

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 14-T2N-R65W

Weichel 27C-11HZ

Plan C Rev 0

Design: Actual Field Surveys

Survey Report - Geographic

24 September, 2012

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Weichel 27C-11HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Site:	Sec. 14-T2N-R65W	MD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Well:	Weichel 27C-11HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

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

Site	Sec. 14-T2N-R65W				
Site Position:		Northing:	1,292,356.99ft	Latitude:	40.132622
From:	Lat/Long	Easting:	3,243,841.77 ft	Longitude:	-104.627904
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.56 °

Well	Weichel 27C-11HZ					
Well Position	+N-S	0.00 ft	Northing:	1,292,377.24 ft	Latitude:	40.132677
	+E-W	0.00 ft	Easting:	3,243,863.66 ft	Longitude:	-104.627825
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,881.00 ft

Wellbore	Plan C Rev 0				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2012-08-25	8.65	66.80	52,803

Design	Actual Field Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	1.78	

Survey Program	Date	2012-09-24			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	917.00	Surface Gyros (Plan C Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,011.00	7,443.00	Sperry MWD Surveys - Vert/Build (Plan C	MWD+IFR1	Fixed:v2:crustal field declination	
7,551.00	16,514.00	Sperry MWD Surveys - Lateral (Plan C Re	MWD+IFR1	Fixed:v2:crustal field declination	

