

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T2N-R65W

Nichols 1N-5HZ

Plan B Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

07 January, 2013

Well Coordinates: 1,299,891.35 N, 3,229,099.31 E (40° 09' 13.28" N, 104° 40' 49.36" W)

Ground Level: 4,893.00 ft

Local Coordinate Origin:

Centered on Well Nichols 1N-5HZ

Viewing Datum:

RKB=25 @ 4918.00ft (HP 308)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

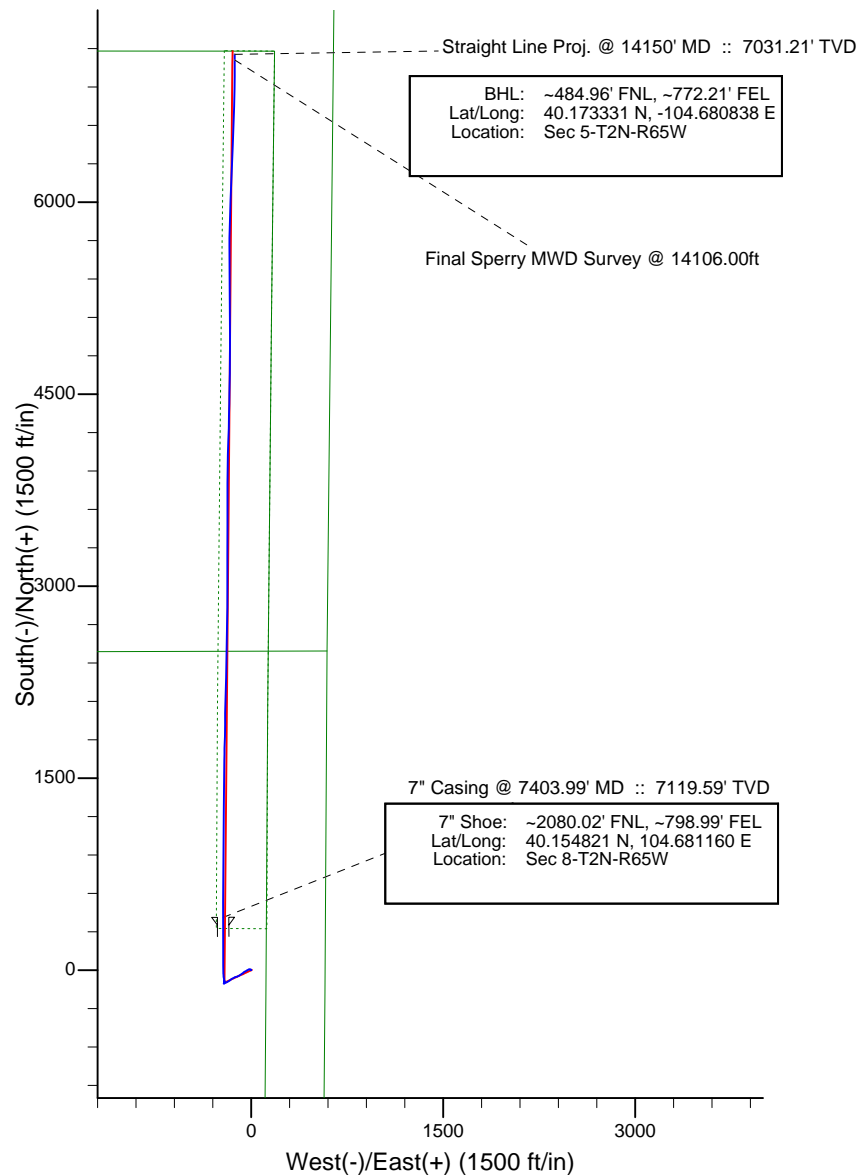
Version: 2003.16 Build: 43I

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T2N-R65W
 Well: Nichols 1N-5HZ

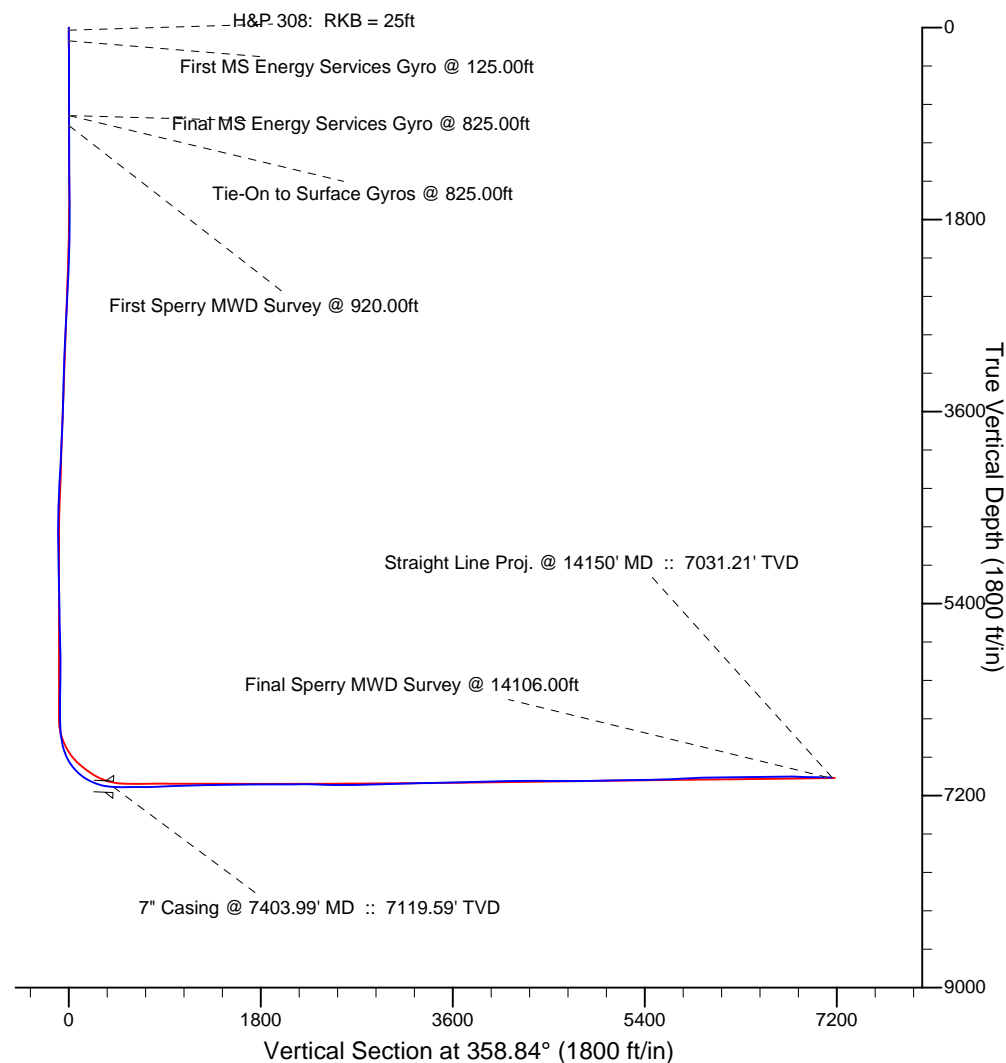


HALLIBURTON
 Sperry Drilling



LEGEND

- Nichols 1N-5HZ, Plan B Rev 0, Plan B Rev 0 Proposal V0
- Actual Field Surveys



*Footages are calculated assuming section lines parallel N/S and E/W.

