,014.75	3,229,212.11		
Point 13				1,683.05	7,177.42	1,307,071.99	3,229,216.72		
Point 14				-484.82	7,179.63	1,307,054.29	3,227,049.01		
Nichols 2N_pEr0 WF	0.00	0.00	7,083.79	4,500.00	20.00	1,304,379.52	3,227,578.39	40.166049	-104.685671
- actual wellpath misses target center by 5.36ft at 11571.58ft MD (7080.42 TVD, 4499.88 N, 15.84 E)									
- Point									
B&M 32-5	0.00	0.00	7,083.79	5,862.99	186.96	1,305,743.93	3,227,732.83	40.169790	-104.685074
- actual wellpath misses target center by 179.71ft at 12937.13ft MD (7050.82 TVD, 5863.69 N, 10.30 E)									
- Circle (radius 160.00)									

North Reference Sheet for Sec. 8-T2N-R65W - Nichols 2N-5HZ - Plan E 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=16 @ 4927.00ft (Xtreme 22). Northing and Easting are relative to Nichols 2N-5HZ

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: 0.99995827

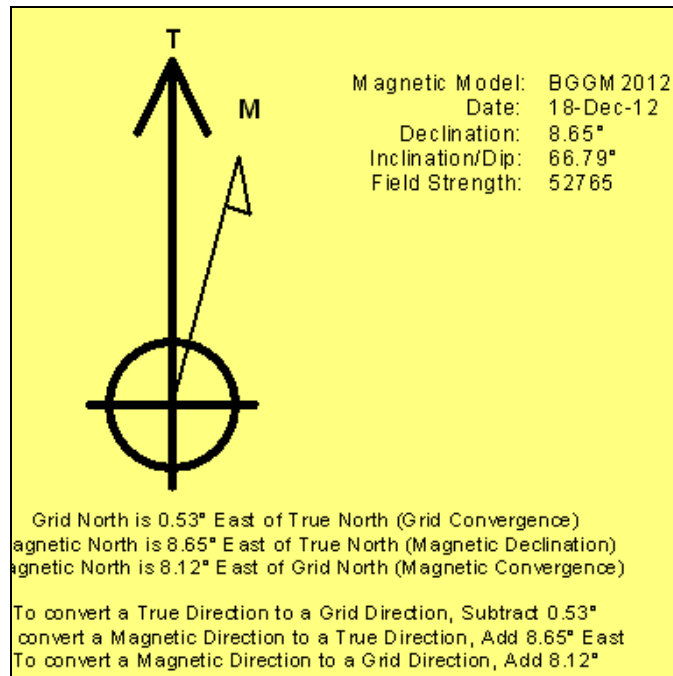
Grid Coordinates of Well: 1,299,879.72 ft N, 3,227,599.72 ft E

Geographical Coordinates of Well: 40° 09' 13.31" N, 104° 41' 08.67" W

Grid Convergence at Surface is: 0.53°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,178.00ft
the Bottom Hole Displacement is 7,104.15ft in the Direction of 0.12° (True).

Magnetic Convergence at surface is: -8.12° (18 December 2012, , BGGM2012)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T2N-R65W

Nichols 2N-5HZ

Plan E Rev 0

Design: Actual Field Surveys

Survey Report - Geographic

02 January, 2013

Halliburton Company

Survey Report - Geographic

Company: Anadarko Petroleum Corp.	Local Co-ordinate Reference: Well Nichols 2N-5HZ
Project: Weld County, CO (NAD 83)	TVD Reference: RKB=16 @ 4927.00ft (Xtreme 22)
Site: Sec. 8-T2N-R65W	MD Reference: RKB=16 @ 4927.00ft (Xtreme 22)
Well: Nichols 2N-5HZ	North Reference: True
Wellbore: Plan E 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. 8-T2N-R65W		
Site Position:	Northing: 1,299,927.50 ft	Latitude: 40.153788
From: Lat/Long	Easting: 3,229,147.33 ft	Longitude: -104.680205
Position Uncertainty: 0.00 ft	Slot Radius: "	Grid Convergence: 0.53 °

