

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 3-T2N-R65W

Cannon 15N-W3HZ

Plan D Rev 0

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

04 January, 2013

Well Coordinates: 1,307,381.04 N, 3,238,001.00 E (40° 10' 26.47" N, 104° 38' 53.79" W)

Ground Level: 4,839.00 ft

Local Coordinate Origin:

Centered on Well Cannon 15N-W3HZ

Viewing Datum:

RKB=16ft @ 4855.00ft (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**

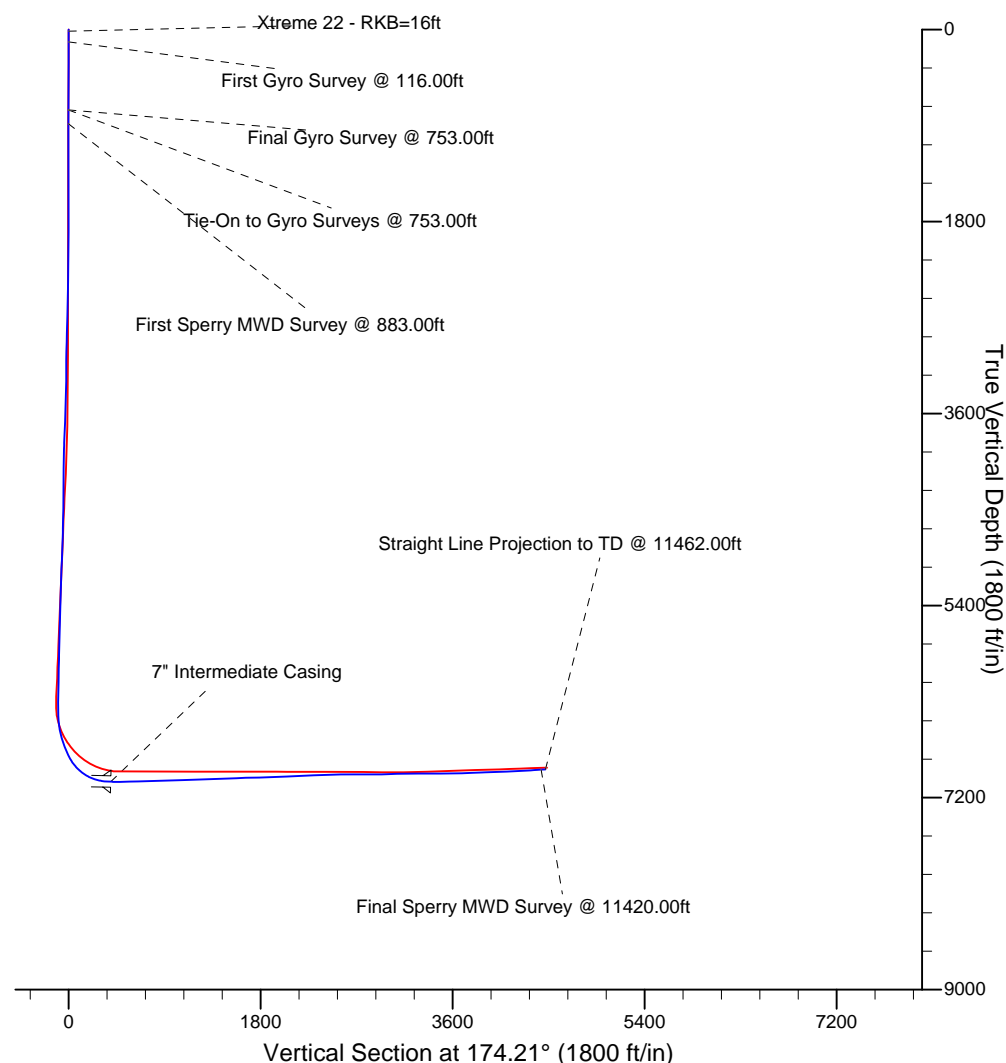
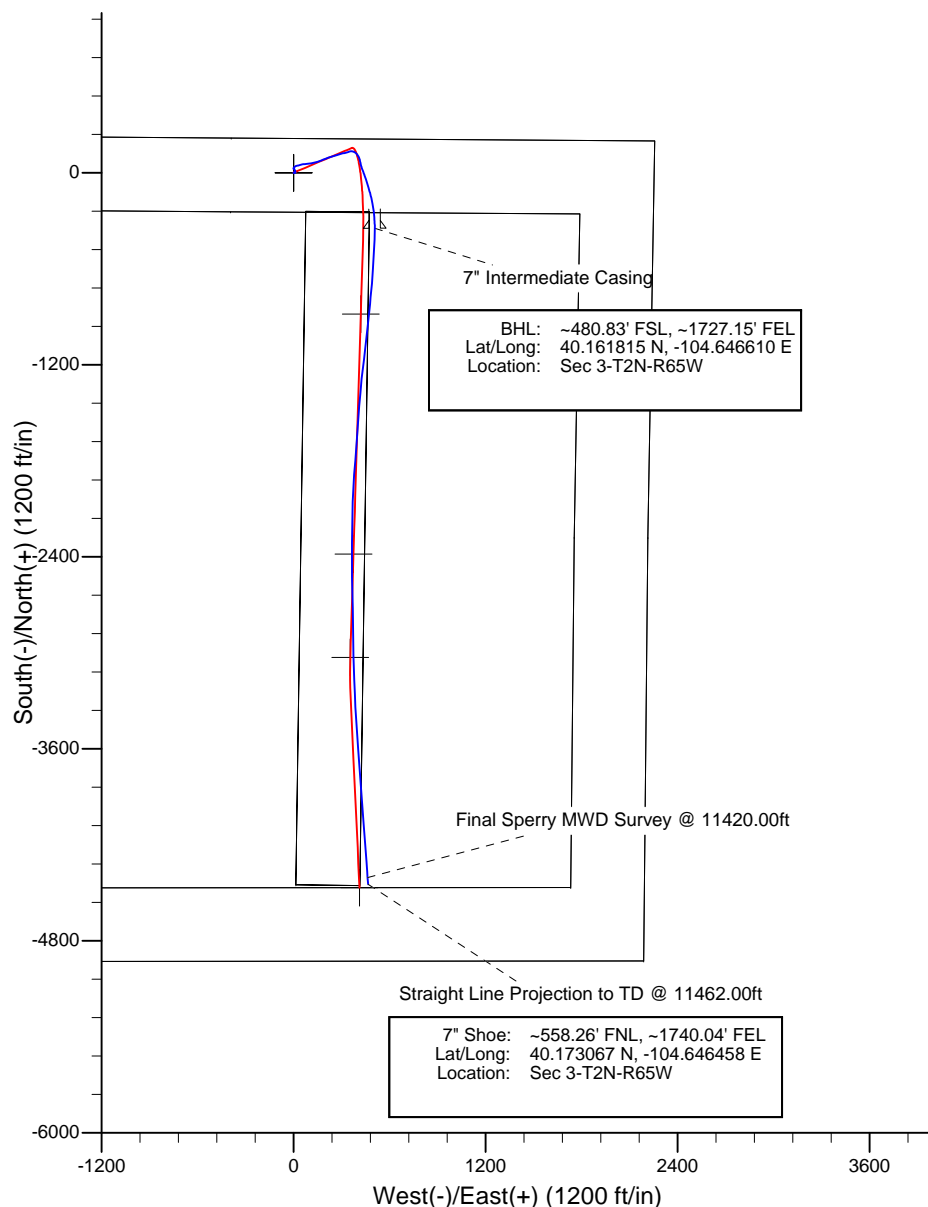
Project: Weld County, CO (NAD 83)  
Site: Sec. 3-T2N-R65W  
Well: Cannon 15N-W3HZ



**HALLIBURTON**  
Sperry Drilling

# LEGEND

- - - Cannon 15N-W3HZ, Plan D Rev 0, Plan D Rev 0 Proposal V0
- - - Actual Field Surveys