Design Report for Nichols 1N-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
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
H&P 308: RKB = 25ft							
125.00	0.43	351.72	125.00	0.37	-0.05	0.37	0.43
First MS Energy Services Gyro @ 125.00ft							
225.00	0.44	10.19	225.00	1.12	-0.04	1.12	0.14
325.00	0.38	20.51	324.99	1.81	0.14	1.81	0.09
425.00	0.30	100.07	424.99	2.07	0.52	2.06	0.44
525.00	0.13	282.53	524.99	2.05	0.66	2.04	0.43
625.00	0.12	300.67	624.99	2.13	0.46	2.12	0.04
725.00	0.25	24.87	724.99	2.38	0.47	2.37	0.27
825.00	0.24	93.37	824.99	2.57	0.77	2.55	0.28
Final MS Energy Services Gyro @ 825.00ft - Tie-On to Surface Gyros @ 825.00ft							
920.00	0.50	282.91	919.99	2.65	0.56	2.64	0.78
First Sperry MWD Survey @ 920.00ft							
1,012.00	0.51	322.12	1,011.99	3.06	-0.08	3.06	0.37
1,104.00	0.54	300.27	1,103.98	3.60	-0.71	3.62	0.22
1,196.00	0.48	284.82	1,195.98	3.92	-1.45	3.95	0.16
1,288.00	0.37	295.79	1,287.98	4.15	-2.09	4.19	0.15
1,380.00	0.92	269.65	1,379.97	4.27	-3.10	4.33	0.66
1,471.00	0.72	288.66	1,470.96	4.45	-4.37	4.54	0.37
1,563.00	0.87	310.09	1,562.95	5.09	-5.45	5.20	0.36
1,655.00	0.83	298.26	1,654.94	5.85	-6.58	5.98	0.20
1,747.00	1.10	301.25	1,746.93	6.62	-7.92	6.78	0.30
1,839.00	1.76	271.48	1,838.90	7.12	-10.09	7.32	1.06
1,931.00	2.61	252.10	1,930.83	6.51	-13.49	6.78	1.21
2,023.00	3.44	252.22	2,022.71	5.03	-18.11	5.39	0.90
2,114.00	4.20	247.30	2,113.50	2.91	-23.79	3.39	0.91
2,209.00	4.55	236.18	2,208.23	-0.53	-30.13	0.07	0.96
2,304.00	4.81	239.41	2,302.91	-4.66	-36.69	-3.92	0.39
2,399.00	5.22	241.97	2,397.55	-8.72	-43.93	-7.83	0.49
2,494.00	4.86	239.05	2,492.18	-12.82	-51.20	-11.78	0.47
2,588.00	4.87	231.48	2,585.84	-17.35	-57.73	-16.18	0.68
2,683.00	5.81	225.41	2,680.43	-23.24	-64.31	-21.93	1.15
2,778.00	5.32	235.48	2,774.98	-29.11	-71.36	-27.66	1.15
2,872.00	5.34	239.76	2,868.58	-33.78	-78.73	-32.18	0.42
2,967.00	5.41	240.69	2,963.16	-38.20	-86.46	-36.45	0.12
3,062.00	4.97	239.22	3,057.77	-42.50	-93.90	-40.59	0.48
3,157.00	4.49	240.70	3,152.45	-46.42	-100.68	-44.38	0.52
3,252.00	4.77	250.36	3,247.14	-49.57	-107.64	-47.39	0.87
3,347.00	4.43	256.32	3,341.83	-51.77	-114.93	-49.43	0.62
3,442.00	4.47	254.63	3,436.55	-53.61	-122.06	-51.14	0.14
3,536.00	5.11	243.79	3,530.22	-56.43	-129.35	-53.81	1.18
3,631.00	4.07	248.16	3,624.91	-59.56	-136.27	-56.79	1.15
3,726.00	4.18	240.50	3,719.67	-62.52	-142.42	-59.63	0.59
3,820.00	5.10	230.72	3,813.36	-66.85	-148.63	-63.83	1.29
3,915.00	3.94	237.38	3,908.06	-71.28	-154.65	-68.14	1.34
4,010.00	4.95	235.24	4,002.78	-75.38	-160.77	-72.12	1.08
4,105.00	6.53	233.67	4,097.30	-80.92	-168.49	-77.50	1.67
4,200.00	6.39	237.56	4,191.70	-86.95	-177.30	-83.35	0.48

Design Report for Nichols 1N-5HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,294.00	6.25	238.22	4,285.12	-92.45	-186.06	-88.68	0.17
4,389.00	5.06	244.76	4,379.66	-96.96	-194.25	-93.02	1.42
4,484.00	4.55	252.05	4,474.33	-99.91	-201.62	-95.82	0.84
4,578.00	3.06	238.49	4,568.12	-102.37	-207.31	-98.16	1.84
4,673.00	2.21	235.79	4,663.02	-104.73	-210.99	-100.44	0.90
4,767.00	0.56	309.27	4,756.99	-105.45	-212.84	-101.14	2.26
4,862.00	0.80	10.77	4,851.99	-104.51	-213.08	-100.19	0.76
4,957.00	1.51	10.55	4,946.97	-102.63	-212.72	-98.31	0.75
5,052.00	1.45	5.17	5,041.94	-100.20	-212.39	-95.89	0.16
5,146.00	1.17	342.25	5,135.91	-98.10	-212.57	-93.79	0.63
5,241.00	1.19	2.65	5,230.89	-96.19	-212.82	-91.87	0.44
5,336.00	1.22	32.22	5,325.87	-94.35	-212.24	-90.05	0.65
5,431.00	1.81	34.53	5,420.84	-92.26	-210.85	-87.98	0.62
5,525.00	0.79	18.27	5,514.81	-90.42	-209.80	-86.17	1.14
5,620.00	1.07	25.32	5,609.80	-89.00	-209.22	-84.75	0.32
5,715.00	0.87	8.57	5,704.79	-87.48	-208.73	-83.25	0.36
5,810.00	1.26	16.46	5,799.77	-85.77	-208.33	-81.54	0.44
5,904.00	1.11	343.49	5,893.75	-83.90	-208.29	-79.68	0.73
5,999.00	0.43	344.75	5,988.74	-82.68	-208.65	-78.45	0.72
6,094.00	0.07	180.87	6,083.74	-82.39	-208.74	-78.16	0.52
6,188.00	0.84	185.39	6,177.74	-83.13	-208.81	-78.90	0.82
6,283.00	1.27	185.41	6,272.72	-84.88	-208.97	-80.64	0.45
6,378.00	1.07	199.28	6,367.70	-86.76	-209.37	-82.52	0.36
6,473.00	0.53	336.39	6,462.70	-87.20	-209.83	-82.94	1.58
6,504.00	1.22	356.96	6,493.69	-86.73	-209.91	-82.48	2.41
6,536.00	1.74	356.61	6,525.68	-85.91	-209.96	-81.65	1.63
6,568.00	3.00	355.72	6,557.65	-84.59	-210.05	-80.33	3.94
6,599.00	4.64	351.26	6,588.58	-82.54	-210.30	-78.28	5.37
6,631.00	6.40	353.00	6,620.43	-79.49	-210.71	-75.22	5.52
6,662.00	7.80	353.47	6,651.20	-75.69	-211.16	-71.41	4.52
6,694.00	9.34	352.27	6,682.84	-70.96	-211.76	-66.67	4.84
6,725.00	11.14	352.10	6,713.34	-65.50	-212.51	-61.19	5.81
6,756.00	14.12	353.00	6,743.59	-58.78	-213.38	-54.45	9.63
6,788.00	17.57	353.56	6,774.37	-50.10	-214.40	-45.76	10.79
6,819.00	21.19	354.90	6,803.61	-39.87	-215.42	-35.51	11.76
6,851.00	24.67	356.48	6,833.07	-27.44	-216.35	-23.06	11.04
6,883.00	28.14	357.98	6,861.73	-13.22	-217.02	-8.84	11.04
6,914.00	31.72	358.66	6,888.59	2.23	-217.47	6.62	11.60
6,946.00	35.42	359.03	6,915.25	19.92	-217.82	24.32	11.58
6,977.00	39.61	359.74	6,939.84	38.79	-218.02	43.19	13.59
7,009.00	43.43	359.45	6,963.79	60.00	-218.17	64.40	11.95
7,041.00	46.75	359.95	6,986.38	82.66	-218.29	87.05	10.43
7,072.00	50.74	0.24	7,006.82	105.96	-218.25	110.35	12.89
7,104.00	54.99	0.81	7,026.13	131.47	-218.01	135.84	13.36
7,135.00	58.16	0.89	7,043.20	157.33	-217.63	161.69	10.23
7,167.00	62.29	0.77	7,059.09	185.10	-217.23	189.45	12.91
7,198.00	65.53	358.86	7,072.72	212.93	-217.32	217.28	11.83
7,230.00	68.81	358.70	7,085.14	242.42	-217.95	246.77	10.26
7,261.00	72.12	0.03	7,095.50	271.63	-218.27	275.98	11.42
7,293.00	75.95	0.28	7,104.30	302.39	-218.19	306.73	11.99
7,324.00	79.29	359.73	7,110.95	332.66	-218.19	337.00	10.91