Well Nichols 2N-5HZ			
Well Position	+N/-S 0.00 ft	Northing: 1,299,879.72 ft	Latitude: 40.153696
	+E/-W 0.00 ft	Easting: 3,227,599.72 ft	Longitude: -104.685743
Position Uncertainty	3.28 ft	Wellhead Elevation: ft	Ground Level: 4,911.00 ft

Wellbore Plan E Rev 0					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2012-12-18	8.65	66.79	52,765

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	0.26

Survey Program		Date 2013-01-02		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
16.00	816.00	MS Energy Services - Gyros (Plan E Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s
917.00	7,284.00	Sperry MWD Surveys - Vert/Build (Plan E Rev 0)	MWD+IFR1+SC	Fixed:v2:crustal field dec & axial correction
7,366.00	14,126.00	Sperry MWD Surveys - Lateral (Plan E Rev 0)	MWD+IFR1+SC	Fixed:v2:crustal field dec & axial correction

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 2N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Well:	Nichols 2N-5HZ	North Reference:	True
Wellbore:	Plan E 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	1,299,879.72	3,227,599.72	40.153696	-104.685743	
16.00	0.00	0.00	16.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743	
Xtreme 22: RKB = 16ft										
116.00	0.24	203.06	116.00	-0.19	-0.08	1,299,879.52	3,227,599.63	40.153695	-104.685743	
First MS Energy Services Gyro @ 116.00ft										
216.00	0.02	285.53	216.00	-0.38	-0.18	1,299,879.33	3,227,599.54	40.153695	-104.685744	
316.00	0.04	50.03	316.00	-0.35	-0.17	1,299,879.36	3,227,599.55	40.153695	-104.685744	
416.00	0.08	88.30	416.00	-0.33	-0.07	1,299,879.39	3,227,599.64	40.153695	-104.685743	
516.00	0.20	34.14	516.00	-0.18	0.09	1,299,879.53	3,227,599.81	40.153695	-104.685743	
616.00	0.07	11.07	616.00	0.02	0.20	1,299,879.74	3,227,599.92	40.153696	-104.685742	
716.00	0.02	331.04	716.00	0.10	0.21	1,299,879.81	3,227,599.92	40.153696	-104.685742	
816.00	0.04	231.48	816.00	0.09	0.17	1,299,879.81	3,227,599.88	40.153696	-104.685742	
Tie-On to Surface Gyros @ 816.00ft - Final MS Energy Services Gyro @ 816.00ft										
917.00	0.45	311.79	917.00	0.33	-0.15	1,299,880.05	3,227,599.56	40.153697	-104.685744	
First Sperry MWD Survey @ 917.00ft										
1,009.00	0.61	345.34	1,008.99	1.05	-0.55	1,299,880.76	3,227,599.16	40.153699	-104.685745	
1,070.00	0.33	348.11	1,069.99	1.53	-0.66	1,299,881.24	3,227,599.04	40.153700	-104.685745	
1,163.00	0.52	334.53	1,162.99	2.18	-0.90	1,299,881.88	3,227,598.79	40.153702	-104.685746	
1,255.00	0.70	330.16	1,254.98	3.04	-1.36	1,299,882.74	3,227,598.33	40.153704	-104.685748	
1,346.00	0.51	354.84	1,345.98	3.93	-1.67	1,299,883.63	3,227,598.01	40.153707	-104.685749	
1,618.00	0.62	0.47	1,617.97	6.60	-1.77	1,299,886.30	3,227,597.88	40.153714	-104.685749	
1,894.00	0.26	343.00	1,893.96	8.70	-1.94	1,299,888.39	3,227,597.69	40.153720	-104.685750	
2,151.00	0.92	19.94	2,150.94	11.19	-1.41	1,299,890.89	3,227,598.20	40.153727	-104.685748	