**Design Report for Cannon 15N-W3HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
<b>Xtreme 22 - RKB=16ft</b>							
116.00	0.14	52.00	116.00	0.08	0.10	-0.07	0.14
<b>First Gyro Survey @ 116.00ft</b>							
216.00	0.41	55.39	216.00	0.35	0.49	-0.30	0.27
316.00	0.63	359.18	316.00	1.11	0.77	-1.02	0.53
416.00	0.31	238.70	415.99	1.52	0.53	-1.45	0.83
516.00	0.46	57.55	515.99	1.59	0.64	-1.52	0.77
616.00	0.46	333.02	615.99	2.16	0.80	-2.07	0.62
716.00	0.28	114.12	715.99	2.42	0.84	-2.32	0.70
753.00	0.49	68.62	752.99	2.44	1.07	-2.32	0.96
<b>Tie-On to Gyro Surveys @ 753.00ft - Final Gyro Survey @ 753.00ft</b>							
883.00	0.54	110.26	882.98	2.43	2.16	-2.20	0.28
<b>First Sperry MWD Survey @ 883.00ft</b>							
975.00	0.47	90.65	974.98	2.28	2.95	-1.97	0.20
1,067.00	0.17	167.68	1,066.98	2.14	3.35	-1.79	0.50
1,159.00	0.32	173.02	1,158.98	1.75	3.41	-1.40	0.16
1,250.00	0.11	141.22	1,249.98	1.43	3.50	-1.07	0.26
1,342.00	0.48	146.52	1,341.98	1.04	3.77	-0.66	0.40
1,434.00	0.71	143.05	1,433.97	0.26	4.32	0.17	0.25
1,526.00	0.39	130.26	1,525.97	-0.39	4.90	0.89	0.37
1,618.00	1.76	59.56	1,617.95	0.12	6.36	0.52	1.82
1,710.00	0.86	38.48	1,709.93	1.38	8.01	-0.56	1.09
1,802.00	0.83	58.76	1,801.92	2.26	9.01	-1.34	0.32
1,894.00	1.18	56.62	1,893.90	3.13	10.37	-2.07	0.38
1,986.00	0.16	317.97	1,985.90	3.75	11.07	-2.61	1.32
2,061.00	0.23	354.29	2,060.89	3.97	10.99	-2.84	0.18
2,154.00	0.33	271.26	2,153.89	4.17	10.70	-3.06	0.41
2,245.00	0.61	11.27	2,244.89	4.65	10.53	-3.56	0.82
2,331.00	1.26	19.65	2,330.88	5.99	10.94	-4.85	0.77
2,417.00	1.26	338.59	2,416.86	7.76	10.91	-6.61	1.03
2,502.00	1.16	341.95	2,501.84	9.44	10.31	-8.36	0.14
2,588.00	1.01	348.20	2,587.83	11.01	9.88	-9.96	0.22
2,674.00	1.66	350.46	2,673.80	12.98	9.52	-11.96	0.76
2,759.00	1.38	329.23	2,758.77	15.08	8.79	-14.11	0.73
2,845.00	1.53	346.35	2,844.75	17.08	7.99	-16.19	0.53
2,931.00	1.31	346.34	2,930.72	19.15	7.49	-18.30	0.26
3,017.00	1.24	335.41	3,016.70	20.96	6.87	-20.16	0.29
3,102.00	0.98	318.77	3,101.68	22.34	6.01	-21.62	0.48
3,188.00	1.14	299.47	3,187.67	23.31	4.78	-22.71	0.45
3,274.00	1.23	296.33	3,273.65	24.14	3.21	-23.70	0.13
3,360.00	0.99	274.76	3,359.63	24.61	1.64	-24.32	0.56
3,445.00	0.94	314.01	3,444.62	25.16	0.41	-24.99	0.76
3,531.00	1.97	358.44	3,530.60	27.13	-0.14	-27.00	1.69
3,616.00	3.22	24.46	3,615.51	30.76	0.81	-30.52	1.99
3,702.00	4.49	42.53	3,701.32	35.44	4.08	-34.85	2.03
3,788.00	5.70	55.95	3,786.98	40.31	9.90	-39.11	1.97
3,874.00	6.00	72.73	3,872.54	44.04	17.73	-42.02	2.01
3,960.00	7.99	76.50	3,957.89	46.77	27.83	-43.72	2.37

**Design Report for Cannon 15N-W3HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,046.00	9.99	76.81	4,042.83	49.87	40.91	-45.48	2.33
4,132.00	10.11	79.73	4,127.51	52.91	55.60	-47.03	0.61
4,217.00	9.20	83.17	4,211.31	55.05	69.69	-47.74	1.27
4,303.00	10.50	83.75	4,296.04	56.72	84.30	-47.92	1.52
4,389.00	9.73	82.64	4,380.70	58.51	99.30	-48.18	0.92
4,474.00	10.07	77.64	4,464.44	61.02	113.68	-49.23	1.09
4,560.00	9.63	76.81	4,549.17	64.27	128.03	-51.01	0.54
4,646.00	9.15	76.98	4,634.02	67.45	141.70	-52.80	0.56
4,731.00	7.51	77.27	4,718.12	70.20	153.70	-54.32	1.93
4,817.00	7.42	67.83	4,803.39	73.53	164.33	-56.57	1.43
4,903.00	7.74	63.22	4,888.64	78.24	174.64	-60.20	0.80
4,989.00	9.00	69.17	4,973.73	83.24	186.10	-64.02	1.78
5,074.00	8.33	69.22	5,057.75	87.79	198.07	-67.34	0.79
5,159.00	6.91	68.85	5,142.00	91.82	208.59	-70.29	1.67
5,245.00	7.19	70.47	5,227.35	95.48	218.49	-72.93	0.40
5,331.00	7.82	73.08	5,312.61	98.98	229.16	-75.34	0.83
5,416.00	8.60	73.32	5,396.74	102.49	240.78	-77.66	0.92
5,502.00	7.18	76.12	5,481.93	105.63	252.16	-79.63	1.71
5,588.00	7.10	74.09	5,567.26	108.37	262.49	-81.32	0.31
5,673.00	8.36	69.41	5,651.49	111.99	273.32	-83.82	1.66
5,759.00	8.43	73.06	5,736.57	116.02	285.21	-86.63	0.62
5,845.00	8.47	71.83	5,821.63	119.83	297.25	-89.21	0.22
5,930.00	6.74	79.10	5,905.88	122.73	308.10	-90.99	2.32
6,016.00	7.14	81.64	5,991.25	124.46	318.34	-91.68	0.59
6,102.00	7.35	75.25	6,076.57	126.64	328.95	-92.78	0.97
6,188.00	8.44	68.20	6,161.75	130.38	340.13	-95.37	1.69
6,241.00	6.58	71.45	6,214.30	132.79	346.62	-97.12	3.60
6,284.00	5.98	72.51	6,257.04	134.25	351.09	-98.12	1.42
6,327.00	6.08	79.81	6,299.80	135.33	355.47	-98.74	1.80
6,369.00	5.97	87.03	6,341.57	135.83	359.84	-98.81	1.82
6,412.00	6.53	101.63	6,384.32	135.46	364.47	-97.96	3.91
6,455.00	7.50	102.46	6,426.99	134.36	369.61	-96.35	2.27
6,499.00	8.00	105.00	6,470.59	132.95	375.37	-94.37	1.38
6,541.00	9.51	121.70	6,512.11	130.37	381.14	-91.22	7.00
6,585.00	13.80	132.95	6,555.20	124.88	388.08	-85.06	10.99
6,626.00	15.14	137.43	6,594.90	117.60	395.28	-77.09	4.26
6,669.00	18.21	146.64	6,636.09	107.85	402.78	-66.63	9.40
6,712.00	19.31	155.93	6,676.82	95.74	409.38	-53.92	7.40
6,755.00	21.13	166.40	6,717.18	81.71	414.10	-39.49	9.40
6,804.00	22.85	168.86	6,762.61	63.79	418.02	-21.26	3.98
6,847.00	24.72	165.24	6,801.96	46.90	421.92	-4.07	5.52
6,889.00	30.94	159.39	6,839.09	28.28	427.96	15.07	16.16
6,932.00	36.34	160.03	6,874.88	5.95	436.21	38.13	12.59
6,975.00	42.10	161.07	6,908.18	-19.68	445.25	64.54	13.48
7,018.00	47.03	161.96	6,938.80	-48.29	454.80	93.97	11.56
7,061.00	53.27	162.51	6,966.34	-79.72	464.86	126.25	14.54
7,103.00	58.71	164.23	6,989.83	-113.07	474.81	160.43	13.39
7,146.00	65.08	166.06	7,010.07	-149.71	484.51	197.87	15.28
7,189.00	70.39	168.95	7,026.36	-188.55	493.09	237.37	13.83
7,232.00	76.37	172.08	7,038.66	-229.17	499.86	278.47	15.56
7,275.00	81.13	175.00	7,047.05	-271.06	504.60	320.62	12.92