Design Report for Nichols 1N-5HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,356.00	83.44	359.48	7,115.75	364.29	-218.40	368.63	12.99
7,403.99	87.37	359.79	7,119.59	412.12	-218.71	416.45	8.22
7" Casing @ 7403.99' MD :: 7119.59' TVD							
7,433.00	89.75	359.97	7,120.32	441.11	-218.77	445.44	8.22
7,528.00	89.51	359.81	7,120.94	536.11	-218.95	540.42	0.30
7,622.00	89.81	359.93	7,121.49	630.11	-219.17	634.41	0.34
7,714.00	90.74	0.21	7,121.05	722.11	-219.05	726.38	1.06
7,806.00	92.04	0.84	7,118.82	814.07	-218.21	818.31	1.57
7,898.00	92.53	0.15	7,115.15	906.00	-217.42	910.20	0.92
7,990.00	91.85	0.97	7,111.64	997.92	-216.52	1,002.09	1.16
8,082.00	92.35	0.38	7,108.27	1,089.86	-215.44	1,093.98	0.84
8,174.00	91.54	1.06	7,105.14	1,181.79	-214.28	1,185.88	1.15
8,266.00	92.04	0.85	7,102.27	1,273.74	-212.75	1,277.77	0.59
8,357.00	90.49	0.91	7,100.26	1,364.70	-211.35	1,368.69	1.70
8,449.00	90.37	0.90	7,099.57	1,456.69	-209.90	1,460.63	0.13
8,541.00	90.49	0.47	7,098.88	1,548.68	-208.80	1,552.58	0.49
8,633.00	90.49	359.76	7,098.09	1,640.67	-208.61	1,644.55	0.77
8,725.00	90.43	1.67	7,097.35	1,732.66	-207.47	1,736.49	2.08
8,817.00	90.19	1.05	7,096.86	1,824.63	-205.28	1,828.40	0.72
8,909.00	90.43	0.61	7,096.36	1,916.62	-203.95	1,920.35	0.54
9,001.00	89.69	0.99	7,096.26	2,008.61	-202.66	2,012.29	0.90
9,093.00	91.05	0.84	7,095.67	2,100.59	-201.20	2,104.23	1.49
9,184.00	90.12	1.66	7,094.74	2,191.56	-199.21	2,195.14	1.36
9,276.00	88.76	2.04	7,095.64	2,283.51	-196.24	2,287.01	1.53
9,368.00	88.83	1.60	7,097.57	2,375.44	-193.32	2,378.86	0.48
9,459.00	88.95	1.51	7,099.34	2,466.39	-190.85	2,469.74	0.16
9,551.00	88.83	1.27	7,101.12	2,558.35	-188.62	2,561.64	0.29
9,643.00	90.37	0.55	7,101.76	2,650.33	-187.16	2,653.57	1.85
9,735.00	91.73	0.17	7,100.08	2,742.31	-186.58	2,745.52	1.53
9,827.00	91.98	0.16	7,097.10	2,834.26	-186.32	2,837.45	0.27
9,919.00	91.92	359.73	7,093.97	2,926.21	-186.40	2,929.38	0.47
10,011.00	90.43	0.78	7,092.08	3,018.19	-185.99	3,021.33	1.98
10,103.00	91.92	0.11	7,090.19	3,110.16	-185.28	3,113.27	1.78
10,195.00	91.98	359.89	7,087.06	3,202.11	-185.28	3,205.19	0.25
10,287.00	91.05	0.66	7,084.63	3,294.07	-184.84	3,297.13	1.31
10,378.00	91.05	0.44	7,082.96	3,385.05	-183.96	3,388.08	0.24
10,470.00	91.17	359.99	7,081.18	3,477.03	-183.62	3,480.03	0.51
10,565.00	91.24	359.58	7,079.18	3,572.01	-183.98	3,575.00	0.44
10,659.00	91.54	359.10	7,076.90	3,665.98	-185.06	3,668.97	0.60
10,754.00	91.79	1.11	7,074.14	3,760.93	-184.88	3,763.90	2.13
10,849.00	91.79	0.44	7,071.17	3,855.88	-183.60	3,858.80	0.70
10,944.00	91.85	0.39	7,068.16	3,950.83	-182.91	3,953.71	0.08
11,038.00	91.24	2.01	7,065.62	4,044.77	-180.94	4,047.60	1.84
11,133.00	91.17	1.73	7,063.62	4,139.70	-177.85	4,142.44	0.30
11,228.00	89.94	1.57	7,062.70	4,234.65	-175.11	4,237.32	1.31
11,323.00	89.75	1.44	7,062.96	4,329.62	-172.61	4,332.22	0.24
11,418.00	89.75	1.04	7,063.38	4,424.59	-170.56	4,427.14	0.42
11,513.00	89.94	1.05	7,063.63	4,519.58	-168.83	4,522.07	0.20
11,608.00	89.88	0.43	7,063.78	4,614.57	-167.60	4,617.01	0.66
11,702.00	90.00	359.99	7,063.88	4,708.57	-167.25	4,710.99	0.49
11,797.00	90.31	0.14	7,063.62	4,803.57	-167.15	4,805.96	0.36

Design Report for Nichols 1N-5HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,892.00	90.93	0.87	7,062.60	4,898.56	-166.31	4,900.92	1.01
11,987.00	91.23	0.78	7,060.81	4,993.53	-164.94	4,995.84	0.33
12,081.00	90.80	0.18	7,059.14	5,087.51	-164.15	5,089.79	0.79
12,176.00	90.37	359.41	7,058.17	5,182.51	-164.49	5,184.77	0.93
12,271.00	91.92	358.86	7,056.27	5,277.47	-165.93	5,279.75	1.73
12,365.00	91.85	358.59	7,053.18	5,371.40	-168.02	5,373.70	0.30
12,460.00	90.93	0.24	7,050.88	5,466.36	-168.99	5,468.66	1.99
12,555.00	90.49	359.95	7,049.70	5,561.35	-168.83	5,563.63	0.55
12,649.00	92.04	359.97	7,047.62	5,655.33	-168.90	5,657.58	1.65
12,744.00	93.09	1.71	7,043.37	5,750.22	-167.51	5,752.43	2.14
12,839.00	93.40	1.12	7,037.99	5,845.04	-165.16	5,847.18	0.70
12,934.00	92.41	1.47	7,033.18	5,939.89	-163.02	5,941.97	1.11
13,029.00	91.17	2.43	7,030.21	6,034.78	-159.79	6,036.78	1.65
13,124.00	89.69	1.83	7,029.50	6,129.71	-156.26	6,131.62	1.68
13,219.00	90.00	2.47	7,029.76	6,224.64	-152.69	6,226.46	0.75
13,313.00	90.49	2.47	7,029.35	6,318.56	-148.64	6,320.27	0.52
13,408.00	90.99	2.42	7,028.13	6,413.46	-144.59	6,415.07	0.53
13,503.00	91.30	2.19	7,026.23	6,508.37	-140.77	6,509.88	0.41
13,598.00	91.79	2.01	7,023.67	6,603.27	-137.29	6,604.69	0.55
13,692.00	90.62	1.99	7,021.69	6,697.19	-134.01	6,698.53	1.24
13,787.00	88.14	1.24	7,022.72	6,792.14	-131.33	6,793.40	2.73
13,882.00	88.27	0.79	7,025.69	6,887.07	-129.65	6,888.29	0.49
13,977.00	88.64	0.41	7,028.26	6,982.03	-128.66	6,983.21	0.56
14,071.00	89.07	359.74	7,030.13	7,076.01	-128.53	7,077.17	0.85
14,106.00	89.26	359.95	7,030.64	7,111.01	-128.63	7,112.16	0.81
Final Sperry MWD Survey @ 14106.00ft							
14,150.00	89.26	359.95	7,031.21	7,155.01	-128.67	7,156.15	0.00
Straight Line Proj. @ 14150' MD :: 7031.21' TVD							

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	H&P 308: RKB = 25ft
125.00	125.00	0.37	-0.05	First MS Energy Services Gyro @ 125.00ft
825.00	824.99	2.57	0.77	Final MS Energy Services Gyro @ 825.00ft
825.00	824.99	2.57	0.77	Tie-On to Surface Gyros @ 825.00ft
920.00	919.99	2.65	0.56	First Sperry MWD Survey @ 920.00ft
14,106.00	7,030.64	7,111.01	-128.63	Final Sperry MWD Survey @ 14106.00ft
14,150.00	7,031.21	7,155.01	-128.67	Straight Line Proj. @ 14150' MD :: 7031.21' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Nichols 1N-5HZ_BHL reloc	358.84	Slot	0.00	0.00	0.00

