

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 9-T2N-R65W

Thomason 27N-W9HZ

Plan D Rev 0

Design: Actual Field Surveys

## Sperry Drilling Services Standard Report

26 November, 2012

Well Coordinates: 1,297,423.92 N, 3,232,814.02 E (40° 08' 48.56" N, 104° 40' 01.82" W)

Ground Level: 4,881.00 ft

Local Coordinate Origin:

Centered on Well Thomason 27N-W9HZ

Viewing Datum:

RKB=16ft @ 4897.00ft (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**

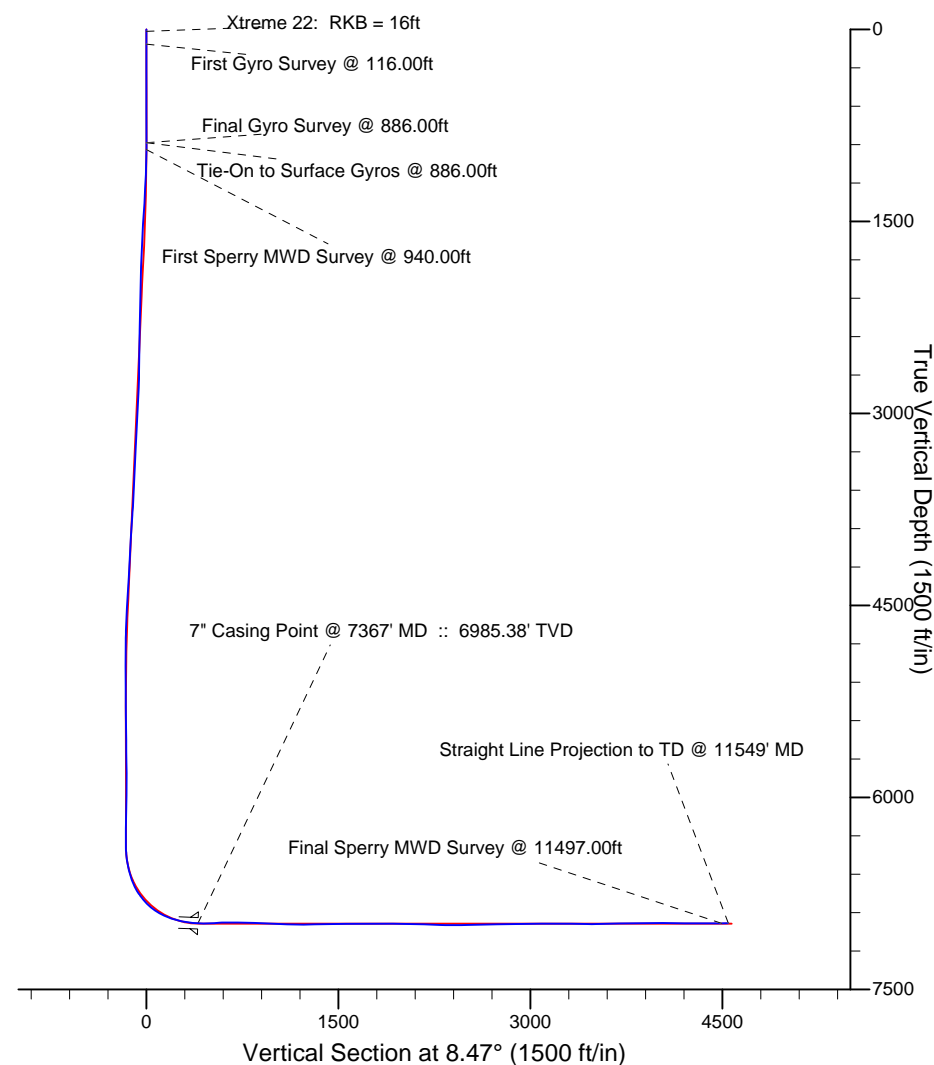
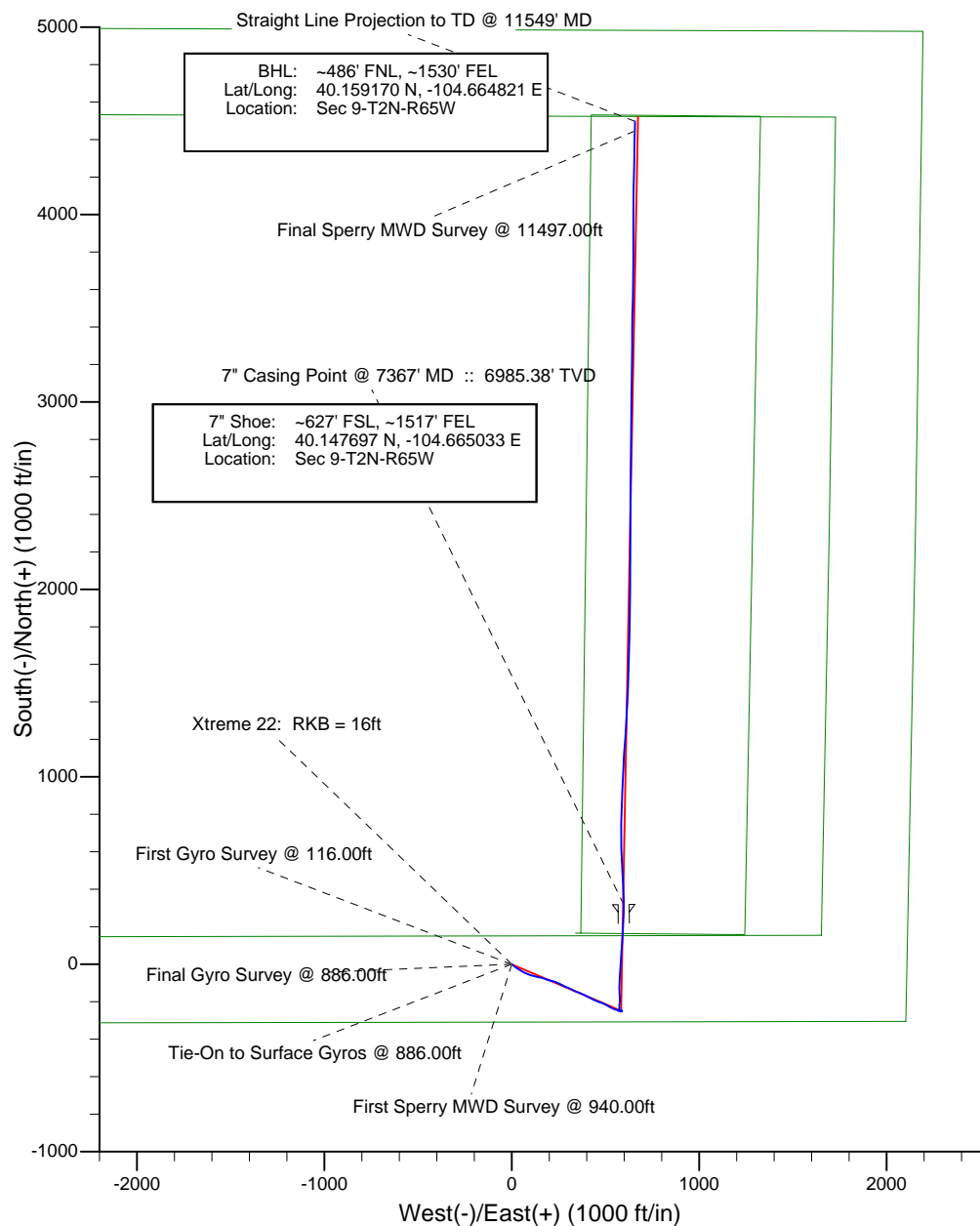
Project: Weld County, CO (NAD 83)  
Site: Sec. 9-T2N-R65W  
Well: Thomason 27N-W9HZ