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Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677	-104.627825
25.00	0.00	0.00	25.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677	-104.627825
H&P 308 - RKB=25ft									
125.00	0.42	127.41	125.00	-0.22	0.29	1,292,377.02	3,243,863.95	40.132676	-104.627824
First Gyro Survey @ 125.00ft									
225.00	0.45	208.27	225.00	-0.79	0.40	1,292,376.45	3,243,864.06	40.132675	-104.627824
325.00	0.19	251.29	325.00	-1.19	0.05	1,292,376.05	3,243,863.72	40.132674	-104.627825
425.00	0.20	76.23	425.00	-1.20	0.07	1,292,376.04	3,243,863.74	40.132674	-104.627825
525.00	0.40	165.39	524.99	-1.50	0.32	1,292,375.74	3,243,864.00	40.132673	-104.627824
625.00	0.28	253.80	624.99	-1.90	0.18	1,292,375.34	3,243,863.85	40.132672	-104.627824
725.00	0.10	308.36	724.99	-1.92	-0.13	1,292,375.32	3,243,863.55	40.132672	-104.627825
825.00	0.23	77.66	824.99	-1.82	0.00	1,292,375.42	3,243,863.68	40.132672	-104.627825
917.00	0.46	207.06	916.99	-2.11	0.01	1,292,375.13	3,243,863.69	40.132671	-104.627825
Final Gyro Survey @ 917.00ft - Tie-On to Gyro Surveys @ 917.00ft									
1,011.00	0.39	128.84	1,010.99	-2.65	0.09	1,292,374.59	3,243,863.78	40.132670	-104.627825
First Sperry MWD Survey @ 1011.00ft									
1,103.00	0.22	157.55	1,102.99	-3.01	0.40	1,292,374.24	3,243,864.09	40.132669	-104.627824
1,195.00	0.28	235.54	1,194.99	-3.30	0.28	1,292,373.94	3,243,863.98	40.132668	-104.627824
1,287.00	0.13	49.13	1,286.99	-3.36	0.18	1,292,373.88	3,243,863.87	40.132668	-104.627824
1,379.00	0.38	230.27	1,378.99	-3.48	0.02	1,292,373.76	3,243,863.72	40.132667	-104.627825
1,471.00	0.42	84.34	1,470.99	-3.64	0.12	1,292,373.60	3,243,863.82	40.132667	-104.627825
1,562.00	0.48	160.64	1,561.98	-3.97	0.58	1,292,373.27	3,243,864.28	40.132666	-104.627823
1,654.00	0.44	90.57	1,653.98	-4.34	1.06	1,292,372.91	3,243,864.76	40.132665	-104.627821
1,746.00	0.62	212.70	1,745.98	-4.76	1.15	1,292,372.49	3,243,864.85	40.132664	-104.627821
1,838.00	0.86	83.20	1,837.98	-5.10	1.56	1,292,372.16	3,243,865.27	40.132663	-104.627819
1,930.00	0.23	301.66	1,929.97	-4.92	2.09	1,292,372.34	3,243,865.80	40.132663	-104.627818
2,022.00	0.29	54.19	2,021.97	-4.69	2.12	1,292,372.57	3,243,865.83	40.132664	-104.627817
2,114.00	0.53	54.01	2,113.97	-4.30	2.66	1,292,372.97	3,243,866.36	40.132665	-104.627815
2,209.00	0.71	7.20	2,208.96	-3.46	3.09	1,292,373.81	3,243,866.78	40.132667	-104.627814
2,303.00	0.58	7.85	2,302.96	-2.41	3.22	1,292,374.86	3,243,866.91	40.132670	-104.627813
2,398.00	0.99	56.65	2,397.95	-1.48	3.98	1,292,375.80	3,243,867.65	40.132673	-104.627811
2,493.00	0.79	16.48	2,492.94	-0.40	4.85	1,292,376.88	3,243,868.51	40.132676	-104.627808
2,588.00	1.76	30.53	2,587.92	1.48	5.77	1,292,378.78	3,243,869.42	40.132681	-104.627804
2,682.00	1.31	95.96	2,681.89	2.61	7.58	1,292,379.93	3,243,871.21	40.132684	-104.627798
2,777.00	2.80	103.56	2,776.82	1.96	10.91	1,292,379.30	3,243,874.55	40.132682	-104.627786
2,872.00	4.52	111.88	2,871.63	0.02	16.64	1,292,377.42	3,243,880.30	40.132677	-104.627765
2,967.00	4.34	102.54	2,966.35	-2.16	23.62	1,292,375.31	3,243,887.30	40.132671	-104.627741
3,061.00	4.51	101.84	3,060.06	-3.69	30.71	1,292,373.85	3,243,894.40	40.132667	-104.627715
3,156.00	5.14	121.52	3,154.73	-6.68	38.00	1,292,370.93	3,243,901.72	40.132659	-104.627689
3,251.00	4.90	108.93	3,249.37	-10.22	45.46	1,292,367.47	3,243,909.22	40.132649	-104.627662
3,346.00	5.24	109.44	3,344.00	-12.98	53.39	1,292,364.79	3,243,917.17	40.132641	-104.627634
3,440.00	5.28	110.50	3,437.61	-15.92	61.49	1,292,361.92	3,243,925.30	40.132633	-104.627605
3,535.00	3.43	112.06	3,532.33	-18.52	68.22	1,292,359.39	3,243,932.05	40.132626	-104.627581
3,630.00	4.77	101.09	3,627.08	-20.35	74.73	1,292,357.63	3,243,938.58	40.132621	-104.627558
3,725.00	5.65	87.78	3,721.69	-20.93	83.28	1,292,357.13	3,243,947.14	40.132620	-104.627527
3,819.00	4.39	92.16	3,815.33	-20.88	91.50	1,292,357.26	3,243,955.35	40.132620	-104.627498
3,914.00	6.31	85.12	3,909.91	-20.58	100.33	1,292,357.65	3,243,964.19	40.132621	-104.627466
4,009.00	5.03	85.35	4,004.45	-19.79	109.69	1,292,358.52	3,243,973.53	40.132623	-104.627433
4,104.00	7.36	78.72	4,098.89	-18.27	119.81	1,292,360.15	3,243,983.63	40.132627	-104.627397
4,199.00	6.91	77.31	4,193.15	-15.82	131.35	1,292,362.71	3,243,995.15	40.132634	-104.627355
4,293.00	5.96	75.24	4,286.56	-13.34	141.59	1,292,365.30	3,244,005.36	40.132640	-104.627319
4,388.00	5.46	65.41	4,381.09	-10.20	150.46	1,292,368.52	3,244,014.21	40.132649	-104.627287
4,483.00	7.32	67.98	4,475.49	-6.05	160.19	1,292,372.77	3,244,023.89	40.132660	-104.627252
4,578.00	6.96	73.11	4,569.76	-2.11	171.30	1,292,376.82	3,244,034.97	40.132671	-104.627212
4,672.00	8.31	81.57	4,662.93	0.54	183.47	1,292,379.59	3,244,047.11	40.132678	-104.627169