Design Report for Nichols 1N-5HZ - Actual Field Surveys

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	825.00	MS Energy Services - Surface Gyros	NS-GYRO-MS
920.00	7,356.00	Sperry MWD Surveys - Vert/Build	MWD+SC
7,433.00	14,106.00	Sperry MWD Surveys - Lateral	MWD+IFR1+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,403.99		7" Casing @ 7403.99' MD :: 7119.59' TVD	7	8-3/4

Design Report for Nichols 1N-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 1N-5HZ_Sel	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			-4,151.72	7,184.22		1,307,036.59	3,224,881.54		
Point 2			-4,175.26	5,129.14		1,304,981.46	3,224,876.99		
Point 3			-4,205.28	2,941.82		1,302,794.05	3,224,867.19		
Point 4			-4,216.03	2,021.75		1,301,873.96	3,224,864.95		
Point 5			-4,236.96	-168.78		1,299,683.42	3,224,864.27		
Point 6			-4,257.81	-2,355.67		1,297,496.52	3,224,863.63		
Point 7			-2,079.75	-2,355.77		1,297,516.55	3,227,041.51		
Point 8			98.64	-2,356.18		1,297,536.28	3,229,219.72		
Point 9			116.57	-180.16		1,299,712.28	3,229,217.53		
Point 10			130.49	2,033.07		1,301,925.45	3,229,211.00		
Point 11			138.06	2,953.14		1,302,845.51	3,229,210.06		
Point 12			160.16	5,122.36		1,305,014.75	3,229,212.11		
Point 13			183.78	7,179.55		1,307,071.99	3,229,216.72		
Point 14			-1,984.09	7,181.89		1,307,054.29	3,227,049.01		
Nichols 1N-5HZ_B&	0.00	0.00	7,032.17	5,653.16	202.34	1,305,545.90	3,229,249.38	40.169208	-104.679654
- actual wellpath misses target center by 371.60ft at 12652.96ft MD (7047.48 TVD, 5659.29 N, -168.90 E)									
- Circle (radius 150.00)									
Nichols 1N-5HZ_BH	0.00	0.00	7,036.00	7,179.93	-145.00	1,307,069.33	3,228,887.96	40.173399	-104.680897
- actual wellpath misses target center by 30.18ft at 14150.00ft MD (7031.21 TVD, 7155.01 N, -128.67 E)									
- Point									
Nichols 1N-5HZ_Mo	0.00	0.00	7,029.13	7,113.63	131.62	1,307,005.59	3,229,165.17	40.173217	-104.679907
- actual wellpath misses target center by 260.27ft at 14106.00ft MD (7030.64 TVD, 7111.01 N, -128.63 E)									
- Circle (radius 150.00)									
Nichols 1N-5HZ_T1	0.00	0.00	7,073.77	4,138.99	-171.24	1,304,028.41	3,228,889.83	40.165052	-104.680991
- actual wellpath misses target center by 12.11ft at 11132.30ft MD (7063.64 TVD, 4139.00 N, -177.87 E)									
- Point									
Nichols 1N-5HZ_Lar	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			-209.22	7,183.19		1,307,072.00	3,228,823.72		
Point 2			-232.84	5,125.99		1,305,014.75	3,228,819.11		
Point 3			-254.94	2,956.77		1,302,845.51	3,228,817.06		
Point 4			-262.51	2,036.70		1,301,925.45	3,228,818.00		
Point 5			-271.78	327.13		1,300,215.94	3,228,824.53		
Point 6			123.41	323.47		1,300,215.93	3,229,219.72		
Point 7			130.49	2,033.07		1,301,925.45	3,229,211.00		
Point 8			138.06	2,953.14		1,302,845.51	3,229,210.06		
Point 9			160.16	5,122.36		1,305,014.75	3,229,212.11		
Point 10			183.78	7,179.55		1,307,071.99	3,229,216.72		
Nichols 1N-5HZ_BH	0.00	0.00	7,029.00	7,179.93	-56.17	1,307,070.15	3,228,976.78	40.173399	-104.680579
- actual wellpath misses target center by 76.69ft at 14150.00ft MD (7031.21 TVD, 7155.01 N, -128.67 E)									
- Point									
Nichols 1N-5HZ_Hal	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			576.59	-181.36		1,299,715.33	3,229,677.53		
Point 2			-4,696.98	-167.58		1,299,680.37	3,224,404.27		
Nichols 1N-5HZ_SH	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Point									
Nichols 1N-5HZ_Ser	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			-4,671.68	2,480.60		1,302,328.56	3,224,405.10		
Point 2			-2,039.11	2,487.37		1,302,359.66	3,227,037.38		
Point 3			593.43	2,494.31		1,302,390.93	3,229,669.63		

Design Report for Nichols 1N-5HZ - Actual Field Surveys

Nichols 1N-5HZ_Ser	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			-4,606.49	7,644.73	1,307,492.85	3,224,422.55			
Point 2			-4,635.31	5,129.85	1,304,977.92	3,224,416.98			
Point 3			-4,671.68	2,480.60	1,302,328.56	3,224,405.10			
Point 4			-4,696.98	-167.58	1,299,680.37	3,224,404.27			
Point 5			-4,722.23	-2,815.67	1,297,032.27	3,224,403.50			
Point 6			-2,083.61	-2,815.79	1,297,056.54	3,227,041.90			
Point 7			554.88	-2,816.29	1,297,080.42	3,229,680.17			
Point 8			576.59	-181.36	1,299,715.33	3,229,677.53			
Point 9			593.43	2,494.31	1,302,390.93	3,229,669.63			
Point 10			620.19	5,121.64	1,305,018.28	3,229,672.11			
Point 11			649.11	7,639.07	1,307,535.77	3,229,677.76			
Point 12			-1,978.70	7,641.90	1,307,514.31	3,227,050.15			
Nichols 1N-5HZ_T2	0.00	0.00	7,072.32	4,255.71	-170.23	1,304,145.13	3,228,889.76	40.165372	-104.680987
- actual wellpath misses target center by 10.51ft at 11249.21ft MD (7062.73 TVD, 4255.85 N, -174.53 E)									
- Point									

North Reference Sheet for Sec. 8-T2N-R65W - Nichols 1N-5HZ - 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 @ 4918.00ft (HP 308). Northing and Easting are relative to Nichols 1N-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

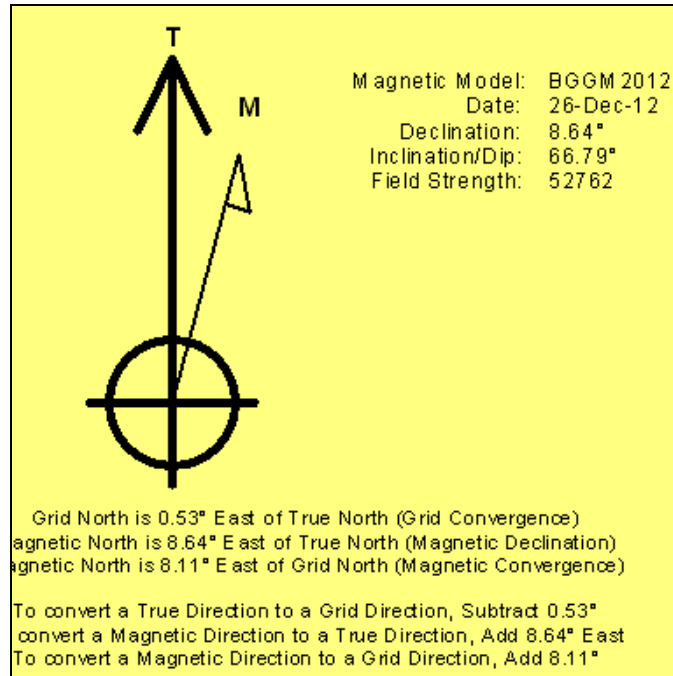
Grid Coordinates of Well: 1,299,891.35 ft N, 3,229,099.31 ft E

Geographical Coordinates of Well: 40° 09' 13.28" N, 104° 40' 49.36" W

Grid Convergence at Surface is: 0.53°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,150.00ft
the Bottom Hole Displacement is 7,156.16ft in the Direction of 358.97° (True).