**HALLIBURTON**  
Sperry Drilling

# LEGEND

- Thomason 27N-W9HZ, Plan D Rev 0, Plan D Rev 0 Proposal V0
- Actual Field Surveys



**Design Report for Thomason 27N-W9HZ - 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
<b>Xtreme 22: RKB = 16ft</b>							
116.00	0.11	179.73	116.00	-0.10	0.00	-0.09	0.11
<b>First Gyro Survey @ 116.00ft</b>							
216.00	0.25	108.12	216.00	-0.26	0.21	-0.23	0.24
316.00	0.26	83.81	316.00	-0.30	0.64	-0.21	0.11
416.00	0.31	297.91	416.00	-0.15	0.63	-0.06	0.55
516.00	0.11	241.31	516.00	-0.07	0.30	-0.03	0.27
616.00	0.13	61.71	616.00	-0.06	0.32	-0.02	0.24
716.00	0.29	43.66	716.00	0.17	0.59	0.26	0.17
816.00	0.12	357.74	816.00	0.46	0.77	0.57	0.22
886.00	0.16	233.92	886.00	0.48	0.68	0.57	0.35
<b>Final Gyro Survey @ 886.00ft - Tie-On to Surface Gyros @ 886.00ft</b>							
940.00	0.37	112.46	940.00	0.37	0.78	0.48	0.88
<b>First Sperry MWD Survey @ 940.00ft</b>							
1,029.00	2.14	138.10	1,028.97	-0.98	2.16	-0.65	2.04
1,119.00	4.17	131.48	1,118.83	-4.40	5.73	-3.51	2.29
1,361.00	7.95	123.18	1,359.44	-19.39	26.34	-15.30	1.60
1,633.00	10.42	120.13	1,627.93	-42.04	63.36	-32.25	0.93
1,906.00	11.22	104.23	1,896.14	-60.96	110.47	-44.03	1.13
2,092.00	9.19	101.26	2,079.19	-68.31	142.58	-46.58	1.13
2,349.00	9.06	109.37	2,332.94	-79.03	181.80	-51.41	0.50
2,607.00	5.64	103.63	2,588.79	-88.76	213.29	-56.39	1.35
2,692.00	6.50	100.94	2,673.31	-90.66	222.08	-56.97	1.07
2,778.00	8.34	109.35	2,758.59	-93.65	232.74	-58.36	2.48
2,864.00	9.47	117.73	2,843.56	-99.01	244.89	-61.87	2.00
2,950.00	10.42	116.55	2,928.26	-105.77	258.11	-66.62	1.13
3,035.00	9.46	117.16	3,011.99	-112.40	271.20	-71.25	1.14
3,121.00	10.31	112.01	3,096.71	-118.51	284.63	-75.32	1.43
3,207.00	8.81	113.74	3,181.51	-124.04	297.79	-78.85	1.78
3,293.00	9.17	114.31	3,266.46	-129.52	310.06	-82.46	0.43
3,378.00	9.66	117.06	3,350.31	-135.55	322.59	-86.58	0.78
3,464.00	10.27	115.56	3,435.01	-142.14	335.93	-91.14	0.77
3,549.00	10.29	108.41	3,518.65	-147.81	349.97	-94.67	1.50
3,635.00	10.95	111.99	3,603.18	-153.29	364.83	-97.91	1.08
3,721.00	11.30	117.55	3,687.57	-160.25	379.87	-102.58	1.31
3,806.00	12.67	115.98	3,770.71	-168.18	395.64	-108.10	1.66
3,892.00	10.70	119.00	3,854.93	-176.19	411.10	-113.74	2.40
3,978.00	11.40	115.20	3,939.33	-183.68	425.77	-118.99	1.17
4,064.00	13.59	113.14	4,023.29	-191.27	442.76	-124.00	2.60
4,149.00	13.02	111.85	4,106.01	-198.75	460.83	-128.75	0.76
4,235.00	10.19	110.07	4,190.24	-204.97	476.97	-132.52	3.32
4,321.00	9.60	114.27	4,274.97	-210.53	490.65	-136.00	1.08
4,407.00	11.31	119.24	4,359.54	-217.60	504.55	-140.95	2.25
4,493.00	10.51	117.90	4,443.98	-225.39	518.84	-146.55	0.98
4,578.00	10.18	116.16	4,527.60	-232.33	532.43	-151.41	0.53
4,664.00	9.74	112.93	4,612.30	-238.51	545.95	-155.54	0.83
4,750.00	9.21	111.54	4,697.13	-243.87	559.06	-158.91	0.67
4,836.00	6.71	108.05	4,782.30	-247.96	570.24	-161.30	2.96