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Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
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Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
4,767.00	8.12	79.41	4,756.95	2.78	196.86	1,292,381.96	3,244,060.47	40.132685	-104.627121
4,862.00	8.08	83.99	4,851.00	4.72	210.09	1,292,384.02	3,244,073.69	40.132690	-104.627074
4,956.00	6.41	92.74	4,944.25	5.16	221.91	1,292,384.58	3,244,085.49	40.132691	-104.627031
5,051.00	5.27	84.58	5,038.76	5.32	231.55	1,292,384.83	3,244,095.13	40.132692	-104.626997
5,146.00	5.18	106.73	5,133.38	4.49	240.00	1,292,384.09	3,244,103.59	40.132689	-104.626967
5,241.00	4.45	98.54	5,228.04	2.71	247.75	1,292,382.39	3,244,111.36	40.132684	-104.626939
5,335.00	3.67	90.12	5,321.80	2.16	254.37	1,292,381.90	3,244,117.98	40.132683	-104.626915
5,430.00	3.49	97.30	5,416.62	1.79	260.27	1,292,381.59	3,244,123.89	40.132682	-104.626894
5,525.00	4.35	113.80	5,511.40	-0.03	266.44	1,292,379.83	3,244,130.07	40.132677	-104.626872
5,620.00	3.99	99.23	5,606.15	-2.02	273.00	1,292,377.91	3,244,136.65	40.132671	-104.626849
5,715.00	4.40	117.60	5,700.90	-4.23	279.49	1,292,375.75	3,244,143.17	40.132665	-104.626825
5,810.00	5.19	115.34	5,795.57	-7.76	286.60	1,292,372.30	3,244,150.31	40.132656	-104.626800
5,905.00	3.37	109.46	5,890.30	-10.53	293.12	1,292,369.59	3,244,156.86	40.132648	-104.626777
6,000.00	4.06	100.47	5,985.10	-12.07	299.06	1,292,368.11	3,244,162.81	40.132644	-104.626755
6,094.00	5.13	98.95	6,078.80	-13.33	306.48	1,292,366.92	3,244,170.25	40.132640	-104.626729
6,189.00	3.28	93.82	6,173.54	-14.17	313.39	1,292,366.15	3,244,177.16	40.132638	-104.626704
6,284.00	2.64	95.72	6,268.41	-14.57	318.28	1,292,365.80	3,244,182.05	40.132637	-104.626687
6,379.00	1.53	110.48	6,363.35	-15.23	321.65	1,292,365.17	3,244,185.42	40.132635	-104.626675
6,474.00	0.42	150.84	6,458.33	-15.98	323.00	1,292,364.43	3,244,186.79	40.132633	-104.626670
6,569.00	2.46	1.70	6,553.30	-14.25	323.23	1,292,366.17	3,244,187.00	40.132638	-104.626669
6,600.00	3.95	7.71	6,584.26	-12.52	323.40	1,292,367.90	3,244,187.15	40.132643	-104.626668
6,632.00	6.40	9.91	6,616.12	-9.68	323.85	1,292,370.75	3,244,187.58	40.132650	-104.626667
6,663.00	8.84	5.85	6,646.85	-5.60	324.39	1,292,374.83	3,244,188.08	40.132662	-104.626665
6,695.00	12.21	4.85	6,678.30	0.22	324.93	1,292,380.65	3,244,188.56	40.132678	-104.626663
6,726.00	14.24	6.15	6,708.48	7.27	325.61	1,292,387.72	3,244,189.17	40.132697	-104.626661
6,758.00	17.10	7.71	6,739.29	15.85	326.67	1,292,396.30	3,244,190.14	40.132720	-104.626657