**Design Report for Cannon 15N-W3HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,305.00	86.66	177.13	7,050.24	-300.81	506.64	350.42	19.74
7,351.00	88.46	179.66	7,052.20	-346.74	507.93	396.25	6.74
<b>7" Intermediate Casing</b>							
7,395.00	90.19	182.07	7,052.72	-390.73	507.26	439.95	6.74
7,438.00	90.37	182.41	7,052.51	-433.69	505.58	482.52	0.90
7,524.00	91.23	183.30	7,051.30	-519.58	501.30	567.54	1.44
7,609.00	90.93	183.44	7,049.70	-604.42	496.31	651.44	0.40
7,695.00	91.48	185.19	7,047.89	-690.15	489.84	736.08	2.14
7,781.00	91.73	184.89	7,045.48	-775.78	482.29	820.51	0.46
7,867.00	92.53	185.94	7,042.29	-861.34	474.18	904.81	1.53
7,952.00	92.35	186.61	7,038.67	-945.75	464.90	987.86	0.82
8,038.00	91.11	185.39	7,036.07	-1,031.24	455.92	1,072.00	2.01
8,123.00	92.22	187.26	7,033.60	-1,115.68	446.56	1,155.07	2.55
8,209.00	91.54	187.24	7,030.78	-1,200.95	435.71	1,238.80	0.79
8,295.00	91.36	185.76	7,028.60	-1,286.36	425.98	1,322.80	1.73
8,381.00	92.23	184.80	7,025.91	-1,371.95	418.07	1,407.15	1.51
8,467.00	92.72	184.27	7,022.20	-1,457.61	411.28	1,491.68	0.84
8,552.00	92.47	183.88	7,018.34	-1,542.30	405.24	1,575.34	0.54
8,638.00	91.98	183.73	7,015.01	-1,628.05	399.54	1,660.07	0.61
8,724.00	91.55	184.24	7,012.36	-1,713.80	393.57	1,744.78	0.78
8,809.00	91.30	184.88	7,010.25	-1,798.50	386.81	1,828.37	0.80
8,895.00	91.48	185.14	7,008.17	-1,884.15	379.31	1,912.82	0.37
8,981.00	92.28	182.31	7,005.34	-1,969.91	373.73	1,997.58	3.41
9,066.00	92.16	181.82	7,002.04	-2,054.79	370.67	2,081.72	0.60
9,152.00	92.16	181.54	6,998.80	-2,140.70	368.15	2,166.93	0.33
9,238.00	92.72	180.75	6,995.14	-2,226.60	366.44	2,252.22	1.12
9,323.00	93.09	180.02	6,990.83	-2,311.49	365.87	2,336.62	0.97
9,409.00	92.72	180.41	6,986.47	-2,397.38	365.55	2,422.03	0.63
9,494.00	90.93	179.94	6,983.77	-2,482.33	365.28	2,506.53	2.18
9,580.00	90.31	178.33	6,982.85	-2,568.31	366.58	2,592.20	2.00
9,666.00	89.88	178.62	6,982.71	-2,654.28	368.86	2,677.96	0.60
9,752.00	89.32	178.42	6,983.31	-2,740.25	371.08	2,763.71	0.69
9,837.00	90.12	180.42	6,983.72	-2,825.24	371.94	2,848.36	2.53
9,923.00	90.87	178.71	6,982.98	-2,911.23	372.60	2,933.97	2.16
10,008.00	92.53	178.55	6,980.46	-2,996.17	374.63	3,018.68	1.97
10,094.00	92.23	178.01	6,976.89	-3,082.05	377.21	3,104.39	0.71
10,180.00	89.51	177.93	6,975.59	-3,167.98	380.25	3,190.18	3.16
10,266.00	89.69	177.84	6,976.19	-3,253.92	383.43	3,276.00	0.24
10,351.00	90.00	177.76	6,976.42	-3,338.86	386.69	3,360.84	0.38
10,437.00	89.81	175.72	6,976.56	-3,424.71	391.59	3,446.75	2.38
10,523.00	91.54	176.52	6,975.54	-3,510.50	397.41	3,532.69	2.22
10,609.00	91.42	175.59	6,973.32	-3,596.27	403.32	3,618.62	1.08
10,694.00	91.36	175.87	6,971.25	-3,681.01	409.65	3,703.56	0.33
10,780.00	92.04	175.32	6,968.70	-3,766.72	416.25	3,789.50	1.02
10,866.00	92.47	175.18	6,965.32	-3,852.36	423.37	3,875.42	0.53
10,896.00	92.79	175.88	6,963.94	-3,882.23	425.71	3,905.38	2.56
10,927.00	91.86	176.68	6,962.69	-3,913.14	427.72	3,936.33	3.95
10,951.00	91.79	175.90	6,961.93	-3,937.08	429.27	3,960.30	3.25
10,981.00	91.36	176.69	6,961.10	-3,967.00	431.20	3,990.27	2.99
11,011.00	91.79	176.76	6,960.27	-3,996.94	432.92	4,020.23	1.45
11,037.00	91.85	175.20	6,959.45	-4,022.87	434.74	4,046.20	5.98

**Design Report for Cannon 15N-W3HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,067.00	91.79	175.29	6,958.49	-4,052.75	437.22	4,076.18	0.37
11,097.00	92.47	176.13	6,957.38	-4,082.64	439.47	4,106.15	3.59
11,123.00	92.72	176.21	6,956.20	-4,108.56	441.20	4,132.11	1.01
11,153.00	92.96	175.43	6,954.71	-4,138.44	443.39	4,162.06	2.73
11,183.00	92.96	175.53	6,953.16	-4,168.31	445.75	4,192.01	0.34
11,208.00	93.15	176.07	6,951.83	-4,193.20	447.58	4,216.97	2.29
11,238.00	93.40	175.42	6,950.12	-4,223.07	449.80	4,246.91	2.34
11,268.00	93.34	175.58	6,948.35	-4,252.93	452.15	4,276.85	0.60
11,294.00	93.21	176.13	6,946.87	-4,278.82	454.03	4,302.79	2.15
11,324.00	93.59	175.44	6,945.09	-4,308.68	456.23	4,332.73	2.61
11,354.00	94.02	176.04	6,943.10	-4,338.54	458.45	4,362.65	2.47
11,380.00	94.03	176.01	6,941.27	-4,364.41	460.25	4,388.58	0.12
11,420.00	94.01	176.29	6,938.47	-4,404.22	462.93	4,428.45	0.69
<b>Final Sperry MWD Survey @ 11420.00ft</b>							
11,462.00	94.01	176.29	6,935.53	-4,446.03	465.64	4,470.32	0.01
<b>Straight Line Projection to TD @ 11462.00ft</b>							