**Design Report for Thomason 27N-W9HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,921.00	4.24	105.37	4,866.90	-250.33	577.99	-162.51	2.92
5,007.00	3.32	95.82	4,952.71	-251.42	583.53	-162.78	1.29
5,093.00	1.32	67.26	5,038.64	-251.29	586.92	-162.15	2.62
5,179.00	0.77	66.87	5,124.63	-250.68	588.37	-161.33	0.64
5,264.00	0.57	48.94	5,209.62	-250.18	589.21	-160.71	0.34
5,350.00	0.50	300.44	5,295.62	-249.71	589.21	-160.25	1.01
5,436.00	0.83	308.85	5,381.61	-249.13	588.40	-159.79	0.40
5,522.00	0.83	309.03	5,467.60	-248.35	587.43	-159.16	0.00
5,607.00	0.89	317.87	5,552.59	-247.47	586.51	-158.43	0.17
5,693.00	1.06	339.55	5,638.58	-246.23	585.79	-157.31	0.47
5,779.00	1.09	329.15	5,724.57	-244.78	585.09	-155.98	0.23
5,865.00	0.93	280.62	5,810.56	-243.95	583.98	-155.32	0.98
5,950.00	1.02	270.12	5,895.54	-243.82	582.55	-155.40	0.23
6,036.00	1.08	255.98	5,981.53	-244.02	581.00	-155.82	0.31
6,122.00	0.93	246.15	6,067.52	-244.49	579.57	-156.51	0.27
6,207.00	0.97	235.68	6,152.50	-245.18	578.35	-157.36	0.21
6,293.00	1.33	224.42	6,238.49	-246.30	577.05	-158.67	0.49
6,336.00	1.66	227.37	6,281.47	-247.08	576.24	-159.55	0.79
6,384.00	2.06	230.08	6,329.45	-248.10	575.07	-160.74	0.85
6,426.00	1.57	302.10	6,371.43	-248.28	574.00	-161.07	5.17
6,470.00	4.11	352.89	6,415.38	-246.40	573.29	-159.31	7.60
6,512.00	6.01	4.39	6,457.21	-242.71	573.28	-155.67	5.11
6,556.00	8.98	6.44	6,500.83	-237.00	573.84	-149.94	6.78
6,598.00	11.95	1.93	6,542.13	-229.40	574.35	-142.34	7.33
6,641.00	14.58	4.37	6,583.98	-219.55	574.91	-132.52	6.25
6,687.00	18.10	4.87	6,628.11	-206.65	575.96	-119.61	7.66
6,727.00	22.52	0.48	6,665.62	-192.79	576.55	-105.81	11.68
6,769.00	27.41	357.63	6,703.69	-175.08	576.22	-88.34	11.99
6,812.00	32.29	358.90	6,740.97	-153.69	575.59	-67.28	11.44
6,854.00	37.20	358.04	6,775.47	-129.77	574.94	-43.72	11.75
6,898.00	41.37	1.06	6,809.52	-101.93	574.76	-16.20	10.42
6,940.00	46.66	3.28	6,839.72	-72.78	575.89	12.79	13.12
6,984.00	52.02	4.26	6,868.38	-39.49	578.09	46.05	12.30
7,026.00	57.46	4.32	6,892.61	-5.30	580.66	80.24	12.95
7,070.00	63.11	4.57	6,914.42	32.78	583.62	118.34	12.85
7,112.00	67.63	2.95	6,931.92	70.87	586.11	156.38	11.32
7,155.00	71.61	2.79	6,946.89	111.12	588.13	196.49	9.26
7,197.00	76.11	3.59	6,958.56	151.39	590.38	236.65	10.87
7,241.00	79.39	3.43	6,967.90	194.30	593.01	279.48	7.46
7,283.00	80.14	3.00	6,975.36	235.56	595.33	320.64	2.05
7,327.00	82.36	2.13	6,982.05	279.01	597.27	363.90	5.41
7,367.00	88.08	359.64	6,985.38	318.84	597.89	403.39	15.59
<b>7" Casing Point @ 7367' MD :: 6985.38' TVD</b>							
7,369.00	88.37	359.52	6,985.44	320.84	597.87	405.36	15.59
7,389.00	90.31	358.13	6,985.67	340.83	597.46	425.08	11.93
7,472.00	93.09	357.32	6,983.21	423.72	594.17	506.58	3.49
7,515.00	93.53	356.83	6,980.73	466.60	591.98	548.66	1.53
7,601.00	89.88	357.59	6,978.17	552.44	587.80	632.96	4.34
7,687.00	89.26	359.18	6,978.82	638.40	585.37	717.62	1.98
7,773.00	88.58	359.39	6,980.44	724.38	584.30	802.51	0.83
7,858.00	87.34	1.46	6,983.46	809.32	584.93	886.61	2.84

**Design Report for Thomason 27N-W9HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,944.00	88.14	3.80	6,986.86	895.15	588.87	972.09	2.87
8,030.00	86.85	2.01	6,990.61	980.95	593.23	1,057.60	2.56
8,116.00	88.70	2.54	6,993.95	1,066.82	596.64	1,143.03	2.24
8,201.00	90.49	3.64	6,994.55	1,151.69	601.22	1,227.65	2.47
8,287.00	91.67	4.07	6,992.93	1,237.48	607.00	1,313.35	1.46
8,373.00	91.11	3.51	6,990.85	1,323.26	612.68	1,399.04	0.92
8,459.00	90.68	3.05	6,989.50	1,409.11	617.60	1,484.68	0.73
8,545.00	90.43	1.94	6,988.67	1,495.02	621.35	1,570.21	1.32
8,630.00	90.86	2.33	6,987.71	1,579.96	624.51	1,654.68	0.68
8,716.00	89.69	0.71	6,987.30	1,665.92	626.79	1,740.05	2.32
8,802.00	89.69	0.69	6,987.77	1,751.91	627.84	1,825.26	0.02
8,887.00	89.57	0.72	6,988.31	1,836.91	628.89	1,909.48	0.15
8,973.00	89.44	0.92	6,989.06	1,922.89	630.12	1,994.71	0.28
9,059.00	89.63	0.63	6,989.76	2,008.88	631.28	2,079.93	0.40
9,145.00	87.90	359.91	6,991.61	2,094.86	631.69	2,165.03	2.18
9,230.00	87.40	0.56	6,995.09	2,179.79	632.04	2,249.08	0.96
9,316.00	89.07	0.27	6,997.74	2,265.74	632.66	2,334.19	1.97
9,402.00	90.06	0.31	6,998.40	2,351.73	633.10	2,419.31	1.15
9,488.00	91.79	0.88	6,997.01	2,437.72	633.99	2,504.49	2.12
9,573.00	91.05	0.04	6,994.90	2,522.69	634.67	2,588.63	1.32
9,659.00	91.11	0.26	6,993.28	2,608.67	634.90	2,673.71	0.27
9,745.00	90.80	0.14	6,991.85	2,694.66	635.20	2,758.81	0.39
9,830.00	91.05	0.56	6,990.48	2,779.64	635.71	2,842.95	0.57
9,916.00	90.68	0.99	6,989.18	2,865.63	636.88	2,928.16	0.66
10,002.00	91.11	1.30	6,987.83	2,951.60	638.60	3,013.45	0.62
10,088.00	89.13	0.35	6,987.65	3,037.58	639.83	3,098.68	2.55
10,173.00	90.12	0.83	6,988.21	3,122.58	640.71	3,182.88	1.29
10,259.00	89.94	0.82	6,988.16	3,208.57	641.95	3,268.11	0.21
10,345.00	89.32	359.87	6,988.72	3,294.56	642.47	3,353.25	1.32
10,431.00	89.26	0.43	6,989.79	3,380.56	642.69	3,438.34	0.65
10,516.00	90.99	1.26	6,989.60	3,465.54	643.94	3,522.58	2.26
10,602.00	91.05	0.96	6,988.07	3,551.51	645.61	3,607.86	0.36
10,688.00	91.11	0.92	6,986.45	3,637.49	647.02	3,693.10	0.08
10,774.00	90.99	0.93	6,984.87	3,723.46	648.41	3,778.35	0.14
10,860.00	90.93	0.15	6,983.43	3,809.44	649.22	3,863.51	0.91
10,946.00	91.30	0.34	6,981.76	3,895.43	649.59	3,948.61	0.48
11,031.00	89.20	0.06	6,981.39	3,980.42	649.88	4,032.72	2.49
11,117.00	87.90	359.17	6,983.56	4,066.39	649.31	4,117.67	1.83
11,203.00	89.88	2.11	6,985.23	4,152.35	650.27	4,202.84	4.12
11,288.00	89.94	1.47	6,985.36	4,237.31	652.92	4,287.26	0.76
11,374.00	90.25	0.77	6,985.22	4,323.29	654.60	4,372.56	0.89
11,460.00	90.62	0.96	6,984.57	4,409.28	655.90	4,457.80	0.48
11,497.00	90.93	0.86	6,984.07	4,446.27	656.49	4,494.47	0.88
<b>Final Sperry MWD Survey @ 11497.00ft</b>							
11,549.00	90.93	0.86	6,983.22	4,498.26	657.27	4,546.01	0.00
<b>Straight Line Projection to TD @ 11549' MD</b>							