6,790.00	19.91	8.44	6,769.63	25.91	328.10	1,292,406.37	3,244,191.47	40.132748	-104.626652
6,821.00	22.86	7.83	6,798.49	37.09	329.69	1,292,417.57	3,244,192.96	40.132779	-104.626646
6,853.00	25.87	6.65	6,827.64	50.19	331.35	1,292,430.68	3,244,194.48	40.132815	-104.626640
6,884.00	29.95	4.42	6,855.03	64.63	332.73	1,292,445.13	3,244,195.72	40.132854	-104.626635
6,916.00	33.46	2.60	6,882.25	81.41	333.75	1,292,461.93	3,244,196.57	40.132900	-104.626631
6,948.00	36.76	1.42	6,908.42	99.80	334.38	1,292,480.32	3,244,197.03	40.132951	-104.626629
6,980.00	39.76	0.79	6,933.55	119.61	334.76	1,292,500.13	3,244,197.21	40.133005	-104.626628
7,011.00	41.65	0.39	6,957.05	139.83	334.97	1,292,520.35	3,244,197.22	40.133061	-104.626627
7,043.00	44.50	0.33	6,980.42	161.68	335.11	1,292,542.20	3,244,197.14	40.133121	-104.626627
7,074.00	48.05	1.10	7,001.84	184.07	335.39	1,292,564.60	3,244,197.21	40.133182	-104.626626
7,105.00	50.94	0.78	7,021.98	207.64	335.77	1,292,588.16	3,244,197.36	40.133247	-104.626624
7,137.00	54.30	1.25	7,041.40	233.06	336.23	1,292,613.59	3,244,197.56	40.133317	-104.626623
7,168.00	57.46	0.06	7,058.79	258.72	336.52	1,292,639.24	3,244,197.60	40.133387	-104.626622
7,200.00	60.94	358.94	7,075.17	286.20	336.27	1,292,666.72	3,244,197.08	40.133463	-104.626622
7,231.00	64.75	358.74	7,089.32	313.77	335.71	1,292,694.28	3,244,196.25	40.133538	-104.626624
7,263.00	69.16	358.75	7,101.84	343.20	335.07	1,292,723.71	3,244,195.32	40.133619	-104.626627
7,294.00	73.09	359.18	7,111.87	372.53	334.54	1,292,753.02	3,244,194.50	40.133700	-104.626629
7,326.00	75.09	359.55	7,120.64	403.30	334.20	1,292,783.79	3,244,193.86	40.133784	-104.626630
7,358.00	76.93	359.65	7,128.37	434.35	333.98	1,292,814.83	3,244,193.34	40.133869	-104.626631
7,389.00	79.47	359.06	7,134.71	464.69	333.64	1,292,845.16	3,244,192.70	40.133953	-104.626632
7,421.00	82.77	358.03	7,139.65	496.29	332.84	1,292,876.75	3,244,191.58	40.134039	-104.626635
7,443.00	83.81	357.45	7,142.22	518.12	331.97	1,292,898.58	3,244,190.51	40.134099	-104.626638
7,483.00	85.48	357.40	7,145.95	557.90	330.19	1,292,938.34	3,244,188.33	40.134208	-104.626644
7" Intermediate Casing @ 7483ft									
7,551.00	88.33	357.32	7,149.62	625.72	327.06	1,293,006.12	3,244,184.53	40.134395	-104.626655
7,645.00	88.33	355.06	7,152.36	719.47	320.82	1,293,099.80	3,244,177.37	40.134652	-104.626678
7,740.00	90.25	357.06	7,153.54	814.23	314.29	1,293,194.49	3,244,169.91	40.134912	-104.626701
7,835.00	91.79	359.52	7,151.85	909.16	311.46	1,293,289.38	3,244,166.14	40.135173	-104.626711
7,930.00	92.15	358.62	7,148.58	1,004.09	309.91	1,293,384.29	3,244,163.67	40.135433	-104.626717