2,408.00	0.91	16.64	2,407.91	15.09	-0.12	1,299,894.80	3,227,599.46	40.153737	-104.685743	
2,666.00	0.43	352.22	2,665.89	18.01	0.34	1,299,897.73	3,227,599.89	40.153745	-104.685742	
2,923.00	0.86	318.67	2,922.88	20.41	-1.07	1,299,900.12	3,227,598.46	40.153752	-104.685747	
3,181.00	3.15	187.95	3,180.76	14.85	-3.33	1,299,894.53	3,227,596.25	40.153737	-104.685755	
3,438.00	1.82	189.64	3,437.51	3.83	-4.99	1,299,883.50	3,227,594.69	40.153706	-104.685761	
3,695.00	1.46	222.49	3,694.41	-2.61	-7.88	1,299,877.03	3,227,591.86	40.153689	-104.685771	
3,953.00	3.45	238.35	3,952.16	-9.11	-16.71	1,299,870.46	3,227,583.09	40.153671	-104.685803	
4,210.00	3.34	232.38	4,208.71	-17.74	-29.23	1,299,861.71	3,227,570.65	40.153647	-104.685848	
4,467.00	2.76	218.52	4,465.35	-27.15	-39.01	1,299,852.21	3,227,560.96	40.153621	-104.685883	
4,724.00	0.65	211.97	4,722.22	-33.22	-43.64	1,299,846.09	3,227,556.39	40.153605	-104.685899	
4,981.00	3.07	154.00	4,979.08	-40.65	-41.39	1,299,838.69	3,227,558.70	40.153584	-104.685891	
5,238.00	2.28	141.45	5,235.80	-50.83	-35.19	1,299,828.56	3,227,565.00	40.153556	-104.685869	
5,496.00	3.93	142.12	5,493.41	-61.82	-26.56	1,299,817.65	3,227,573.73	40.153526	-104.685838	
5,753.00	6.11	128.88	5,749.42	-77.36	-10.50	1,299,802.26	3,227,589.92	40.153484	-104.685781	
6,010.00	5.55	134.91	6,005.09	-94.72	8.95	1,299,785.08	3,227,609.53	40.153436	-104.685711	
6,267.00	3.81	138.57	6,261.23	-109.90	23.40	1,299,770.04	3,227,624.12	40.153394	-104.685659	
6,416.00	2.84	144.21	6,409.98	-116.61	28.83	1,299,763.38	3,227,629.62	40.153376	-104.685640	
6,444.00	2.99	144.27	6,437.94	-117.76	29.67	1,299,762.24	3,227,630.46	40.153373	-104.685637	
6,487.00	1.52	111.07	6,480.91	-118.88	30.85	1,299,761.13	3,227,631.66	40.153370	-104.685633	
6,530.00	4.28	57.77	6,523.85	-118.23	32.74	1,299,761.80	3,227,633.54	40.153371	-104.685626	
6,573.00	6.70	38.86	6,566.66	-115.42	35.68	1,299,764.64	3,227,636.45	40.153379	-104.685615	
6,616.00	10.82	28.45	6,609.15	-109.91	39.17	1,299,770.17	3,227,639.90	40.153394	-104.685603	
6,659.00	13.13	33.17	6,651.21	-102.27	43.77	1,299,777.85	3,227,644.42	40.153415	-104.685586	
6,702.00	15.29	32.71	6,692.89	-93.41	49.51	1,299,786.76	3,227,650.07	40.153440	-104.685566	
6,745.00	16.94	38.23	6,734.20	-83.72	56.45	1,299,796.52	3,227,656.93	40.153466	-104.685541	
6,787.00	20.80	34.45	6,773.94	-72.76	64.46	1,299,807.55	3,227,664.83	40.153496	-104.685512	
6,830.00	25.76	32.46	6,813.43	-58.57	73.80	1,299,821.83	3,227,674.04	40.153535	-104.685479	
6,873.00	29.91	27.88	6,851.45	-41.20	83.83	1,299,839.29	3,227,683.92	40.153583	-104.685443	
6,916.00	34.36	28.43	6,887.85	-21.04	94.63	1,299,859.54	3,227,694.53	40.153638	-104.685404	
6,959.00	37.45	30.13	6,922.68	0.94	106.97	1,299,881.64	3,227,706.67	40.153699	-104.685360	
7,002.00	42.82	28.02	6,955.54	25.17	120.41	1,299,905.98	3,227,719.88	40.153765	-104.685312	
7,045.00	49.30	28.16	6,985.36	52.47	134.98	1,299,933.42	3,227,734.20	40.153840	-104.685260	