**Design Report for Thomason 27N-W9HZ - 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	-0.10	0.00	First Gyro Survey @ 116.00ft
886.00	886.00	0.48	0.68	Final Gyro Survey @ 886.00ft
886.00	886.00	0.48	0.68	Tie-On to Surface Gyros @ 886.00ft
940.00	940.00	0.37	0.78	First Sperry MWD Survey @ 940.00ft
11,497.00	6,984.07	4,446.27	656.49	Final Sperry MWD Survey @ 11497.00ft
11,549.00	6,983.22	4,498.26	657.27	Straight Line Projection to TD @ 11549' MD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	Thomason 27N-W9HZ_BHL	8.47	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
16.00	886.00	Surface Gyros	NS-GYRO-MS
940.00	7,389.00	Sperry MWD Vert/Build	MWD+SC
7,472.00	11,497.00	Sperry MWD Surveys - Lateral	MWD+SC

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,367.00	6,985.38	7" Casing Point @ 7367' MD :: 6985.38' TVD	7	8-3/4

## Design Report for Thomason 27N-W9HZ - 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
Thomason 27N-W9H	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			1,651.19	154.23	1,297,593.65	3,234,463.62			
Point 2			-504.52	150.55	1,297,569.72	3,232,308.13			
Point 3			-2,673.29	146.86	1,297,545.66	3,230,139.58			
Point 4			-2,654.98	2,320.42	1,299,719.21	3,230,137.47			
Point 5			-2,640.68	4,534.92	1,301,933.65	3,230,130.97			
Point 6			-455.32	4,527.53	1,301,946.79	3,232,316.22			
Point 7			1,727.52	4,520.27	1,301,960.03	3,234,498.94			
Point 8			1,694.82	2,323.04	1,299,762.68	3,234,486.87			
Thomason 27N-W9H	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			2,102.07	-305.03	1,297,138.66	3,234,918.77			
Point 2			-511.13	-309.48	1,297,109.67	3,232,305.84			
Point 3			-3,137.20	-313.95	1,297,080.54	3,229,680.03			
Point 4			-3,085.01	2,320.11	1,299,714.86	3,229,707.48			
Point 5			-3,097.73	4,996.48	1,302,390.88	3,229,669.63			
Point 6			-451.57	4,987.54	1,302,406.79	3,232,315.64			
Point 7			2,194.41	4,978.74	1,302,422.84	3,234,961.48			
Point 8			2,154.93	2,323.27	1,299,767.23	3,234,946.94			
Thomason 27N-W9H	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Point									
Thomason 27N-W9H	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			340.35	166.55	1,297,593.65	3,233,152.77			
Point 2			1,243.35	158.07	1,297,593.65	3,234,055.78			
Point 3			1,327.06	4,524.04	1,301,960.04	3,234,098.48			
Point 4			424.07	4,532.52	1,301,960.04	3,233,195.48			
Thomason 27N-W9H	0.00	0.00	6,987.00	4,523.90	673.34	1,301,953.75	3,233,444.81	40.159240	-104.664763
- actual wellpath misses target center by 30.49ft at 11549.00ft MD (6983.22 TVD, 4498.26 N, 657.27 E)									
- Point									

# North Reference Sheet for Sec. 9-T2N-R65W - Thomason 27N-W9HZ - Plan D Rev 0

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

Vertical Depths are relative to RKB=16ft @ 4897.00ft (Xtreme 22). Northing and Easting are relative to Thomason 27N-W9HZ

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: 0.99995848

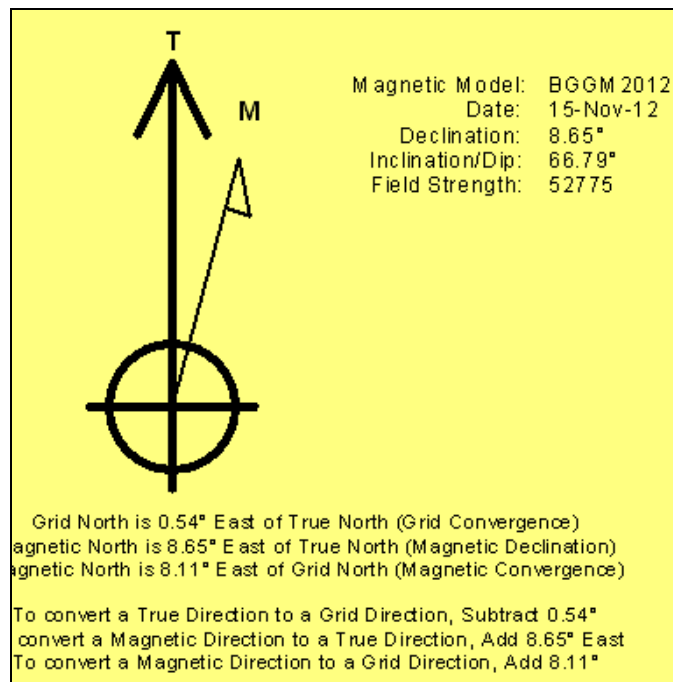
Grid Coordinates of Well: 1,297,423.92 ft N, 3,232,814.02 ft E

Geographical Coordinates of Well: 40° 08' 48.56" N, 104° 40' 01.82" W

Grid Convergence at Surface is: 0.54°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,549.00ft the Bottom Hole Displacement is 4,546.02ft in the Direction of 8.31° (True).

Magnetic Convergence at surface is: -8.11° (15 November 2012, , BGGM2012)





# **Anadarko Petroleum Corp.**

**Weld County, CO (NAD 83)**

**Sec. 9-T2N-R65W**

**Thomason 27N-W9HZ**

**Plan D Rev 0**

**Design: Actual Field Surveys**

## **Survey Report - Geographic**

**26 November, 2012**

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	EDM 2003.16 Single User Db

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

Site	Sec. 9-T2N-R65W				
Site Position:		Northing:	1,297,400.69ft	Latitude:	40.146712
From:	Lat/Long	Easting:	3,234,593.37ft	Longitude:	-104.660808
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.54 °

Well	Thomason 27N-W9HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,297,423.92 ft	Latitude:	40.146822
	+E/-W	0.00 ft	Easting:	3,232,814.02 ft	Longitude:	-104.667172
Position Uncertainty		3.28 ft	Wellhead Elevation:	ft	Ground Level:	4,881.00 ft

<b>Wellbore</b>	Plan D Rev 0				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2012	2012-11-15	8.65	66.79	52,775

<b>Design</b>	Actual Field Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	8.47	

<b>Survey Program</b>	<b>Date</b>	2012-11-26			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
16.00	886.00	Surface Gyros (Plan D Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s	
940.00	7,389.00	Sperry MWD Vert/Build (Plan D Rev 0)	MWD+SC	Fixed:v2:standard dec & axial correction	
7,472.00	11,497.00	Sperry MWD Surveys - Lateral (Plan D Re	MWD+SC	Fixed:v2:standard dec & axial correction	