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Site:	Sec. 14-T2N-R65W	MD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Well:	Weichel 27C-11HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
8,025.00	89.01	356.83	7,147.62	1,099.00	306.14	1,293,479.15	3,244,158.97	40.135694	-104.626730
8,120.00	89.81	357.96	7,148.60	1,193.89	301.83	1,293,573.99	3,244,153.72	40.135954	-104.626746
8,215.00	90.31	359.07	7,148.50	1,288.86	299.36	1,293,668.93	3,244,150.32	40.136215	-104.626754
8,310.00	91.48	359.31	7,147.02	1,383.84	298.02	1,293,763.88	3,244,148.04	40.136476	-104.626759
8,405.00	88.70	358.06	7,146.87	1,478.80	295.84	1,293,858.82	3,244,144.93	40.136736	-104.626767
8,500.00	90.25	0.00	7,147.74	1,573.77	294.23	1,293,953.77	3,244,142.39	40.136997	-104.626773
8,595.00	89.82	1.00	7,147.68	1,668.77	295.06	1,294,048.76	3,244,142.28	40.137258	-104.626770
8,690.00	89.94	0.55	7,147.88	1,763.76	296.35	1,294,143.76	3,244,142.63	40.137519	-104.626765
8,785.00	88.21	358.27	7,149.41	1,858.73	295.37	1,294,238.71	3,244,140.72	40.137779	-104.626769
8,880.00	89.38	358.23	7,151.41	1,953.67	292.47	1,294,333.61	3,244,136.89	40.138040	-104.626779
8,975.00	91.72	0.21	7,150.50	2,048.64	291.18	1,294,428.56	3,244,134.66	40.138301	-104.626784
9,070.00	90.06	0.01	7,149.02	2,143.63	291.36	1,294,523.54	3,244,133.91	40.138561	-104.626783
9,166.00	89.51	0.71	7,149.38	2,239.62	291.96	1,294,619.53	3,244,133.57	40.138825	-104.626781
9,261.00	92.04	2.39	7,148.10	2,334.57	294.53	1,294,714.49	3,244,135.20	40.139085	-104.626772
9,356.00	91.85	3.36	7,144.87	2,429.39	299.29	1,294,809.36	3,244,139.03	40.139346	-104.626755
9,451.00	88.77	1.03	7,144.36	2,524.30	302.93	1,294,904.30	3,244,141.73	40.139606	-104.626742
9,546.00	89.82	0.55	7,145.53	2,619.29	304.24	1,294,999.28	3,244,142.11	40.139867	-104.626737
9,641.00	88.95	0.03	7,146.55	2,714.28	304.72	1,295,094.27	3,244,141.66	40.140128	-104.626735
9,736.00	89.32	0.02	7,147.98	2,809.27	304.76	1,295,189.25	3,244,140.76	40.140389	-104.626735
9,828.00	90.18	0.71	7,148.38	2,901.26	305.35	1,295,281.24	3,244,140.44	40.140641	-104.626733
9,920.00	91.54	0.93	7,147.00	2,993.24	306.66	1,295,373.23	3,244,140.86	40.140894	-104.626728
10,012.00	91.60	0.81	7,144.48	3,085.20	308.06	1,295,465.19	3,244,141.35	40.141146	-104.626723
10,105.00	91.48	1.99	7,141.98	3,178.13	310.33	1,295,558.14	3,244,142.71	40.141401	-104.626715
10,196.00	89.88	359.89	7,140.90	3,269.11	311.82	1,295,649.12	3,244,143.30	40.141651	-104.626710
10,288.00	88.15	358.23	7,142.48	3,361.07	310.32	1,295,741.06	3,244,140.89	40.141903	-104.626715
10,380.00	88.89	358.50	7,144.86	3,453.00	307.69	1,295,832.96	3,244,137.36	40.142156	-104.626724
10,472.00	89.57	357.72	7,146.10	3,544.94	304.66	1,295,924.86	3,244,133.42	40.142408	-104.626735