Magnetic Convergence at surface is: -8.11° (26 December 2012, , BGGM2012)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T2N-R65W

Nichols 1N-5HZ

Plan B Rev 0

Design: Actual Field Surveys

Survey Report - Geographic

07 January, 2013

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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 1N-5HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,299,891.35 ft	Latitude:	40.153690
	+E/-W	0.00 ft	Easting:	3,229,099.31 ft	Longitude:	-104.680378
Position Uncertainty		3.28 ft	Wellhead Elevation:	ft	Ground Level:	4,893.00 ft

Wellbore	Plan B Rev 0				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2012-12-26	8.64	66.79	52,762

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	358.84	

Survey Program	Date	2013-01-07			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	825.00	MS Energy Services - Surface Gyros (Plar	NS-GYRO-MS	North sensing gyrocompassing m/s	
920.00	7,356.00	Sperry MWD Surveys - Vert/Build (Plan B	MWD+SC	Fixed:v2:standard dec & axial correction	
7,433.00	14,106.00	Sperry MWD Surveys - Lateral (Plan B Re	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 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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	1,299,891.35	3,229,099.31	40.153690	-104.680378
25.00	0.00	0.00	25.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
H&P 308: RKB = 25ft									
125.00	0.43	351.72	125.00	0.37	-0.05	1,299,891.72	3,229,099.25	40.153691	-104.680378
First MS Energy Services Gyro @ 125.00ft									
225.00	0.44	10.19	225.00	1.12	-0.04	1,299,892.47	3,229,099.26	40.153693	-104.680378
325.00	0.38	20.51	324.99	1.81	0.14	1,299,893.16	3,229,099.44	40.153695	-104.680377
425.00	0.30	100.07	424.99	2.07	0.52	1,299,893.42	3,229,099.81	40.153696	-104.680376
525.00	0.13	282.53	524.99	2.05	0.66	1,299,893.40	3,229,099.95	40.153696	-104.680376
625.00	0.12	300.67	624.99	2.13	0.46	1,299,893.48	3,229,099.75	40.153696	-104.680376
725.00	0.25	24.87	724.99	2.38	0.47	1,299,893.73	3,229,099.75	40.153696	-104.680376
825.00	0.24	93.37	824.99	2.57	0.77	1,299,893.92	3,229,100.05	40.153697	-104.680375
Final MS Energy Services Gyro @ 825.00ft - Tie-On to Surface Gyros @ 825.00ft									
920.00	0.50	282.91	919.99	2.65	0.56	1,299,894.00	3,229,099.84	40.153697	-104.680376
First Sperry MWD Survey @ 920.00ft									
1,012.00	0.51	322.12	1,011.99	3.06	-0.08	1,299,894.41	3,229,099.20	40.153698	-104.680378
1,104.00	0.54	300.27	1,103.98	3.60	-0.71	1,299,894.94	3,229,098.57	40.153700	-104.680381
1,196.00	0.48	284.82	1,195.98	3.92	-1.45	1,299,895.25	3,229,097.82	40.153701	-104.680383
1,288.00	0.37	295.79	1,287.98	4.15	-2.09	1,299,895.47	3,229,097.18	40.153701	-104.680385
1,380.00	0.92	269.65	1,379.97	4.27	-3.10	1,299,895.59	3,229,096.17	40.153702	-104.680389
1,471.00	0.72	288.66	1,470.96	4.45	-4.37	1,299,895.76	3,229,094.89	40.153702	-104.680394
1,563.00	0.87	310.09	1,562.95	5.09	-5.45	1,299,896.38	3,229,093.81	40.153704	-104.680398
1,655.00	0.83	298.26	1,654.94	5.85	-6.58	1,299,897.14	3,229,092.68	40.153706	-104.680402
1,747.00	1.10	301.25	1,746.93	6.62	-7.92	1,299,897.90	3,229,091.33	40.153708	-104.680406
1,839.00	1.76	271.48	1,838.90	7.12	-10.09	1,299,898.37	3,229,089.16	40.153709	-104.680414
1,931.00	2.61	252.10	1,930.83	6.51	-13.49	1,299,897.73	3,229,085.76	40.153708	-104.680426
2,023.00	3.44	252.22	2,022.71	5.03	-18.11	1,299,896.20	3,229,081.15	40.153704	-104.680443
2,114.00	4.20	247.30	2,113.50	2.91	-23.79	1,299,894.03	3,229,075.50	40.153698	-104.680463
2,209.00	4.55	236.18	2,208.23	-0.53	-30.13	1,299,890.53	3,229,069.19	40.153688	-104.680486
2,304.00	4.81	239.41	2,302.91	-4.66	-36.69	1,299,886.35	3,229,062.67	40.153677	-104.680509
2,399.00	5.22	241.97	2,397.55	-8.72	-43.93	1,299,882.22	3,229,055.46	40.153666	-104.680535
2,494.00	4.86	239.05	2,492.18	-12.82	-51.20	1,299,878.06	3,229,048.24	40.153655	-104.680561
2,588.00	4.87	231.48	2,585.84	-17.35	-57.73	1,299,873.46	3,229,041.74	40.153642	-104.680585
2,683.00	5.81	225.41	2,680.43	-23.24	-64.31	1,299,867.52	3,229,035.22	40.153626	-104.680608
2,778.00	5.32	235.48	2,774.98	-29.11	-71.36	1,299,861.58	3,229,028.22	40.153610	-104.680633
2,872.00	5.34	239.76	2,868.58	-33.78	-78.73	1,299,856.84	3,229,020.89	40.153597	-104.680660
2,967.00	5.41	240.69	2,963.16	-38.20	-86.46	1,299,852.35	3,229,013.21	40.153585	-104.680687
3,062.00	4.97	239.22	3,057.77	-42.50	-93.90	1,299,847.98	3,229,005.81	40.153573	-104.680714
3,157.00	4.49	240.70	3,152.45	-46.42	-100.68	1,299,844.00	3,228,999.07	40.153563	-104.680738
3,252.00	4.77	250.36	3,247.14	-49.57	-107.64	1,299,840.78	3,228,992.14	40.153554	-104.680763
3,347.00	4.43	256.32	3,341.83	-51.77	-114.93	1,299,838.52	3,228,984.87	40.153548	-104.680789
3,442.00	4.47	254.63	3,436.55	-53.61	-122.06	1,299,836.61	3,228,977.75	40.153543	-104.680815
3,536.00	5.11	243.79	3,530.22	-56.43	-129.35	1,299,833.72	3,228,970.49	40.153535	-104.680841
3,631.00	4.07	248.16	3,624.91	-59.56	-136.27	1,299,830.53	3,228,963.60	40.153526	-104.680865
3,726.00	4.18	240.50	3,719.67	-62.52	-142.42	1,299,827.52	3,228,957.48	40.153518	-104.680887
3,820.00	5.10	230.72	3,813.36	-66.85	-148.63	1,299,823.13	3,228,951.31	40.153506	-104.680910
3,915.00	3.94	237.38	3,908.06	-71.28	-154.65	1,299,818.64	3,228,945.33	40.153494	-104.680931
4,010.00	4.95	235.24	4,002.78	-75.38	-160.77	1,299,814.49	3,228,939.25	40.153483	-104.680953
4,105.00	6.53	233.67	4,097.30	-80.92	-168.49	1,299,808.88	3,228,931.58	40.153468	-104.680981
4,200.00	6.39	237.56	4,191.70	-86.95	-177.30	1,299,802.76	3,228,922.83	40.153451	-104.681012
4,294.00	6.25	238.22	4,285.12	-92.45	-186.06	1,299,797.18	3,228,914.12	40.153436	-104.681044
4,389.00	5.06	244.76	4,379.66	-96.96	-194.25	1,299,792.60	3,228,905.97	40.153424	-104.681073
4,484.00	4.55	252.05	4,474.33	-99.91	-201.62	1,299,789.58	3,228,898.63	40.153416	-104.681099
4,578.00	3.06	238.49	4,568.12	-102.37	-207.31	1,299,787.07	3,228,892.96	40.153409	-104.681120
4,673.00	2.21	235.79	4,663.02	-104.73	-210.99	1,299,784.68	3,228,889.31	40.153402	-104.681133