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	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	1,297,423.92	3,232,814.02	40.146822	-104.667172	
16.00	0.00	0.00	16.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172	
Xtreme 22: RKB = 16ft										
116.00	0.11	179.73	116.00	-0.10	0.00	1,297,423.83	3,232,814.02	40.146822	-104.667172	
First Gyro Survey @ 116.00ft										
216.00	0.25	108.12	216.00	-0.26	0.21	1,297,423.66	3,232,814.23	40.146821	-104.667171	
316.00	0.26	83.81	316.00	-0.30	0.64	1,297,423.62	3,232,814.66	40.146821	-104.667170	
416.00	0.31	297.91	416.00	-0.15	0.63	1,297,423.78	3,232,814.65	40.146821	-104.667170	
516.00	0.11	241.31	516.00	-0.07	0.30	1,297,423.85	3,232,814.32	40.146822	-104.667171	
616.00	0.13	61.71	616.00	-0.06	0.32	1,297,423.86	3,232,814.34	40.146822	-104.667171	
716.00	0.29	43.66	716.00	0.17	0.59	1,297,424.10	3,232,814.61	40.146822	-104.667170	
816.00	0.12	357.74	816.00	0.46	0.77	1,297,424.39	3,232,814.78	40.146823	-104.667169	
886.00	0.16	233.92	886.00	0.48	0.68	1,297,424.40	3,232,814.70	40.146823	-104.667170	
Final Gyro Survey @ 886.00ft - Tie-On to Surface Gyros @ 886.00ft										
940.00	0.37	112.46	940.00	0.37	0.78	1,297,424.29	3,232,814.80	40.146823	-104.667169	
First Sperry MWD Survey @ 940.00ft										
1,029.00	2.14	138.10	1,028.97	-0.98	2.16	1,297,422.96	3,232,816.18	40.146819	-104.667164	
1,119.00	4.17	131.48	1,118.83	-4.40	5.73	1,297,419.58	3,232,819.79	40.146810	-104.667151	
1,361.00	7.95	123.18	1,359.44	-19.39	26.34	1,297,404.78	3,232,840.54	40.146769	-104.667078	
1,633.00	10.42	120.13	1,627.93	-42.04	63.36	1,297,382.48	3,232,877.77	40.146706	-104.666945	
1,906.00	11.22	104.23	1,896.14	-60.96	110.47	1,297,364.00	3,232,925.05	40.146654	-104.666777	
2,092.00	9.19	101.26	2,079.19	-68.31	142.58	1,297,356.95	3,232,957.23	40.146634	-104.666662	
2,349.00	9.06	109.37	2,332.94	-79.03	181.80	1,297,346.60	3,232,996.54	40.146605	-104.666522	
2,607.00	5.64	103.63	2,588.79	-88.76	213.29	1,297,337.17	3,233,028.13	40.146578	-104.666409	
2,692.00	6.50	100.94	2,673.31	-90.66	222.08	1,297,335.36	3,233,036.93	40.146573	-104.666378	
2,778.00	8.34	109.35	2,758.59	-93.65	232.74	1,297,332.47	3,233,047.62	40.146565	-104.666339	
2,864.00	9.47	117.73	2,843.56	-99.01	244.89	1,297,327.22	3,233,059.82	40.146550	-104.666296	
2,950.00	10.42	116.55	2,928.26	-105.77	258.11	1,297,320.58	3,233,073.10	40.146531	-104.666249	
3,035.00	9.46	117.16	3,011.99	-112.40	271.20	1,297,314.08	3,233,086.25	40.146513	-104.666202	
3,121.00	10.31	112.01	3,096.71	-118.51	284.63	1,297,308.10	3,233,099.73	40.146497	-104.666154	
3,207.00	8.81	113.74	3,181.51	-124.04	297.79	1,297,302.68	3,233,112.95	40.146481	-104.666107	
3,293.00	9.17	114.31	3,266.46	-129.52	310.06	1,297,297.33	3,233,125.27	40.146466	-104.666063	
3,378.00	9.66	117.06	3,350.31	-135.55	322.59	1,297,291.41	3,233,137.85	40.146450	-104.666018	
3,464.00	10.27	115.56	3,435.01	-142.14	335.93	1,297,284.95	3,233,151.25	40.146432	-104.665970	
3,549.00	10.29	108.41	3,518.65	-147.81	349.97	1,297,279.41	3,233,165.34	40.146416	-104.665920	
3,635.00	10.95	111.99	3,603.18	-153.29	364.83	1,297,274.07	3,233,180.25	40.146401	-104.665867	
3,721.00	11.30	117.55	3,687.57	-160.25	379.87	1,297,267.26	3,233,195.36	40.146382	-104.665813	
3,806.00	12.67	115.98	3,770.71	-168.18	395.64	1,297,259.47	3,233,211.20	40.146360	-104.665757	
3,892.00	10.70	119.00	3,854.93	-176.19	411.10	1,297,251.61	3,233,226.74	40.146338	-104.665701	
3,978.00	11.40	115.20	3,939.33	-183.68	425.77	1,297,244.26	3,233,241.48	40.146318	-104.665649	
4,064.00	13.59	113.14	4,023.29	-191.27	442.76	1,297,236.83	3,233,258.53	40.146297	-104.665588	
4,149.00	13.02	111.85	4,106.01	-198.75	460.83	1,297,229.51	3,233,276.67	40.146276	-104.665524	
4,235.00	10.19	110.07	4,190.24	-204.97	476.97	1,297,223.45	3,233,292.87	40.146259	-104.665466	
4,321.00	9.60	114.27	4,274.97	-210.53	490.65	1,297,218.02	3,233,306.60	40.146244	-104.665417	
4,407.00	11.31	119.24	4,359.54	-217.60	504.55	1,297,211.08	3,233,320.56	40.146224	-104.665367	
4,493.00	10.51	117.90	4,443.98	-225.39	518.84	1,297,203.43	3,233,334.93	40.146203	-104.665316	
4,578.00	10.18	116.16	4,527.60	-232.33	532.43	1,297,196.62	3,233,348.58	40.146184	-104.665267	
4,664.00	9.74	112.93	4,612.30	-238.51	545.95	1,297,190.56	3,233,362.16	40.146167	-104.665219	
4,750.00	9.21	111.54	4,697.13	-243.87	559.06	1,297,185.32	3,233,375.31	40.146152	-104.665172	
4,836.00	6.71	108.05	4,782.30	-247.96	570.24	1,297,181.34	3,233,386.53	40.146141	-104.665132	
4,921.00	4.24	105.37	4,866.90	-250.33	577.99	1,297,179.04	3,233,394.31	40.146135	-104.665105	
5,007.00	3.32	95.82	4,952.71	-251.42	583.53	1,297,178.00	3,233,399.86	40.146132	-104.665085	
5,093.00	1.32	67.26	5,038.64	-251.29	586.92	1,297,178.16	3,233,403.25	40.146132	-104.665073	
5,179.00	0.77	66.87	5,124.63	-250.68	588.37	1,297,178.79	3,233,404.69	40.146134	-104.665067	
5,264.00	0.57	48.94	5,209.62	-250.18	589.21	1,297,179.30	3,233,405.53	40.146135	-104.665064	