**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	0.08	0.10	First Gyro Survey @ 116.00ft
753.00	752.99	2.44	1.07	Tie-On to Gyro Surveys @ 753.00ft
753.00	752.99	2.44	1.07	Final Gyro Survey @ 753.00ft
883.00	882.98	2.43	2.16	First Sperry MWD Survey @ 883.00ft
11,420.00	6,938.47	-4,404.22	462.93	Final Sperry MWD Survey @ 11420.00ft
11,462.00	6,935.53	-4,446.03	465.64	Straight Line Projection to TD @ 11462.00ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
User	Cannon 15N-W3HZ_BHL	174.21	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
16.00	753.00	Surface Gyros	NS-GYRO-MS
883.00	7,305.00	Sperry MWD Surveys	MWD
7,395.00	11,462.00	Sperry MWD Surveys - Lateral	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4

**Design Report for Cannon 15N-W3HZ - Actual Field Surveys****Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- actual wellpath hits target center									
- Polygon									
Point 1				474.95	-244.01	1,307,141.61	3,238,478.26		
Point 2				75.95	-240.18	1,307,141.61	3,238,079.25		
Point 3				15.31	-4,449.58	1,302,932.00	3,238,059.05		
Point 4				414.31	-4,453.41	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
- actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E)									
- Point									
Cannon 15N-W3HZ_	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- actual wellpath hits target center									
- Polygon									
Point 1				2,257.38	200.37	1,307,603.07	3,240,256.26		
Point 2				-389.70	217.39	1,307,594.67	3,237,609.25		
Point 3				-3,036.73	234.14	1,307,585.99	3,234,962.29		
Point 4				-3,061.21	-2,273.59	1,305,078.25	3,234,961.90		
Point 5				-3,087.14	-4,928.93	1,302,422.89	3,234,961.48		
Point 6				2,187.93	-4,925.83	1,302,476.66	3,240,236.05		
Point 7				2,214.79	-2,278.94	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
- actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E)									
- Point									
Cannon 15N-W3HZ_	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- actual wellpath hits target center									
- Point									
Cannon 15N-W3HZ_	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- actual wellpath hits target center									
- Polygon									
Point 1				1,789.44	-256.65	1,307,141.60	3,239,792.75		
Point 2				-392.61	-242.62	1,307,134.67	3,237,610.76		
Point 3				-2,581.21	-228.77	1,307,127.50	3,235,422.22		
Point 4				-2,601.17	-2,274.05	1,305,082.21	3,235,421.90		
Point 5				-2,622.60	-4,468.65	1,302,887.59	3,235,421.55		
Point 6				1,732.56	-4,466.09	1,302,931.98	3,239,776.31		
Point 7				1,754.75	-2,278.47	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
- actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E)									
- Point									
Cannon 15N-W3HZ_	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935
- actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E)									
- Point									

## North Reference Sheet for Sec. 3-T2N-R65W - Cannon 15N-W3HZ - 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 @ 4855.00ft (Xtreme 22). Northing and Easting are relative to Cannon 15N-W3HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995774

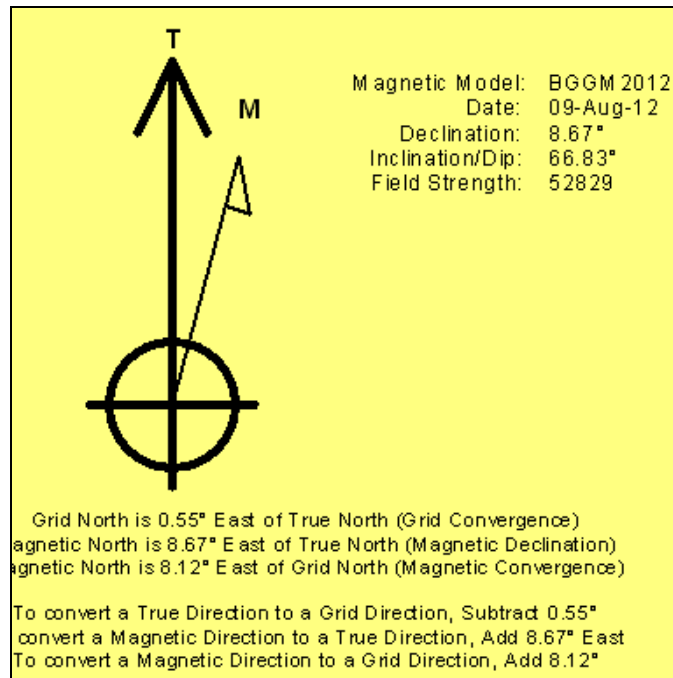
Grid Coordinates of Well: 1,307,381.04 ft N, 3,238,001.00 ft E

Geographical Coordinates of Well: 40° 10' 26.47" N, 104° 38' 53.79" W

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,462.00ft  
the Bottom Hole Displacement is 4,470.35ft in the Direction of 174.02° (True).

Magnetic Convergence at surface is: -8.12° ( 9 August 2012, , BGGM2012)



# **Anadarko Petroleum Corp.**

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

**Sec. 3-T2N-R65W**

**Cannon 15N-W3HZ**

**Plan D Rev 0**

**Design: Actual Field Surveys**

## **Survey Report - Geographic**

**04 January, 2013**

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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. 3-T2N-R65W				
Site Position:		Northing:	1,307,311.71 ft	Latitude:	40.173779
From:	Lat/Long	Easting:	3,239,877.08 ft	Longitude:	-104.641565
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Cannon 15N-W3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,307,381.04 ft	Latitude:	40.174019
	+E/-W	0.00 ft	Easting:	3,238,001.00 ft	Longitude:	-104.648276
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,839.00 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	2012-08-09	8.67	66.83	52,829

<b>Design</b>	Actual Field Surveys				
<b>Audit Notes:</b>	Definitive				
<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	174.21	

<b>Survey Program</b>	<b>Date</b>	2013-01-04			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
16.00	753.00	Surface Gyros (Plan D Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s	
883.00	7,305.00	Sperry MWD Surveys (Plan D Rev 0)	MWD	Fixed:v2:standard declination	
7,395.00	11,462.00	Sperry MWD Surveys - Lateral (Plan D Re	MWD	Fixed:v2:standard declination	