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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
4,767.00	0.56	309.27	4,756.99	-105.45	-212.84	1,299,783.93	3,228,887.46	40.153400	-104.681139
4,862.00	0.80	10.77	4,851.99	-104.51	-213.08	1,299,784.88	3,228,887.22	40.153403	-104.681140
4,957.00	1.51	10.55	4,946.97	-102.63	-212.72	1,299,786.76	3,228,887.55	40.153408	-104.681139
5,052.00	1.45	5.17	5,041.94	-100.20	-212.39	1,299,789.19	3,228,887.87	40.153415	-104.681138
5,146.00	1.17	342.25	5,135.91	-98.10	-212.57	1,299,791.29	3,228,887.66	40.153421	-104.681138
5,241.00	1.19	2.65	5,230.89	-96.19	-212.82	1,299,793.20	3,228,887.39	40.153426	-104.681139
5,336.00	1.22	32.22	5,325.87	-94.35	-212.24	1,299,795.04	3,228,887.96	40.153431	-104.681137
5,431.00	1.81	34.53	5,420.84	-92.26	-210.85	1,299,797.15	3,228,889.33	40.153437	-104.681132
5,525.00	0.79	18.27	5,514.81	-90.42	-209.80	1,299,798.99	3,228,890.36	40.153442	-104.681129
5,620.00	1.07	25.32	5,609.80	-89.00	-209.22	1,299,800.42	3,228,890.93	40.153446	-104.681126
5,715.00	0.87	8.57	5,704.79	-87.48	-208.73	1,299,801.94	3,228,891.40	40.153450	-104.681125
5,810.00	1.26	16.46	5,799.77	-85.77	-208.33	1,299,803.66	3,228,891.79	40.153455	-104.681123
5,904.00	1.11	343.49	5,893.75	-83.90	-208.29	1,299,805.52	3,228,891.81	40.153460	-104.681123
5,999.00	0.43	344.75	5,988.74	-82.68	-208.65	1,299,806.75	3,228,891.44	40.153463	-104.681124
6,094.00	0.07	180.87	6,083.74	-82.39	-208.74	1,299,807.03	3,228,891.34	40.153464	-104.681125
6,188.00	0.84	185.39	6,177.74	-83.13	-208.81	1,299,806.29	3,228,891.29	40.153462	-104.681125
6,283.00	1.27	185.41	6,272.72	-84.88	-208.97	1,299,804.55	3,228,891.14	40.153457	-104.681126
6,378.00	1.07	199.28	6,367.70	-86.76	-209.37	1,299,802.66	3,228,890.76	40.153452	-104.681127
6,473.00	0.53	336.39	6,462.70	-87.20	-209.83	1,299,802.22	3,228,890.30	40.153451	-104.681129
6,504.00	1.22	356.96	6,493.69	-86.73	-209.91	1,299,802.68	3,228,890.22	40.153452	-104.681129
6,536.00	1.74	356.61	6,525.68	-85.91	-209.96	1,299,803.50	3,228,890.16	40.153454	-104.681129
6,568.00	3.00	355.72	6,557.65	-84.59	-210.05	1,299,804.82	3,228,890.06	40.153458	-104.681129
6,599.00	4.64	351.26	6,588.58	-82.54	-210.30	1,299,806.87	3,228,889.79	40.153463	-104.681130
6,631.00	6.40	353.00	6,620.43	-79.49	-210.71	1,299,809.91	3,228,889.35	40.153472	-104.681132
6,662.00	7.80	353.47	6,651.20	-75.69	-211.16	1,299,813.71	3,228,888.86	40.153482	-104.681133
6,694.00	9.34	352.27	6,682.84	-70.96	-211.76	1,299,818.44	3,228,888.22	40.153495	-104.681136
6,725.00	11.14	352.10	6,713.34	-65.50	-212.51	1,299,823.89	3,228,887.42	40.153510	-104.681138
6,756.00	14.12	353.00	6,743.59	-58.78	-213.38	1,299,830.60	3,228,886.49	40.153529	-104.681141
6,788.00	17.57	353.56	6,774.37	-50.10	-214.40	1,299,839.27	3,228,885.39	40.153552	-104.681145
6,819.00	21.19	354.90	6,803.61	-39.87	-215.42	1,299,849.49	3,228,884.27	40.153581	-104.681149
6,851.00	24.67	356.48	6,833.07	-27.44	-216.35	1,299,861.91	3,228,883.23	40.153615	-104.681152
6,883.00	28.14	357.98	6,861.73	-13.22	-217.02	1,299,876.12	3,228,882.43	40.153654	-104.681154
6,914.00	31.72	358.66	6,888.59	2.23	-217.47	1,299,891.57	3,228,881.83	40.153696	-104.681156
6,946.00	35.42	359.03	6,915.25	19.92	-217.82	1,299,909.25	3,228,881.32	40.153745	-104.681157
6,977.00	39.61	359.74	6,939.84	38.79	-218.02	1,299,928.12	3,228,880.95	40.153796	-104.681158
7,009.00	43.43	359.45	6,963.79	60.00	-218.17	1,299,949.33	3,228,880.60	40.153855	-104.681158
7,041.00	46.75	359.95	6,986.38	82.66	-218.29	1,299,971.98	3,228,880.27	40.153917	-104.681159
7,072.00	50.74	0.24	7,006.82	105.96	-218.25	1,299,995.28	3,228,880.10	40.153981	-104.681159
7,104.00	54.99	0.81	7,026.13	131.47	-218.01	1,300,020.79	3,228,880.10	40.154051	-104.681158
7,135.00	58.16	0.89	7,043.20	157.33	-217.63	1,300,046.65	3,228,880.24	40.154122	-104.681157
7,167.00	62.29	0.77	7,059.09	185.10	-217.23	1,300,074.42	3,228,880.39	40.154198	-104.681155
7,198.00	65.53	358.86	7,072.72	212.93	-217.32	1,300,102.25	3,228,880.04	40.154274	-104.681155
7,230.00	68.81	358.70	7,085.14	242.42	-217.95	1,300,131.73	3,228,879.14	40.154355	-104.681158
7,261.00	72.12	0.03	7,095.50	271.63	-218.27	1,300,160.93	3,228,878.55	40.154436	-104.681159
7,293.00	75.95	0.28	7,104.30	302.39	-218.19	1,300,191.69	3,228,878.34	40.154520	-104.681159
7,324.00	79.29	359.73	7,110.95	332.66	-218.19	1,300,221.96	3,228,878.07	40.154603	-104.681159
7,356.00	83.44	359.48	7,115.75	364.29	-218.40	1,300,253.59	3,228,877.56	40.154690	-104.681159
7,403.99	87.37	359.79	7,119.59	412.12	-218.71	1,300,301.40	3,228,876.81	40.154821	-104.681160
7" Casing @ 7403.99' MD :: 7119.59' TVD									
7,433.00	89.75	359.97	7,120.32	441.11	-218.77	1,300,330.40	3,228,876.48	40.154901	-104.681161
7,528.00	89.51	359.81	7,120.94	536.11	-218.95	1,300,425.39	3,228,875.42	40.155162	-104.681161
7,622.00	89.81	359.93	7,121.49	630.11	-219.17	1,300,519.38	3,228,874.34	40.155420	-104.681162
7,714.00	90.74	0.21	7,121.05	722.11	-219.05	1,300,611.37	3,228,873.60	40.155672	-104.681162
7,806.00	92.04	0.84	7,118.82	814.07	-218.21	1,300,703.33	3,228,873.59	40.155925	-104.681159
7,898.00	92.53	0.15	7,115.15	906.00	-217.42	1,300,795.26	3,228,873.53	40.156177	-104.681156