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 2N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Well:	Nichols 2N-5HZ	North Reference:	True
Wellbore:	Plan E 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	
7,088.00	55.10	23.82	7,011.72	83.00	149.81	1,299,964.09	3,227,748.75	40.153924	-104.685207	
7,130.00	60.91	20.58	7,033.96	115.97	163.23	1,299,997.18	3,227,761.87	40.154014	-104.685159	
7,173.00	67.11	18.47	7,052.80	152.39	176.12	1,300,033.71	3,227,774.42	40.154114	-104.685113	
7,216.00	73.21	15.55	7,067.39	191.05	187.93	1,300,072.47	3,227,785.88	40.154220	-104.685071	
7,266.00	81.33	14.18	7,078.40	238.15	200.42	1,300,119.68	3,227,797.93	40.154350	-104.685026	
7,284.00	83.91	13.32	7,080.71	255.49	204.66	1,300,137.06	3,227,802.02	40.154397	-104.685011	
7,329.60	86.44	13.27	7,084.55	299.70	215.11	1,300,181.37	3,227,812.06	40.154519	-104.684973	
7" Casing Point @ 7329.6' MD :: 7084.55' TVD										
7,366.00	88.46	13.23	7,086.17	335.10	223.45	1,300,216.84	3,227,820.07	40.154616	-104.684944	
7,452.00	88.64	11.60	7,088.34	419.06	241.93	1,300,300.96	3,227,837.78	40.154846	-104.684878	
7,538.00	90.49	9.41	7,088.99	503.60	257.61	1,300,385.64	3,227,852.68	40.155078	-104.684821	
7,623.00	90.56	7.33	7,088.22	587.69	269.98	1,300,469.84	3,227,864.27	40.155309	-104.684777	
7,714.00	90.99	5.95	7,086.98	678.07	280.50	1,300,560.30	3,227,873.97	40.155557	-104.684740	
7,806.00	91.79	5.08	7,084.75	769.62	289.34	1,300,651.92	3,227,881.96	40.155809	-104.684708	
7,898.00	92.10	3.17	7,081.63	861.32	295.95	1,300,743.68	3,227,887.73	40.156060	-104.684684	
7,988.00	91.36	1.66	7,078.91	951.20	299.74	1,300,833.58	3,227,890.70	40.156307	-104.684671	
8,079.00	89.81	359.24	7,077.98	1,042.18	300.46	1,300,924.57	3,227,890.58	40.156557	-104.684668	
8,172.00	89.94	357.00	7,078.19	1,135.12	297.41	1,301,017.47	3,227,886.67	40.156812	-104.684679	
8,264.00	90.49	355.67	7,077.84	1,226.93	291.53	1,301,109.22	3,227,879.95	40.157064	-104.684700	
8,357.00	90.12	353.33	7,077.35	1,319.50	282.61	1,301,201.69	3,227,870.19	40.157318	-104.684732	
8,448.00	89.07	351.03	7,077.99	1,409.64	270.23	1,301,291.72	3,227,856.98	40.157565	-104.684776	
8,539.00	89.57	347.41	7,079.07	1,499.01	253.22	1,301,380.93	3,227,839.15	40.157811	-104.684837	
8,601.00	89.69	344.73	7,079.47	1,559.18	238.29	1,301,440.95	3,227,823.67	40.157976	-104.684890	
8,632.00	90.00	344.22	7,079.55	1,589.05	229.99	1,301,470.74	3,227,815.10	40.158058	-104.684920	
8,663.00	90.25	342.57	7,079.49	1,618.76	221.14	1,301,500.37	3,227,805.97	40.158139	-104.684952	
8,724.00	90.86	339.06	7,078.90	1,676.36	201.09	1,301,557.78	3,227,785.40	40.158298	-104.685024	
8,815.00	89.94	341.07	7,078.26	1,761.90	170.07	1,301,643.03	3,227,753.59	40.158532	-104.685135	