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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	1,307,381.04	3,238,001.00	40.174019	-104.648276
16.00	0.00	0.00	16.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
<b>Xtreme 22 - RKB=16ft</b>									
116.00	0.14	52.00	116.00	0.08	0.10	1,307,381.11	3,238,001.10	40.174019	-104.648276
<b>First Gyro Survey @ 116.00ft</b>									
216.00	0.41	55.39	216.00	0.35	0.49	1,307,381.40	3,238,001.49	40.174020	-104.648274
316.00	0.63	359.18	316.00	1.11	0.77	1,307,382.15	3,238,001.77	40.174022	-104.648273
416.00	0.31	238.70	415.99	1.52	0.53	1,307,382.56	3,238,001.52	40.174023	-104.648274
516.00	0.46	57.55	515.99	1.59	0.64	1,307,382.63	3,238,001.63	40.174023	-104.648274
616.00	0.46	333.02	615.99	2.16	0.80	1,307,383.21	3,238,001.78	40.174025	-104.648273
716.00	0.28	114.12	715.99	2.42	0.84	1,307,383.47	3,238,001.82	40.174026	-104.648273
753.00	0.49	68.62	752.99	2.44	1.07	1,307,383.49	3,238,002.05	40.174026	-104.648272
<b>Tie-On to Gyro Surveys @ 753.00ft - Final Gyro Survey @ 753.00ft</b>									
883.00	0.54	110.26	882.98	2.43	2.16	1,307,383.49	3,238,003.14	40.174026	-104.648268
<b>First Sperry MWD Survey @ 883.00ft</b>									
975.00	0.47	90.65	974.98	2.28	2.95	1,307,383.34	3,238,003.93	40.174025	-104.648265
1,067.00	0.17	167.68	1,066.98	2.14	3.35	1,307,383.21	3,238,004.34	40.174025	-104.648264
1,159.00	0.32	173.02	1,158.98	1.75	3.41	1,307,382.82	3,238,004.40	40.174024	-104.648264
1,250.00	0.11	141.22	1,249.98	1.43	3.50	1,307,382.50	3,238,004.49	40.174023	-104.648263
1,342.00	0.48	146.52	1,341.98	1.04	3.77	1,307,382.12	3,238,004.76	40.174022	-104.648263
1,434.00	0.71	143.05	1,433.97	0.26	4.32	1,307,381.34	3,238,005.32	40.174020	-104.648261
1,526.00	0.39	130.26	1,525.97	-0.39	4.90	1,307,380.69	3,238,005.91	40.174018	-104.648258
1,618.00	1.76	59.56	1,617.95	0.12	6.36	1,307,381.22	3,238,007.36	40.174019	-104.648253
1,710.00	0.86	38.48	1,709.93	1.38	8.01	1,307,382.49	3,238,009.00	40.174023	-104.648247
1,802.00	0.83	58.76	1,801.92	2.26	9.01	1,307,383.39	3,238,009.99	40.174025	-104.648244
1,894.00	1.18	56.62	1,893.90	3.13	10.37	1,307,384.27	3,238,011.34	40.174028	-104.648239
1,986.00	0.16	317.97	1,985.90	3.75	11.07	1,307,384.89	3,238,012.04	40.174029	-104.648236
2,061.00	0.23	354.29	2,060.89	3.97	10.99	1,307,385.12	3,238,011.95	40.174030	-104.648237
2,154.00	0.33	271.26	2,153.89	4.17	10.70	1,307,385.31	3,238,011.66	40.174030	-104.648238
2,245.00	0.61	11.27	2,244.89	4.65	10.53	1,307,385.79	3,238,011.49	40.174032	-104.648238
2,331.00	1.26	19.65	2,330.88	5.99	10.94	1,307,387.13	3,238,011.89	40.174035	-104.648237
2,417.00	1.26	338.59	2,416.86	7.76	10.91	1,307,388.90	3,238,011.84	40.174040	-104.648237
2,502.00	1.16	341.95	2,501.84	9.44	10.31	1,307,390.58	3,238,011.22	40.174045	-104.648239
2,588.00	1.01	348.20	2,587.83	11.01	9.88	1,307,392.15	3,238,010.78	40.174049	-104.648241
2,674.00	1.66	350.46	2,673.80	12.98	9.52	1,307,394.11	3,238,010.40	40.174055	-104.648242
2,759.00	1.38	329.23	2,758.77	15.08	8.79	1,307,396.20	3,238,009.65	40.174060	-104.648245
2,845.00	1.53	346.35	2,844.75	17.08	7.99	1,307,398.20	3,238,008.83	40.174066	-104.648247
2,931.00	1.31	346.34	2,930.72	19.15	7.49	1,307,400.26	3,238,008.31	40.174072	-104.648249
3,017.00	1.24	335.41	3,016.70	20.96	6.87	1,307,402.06	3,238,007.67	40.174076	-104.648251
3,102.00	0.98	318.77	3,101.68	22.34	6.01	1,307,403.43	3,238,006.80	40.174080	-104.648255
3,188.00	1.14	299.47	3,187.67	23.31	4.78	1,307,404.39	3,238,005.56	40.174083	-104.648259
3,274.00	1.23	296.33	3,273.65	24.14	3.21	1,307,405.21	3,238,003.98	40.174085	-104.648265
3,360.00	0.99	274.76	3,359.63	24.61	1.64	1,307,405.67	3,238,002.41	40.174087	-104.648270
3,445.00	0.94	314.01	3,444.62	25.16	0.41	1,307,406.20	3,238,001.17	40.174088	-104.648275
3,531.00	1.97	358.44	3,530.60	27.13	-0.14	1,307,408.16	3,238,000.60	40.174093	-104.648277
3,616.00	3.22	24.46	3,615.51	30.76	0.81	1,307,411.80	3,238,001.51	40.174103	-104.648273
3,702.00	4.49	42.53	3,701.32	35.44	4.08	1,307,416.51	3,238,004.75	40.174116	-104.648261
3,788.00	5.70	55.95	3,786.98	40.31	9.90	1,307,421.44	3,238,010.51	40.174130	-104.648241
3,874.00	6.00	72.73	3,872.54	44.04	17.73	1,307,425.24	3,238,018.31	40.174140	-104.648213
3,960.00	7.99	76.50	3,957.89	46.77	27.83	1,307,428.07	3,238,028.39	40.174147	-104.648176
4,046.00	9.99	76.81	4,042.83	49.87	40.91	1,307,431.29	3,238,041.43	40.174156	-104.648130
4,132.00	10.11	79.73	4,127.51	52.91	55.60	1,307,434.48	3,238,056.09	40.174164	-104.648077
4,217.00	9.20	83.17	4,211.31	55.05	69.69	1,307,436.76	3,238,070.16	40.174170	-104.648027
4,303.00	10.50	83.75	4,296.04	56.72	84.30	1,307,438.57	3,238,084.75	40.174175	-104.647974
4,389.00	9.73	82.64	4,380.70	58.51	99.30	1,307,440.49	3,238,099.73	40.174180	-104.647921