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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
7,990.00	91.85	0.97	7,111.64	997.92	-216.52	1,300,887.18	3,228,873.58	40.156429	-104.681153
8,082.00	92.35	0.38	7,108.27	1,089.86	-215.44	1,300,979.12	3,228,873.82	40.156682	-104.681149
8,174.00	91.54	1.06	7,105.14	1,181.79	-214.28	1,301,071.06	3,228,874.12	40.156934	-104.681145
8,266.00	92.04	0.85	7,102.27	1,273.74	-212.75	1,301,163.01	3,228,874.81	40.157186	-104.681139
8,357.00	90.49	0.91	7,100.26	1,364.70	-211.35	1,301,253.98	3,228,875.36	40.157436	-104.681134
8,449.00	90.37	0.90	7,099.57	1,456.69	-209.90	1,301,345.97	3,228,875.96	40.157689	-104.681129
8,541.00	90.49	0.47	7,098.88	1,548.68	-208.80	1,301,437.96	3,228,876.21	40.157941	-104.681125
8,633.00	90.49	359.76	7,098.09	1,640.67	-208.61	1,301,529.95	3,228,875.55	40.158194	-104.681124
8,725.00	90.43	1.67	7,097.35	1,732.66	-207.47	1,301,621.94	3,228,875.85	40.158446	-104.681120
8,817.00	90.19	1.05	7,096.86	1,824.63	-205.28	1,301,713.92	3,228,877.18	40.158699	-104.681112
8,909.00	90.43	0.61	7,096.36	1,916.62	-203.95	1,301,805.92	3,228,877.66	40.158951	-104.681108
9,001.00	89.69	0.99	7,096.26	2,008.61	-202.66	1,301,897.91	3,228,878.10	40.159204	-104.681103
9,093.00	91.05	0.84	7,095.67	2,100.59	-201.20	1,301,989.90	3,228,878.72	40.159456	-104.681098
9,184.00	90.12	1.66	7,094.74	2,191.56	-199.21	1,302,080.88	3,228,879.86	40.159706	-104.681091
9,276.00	88.76	2.04	7,095.64	2,283.51	-196.24	1,302,172.85	3,228,881.98	40.159958	-104.681080
9,368.00	88.83	1.60	7,097.57	2,375.44	-193.32	1,302,264.80	3,228,884.05	40.160211	-104.681070
9,459.00	88.95	1.51	7,099.34	2,466.39	-190.85	1,302,355.77	3,228,885.68	40.160460	-104.681061
9,551.00	88.83	1.27	7,101.12	2,558.35	-188.62	1,302,447.73	3,228,887.06	40.160713	-104.681053
9,643.00	90.37	0.55	7,101.76	2,650.33	-187.16	1,302,539.72	3,228,887.67	40.160965	-104.681048
9,735.00	91.73	0.17	7,100.08	2,742.31	-186.58	1,302,631.70	3,228,887.40	40.161218	-104.681046
9,827.00	91.98	0.16	7,097.10	2,834.26	-186.32	1,302,723.65	3,228,886.81	40.161470	-104.681045
9,919.00	91.92	359.73	7,093.97	2,926.21	-186.40	1,302,815.58	3,228,885.87	40.161722	-104.681045
10,011.00	90.43	0.78	7,092.08	3,018.19	-185.99	1,302,907.56	3,228,885.43	40.161975	-104.681043
10,103.00	91.92	0.11	7,090.19	3,110.16	-185.28	1,302,999.53	3,228,885.30	40.162227	-104.681041
10,195.00	91.98	359.89	7,087.06	3,202.11	-185.28	1,303,091.47	3,228,884.45	40.162480	-104.681041
10,287.00	91.05	0.66	7,084.63	3,294.07	-184.84	1,303,183.43	3,228,884.04	40.162732	-104.681039
10,378.00	91.05	0.44	7,082.96	3,385.05	-183.96	1,303,274.41	3,228,884.07	40.162982	-104.681036
10,470.00	91.17	359.99	7,081.18	3,477.03	-183.62	1,303,366.39	3,228,883.57	40.163234	-104.681035
10,565.00	91.24	359.58	7,079.18	3,572.01	-183.98	1,303,461.36	3,228,882.33	40.163495	-104.681036
10,659.00	91.54	359.10	7,076.90	3,665.98	-185.06	1,303,555.30	3,228,880.38	40.163753	-104.681040
10,754.00	91.79	1.11	7,074.14	3,760.93	-184.88	1,303,650.25	3,228,879.68	40.164014	-104.681040
10,849.00	91.79	0.44	7,071.17	3,855.88	-183.60	1,303,745.20	3,228,880.09	40.164274	-104.681035
10,944.00	91.85	0.39	7,068.16	3,950.83	-182.91	1,303,840.15	3,228,879.90	40.164535	-104.681032
11,038.00	91.24	2.01	7,065.62	4,044.77	-180.94	1,303,934.10	3,228,881.00	40.164793	-104.681025
11,133.00	91.17	1.73	7,063.62	4,139.70	-177.85	1,304,029.05	3,228,883.22	40.165054	-104.681014
11,228.00	89.94	1.57	7,062.70	4,234.65	-175.11	1,304,124.02	3,228,885.07	40.165314	-104.681005
11,323.00	89.75	1.44	7,062.96	4,329.62	-172.61	1,304,219.00	3,228,886.69	40.165575	-104.680996
11,418.00	89.75	1.04	7,063.38	4,424.59	-170.56	1,304,313.99	3,228,887.87	40.165836	-104.680988
11,513.00	89.94	1.05	7,063.63	4,519.58	-168.83	1,304,408.98	3,228,888.72	40.166096	-104.680982
11,608.00	89.88	0.43	7,063.78	4,614.57	-167.60	1,304,503.98	3,228,889.07	40.166357	-104.680978
11,702.00	90.00	359.99	7,063.88	4,708.57	-167.25	1,304,597.97	3,228,888.55	40.166615	-104.680976
11,797.00	90.31	0.14	7,063.62	4,803.57	-167.15	1,304,692.96	3,228,887.78	40.166876	-104.680976
11,892.00	90.93	0.87	7,062.60	4,898.56	-166.31	1,304,787.95	3,228,887.74	40.167137	-104.680973
11,987.00	91.23	0.78	7,060.81	4,993.53	-164.94	1,304,882.93	3,228,888.23	40.167397	-104.680968
12,081.00	90.80	0.18	7,059.14	5,087.51	-164.15	1,304,976.91	3,228,888.15	40.167655	-104.680965
12,176.00	90.37	359.41	7,058.17	5,182.51	-164.49	1,305,071.89	3,228,886.93	40.167916	-104.680967
12,271.00	91.92	358.86	7,056.27	5,277.47	-165.93	1,305,166.84	3,228,884.62	40.168177	-104.680972
12,365.00	91.85	358.59	7,053.18	5,371.40	-168.02	1,305,260.74	3,228,881.66	40.168435	-104.680979
12,460.00	90.93	0.24	7,050.88	5,466.36	-168.99	1,305,355.68	3,228,879.81	40.168695	-104.680983
12,555.00	90.49	359.95	7,049.70	5,561.35	-168.83	1,305,450.67	3,228,879.09	40.168956	-104.680982
12,649.00	92.04	359.97	7,047.62	5,655.33	-168.90	1,305,544.63	3,228,878.16	40.169214	-104.680982
12,744.00	93.09	1.71	7,043.37	5,750.22	-167.51	1,305,639.53	3,228,878.67	40.169474	-104.680977
12,839.00	93.40	1.12	7,037.99	5,845.04	-165.16	1,305,734.36	3,228,880.14	40.169735	-104.680969
12,934.00	92.41	1.47	7,033.18	5,939.89	-163.02	1,305,829.22	3,228,881.40	40.169995	-104.680961
13,029.00	91.17	2.43	7,030.21	6,034.78	-159.79	1,305,924.14	3,228,883.76	40.170256	-104.680950