8,907.00	90.80	342.81	7,077.67	1,849.36	141.55	1,301,730.22	3,227,724.27	40.158772	-104.685237	
8,998.00	90.93	343.68	7,076.29	1,936.48	115.32	1,301,817.10	3,227,697.25	40.159012	-104.685330	
9,087.00	89.57	346.15	7,075.90	2,022.41	92.16	1,301,902.80	3,227,673.30	40.159248	-104.685413	
9,180.00	89.07	347.85	7,077.01	2,113.01	71.24	1,301,993.21	3,227,651.55	40.159496	-104.685488	
9,271.00	89.63	350.79	7,078.04	2,202.42	54.38	1,302,082.45	3,227,633.87	40.159742	-104.685548	
9,363.00	90.74	351.60	7,077.74	2,293.34	40.30	1,302,173.23	3,227,618.95	40.159991	-104.685599	
9,455.00	90.74	352.90	7,076.55	2,384.49	27.89	1,302,264.26	3,227,605.71	40.160241	-104.685643	
9,540.00	90.19	355.35	7,075.86	2,469.03	19.20	1,302,348.71	3,227,596.24	40.160473	-104.685674	
9,626.00	90.56	357.77	7,075.30	2,554.87	14.04	1,302,434.50	3,227,590.29	40.160709	-104.685693	
9,712.00	91.61	359.54	7,073.67	2,640.82	12.02	1,302,520.43	3,227,587.48	40.160945	-104.685700	
9,798.00	90.74	0.69	7,071.91	2,726.80	12.19	1,302,606.40	3,227,586.87	40.161181	-104.685699	
9,883.00	89.69	0.69	7,071.59	2,811.79	13.21	1,302,691.39	3,227,587.11	40.161414	-104.685696	
9,969.00	89.75	359.53	7,072.01	2,897.79	13.38	1,302,777.39	3,227,586.48	40.161650	-104.685695	
10,055.00	89.32	359.14	7,072.71	2,983.78	12.38	1,302,863.36	3,227,584.70	40.161886	-104.685699	
10,141.00	89.14	358.97	7,073.86	3,069.76	10.96	1,302,949.32	3,227,582.49	40.162123	-104.685704	
10,227.00	88.89	359.15	7,075.34	3,155.74	9.55	1,303,035.28	3,227,580.29	40.162359	-104.685709	
10,313.00	89.20	359.64	7,076.78	3,241.72	8.64	1,303,121.24	3,227,578.59	40.162595	-104.685712	
10,398.00	89.69	0.66	7,077.60	3,326.72	8.87	1,303,206.23	3,227,578.03	40.162828	-104.685711	
10,484.00	89.26	0.63	7,078.39	3,412.71	9.83	1,303,292.23	3,227,578.21	40.163064	-104.685708	
10,570.00	90.86	1.26	7,078.30	3,498.69	11.25	1,303,378.22	3,227,578.84	40.163300	-104.685703	
10,656.00	91.67	0.26	7,076.40	3,584.66	12.39	1,303,464.19	3,227,579.19	40.163536	-104.685699	
10,742.00	90.87	1.97	7,074.49	3,670.62	14.07	1,303,550.16	3,227,580.08	40.163772	-104.685693	
10,827.00	90.93	1.46	7,073.16	3,755.57	16.61	1,303,635.12	3,227,581.84	40.164005	-104.685684	
10,913.00	89.26	1.76	7,073.02	3,841.53	19.03	1,303,721.10	3,227,583.47	40.164241	-104.685675	
10,999.00	89.13	1.46	7,074.22	3,927.49	21.44	1,303,807.07	3,227,585.09	40.164477	-104.685666	
11,085.00	89.32	1.25	7,075.39	4,013.46	23.48	1,303,893.05	3,227,586.34	40.164713	-104.685659	
11,171.00	89.51	0.04	7,076.26	4,099.45	24.44	1,303,979.04	3,227,586.52	40.164949	-104.685656	
11,256.00	89.51	359.37	7,076.99	4,184.44	24.01	1,304,064.03	3,227,585.30	40.165182	-104.685657	