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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
4,474.00	10.07	77.64	4,464.44	61.02	113.68	1,307,443.14	3,238,114.09	40.174186	-104.647869
4,560.00	9.63	76.81	4,549.17	64.27	128.03	1,307,446.53	3,238,128.41	40.174195	-104.647818
4,646.00	9.15	76.98	4,634.02	67.45	141.70	1,307,449.84	3,238,142.04	40.174204	-104.647769
4,731.00	7.51	77.27	4,718.12	70.20	153.70	1,307,452.71	3,238,154.02	40.174212	-104.647726
4,817.00	7.42	67.83	4,803.39	73.53	164.33	1,307,456.14	3,238,164.61	40.174221	-104.647688
4,903.00	7.74	63.22	4,888.64	78.24	174.64	1,307,460.95	3,238,174.87	40.174234	-104.647651
4,989.00	9.00	69.17	4,973.73	83.24	186.10	1,307,466.06	3,238,186.28	40.174247	-104.647610
5,074.00	8.33	69.22	5,057.75	87.79	198.07	1,307,470.72	3,238,198.21	40.174260	-104.647567
5,159.00	6.91	68.85	5,142.00	91.82	208.59	1,307,474.85	3,238,208.70	40.174271	-104.647530
5,245.00	7.19	70.47	5,227.35	95.48	218.49	1,307,478.61	3,238,218.56	40.174281	-104.647494
5,331.00	7.82	73.08	5,312.61	98.98	229.16	1,307,482.21	3,238,229.19	40.174291	-104.647456
5,416.00	8.60	73.32	5,396.74	102.49	240.78	1,307,485.83	3,238,240.78	40.174300	-104.647414
5,502.00	7.18	76.12	5,481.93	105.63	252.16	1,307,489.08	3,238,252.12	40.174309	-104.647374
5,588.00	7.10	74.09	5,567.26	108.37	262.49	1,307,491.92	3,238,262.43	40.174316	-104.647337
5,673.00	8.36	69.41	5,651.49	111.99	273.32	1,307,495.64	3,238,273.23	40.174326	-104.647298
5,759.00	8.43	73.06	5,736.57	116.02	285.21	1,307,499.79	3,238,285.07	40.174337	-104.647255
5,845.00	8.47	71.83	5,821.63	119.83	297.25	1,307,503.72	3,238,297.08	40.174348	-104.647212
5,930.00	6.74	79.10	5,905.88	122.73	308.10	1,307,506.72	3,238,307.90	40.174356	-104.647173
6,016.00	7.14	81.64	5,991.25	124.46	318.34	1,307,508.54	3,238,318.12	40.174361	-104.647137
6,102.00	7.35	75.25	6,076.57	126.64	328.95	1,307,510.82	3,238,328.71	40.174367	-104.647099
6,188.00	8.44	68.20	6,161.75	130.38	340.13	1,307,514.68	3,238,339.85	40.174377	-104.647059
6,241.00	6.58	71.45	6,214.30	132.79	346.62	1,307,517.15	3,238,346.32	40.174383	-104.647036
6,284.00	5.98	72.51	6,257.04	134.25	351.09	1,307,518.65	3,238,350.78	40.174387	-104.647020
6,327.00	6.08	79.81	6,299.80	135.33	355.47	1,307,519.77	3,238,355.15	40.174390	-104.647004
6,369.00	5.97	87.03	6,341.57	135.83	359.84	1,307,520.31	3,238,359.51	40.174392	-104.646988
6,412.00	6.53	101.63	6,384.32	135.46	364.47	1,307,519.98	3,238,364.14	40.174391	-104.646972
6,455.00	7.50	102.46	6,426.99	134.36	369.61	1,307,518.93	3,238,369.29	40.174388	-104.646953
6,499.00	8.00	105.00	6,470.59	132.95	375.37	1,307,517.58	3,238,375.06	40.174384	-104.646933
6,541.00	9.51	121.70	6,512.11	130.37	381.14	1,307,515.05	3,238,380.86	40.174377	-104.646912
6,585.00	13.80	132.95	6,555.20	124.88	388.08	1,307,509.63	3,238,387.85	40.174362	-104.646887
6,626.00	15.14	137.43	6,594.90	117.60	395.28	1,307,502.42	3,238,395.12	40.174342	-104.646861
6,669.00	18.21	146.64	6,636.09	107.85	402.78	1,307,492.75	3,238,402.71	40.174315	-104.646835
6,712.00	19.31	155.93	6,676.82	95.74	409.38	1,307,480.70	3,238,409.42	40.174282	-104.646811
6,755.00	21.13	166.40	6,717.18	81.71	414.10	1,307,466.72	3,238,414.28	40.174243	-104.646794
6,804.00	22.85	168.86	6,762.61	63.79	418.02	1,307,448.84	3,238,418.37	40.174194	-104.646780
6,847.00	24.72	165.24	6,801.96	46.90	421.92	1,307,431.99	3,238,422.44	40.174148	-104.646766
6,889.00	30.94	159.39	6,839.09	28.28	427.96	1,307,413.43	3,238,428.66	40.174097	-104.646745
6,932.00	36.34	160.03	6,874.88	5.95	436.21	1,307,391.17	3,238,437.12	40.174035	-104.646715
6,975.00	42.10	161.07	6,908.18	-19.68	445.25	1,307,365.63	3,238,446.40	40.173965	-104.646683
7,018.00	47.03	161.96	6,938.80	-48.29	454.80	1,307,337.12	3,238,456.23	40.173886	-104.646649
7,061.00	53.27	162.51	6,966.34	-79.72	464.86	1,307,305.79	3,238,466.59	40.173800	-104.646613
7,103.00	58.71	164.23	6,989.83	-113.07	474.81	1,307,272.54	3,238,476.85	40.173709	-104.646577
7,146.00	65.08	166.06	7,010.07	-149.71	484.51	1,307,235.99	3,238,486.91	40.173608	-104.646542
7,189.00	70.39	168.95	7,026.36	-188.55	493.09	1,307,197.24	3,238,495.87	40.173501	-104.646512
7,232.00	76.37	172.08	7,038.66	-229.17	499.86	1,307,156.69	3,238,503.02	40.173390	-104.646487
7,275.00	81.13	175.00	7,047.05	-271.06	504.60	1,307,114.85	3,238,508.16	40.173275	-104.646470
7,305.00	86.66	177.13	7,050.24	-300.81	506.64	1,307,085.12	3,238,510.49	40.173193	-104.646463
7,351.00	88.46	179.66	7,052.20	-346.74	507.93	1,307,039.21	3,238,512.22	40.173067	-104.646458
<b>7" Intermediate Casing</b>									
7,395.00	90.19	182.07	7,052.72	-390.73	507.26	1,306,995.22	3,238,511.98	40.172946	-104.646461
7,438.00	90.37	182.41	7,052.51	-433.69	505.58	1,306,952.24	3,238,510.71	40.172828	-104.646467
7,524.00	91.23	183.30	7,051.30	-519.58	501.30	1,306,866.32	3,238,507.25	40.172593	-104.646482
7,609.00	90.93	183.44	7,049.70	-604.42	496.31	1,306,781.44	3,238,503.08	40.172360	-104.646500
7,695.00	91.48	185.19	7,047.89	-690.15	489.84	1,306,695.65	3,238,497.43	40.172124	-104.646523
7,781.00	91.73	184.89	7,045.48	-775.78	482.29	1,306,609.96	3,238,490.70	40.171889	-104.646550