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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
13,124.00	89.69	1.83	7,029.50	6,129.71	-156.26	1,306,019.10	3,228,886.41	40.170516	-104.680937
13,219.00	90.00	2.47	7,029.76	6,224.64	-152.69	1,306,114.05	3,228,889.10	40.170777	-104.680924
13,313.00	90.49	2.47	7,029.35	6,318.56	-148.64	1,306,207.99	3,228,892.28	40.171035	-104.680910
13,408.00	90.99	2.42	7,028.13	6,413.46	-144.59	1,306,302.93	3,228,895.45	40.171295	-104.680895
13,503.00	91.30	2.19	7,026.23	6,508.37	-140.77	1,306,397.86	3,228,898.40	40.171556	-104.680882
13,598.00	91.79	2.01	7,023.67	6,603.27	-137.29	1,306,492.79	3,228,901.00	40.171816	-104.680869
13,692.00	90.62	1.99	7,021.69	6,697.19	-134.01	1,306,586.73	3,228,903.41	40.172074	-104.680858
13,787.00	88.14	1.24	7,022.72	6,792.14	-131.33	1,306,681.69	3,228,905.21	40.172334	-104.680848
13,882.00	88.27	0.79	7,025.69	6,887.07	-129.65	1,306,776.64	3,228,906.01	40.172595	-104.680842
13,977.00	88.64	0.41	7,028.26	6,982.03	-128.66	1,306,871.60	3,228,906.13	40.172856	-104.680838
14,071.00	89.07	359.74	7,030.13	7,076.01	-128.53	1,306,965.57	3,228,905.39	40.173114	-104.680838
14,106.00	89.26	359.95	7,030.64	7,111.01	-128.63	1,307,000.57	3,228,904.97	40.173210	-104.680838
Final Sperry MWD Survey @ 14106.00ft									
14,150.00	89.26	359.95	7,031.21	7,155.01	-128.67	1,307,044.56	3,228,904.52	40.173331	-104.680838
Straight Line Proj. @ 14150' MD :: 7031.21' TVD									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B 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 (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Nichols 1N-5HZ_Setb	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	7,184.22	-4,151.72	1,307,036.59	3,224,881.54		
Point 2			0.00	5,129.14	-4,175.26	1,304,981.46	3,224,876.99		
Point 3			0.00	2,941.82	-4,205.28	1,302,794.05	3,224,867.19		
Point 4			0.00	2,021.75	-4,216.03	1,301,873.96	3,224,864.95		
Point 5			0.00	-168.78	-4,236.96	1,299,683.42	3,224,864.27		
Point 6			0.00	-2,355.67	-4,257.81	1,297,496.52	3,224,863.63		
Point 7			0.00	-2,355.77	-2,079.75	1,297,516.55	3,227,041.51		
Point 8			0.00	-2,356.18	98.64	1,297,536.28	3,229,219.72		
Point 9			0.00	-180.16	116.57	1,299,712.28	3,229,217.53		
Point 10			0.00	2,033.07	130.49	1,301,925.45	3,229,211.00		
Point 11			0.00	2,953.14	138.06	1,302,845.51	3,229,210.06		
Point 12			0.00	5,122.36	160.16	1,305,014.75	3,229,212.11		
Point 13			0.00	7,179.55	183.78	1,307,071.99	3,229,216.72		
Point 14			0.00	7,181.89	-1,984.09	1,307,054.29	3,227,049.01		
Nichols 1N-5HZ_B&M	0.00	0.00	7,032.17	5,653.16	202.34	1,305,545.90	3,229,249.38	40.169208	-104.679654
- actual wellpath misses target center by 371.60ft at 12652.96ft MD (7047.48 TVD, 5659.29 N, -168.90 E)									
- Circle (radius 150.00)									
Nichols 1N-5HZ_BHL	0.00	0.00	7,036.00	7,179.93	-145.00	1,307,069.33	3,228,887.96	40.173399	-104.680897
- actual wellpath misses target center by 30.18ft at 14150.00ft MD (7031.21 TVD, 7155.01 N, -128.67 E)									
- Point									
Nichols 1N-5HZ_Mosr	0.00	0.00	7,029.13	7,113.63	131.62	1,307,005.59	3,229,165.17	40.173217	-104.679907
- actual wellpath misses target center by 260.27ft at 14106.00ft MD (7030.64 TVD, 7111.01 N, -128.63 E)									
- Circle (radius 150.00)									
Nichols 1N-5HZ_T1	0.00	0.00	7,073.77	4,138.99	-171.24	1,304,028.41	3,228,889.83	40.165052	-104.680991
- actual wellpath misses target center by 12.11ft at 11132.30ft MD (7063.64 TVD, 4139.00 N, -177.87 E)									
- Point									
Nichols 1N-5HZ_Lanc	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	7,183.19	-209.22	1,307,072.00	3,228,823.72		
Point 2			0.00	5,125.99	-232.84	1,305,014.75	3,228,819.11		
Point 3			0.00	2,956.77	-254.94	1,302,845.51	3,228,817.06		
Point 4			0.00	2,036.70	-262.51	1,301,925.45	3,228,818.00		
Point 5			0.00	327.13	-271.78	1,300,215.94	3,228,824.53		
Point 6			0.00	323.47	123.41	1,300,215.93	3,229,219.72		
Point 7			0.00	2,033.07	130.49	1,301,925.45	3,229,211.00		
Point 8			0.00	2,953.14	138.06	1,302,845.51	3,229,210.06		
Point 9			0.00	5,122.36	160.16	1,305,014.75	3,229,212.11		
Point 10			0.00	7,179.55	183.78	1,307,071.99	3,229,216.72		
Nichols 1N-5HZ_BHL	0.00	0.00	7,029.00	7,179.93	-56.17	1,307,070.15	3,228,976.78	40.173399	-104.680579
- actual wellpath misses target center by 76.69ft at 14150.00ft MD (7031.21 TVD, 7155.01 N, -128.67 E)									
- Point									
Nichols 1N-5HZ_Half	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-181.36	576.59	1,299,715.33	3,229,677.53		
Point 2			0.00	-167.58	-4,696.98	1,299,680.37	3,224,404.27		
Nichols 1N-5HZ_SHL	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378
- actual wellpath hits target center									
- Point									
Nichols 1N-5HZ_Sec	0.00	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Nichols 1N-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25 @ 4918.00ft (HP 308)
Site:	Sec. 8-T2N-R65W	MD Reference:	RKB=25 @ 4918.00ft (HP 308)
Well:	Nichols 1N-5HZ	North Reference:	True
Wellbore:	Plan B Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

- actual wellpath hits target center									
- Polygon									
Point 1		0.00	2,480.60	-4,671.68	1,302,328.56	3,224,405.10			
Point 2		0.00	2,487.37	-2,039.11	1,302,359.66	3,227,037.38			
Point 3		0.00	2,494.31	593.43	1,302,390.93	3,229,669.63			
Nichols 1N-5HZ_Sect	0.00	0.00	0.00	0.00	1,299,891.35	3,229,099.31	40.153690	-104.680378	
- actual wellpath hits target center									
- Polygon									
Point 1		0.00	7,644.73	-4,606.49	1,307,492.85	3,224,422.55			
Point 2		0.00	5,129.85	-4,635.31	1,304,977.92	3,224,416.98			
Point 3		0.00	2,480.60	-4,671.68	1,302,328.56	3,224,405.10			
Point 4		0.00	-167.58	-4,696.98	1,299,680.37	3,224,404.27			
Point 5		0.00	-2,815.67	-4,722.23	1,297,032.27	3,224,403.50			
Point 6		0.00	-2,815.79	-2,083.61	1,297,056.54	3,227,041.90			
Point 7		0.00	-2,816.29	554.88	1,297,080.42	3,229,680.17			
Point 8		0.00	-181.36	576.59	1,299,715.33	3,229,677.53			
Point 9		0.00	2,494.31	593.43	1,302,390.93	3,229,669.63			
Point 10		0.00	5,121.64	620.19	1,305,018.28	3,229,672.11			
Point 11		0.00	7,639.07	649.11	1,307,535.77	3,229,677.76			
Point 12		0.00	7,641.90	-1,978.70	1,307,514.31	3,227,050.15			
Nichols 1N-5HZ_T2	0.00	0.00	7,072.32	4,255.71	-170.23	1,304,145.13	3,228,889.76	40.165372	-104.680987
- actual wellpath misses target center by 10.51ft at 11249.21ft MD (7062.73 TVD, 4255.85 N, -174.53 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,403.99	7,119.59	7" Casing @ 7403.99' MD :: 7119.59' 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	H&P 308: RKB = 25ft	
125.00	125.00	0.37	-0.05	First MS Energy Services Gyro @ 125.00ft	
825.00	824.99	2.57	0.77	Final MS Energy Services Gyro @ 825.00ft	
825.00	824.99	2.57	0.77	Tie-On to Surface Gyros @ 825.00ft	
920.00	919.99	2.65	0.56	First Sperry MWD Survey @ 920.00ft	
14,106.00	7,030.64	7,111.01	-128.63	Final Sperry MWD Survey @ 14106.00ft	
14,150.00	7,031.21	7,155.01	-128.67	Straight Line Proj. @ 14150' MD :: 7031.21' TVD	

Checked By: _____ Approved By: _____ Date: _____