10,564.00	90.25	359.61	7,146.24	3,636.91	302.51	1,296,016.80	3,244,130.38	40.142660	-104.626743
10,656.00	91.54	359.80	7,144.80	3,728.90	302.04	1,296,108.78	3,244,129.00	40.142913	-104.626745
10,747.00	90.06	359.79	7,143.53	3,819.89	301.72	1,296,199.75	3,244,127.78	40.143163	-104.626746
10,839.00	90.86	0.70	7,142.80	3,911.88	302.11	1,296,291.74	3,244,127.27	40.143415	-104.626744
10,931.00	90.92	1.59	7,141.37	4,003.85	303.95	1,296,383.72	3,244,128.20	40.143668	-104.626738
11,023.00	91.05	1.42	7,139.78	4,095.81	306.36	1,296,475.69	3,244,129.71	40.143920	-104.626729
11,115.00	89.08	1.82	7,139.68	4,187.77	308.96	1,296,567.67	3,244,131.41	40.144173	-104.626720
11,207.00	86.30	0.99	7,143.39	4,279.65	311.22	1,296,659.57	3,244,132.76	40.144425	-104.626712
11,299.00	87.66	359.87	7,148.24	4,371.52	311.91	1,296,751.43	3,244,132.54	40.144677	-104.626709
11,391.00	88.77	0.69	7,151.10	4,463.47	312.36	1,296,843.38	3,244,132.09	40.144929	-104.626708
11,483.00	89.81	0.52	7,152.24	4,555.46	313.33	1,296,935.37	3,244,132.15	40.145182	-104.626704
11,575.00	91.67	0.68	7,151.05	4,647.44	314.29	1,297,027.36	3,244,132.21	40.145434	-104.626701
11,667.00	90.80	1.04	7,149.07	4,739.41	315.67	1,297,119.33	3,244,132.69	40.145687	-104.626696
11,759.00	91.67	1.31	7,147.09	4,831.37	317.56	1,297,211.30	3,244,133.67	40.145939	-104.626689
11,851.00	90.49	0.90	7,145.35	4,923.33	319.33	1,297,303.27	3,244,134.54	40.146192	-104.626683
11,943.00	90.06	359.96	7,144.91	5,015.33	320.02	1,297,395.26	3,244,134.33	40.146444	-104.626680
12,035.00	89.69	359.62	7,145.11	5,107.33	319.68	1,297,487.25	3,244,133.08	40.146697	-104.626681
12,127.00	90.56	359.38	7,144.91	5,199.32	318.88	1,297,579.23	3,244,131.38	40.146949	-104.626684
12,219.00	89.38	357.86	7,144.96	5,291.29	316.67	1,297,671.17	3,244,128.26	40.147202	-104.626692
12,311.00	90.12	358.08	7,145.36	5,383.23	313.41	1,297,763.07	3,244,124.09	40.147454	-104.626704
12,405.00	89.94	357.46	7,145.31	5,477.16	309.75	1,297,856.95	3,244,119.51	40.147712	-104.626717
12,500.00	90.18	356.63	7,145.21	5,572.03	304.85	1,297,951.77	3,244,113.68	40.147972	-104.626735
12,595.00	89.57	357.24	7,145.42	5,666.89	299.77	1,298,046.57	3,244,107.67	40.148233	-104.626753
12,689.00	89.82	357.59	7,145.92	5,760.80	295.53	1,298,140.43	3,244,102.51	40.148491	-104.626768
12,784.00	90.12	358.15	7,145.97	5,855.73	292.00	1,298,235.32	3,244,098.04	40.148751	-104.626780
12,879.00	89.63	359.51	7,146.18	5,950.71	290.06	1,298,330.27	3,244,095.17	40.149012	-104.626787
12,974.00	90.37	0.04	7,146.18	6,045.71	289.69	1,298,425.25	3,244,093.86	40.149273	-104.626789
13,069.00	88.22	0.18	7,147.35	6,140.69	289.87	1,298,520.23	3,244,093.11	40.149533	-104.626788