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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
7,867.00	92.53	185.94	7,042.29	-861.34	474.18	1,306,524.33	3,238,483.42	40.171655	-104.646579
7,952.00	92.35	186.61	7,038.67	-945.75	464.90	1,306,439.83	3,238,474.95	40.171423	-104.646612
8,038.00	91.11	185.39	7,036.07	-1,031.24	455.92	1,306,354.27	3,238,466.79	40.171188	-104.646645
8,123.00	92.22	187.26	7,033.60	-1,115.68	446.56	1,306,269.75	3,238,458.24	40.170956	-104.646678
8,209.00	91.54	187.24	7,030.78	-1,200.95	435.71	1,306,184.38	3,238,448.21	40.170722	-104.646717
8,295.00	91.36	185.76	7,028.60	-1,286.36	425.98	1,306,098.88	3,238,439.30	40.170488	-104.646752
8,381.00	92.23	184.80	7,025.91	-1,371.95	418.07	1,306,013.22	3,238,432.21	40.170253	-104.646780
8,467.00	92.72	184.27	7,022.20	-1,457.61	411.28	1,305,927.51	3,238,426.24	40.170018	-104.646804
8,552.00	92.47	183.88	7,018.34	-1,542.30	405.24	1,305,842.76	3,238,421.02	40.169785	-104.646826
8,638.00	91.98	183.73	7,015.01	-1,628.05	399.54	1,305,756.97	3,238,416.14	40.169550	-104.646846
8,724.00	91.55	184.24	7,012.36	-1,713.80	393.57	1,305,671.17	3,238,410.99	40.169315	-104.646868
8,809.00	91.30	184.88	7,010.25	-1,798.50	386.81	1,305,586.41	3,238,405.06	40.169082	-104.646892
8,895.00	91.48	185.14	7,008.17	-1,884.15	379.31	1,305,500.70	3,238,398.38	40.168847	-104.646919
8,981.00	92.28	182.31	7,005.34	-1,969.91	373.73	1,305,414.89	3,238,393.62	40.168612	-104.646939
9,066.00	92.16	181.82	7,002.04	-2,054.79	370.67	1,305,329.99	3,238,391.37	40.168379	-104.646950
9,152.00	92.16	181.54	6,998.80	-2,140.70	368.15	1,305,244.07	3,238,389.69	40.168143	-104.646959
9,238.00	92.72	180.75	6,995.14	-2,226.60	366.44	1,305,158.15	3,238,388.80	40.167907	-104.646965
9,323.00	93.09	180.02	6,990.83	-2,311.49	365.87	1,305,073.27	3,238,389.04	40.167674	-104.646967
9,409.00	92.72	180.41	6,986.47	-2,397.38	365.55	1,304,987.38	3,238,389.55	40.167438	-104.646968
9,494.00	90.93	179.94	6,983.77	-2,482.33	365.28	1,304,902.44	3,238,390.10	40.167205	-104.646969
9,580.00	90.31	178.33	6,982.85	-2,568.31	366.58	1,304,816.47	3,238,392.21	40.166969	-104.646964
9,666.00	89.88	178.62	6,982.71	-2,654.28	368.86	1,304,730.53	3,238,395.33	40.166733	-104.646956
9,752.00	89.32	178.42	6,983.31	-2,740.25	371.08	1,304,644.59	3,238,398.37	40.166497	-104.646948
9,837.00	90.12	180.42	6,983.72	-2,825.24	371.94	1,304,559.62	3,238,400.05	40.166264	-104.646945
9,923.00	90.87	178.71	6,982.98	-2,911.23	372.60	1,304,473.64	3,238,401.53	40.166028	-104.646943
10,008.00	92.53	178.55	6,980.46	-2,996.17	374.63	1,304,388.74	3,238,404.38	40.165794	-104.646936
10,094.00	92.23	178.01	6,976.89	-3,082.05	377.21	1,304,302.88	3,238,407.78	40.165559	-104.646926
10,180.00	89.51	177.93	6,975.59	-3,167.98	380.25	1,304,216.99	3,238,411.65	40.165323	-104.646915
10,266.00	89.69	177.84	6,976.19	-3,253.92	383.43	1,304,131.09	3,238,415.65	40.165087	-104.646904
10,351.00	90.00	177.76	6,976.42	-3,338.86	386.69	1,304,046.19	3,238,419.73	40.164854	-104.646892
10,437.00	89.81	175.72	6,976.56	-3,424.71	391.59	1,303,960.39	3,238,425.45	40.164618	-104.646875
10,523.00	91.54	176.52	6,975.54	-3,510.50	397.41	1,303,874.66	3,238,432.09	40.164383	-104.646854
10,609.00	91.42	175.59	6,973.32	-3,596.27	403.32	1,303,788.96	3,238,438.83	40.164147	-104.646833
10,694.00	91.36	175.87	6,971.25	-3,681.01	409.65	1,303,704.29	3,238,445.97	40.163915	-104.646810
10,780.00	92.04	175.32	6,968.70	-3,766.72	416.25	1,303,618.65	3,238,453.40	40.163679	-104.646787
10,866.00	92.47	175.18	6,965.32	-3,852.36	423.37	1,303,533.09	3,238,461.34	40.163444	-104.646761
10,896.00	92.79	175.88	6,963.94	-3,882.23	425.71	1,303,503.24	3,238,463.96	40.163362	-104.646753
10,927.00	91.86	176.68	6,962.69	-3,913.14	427.72	1,303,472.35	3,238,466.27	40.163277	-104.646746
10,951.00	91.79	175.90	6,961.93	-3,937.08	429.27	1,303,448.43	3,238,468.05	40.163212	-104.646740
10,981.00	91.36	176.69	6,961.10	-3,967.00	431.20	1,303,418.53	3,238,470.27	40.163129	-104.646733
11,011.00	91.79	176.76	6,960.27	-3,996.94	432.92	1,303,388.61	3,238,472.27	40.163047	-104.646727
11,037.00	91.85	175.20	6,959.45	-4,022.87	434.74	1,303,362.70	3,238,474.34	40.162976	-104.646721
11,067.00	91.79	175.29	6,958.49	-4,052.75	437.22	1,303,332.85	3,238,477.11	40.162894	-104.646712
11,097.00	92.47	176.13	6,957.38	-4,082.64	439.47	1,303,302.98	3,238,479.64	40.162812	-104.646704
11,123.00	92.72	176.21	6,956.20	-4,108.56	441.20	1,303,277.08	3,238,481.63	40.162741	-104.646697
11,153.00	92.96	175.43	6,954.71	-4,138.44	443.39	1,303,247.22	3,238,484.10	40.162659	-104.646690
11,183.00	92.96	175.53	6,953.16	-4,168.31	445.75	1,303,217.38	3,238,486.75	40.162577	-104.646681
11,208.00	93.15	176.07	6,951.83	-4,193.20	447.58	1,303,192.50	3,238,488.82	40.162509	-104.646675
11,238.00	93.40	175.42	6,950.12	-4,223.07	449.80	1,303,162.66	3,238,491.32	40.162427	-104.646667
11,268.00	93.34	175.58	6,948.35	-4,252.93	452.15	1,303,132.83	3,238,493.96	40.162345	-104.646658
11,294.00	93.21	176.13	6,946.87	-4,278.82	454.03	1,303,106.96	3,238,496.09	40.162274	-104.646652
11,324.00	93.59	175.44	6,945.09	-4,308.68	456.23	1,303,077.12	3,238,498.57	40.162192	-104.646644
11,354.00	94.02	176.04	6,943.10	-4,338.54	458.45	1,303,047.29	3,238,501.08	40.162110	-104.646636
11,380.00	94.03	176.01	6,941.27	-4,364.41	460.25	1,303,021.44	3,238,503.13	40.162039	-104.646629

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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
11,420.00	94.01	176.29	6,938.47	-4,404.22	462.93	1,302,981.65	3,238,506.19	40.161929	-104.646620
<b>Final Sperry MWD Survey @ 11420.00ft</b>									
11,462.00	94.01	176.29	6,935.53	-4,446.03	465.64	1,302,939.87	3,238,509.30	40.161815	-104.646610
<b>Straight Line Projection to TD @ 11462.00ft</b>									

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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 (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_L	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-244.01	474.95	1,307,141.61	3,238,478.26		
Point 2				0.00	-240.18	75.95	1,307,141.61	3,238,079.25		
Point 3				0.00	-4,449.58	15.31	1,302,932.00	3,238,059.05		
Point 4				0.00	-4,453.41	414.31	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_v	- actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E)	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	200.37	2,257.38	1,307,603.07	3,240,256.26		
Point 2				0.00	217.39	-389.70	1,307,594.67	3,237,609.25		
Point 3				0.00	234.14	-3,036.73	1,307,585.99	3,234,962.29		
Point 4				0.00	-2,273.59	-3,061.21	1,305,078.25	3,234,961.90		
Point 5				0.00	-4,928.93	-3,087.14	1,302,422.89	3,234,961.48		
Point 6				0.00	-4,925.83	2,187.93	1,302,476.66	3,240,236.05		
Point 7				0.00	-2,278.94	2,214.79	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_E	- actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E)	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-256.65	1,789.44	1,307,141.60	3,239,792.75		
Point 2				0.00	-242.62	-392.61	1,307,134.67	3,237,610.76		
Point 3				0.00	-228.77	-2,581.21	1,307,127.50	3,235,422.22		
Point 4				0.00	-2,274.05	-2,601.17	1,305,082.21	3,235,421.90		
Point 5				0.00	-4,468.65	-2,622.60	1,302,887.59	3,235,421.55		
Point 6				0.00	-4,466.09	1,732.56	1,302,931.98	3,239,776.31		
Point 7				0.00	-2,278.47	1,754.75	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_v	- actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E)	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
- Point										
Cannon 15N-W3HZ_v	- actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E)	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935
- Point										

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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 - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_L - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
Point 1			0.00	-244.01	474.95	1,307,141.61	3,238,478.26		
Point 2			0.00	-240.18	75.95	1,307,141.61	3,238,079.25		
Point 3			0.00	-4,449.58	15.31	1,302,932.00	3,238,059.05		
Point 4			0.00	-4,453.41	414.31	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_V - actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E) - Point	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
Cannon 15N-W3HZ_ξ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
Point 1			0.00	200.37	2,257.38	1,307,603.07	3,240,256.26		
Point 2			0.00	217.39	-389.70	1,307,594.67	3,237,609.25		
Point 3			0.00	234.14	-3,036.73	1,307,585.99	3,234,962.29		
Point 4			0.00	-2,273.59	-3,061.21	1,305,078.25	3,234,961.90		
Point 5			0.00	-4,928.93	-3,087.14	1,302,422.89	3,234,961.48		
Point 6			0.00	-4,925.83	2,187.93	1,302,476.66	3,240,236.05		
Point 7			0.00	-2,278.94	2,214.79	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_E - actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E) - Point	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
Cannon 15N-W3HZ_ξ - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
Cannon 15N-W3HZ_ξ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
Point 1			0.00	-256.65	1,789.44	1,307,141.60	3,239,792.75		
Point 2			0.00	-242.62	-392.61	1,307,134.67	3,237,610.76		
Point 3			0.00	-228.77	-2,581.21	1,307,127.50	3,235,422.22		
Point 4			0.00	-2,274.05	-2,601.17	1,305,082.21	3,235,421.90		
Point 5			0.00	-4,468.65	-2,622.60	1,302,887.59	3,235,421.55		
Point 6			0.00	-4,466.09	1,732.56	1,302,931.98	3,239,776.31		
Point 7			0.00	-2,278.47	1,754.75	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_V - actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E) - Point	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
Cannon 15N-W3HZ_V - actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E) - Point	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4