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 2N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Well:	Nichols 2N-5HZ	North Reference:	True
Wellbore:	Plan E 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
11,342.00	89.01	358.93	7,078.10	4,270.43	22.73	1,304,149.99	3,227,583.23	40.165418	-104.685662
11,428.00	88.95	357.80	7,079.63	4,356.38	20.28	1,304,235.91	3,227,579.99	40.165654	-104.685670
11,514.00	90.00	358.47	7,080.42	4,442.32	17.48	1,304,321.83	3,227,576.40	40.165890	-104.685680
11,599.00	90.00	358.17	7,080.42	4,527.29	14.99	1,304,406.76	3,227,573.13	40.166123	-104.685689
11,685.00	89.94	357.29	7,080.47	4,613.22	11.58	1,304,492.65	3,227,568.94	40.166359	-104.685702
11,771.00	92.22	356.70	7,078.85	4,699.08	7.07	1,304,578.47	3,227,563.64	40.166595	-104.685718
11,857.00	91.85	355.98	7,075.79	4,784.85	1.59	1,304,664.18	3,227,557.37	40.166830	-104.685737
11,942.00	91.61	355.88	7,073.23	4,869.60	-4.44	1,304,748.86	3,227,550.56	40.167063	-104.685759
12,028.00	92.16	357.62	7,070.40	4,955.41	-9.32	1,304,834.62	3,227,544.90	40.167299	-104.685776
12,113.00	91.36	359.10	7,067.79	5,040.33	-11.75	1,304,919.52	3,227,541.69	40.167532	-104.685785
12,199.00	90.00	359.61	7,066.77	5,126.32	-12.72	1,305,005.49	3,227,539.93	40.167768	-104.685788
12,285.00	90.56	0.81	7,066.34	5,212.31	-12.40	1,305,091.48	3,227,539.46	40.168004	-104.685787
12,371.00	90.12	1.06	7,065.83	5,298.30	-11.00	1,305,177.47	3,227,540.07	40.168240	-104.685782
12,456.00	89.88	3.69	7,065.83	5,383.22	-7.48	1,305,262.41	3,227,542.81	40.168473	-104.685770
12,542.00	91.36	3.10	7,064.90	5,469.06	-2.38	1,305,348.30	3,227,547.12	40.168709	-104.685752
12,628.00	91.24	2.52	7,062.95	5,554.93	1.83	1,305,434.20	3,227,550.54	40.168944	-104.685736
12,714.00	92.04	1.94	7,060.49	5,640.83	5.18	1,305,520.12	3,227,553.10	40.169180	-104.685724
12,799.00	92.28	1.48	7,057.29	5,725.73	7.71	1,305,605.04	3,227,554.85	40.169413	-104.685715
12,885.00	93.03	0.99	7,053.30	5,811.62	9.56	1,305,690.94	3,227,555.92	40.169649	-104.685709
12,971.00	92.04	0.41	7,049.50	5,897.53	10.61	1,305,776.85	3,227,556.18	40.169885	-104.685705
13,057.00	92.35	0.08	7,046.21	5,983.47	10.98	1,305,862.78	3,227,555.75	40.170121	-104.685704
13,142.00	92.53	0.59	7,042.59	6,068.39	11.48	1,305,947.70	3,227,555.47	40.170354	-104.685702
13,228.00	91.73	2.01	7,039.39	6,154.30	13.43	1,306,033.62	3,227,556.63	40.170590	-104.685695
13,314.00	90.25	359.97	7,037.91	6,240.27	14.91	1,306,119.60	3,227,557.33	40.170826	-104.685690
13,400.00	90.43	0.03	7,037.40	6,326.27	14.91	1,306,205.59	3,227,556.54	40.171062	-104.685690
13,485.00	90.62	359.71	7,036.62	6,411.26	14.72	1,306,290.58	3,227,555.56	40.171295	-104.685690
13,571.00	90.31	1.68	7,035.92	6,497.25	15.76	1,306,376.57	3,227,555.82	40.171531	-104.685687
13,657.00	88.76	0.44	7,036.62	6,583.23	17.35	1,306,462.55	3,227,556.62	40.171767	-104.685681
13,742.00	88.89	0.00	7,038.36	6,668.21	17.68	1,306,547.53	3,227,556.17	40.172000	-104.685680
13,828.00	88.83	0.90	7,040.07	6,754.19	18.35	1,306,633.51	3,227,556.05	40.172236	-104.685677
13,914.00	89.26	359.88	7,041.50	6,840.17	18.94	1,306,719.49	3,227,555.85	40.172472	-104.685675
14,000.00	89.44	359.69	7,042.48	6,926.17	18.62	1,306,805.47	3,227,554.73	40.172708	-104.685676
14,086.00	89.44	358.70	7,043.32	7,012.15	17.41	1,306,891.44	3,227,552.74	40.172944	-104.685681