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	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
5,350.00	0.50	300.44	5,295.62	-249.71	589.21	1,297,179.77	3,233,405.52	40.146136	-104.665064
5,436.00	0.83	308.85	5,381.61	-249.13	588.40	1,297,180.34	3,233,404.71	40.146138	-104.665067
5,522.00	0.83	309.03	5,467.60	-248.35	587.43	1,297,181.11	3,233,403.73	40.146140	-104.665071
5,607.00	0.89	317.87	5,552.59	-247.47	586.51	1,297,181.98	3,233,402.80	40.146142	-104.665074
5,693.00	1.06	339.55	5,638.58	-246.23	585.79	1,297,183.22	3,233,402.06	40.146146	-104.665077
5,779.00	1.09	329.15	5,724.57	-244.78	585.09	1,297,184.66	3,233,401.35	40.146150	-104.665079
5,865.00	0.93	280.62	5,810.56	-243.95	583.98	1,297,185.48	3,233,400.24	40.146152	-104.665083
5,950.00	1.02	270.12	5,895.54	-243.82	582.55	1,297,185.59	3,233,398.80	40.146153	-104.665088
6,036.00	1.08	255.98	5,981.53	-244.02	581.00	1,297,185.38	3,233,397.26	40.146152	-104.665094
6,122.00	0.93	246.15	6,067.52	-244.49	579.57	1,297,184.89	3,233,395.84	40.146151	-104.665099
6,207.00	0.97	235.68	6,152.50	-245.18	578.35	1,297,184.20	3,233,394.62	40.146149	-104.665103
6,293.00	1.33	224.42	6,238.49	-246.30	577.05	1,297,183.06	3,233,393.33	40.146146	-104.665108
6,336.00	1.66	227.37	6,281.47	-247.08	576.24	1,297,182.27	3,233,392.53	40.146144	-104.665111
6,384.00	2.06	230.08	6,329.45	-248.10	575.07	1,297,181.24	3,233,391.36	40.146141	-104.665115
6,426.00	1.57	302.10	6,371.43	-248.28	574.00	1,297,181.05	3,233,390.30	40.146140	-104.665119
6,470.00	4.11	352.89	6,415.38	-246.40	573.29	1,297,182.93	3,233,389.58	40.146145	-104.665121
6,512.00	6.01	4.39	6,457.21	-242.71	573.28	1,297,186.61	3,233,389.52	40.146156	-104.665121
6,556.00	8.98	6.44	6,500.83	-237.00	573.84	1,297,192.33	3,233,390.03	40.146171	-104.665119
6,598.00	11.95	1.93	6,542.13	-229.40	574.35	1,297,199.94	3,233,390.47	40.146192	-104.665118
6,641.00	14.58	4.37	6,583.98	-219.55	574.91	1,297,209.79	3,233,390.94	40.146219	-104.665116
6,687.00	18.10	4.87	6,628.11	-206.65	575.96	1,297,222.70	3,233,391.87	40.146255	-104.665112
6,727.00	22.52	0.48	6,665.62	-192.79	576.55	1,297,236.56	3,233,392.33	40.146293	-104.665110
6,769.00	27.41	357.63	6,703.69	-175.08	576.22	1,297,254.27	3,233,391.83	40.146341	-104.665111
6,812.00	32.29	358.90	6,740.97	-153.69	575.59	1,297,275.65	3,233,391.00	40.146400	-104.665113
6,854.00	37.20	358.04	6,775.47	-129.77	574.94	1,297,299.56	3,233,390.13	40.146466	-104.665115
6,898.00	41.37	1.06	6,809.52	-101.93	574.76	1,297,327.40	3,233,389.68	40.146542	-104.665116
6,940.00	46.66	3.28	6,839.72	-72.78	575.89	1,297,356.56	3,233,390.54	40.146622	-104.665112
6,984.00	52.02	4.26	6,868.38	-39.49	578.09	1,297,389.86	3,233,392.43	40.146713	-104.665104
7,026.00	57.46	4.32	6,892.61	-5.30	580.66	1,297,424.07	3,233,394.67	40.146807	-104.665095
7,070.00	63.11	4.57	6,914.42	32.78	583.62	1,297,462.18	3,233,397.28	40.146912	-104.665084
7,112.00	67.63	2.95	6,931.92	70.87	586.11	1,297,500.29	3,233,399.41	40.147016	-104.665075
7,155.00	71.61	2.79	6,946.89	111.12	588.13	1,297,540.55	3,233,401.05	40.147127	-104.665068
7,197.00	76.11	3.59	6,958.56	151.39	590.38	1,297,580.84	3,233,402.92	40.147237	-104.665060
7,241.00	79.39	3.43	6,967.90	194.30	593.01	1,297,623.77	3,233,405.15	40.147355	-104.665051
7,283.00	80.14	3.00	6,975.36	235.56	595.33	1,297,665.06	3,233,407.08	40.147468	-104.665042
7,327.00	82.36	2.13	6,982.05	279.01	597.27	1,297,708.51	3,233,408.62	40.147588	-104.665036
7,367.00	88.08	359.64	6,985.38	318.84	597.89	1,297,748.35	3,233,408.86	40.147697	-104.665033
<b>7" Casing Point @ 7367' MD :: 6985.38' TVD</b>									
7,369.00	88.37	359.52	6,985.44	320.84	597.87	1,297,750.35	3,233,408.82	40.147703	-104.665033
7,389.00	90.31	358.13	6,985.67	340.83	597.46	1,297,770.34	3,233,408.23	40.147757	-104.665035
7,472.00	93.09	357.32	6,983.21	423.72	594.17	1,297,853.19	3,233,404.15	40.147985	-104.665047
7,515.00	93.53	356.83	6,980.73	466.60	591.98	1,297,896.04	3,233,401.56	40.148103	-104.665054
7,601.00	89.88	357.59	6,978.17	552.44	587.80	1,297,981.84	3,233,396.57	40.148338	-104.665069
7,687.00	89.26	359.18	6,978.82	638.40	585.37	1,298,067.77	3,233,393.34	40.148574	-104.665078
7,773.00	88.58	359.39	6,980.44	724.38	584.30	1,298,153.73	3,233,391.46	40.148810	-104.665082
7,858.00	87.34	1.46	6,983.46	809.32	584.93	1,298,238.66	3,233,391.29	40.149043	-104.665080
7,944.00	88.14	3.80	6,986.86	895.15	588.87	1,298,324.53	3,233,394.43	40.149279	-104.665066
8,030.00	86.85	2.01	6,990.61	980.95	593.23	1,298,410.36	3,233,397.98	40.149515	-104.665050
8,116.00	88.70	2.54	6,993.95	1,066.82	596.64	1,298,496.25	3,233,400.58	40.149750	-104.665038
8,201.00	90.49	3.64	6,994.55	1,151.69	601.22	1,298,581.16	3,233,404.37	40.149983	-104.665021
8,287.00	91.67	4.07	6,992.93	1,237.48	607.00	1,298,666.99	3,233,409.34	40.150219	-104.665001
8,373.00	91.11	3.51	6,990.85	1,323.26	612.68	1,298,752.82	3,233,414.22	40.150454	-104.664980
8,459.00	90.68	3.05	6,989.50	1,409.11	617.60	1,298,838.71	3,233,418.33	40.150690	-104.664963
8,545.00	90.43	1.94	6,988.67	1,495.02	621.35	1,298,924.65	3,233,421.27	40.150926	-104.664949
8,630.00	90.86	2.33	6,987.71	1,579.96	624.51	1,299,009.61	3,233,423.64	40.151159	-104.664938