### Design Annotations

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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 (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_L	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-244.01	474.95	1,307,141.61	3,238,478.26		
Point 2				0.00	-240.18	75.95	1,307,141.61	3,238,079.25		
Point 3				0.00	-4,449.58	15.31	1,302,932.00	3,238,059.05		
Point 4				0.00	-4,453.41	414.31	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E)	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	200.37	2,257.38	1,307,603.07	3,240,256.26		
Point 2				0.00	217.39	-389.70	1,307,594.67	3,237,609.25		
Point 3				0.00	234.14	-3,036.73	1,307,585.99	3,234,962.29		
Point 4				0.00	-2,273.59	-3,061.21	1,305,078.25	3,234,961.90		
Point 5				0.00	-4,928.93	-3,087.14	1,302,422.89	3,234,961.48		
Point 6				0.00	-4,925.83	2,187.93	1,302,476.66	3,240,236.05		
Point 7				0.00	-2,278.94	2,214.79	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_E	- actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E)	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-256.65	1,789.44	1,307,141.60	3,239,792.75		
Point 2				0.00	-242.62	-392.61	1,307,134.67	3,237,610.76		
Point 3				0.00	-228.77	-2,581.21	1,307,127.50	3,235,422.22		
Point 4				0.00	-2,274.05	-2,601.17	1,305,082.21	3,235,421.90		
Point 5				0.00	-4,468.65	-2,622.60	1,302,887.59	3,235,421.55		
Point 6				0.00	-4,466.09	1,732.56	1,302,931.98	3,239,776.31		
Point 7				0.00	-2,278.47	1,754.75	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E)	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
- Point										
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E)	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935
- Point										

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4
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

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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 (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_L	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-244.01	474.95	1,307,141.61	3,238,478.26		
Point 2				0.00	-240.18	75.95	1,307,141.61	3,238,079.25		
Point 3				0.00	-4,449.58	15.31	1,302,932.00	3,238,059.05		
Point 4				0.00	-4,453.41	414.31	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E)	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	200.37	2,257.38	1,307,603.07	3,240,256.26		
Point 2				0.00	217.39	-389.70	1,307,594.67	3,237,609.25		
Point 3				0.00	234.14	-3,036.73	1,307,585.99	3,234,962.29		
Point 4				0.00	-2,273.59	-3,061.21	1,305,078.25	3,234,961.90		
Point 5				0.00	-4,928.93	-3,087.14	1,302,422.89	3,234,961.48		
Point 6				0.00	-4,925.83	2,187.93	1,302,476.66	3,240,236.05		
Point 7				0.00	-2,278.94	2,214.79	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_E	- actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E)	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-256.65	1,789.44	1,307,141.60	3,239,792.75		
Point 2				0.00	-242.62	-392.61	1,307,134.67	3,237,610.76		
Point 3				0.00	-228.77	-2,581.21	1,307,127.50	3,235,422.22		
Point 4				0.00	-2,274.05	-2,601.17	1,305,082.21	3,235,421.90		
Point 5				0.00	-4,468.65	-2,622.60	1,302,887.59	3,235,421.55		
Point 6				0.00	-4,466.09	1,732.56	1,302,931.98	3,239,776.31		
Point 7				0.00	-2,278.47	1,754.75	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E)	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
- Point										
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E)	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935
- Point										

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4
116.00	116.00	0.08	0.10	First Gyro Survey @ 116.00ft
753.00	752.99	2.44	1.07	Tie-On to Gyro Surveys @ 753.00ft
753.00	752.99	2.44	1.07	Final Gyro Survey @ 753.00ft
883.00	882.98	2.43	2.16	First Sperry MWD Survey @ 883.00ft
11,420.00	6,938.47	-4,404.22	462.93	Final Sperry MWD Survey @ 11420.00ft

# Halliburton Company

## Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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 (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cannon 15N-W3HZ_L	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-244.01	474.95	1,307,141.61	3,238,478.26		
Point 2				0.00	-240.18	75.95	1,307,141.61	3,238,079.25		
Point 3				0.00	-4,449.58	15.31	1,302,932.00	3,238,059.05		
Point 4				0.00	-4,453.41	414.31	1,302,932.00	3,238,458.05		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 98.44ft at 7897.33ft MD (7040.96 TVD, -891.47 N, 470.99 E)	0.00	0.00	6,956.79	-882.34	420.76	1,306,502.82	3,238,430.20	40.171597	-104.646770
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	200.37	2,257.38	1,307,603.07	3,240,256.26		
Point 2				0.00	217.39	-389.70	1,307,594.67	3,237,609.25		
Point 3				0.00	234.14	-3,036.73	1,307,585.99	3,234,962.29		
Point 4				0.00	-2,273.59	-3,061.21	1,305,078.25	3,234,961.90		
Point 5				0.00	-4,928.93	-3,087.14	1,302,422.89	3,234,961.48		
Point 6				0.00	-4,925.83	2,187.93	1,302,476.66	3,240,236.05		
Point 7				0.00	-2,278.94	2,214.79	1,305,123.57	3,240,237.49		
Cannon 15N-W3HZ_E	- actual wellpath misses target center by 59.03ft at 11462.00ft MD (6935.53 TVD, -4446.03 N, 465.64 E)	0.00	0.00	6,920.51	-4,466.99	412.54	1,302,918.40	3,238,456.41	40.161757	-104.646800
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Point										
Cannon 15N-W3HZ_ξ	- actual wellpath hits target center	0.00	0.00	0.00	0.00	0.00	1,307,381.04	3,238,001.00	40.174019	-104.648276
- Polygon										
Point 1				0.00	-256.65	1,789.44	1,307,141.60	3,239,792.75		
Point 2				0.00	-242.62	-392.61	1,307,134.67	3,237,610.76		
Point 3				0.00	-228.77	-2,581.21	1,307,127.50	3,235,422.22		
Point 4				0.00	-2,274.05	-2,601.17	1,305,082.21	3,235,421.90		
Point 5				0.00	-4,468.65	-2,622.60	1,302,887.59	3,235,421.55		
Point 6				0.00	-4,466.09	1,732.56	1,302,931.98	3,239,776.31		
Point 7				0.00	-2,278.47	1,754.75	1,305,119.62	3,239,777.48		
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 25.70ft at 10039.94ft MD (6979.08 TVD, -3028.06 N, 375.49 E)	0.00	0.00	6,963.58	-3,028.03	355.00	1,304,356.69	3,238,385.06	40.165707	-104.647006
- Point										
Cannon 15N-W3HZ_V	- actual wellpath misses target center by 29.16ft at 9395.03ft MD (6987.14 TVD, -2383.42 N, 365.64 E)	0.00	0.00	6,959.49	-2,382.05	374.79	1,305,002.80	3,238,398.64	40.167480	-104.646935
- Point										

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,351.00	7,052.20	7" Intermediate Casing	7	8-3/4
11,462.00	6,935.53	-4,446.03 465.64 Straight Line Projection to TD @ 11462.00ft		

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

**Halliburton Company**  
Survey Report - Geographic

<b>Company:</b>	Anadarko Petroleum Corp.	<b>Local Co-ordinate Reference:</b>	Well Cannon 15N-W3HZ
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Site:</b>	Sec. 3-T2N-R65W	<b>MD Reference:</b>	RKB=16ft @ 4855.00ft (Xtreme 22)
<b>Well:</b>	Cannon 15N-W3HZ	<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