14,126.00	89.51	358.77	7,043.69	7,052.14	16.53	1,306,931.42	3,227,551.49	40.173054	-104.685684
Final Sperry MWD Survey @ 14126.00ft									
14,178.00	89.51	358.77	7,044.13	7,104.13	15.41	1,306,983.39	3,227,549.89	40.173197	-104.685688
Straight Line Proj. @ 14,178' MD :: 7044.13' TVD									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 2N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Well:	Nichols 2N-5HZ	North Reference:	True
Wellbore:	Plan E Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Nichols 2N_pEr0 WP1 - actual wellpath misses target center by 9.29ft at 8752.02ft MD (7078.54 TVD, 1702.58 N, 191.22 E) - Point	0.00	0.00	7,083.79	1,700.00	184.00	1,301,581.26	3,227,768.09	40.158362	-104.685085
Nichols 2N-5HZ_LD - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1			0.00	7,175.39	-23.07	1,307,054.29	3,227,510.76		
Point 2			0.00	2,480.84	-74.31	1,302,359.66	3,227,502.63		
Point 3			0.00	265.77	-86.75	1,300,144.67	3,227,510.53		
Point 4			0.00	262.19	302.25	1,300,144.66	3,227,899.53		
Point 5			0.00	2,477.26	314.69	1,302,359.66	3,227,891.63		
Point 6			0.00	7,171.82	365.93	1,307,054.29	3,227,899.76		
Nichols 2N-5HZ_8/5 - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1			0.00	2,478.18	-3,172.13	1,302,328.56	3,224,405.10		
Point 2			0.00	2,485.11	-539.56	1,302,359.66	3,227,037.38		
Point 3			0.00	2,492.21	2,092.97	1,302,390.93	3,229,669.63		
Nichols 2N-5HZ_Mi/2 - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1			0.00	-170.00	-3,197.27	1,299,680.37	3,224,404.27		
Point 2			0.00	-183.46	2,076.30	1,299,715.34	3,229,677.53		
Nichols 2N_pEr0 BHL - actual wellpath misses target center by 50.09ft at 14178.00ft MD (7044.13 TVD, 7104.13 N, 15.41 E) - Point	0.00	0.00	7,083.79	7,129.20	32.96	1,307,008.62	3,227,567.21	40.173266	-104.685625
B&M 31-5 - actual wellpath misses target center by 192.37ft at 14178.00ft MD (7044.13 TVD, 7104.13 N, 15.41 E) - Circle (radius 160.00)	0.00	0.00	7,083.79	7,291.77	30.46	1,307,171.15	3,227,563.22	40.173712	-104.685634
Nichols 2N-5HZ_Sec - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1			0.00	7,642.31	-3,107.25	1,307,492.85	3,224,422.55		
Point 2			0.00	5,127.43	-3,135.92	1,304,977.92	3,224,416.98		
Point 3			0.00	2,478.18	-3,172.13	1,302,328.56	3,224,405.10		
Point 4			0.00	-170.00	-3,197.27	1,299,680.37	3,224,404.27		
Point 5			0.00	-2,818.09	-3,222.36	1,297,032.27	3,224,403.50		
Point 6			0.00	-2,818.06	-583.74	1,297,056.53	3,227,041.90		
Point 7			0.00	-2,818.40	2,054.75	1,297,080.42	3,229,680.17		
Point 8			0.00	-183.46	2,076.30	1,299,715.34	3,229,677.53		
Point 9			0.00	2,492.21	2,092.97	1,302,390.93	3,229,669.63		
Point 10			0.00	5,119.53	2,119.58	1,305,018.28	3,229,672.11		
Point 11			0.00	7,636.97	2,148.35	1,307,535.77	3,229,677.76		
Point 12			0.00	7,639.64	-479.46	1,307,514.31	3,227,050.15		
Nichols 2N-5HZ_SHL - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Nichols 2N_pEr0 WP2 - actual wellpath misses target center by 30.31ft at 12835.61ft MD (7055.73 TVD, 5762.30 N, 8.59 E) - Point	0.00	0.00	7,083.79	5,763.36	20.00	1,305,642.78	3,227,566.79	40.169516	-104.685671
Nichols 2N-5HZ_SB - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,299,879.72	3,227,599.72	40.153696	-104.685743
Point 1			0.00	7,181.82	-2,652.45	1,307,036.58	3,224,881.54		