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	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
8,716.00	89.69	0.71	6,987.30	1,665.92	626.79	1,299,095.59	3,233,425.11	40.151395	-104.664930
8,802.00	89.69	0.69	6,987.77	1,751.91	627.84	1,299,181.58	3,233,425.35	40.151631	-104.664926
8,887.00	89.57	0.72	6,988.31	1,836.91	628.89	1,299,266.58	3,233,425.60	40.151864	-104.664922
8,973.00	89.44	0.92	6,989.06	1,922.89	630.12	1,299,352.57	3,233,426.02	40.152100	-104.664918
9,059.00	89.63	0.63	6,989.76	2,008.88	631.28	1,299,438.56	3,233,426.38	40.152336	-104.664914
9,145.00	87.90	359.91	6,991.61	2,094.86	631.69	1,299,524.53	3,233,425.98	40.152572	-104.664912
9,230.00	87.40	0.56	6,995.09	2,179.79	632.04	1,299,609.46	3,233,425.53	40.152805	-104.664911
9,316.00	89.07	0.27	6,997.74	2,265.74	632.66	1,299,695.41	3,233,425.34	40.153041	-104.664909
9,402.00	90.06	0.31	6,998.40	2,351.73	633.10	1,299,781.40	3,233,424.97	40.153277	-104.664907
9,488.00	91.79	0.88	6,997.01	2,437.72	633.99	1,299,867.38	3,233,425.06	40.153513	-104.664904
9,573.00	91.05	0.04	6,994.90	2,522.69	634.67	1,299,952.35	3,233,424.94	40.153747	-104.664902
9,659.00	91.11	0.26	6,993.28	2,608.67	634.90	1,300,038.33	3,233,424.36	40.153983	-104.664901
9,745.00	90.80	0.14	6,991.85	2,694.66	635.20	1,300,124.31	3,233,423.85	40.154219	-104.664900
9,830.00	91.05	0.56	6,990.48	2,779.64	635.71	1,300,209.30	3,233,423.57	40.154452	-104.664898
9,916.00	90.68	0.99	6,989.18	2,865.63	636.88	1,300,295.28	3,233,423.93	40.154688	-104.664894
10,002.00	91.11	1.30	6,987.83	2,951.60	638.60	1,300,381.26	3,233,424.84	40.154924	-104.664887
10,088.00	89.13	0.35	6,987.65	3,037.58	639.83	1,300,467.25	3,233,425.27	40.155160	-104.664883
10,173.00	90.12	0.83	6,988.21	3,122.58	640.71	1,300,552.25	3,233,425.35	40.155393	-104.664880
10,259.00	89.94	0.82	6,988.16	3,208.57	641.95	1,300,638.24	3,233,425.78	40.155629	-104.664875
10,345.00	89.32	359.87	6,988.72	3,294.56	642.47	1,300,724.24	3,233,425.49	40.155865	-104.664874
10,431.00	89.26	0.43	6,989.79	3,380.56	642.69	1,300,810.22	3,233,424.90	40.156101	-104.664873
10,516.00	90.99	1.26	6,989.60	3,465.54	643.94	1,300,895.21	3,233,425.36	40.156335	-104.664868
10,602.00	91.05	0.96	6,988.07	3,551.51	645.61	1,300,981.19	3,233,426.22	40.156571	-104.664862
10,688.00	91.11	0.92	6,986.45	3,637.49	647.02	1,301,067.17	3,233,426.82	40.156807	-104.664857
10,774.00	90.99	0.93	6,984.87	3,723.46	648.41	1,301,153.15	3,233,427.40	40.157043	-104.664852
10,860.00	90.93	0.15	6,983.43	3,809.44	649.22	1,301,239.14	3,233,427.40	40.157279	-104.664849
10,946.00	91.30	0.34	6,981.76	3,895.43	649.59	1,301,325.11	3,233,426.96	40.157515	-104.664848
11,031.00	89.20	0.06	6,981.39	3,980.42	649.88	1,301,410.10	3,233,426.46	40.157748	-104.664847
11,117.00	87.90	359.17	6,983.56	4,066.39	649.31	1,301,496.06	3,233,425.08	40.157984	-104.664849
11,203.00	89.88	2.11	6,985.23	4,152.35	650.27	1,301,582.02	3,233,425.23	40.158220	-104.664846
11,288.00	89.94	1.47	6,985.36	4,237.31	652.92	1,301,667.00	3,233,427.09	40.158453	-104.664836
11,374.00	90.25	0.77	6,985.22	4,323.29	654.60	1,301,752.99	3,233,427.96	40.158689	-104.664830
11,460.00	90.62	0.96	6,984.57	4,409.28	655.90	1,301,838.98	3,233,428.45	40.158925	-104.664825
11,497.00	90.93	0.86	6,984.07	4,446.27	656.49	1,301,875.98	3,233,428.69	40.159027	-104.664823
<b>Final Sperry MWD Survey @ 11497.00ft</b>									
11,549.00	90.93	0.86	6,983.22	4,498.26	657.27	1,301,927.97	3,233,428.98	40.159170	-104.664821
<b>Straight Line Projection to TD @ 11549' MD</b>									

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	EDM 2003.16 Single User Db

Targets									
Target Name	- hit/miss target	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	
- Shape		(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude Longitude
Thomason 27N-W9HZ		0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822 -104.667172
- actual wellpath hits target center									
- Polygon									
Point 1				0.00	154.23	1,651.19	1,297,593.65	3,234,463.62	
Point 2				0.00	150.55	-504.52	1,297,569.72	3,232,308.13	
Point 3				0.00	146.86	-2,673.29	1,297,545.66	3,230,139.58	
Point 4				0.00	2,320.42	-2,654.98	1,299,719.21	3,230,137.47	
Point 5				0.00	4,534.92	-2,640.68	1,301,933.65	3,230,130.97	
Point 6				0.00	4,527.53	-455.32	1,301,946.79	3,232,316.22	
Point 7				0.00	4,520.27	1,727.52	1,301,960.03	3,234,498.94	
Point 8				0.00	2,323.04	1,694.82	1,299,762.68	3,234,486.87	
Thomason 27N-W9HZ		0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822 -104.667172
- actual wellpath hits target center									
- Polygon									
Point 1				0.00	-305.03	2,102.07	1,297,138.66	3,234,918.77	
Point 2				0.00	-309.48	-511.13	1,297,109.67	3,232,305.84	
Point 3				0.00	-313.95	-3,137.20	1,297,080.54	3,229,680.03	
Point 4				0.00	2,320.11	-3,085.01	1,299,714.86	3,229,707.48	
Point 5				0.00	4,996.48	-3,097.73	1,302,390.88	3,229,669.63	
Point 6				0.00	4,987.54	-451.57	1,302,406.79	3,232,315.64	
Point 7				0.00	4,978.74	2,194.41	1,302,422.84	3,234,961.48	
Point 8				0.00	2,323.27	2,154.93	1,299,767.23	3,234,946.94	
Thomason 27N-W9HZ		0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822 -104.667172
- actual wellpath hits target center									
- Point									
Thomason 27N-W9HZ		0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822 -104.667172
- actual wellpath hits target center									
- Polygon									
Point 1				0.00	166.55	340.35	1,297,593.65	3,233,152.77	
Point 2				0.00	158.07	1,243.35	1,297,593.65	3,234,055.78	
Point 3				0.00	4,524.04	1,327.06	1,301,960.04	3,234,098.48	
Point 4				0.00	4,532.52	424.07	1,301,960.04	3,233,195.48	
Thomason 27N-W9HZ		0.00	0.00	6,987.00	4,523.90	673.34	1,301,953.75	3,233,444.81	40.159240 -104.664763
- actual wellpath misses target center by 30.49ft at 11549.00ft MD (6983.22 TVD, 4498.26 N, 657.27 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,367.00	6,985.38	7" Casing Point @ 7367' MD :: 6985.38' TVD	7	8-3/4	

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	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									
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	154.23	1,651.19	1,297,593.65	3,234,463.62		
Point 2			0.00	150.55	-504.52	1,297,569.72	3,232,308.13		
Point 3			0.00	146.86	-2,673.29	1,297,545.66	3,230,139.58		
Point 4			0.00	2,320.42	-2,654.98	1,299,719.21	3,230,137.47		
Point 5			0.00	4,534.92	-2,640.68	1,301,933.65	3,230,130.97		
Point 6			0.00	4,527.53	-455.32	1,301,946.79	3,232,316.22		
Point 7			0.00	4,520.27	1,727.52	1,301,960.03	3,234,498.94		
Point 8			0.00	2,323.04	1,694.82	1,299,762.68	3,234,486.87		
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-305.03	2,102.07	1,297,138.66	3,234,918.77		
Point 2			0.00	-309.48	-511.13	1,297,109.67	3,232,305.84		
Point 3			0.00	-313.95	-3,137.20	1,297,080.54	3,229,680.03		
Point 4			0.00	2,320.11	-3,085.01	1,299,714.86	3,229,707.48		
Point 5			0.00	4,996.48	-3,097.73	1,302,390.88	3,229,669.63		
Point 6			0.00	4,987.54	-451.57	1,302,406.79	3,232,315.64		
Point 7			0.00	4,978.74	2,194.41	1,302,422.84	3,234,961.48		
Point 8			0.00	2,323.27	2,154.93	1,299,767.23	3,234,946.94		
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Point									
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	166.55	340.35	1,297,593.65	3,233,152.77		
Point 2			0.00	158.07	1,243.35	1,297,593.65	3,234,055.78		
Point 3			0.00	4,524.04	1,327.06	1,301,960.04	3,234,098.48		
Point 4			0.00	4,532.52	424.07	1,301,960.04	3,233,195.48		
Thomason 27N-W9HZ	0.00	0.00	6,987.00	4,523.90	673.34	1,301,953.75	3,233,444.81	40.159240	-104.664763
- actual wellpath misses target center by 30.49ft at 11549.00ft MD (6983.22 TVD, 4498.26 N, 657.27 E)									
- Point									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,367.00	6,985.38	7" Casing Point @ 7367' MD :: 6985.38' TVD	7	8-3/4

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
16.00	16.00	0.00	0.00	Xtreme 22: RKB = 16ft
116.00	116.00	-0.10	0.00	First Gyro Survey @ 116.00ft
886.00	886.00	0.48	0.68	Final Gyro Survey @ 886.00ft
886.00	886.00	0.48	0.68	Tie-On to Surface Gyros @ 886.00ft
940.00	940.00	0.37	0.78	First Sperry MWD Survey @ 940.00ft
11,497.00	6,984.07	4,446.27	656.49	Final Sperry MWD Survey @ 11497.00ft
11,549.00	6,983.22	4,498.26	657.27	Straight Line Projection to TD @ 11549' MD



# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Thomason 27N-W9HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Site:</b>	Sec. 9-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4897.00ft (Xtreme 22)
<b>Well:</b>	Thomason 27N-W9HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan D Rev 0	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual Field Surveys	<b>Database:</b>	EDM 2003.16 Single User Db

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	154.23	1,651.19	1,297,593.65	3,234,463.62		
Point 2			0.00	150.55	-504.52	1,297,569.72	3,232,308.13		
Point 3			0.00	146.86	-2,673.29	1,297,545.66	3,230,139.58		
Point 4			0.00	2,320.42	-2,654.98	1,299,719.21	3,230,137.47		
Point 5			0.00	4,534.92	-2,640.68	1,301,933.65	3,230,130.97		
Point 6			0.00	4,527.53	-455.32	1,301,946.79	3,232,316.22		
Point 7			0.00	4,520.27	1,727.52	1,301,960.03	3,234,498.94		
Point 8			0.00	2,323.04	1,694.82	1,299,762.68	3,234,486.87		
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-305.03	2,102.07	1,297,138.66	3,234,918.77		
Point 2			0.00	-309.48	-511.13	1,297,109.67	3,232,305.84		
Point 3			0.00	-313.95	-3,137.20	1,297,080.54	3,229,680.03		
Point 4			0.00	2,320.11	-3,085.01	1,299,714.86	3,229,707.48		
Point 5			0.00	4,996.48	-3,097.73	1,302,390.88	3,229,669.63		
Point 6			0.00	4,987.54	-451.57	1,302,406.79	3,232,315.64		
Point 7			0.00	4,978.74	2,194.41	1,302,422.84	3,234,961.48		
Point 8			0.00	2,323.27	2,154.93	1,299,767.23	3,234,946.94		
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Point									
Thomason 27N-W9HZ	0.00	0.00	0.00	0.00	0.00	1,297,423.92	3,232,814.02	40.146822	-104.667172
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	166.55	340.35	1,297,593.65	3,233,152.77		
Point 2			0.00	158.07	1,243.35	1,297,593.65	3,234,055.78		
Point 3			0.00	4,524.04	1,327.06	1,301,960.04	3,234,098.48		
Point 4			0.00	4,532.52	424.07	1,301,960.04	3,233,195.48		
Thomason 27N-W9HZ	0.00	0.00	6,987.00	4,523.90	673.34	1,301,953.75	3,233,444.81	40.159240	-104.664763
- actual wellpath misses target center by 30.49ft at 11549.00ft MD (6983.22 TVD, 4498.26 N, 657.27 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,367.00	6,985.38	7" Casing Point @ 7367' MD :: 6985.38' TVD	7	8-3/4	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_