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 2N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=16 @ 4927.00ft (Xtreme 22)
Well:	Nichols 2N-5HZ	North Reference:	True
Wellbore:	Plan E Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Point 2	0.00	5,126.75	-2,675.88	1,304,981.47	3,224,876.99				
Point 3	0.00	2,939.43	-2,705.76	1,302,794.05	3,224,867.19				
Point 4	0.00	2,019.36	-2,716.45	1,301,873.96	3,224,864.95				
Point 5	0.00	-171.17	-2,737.25	1,299,683.43	3,224,864.27				
Point 6	0.00	-2,358.07	-2,757.97	1,297,496.52	3,224,863.63				
Point 7	0.00	-2,358.04	-579.91	1,297,516.55	3,227,041.51				
Point 8	0.00	-2,358.32	1,598.49	1,297,536.27	3,229,219.73				
Point 9	0.00	-182.29	1,616.28	1,299,712.28	3,229,217.53				
Point 10	0.00	2,030.94	1,630.07	1,301,925.45	3,229,211.00				
Point 11	0.00	2,951.01	1,637.58	1,302,845.51	3,229,210.06				
Point 12	0.00	5,120.23	1,659.55	1,305,014.75	3,229,212.11				
Point 13	0.00	7,177.42	1,683.05	1,307,071.99	3,229,216.72				
Point 14	0.00	7,179.63	-484.82	1,307,054.29	3,227,049.01				
Nichols 2N_pEr0 WP2	0.00	0.00	7,083.79	4,500.00	20.00	1,304,379.52	3,227,578.39	40.166049	-104.685671
- actual wellpath misses target center by 5.36ft at 11571.58ft MD (7080.42 TVD, 4499.88 N, 15.84 E)									
- Point									
B&M 32-5	0.00	0.00	7,083.79	5,862.99	186.96	1,305,743.93	3,227,732.83	40.169790	-104.685074
- actual wellpath misses target center by 179.71ft at 12937.13ft MD (7050.82 TVD, 5863.69 N, 10.30 E)									
- Circle (radius 160.00)									

Casing Points							
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")			
7,329.60	7,084.55	7" Casing Point @ 7329.6' MD :: 7084.55' TVD	7	8-3/4			

Design Annotations						
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment		
		+N/-S (ft)	+E/-W (ft)			
16.00	16.00	0.00	0.00	Xtreme 22: RKB = 16ft		
116.00	116.00	-0.19	-0.08	First MS Energy Services Gyro @ 116.00ft		
816.00	816.00	0.09	0.17	Tie-On to Surface Gyros @ 816.00ft		
816.00	816.00	0.09	0.17	Final MS Energy Services Gyro @ 816.00ft		
917.00	917.00	0.33	-0.15	First Sperry MWD Survey @ 917.00ft		
14,126.00	7,043.69	7,052.14	16.53	Final Sperry MWD Survey @ 14126.00ft		
14,178.00	7,044.13	7,104.13	15.41	Straight Line Proj. @ 14,178' MD :: 7044.13' TVD		

Checked By: _____	Approved By: _____	Date: _____
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