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Weichel 27C-11HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Site:	Sec. 14-T2N-R65W	MD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Well:	Weichel 27C-11HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
13,163.00	89.01	2.06	7,149.62	6,234.64	291.71	1,298,614.19	3,244,094.02	40.149791	-104.626782
13,258.00	89.44	1.82	7,150.90	6,329.58	294.92	1,298,709.15	3,244,096.30	40.150052	-104.626770
13,353.00	89.82	0.76	7,151.52	6,424.55	297.06	1,298,804.14	3,244,097.51	40.150313	-104.626762
13,448.00	87.29	0.38	7,153.91	6,519.51	298.01	1,298,899.10	3,244,097.52	40.150573	-104.626759
13,542.00	89.20	2.28	7,156.79	6,613.43	300.19	1,298,993.03	3,244,098.78	40.150831	-104.626751
13,637.00	89.63	1.73	7,157.76	6,708.37	303.51	1,299,087.99	3,244,101.17	40.151092	-104.626739
13,732.00	90.93	1.38	7,157.30	6,803.33	306.09	1,299,182.97	3,244,102.81	40.151352	-104.626730
13,826.00	89.88	2.27	7,156.63	6,897.28	309.08	1,299,276.94	3,244,104.88	40.151610	-104.626719
13,921.00	91.42	2.48	7,155.55	6,992.19	313.02	1,299,371.88	3,244,107.88	40.151871	-104.626705
14,016.00	91.05	3.05	7,153.51	7,087.05	317.60	1,299,466.78	3,244,111.53	40.152131	-104.626689
14,110.00	91.66	3.25	7,151.28	7,180.88	322.77	1,299,560.66	3,244,115.77	40.152389	-104.626670
14,205.00	91.48	2.75	7,148.68	7,275.72	327.74	1,299,655.53	3,244,119.81	40.152649	-104.626653
14,300.00	90.06	3.57	7,147.40	7,370.56	332.97	1,299,750.42	3,244,124.11	40.152909	-104.626634
14,394.00	90.00	1.96	7,147.36	7,464.45	337.51	1,299,844.34	3,244,127.72	40.153167	-104.626618
14,489.00	90.31	1.35	7,147.10	7,559.41	340.25	1,299,939.32	3,244,129.53	40.153428	-104.626608
14,584.00	89.32	3.01	7,147.41	7,654.34	343.86	1,300,034.27	3,244,132.21	40.153688	-104.626595
14,678.00	89.82	1.99	7,148.11	7,748.24	347.96	1,300,128.21	3,244,135.39	40.153946	-104.626580
14,773.00	90.49	2.16	7,147.85	7,843.18	351.40	1,300,223.17	3,244,137.89	40.154207	-104.626568
14,867.00	90.68	1.97	7,146.89	7,937.11	354.79	1,300,317.13	3,244,140.36	40.154465	-104.626556
14,962.00	88.15	0.78	7,147.86	8,032.07	357.07	1,300,412.10	3,244,141.70	40.154725	-104.626548
15,057.00	89.63	0.24	7,149.70	8,127.05	357.92	1,300,507.08	3,244,141.61	40.154986	-104.626545
15,152.00	88.95	0.23	7,150.88	8,222.04	358.31	1,300,602.06	3,244,141.07	40.155247	-104.626543
15,247.00	89.69	0.13	7,152.01	8,317.03	358.60	1,300,697.05	3,244,140.43	40.155507	-104.626542
15,341.00	86.42	358.24	7,155.20	8,410.95	357.27	1,300,790.95	3,244,138.17	40.155765	-104.626547
15,436.00	84.20	355.98	7,162.97	8,505.50	352.50	1,300,885.44	3,244,132.47	40.156025	-104.626564
15,531.00	86.67	354.74	7,170.53	8,599.88	344.84	1,300,979.74	3,244,123.88	40.156284	-104.626591
15,626.00	87.97	354.94	7,174.97	8,694.39	336.30	1,301,074.16	3,244,114.42	40.156543	-104.626622
15,721.00	90.86	356.60	7,175.94	8,789.11	329.30	1,301,168.80	3,244,106.48	40.156803	-104.626647
15,816.00	91.79	356.93	7,173.74	8,883.93	323.94	1,301,263.56	3,244,100.19	40.157064	-104.626666
15,911.00	91.11	357.98	7,171.34	8,978.81	319.72	1,301,358.39	3,244,095.04	40.157324	-104.626681
16,006.00	90.10	357.83	7,170.34	9,073.74	316.25	1,301,453.27	3,244,090.64	40.157585	-104.626694
16,101.00	90.06	356.65	7,170.20	9,168.62	311.67	1,301,548.11	3,244,085.13	40.157845	-104.626710
16,196.00	89.14	356.31	7,170.87	9,263.44	305.84	1,301,642.86	3,244,078.37	40.158105	-104.626731
16,291.00	89.13	356.65	7,172.30	9,358.25	300.01	1,301,737.60	3,244,071.60	40.158366	-104.626752
16,387.00	88.83	357.39	7,174.01	9,454.11	295.02	1,301,833.40	3,244,065.67	40.158629	-104.626770
16,481.00	89.20	359.19	7,175.63	9,548.05	292.22	1,301,927.30	3,244,061.94	40.158887	-104.626780
16,514.00	89.75	0.10	7,175.93	9,581.04	292.01	1,301,960.30	3,244,061.41	40.158977	-104.626780
Final Sperry MWD Survey @ 16514.00ft									
16,557.00	89.75	0.10	7,176.12	9,624.04	292.09	1,302,003.29	3,244,061.06	40.159095	-104.626780
Straight Line Projection to TD @ 16557ft									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Weichel 27C-11HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Site:	Sec. 14-T2N-R65W	MD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Well:	Weichel 27C-11HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Weichel 27C-11HZ_W	0.00	0.00	7,152.57	7,800.00	349.00	1,300,179.97	3,244,135.91	40.154088	-104.626576
- actual wellpath misses target center by 4.53ft at 14729.75ft MD (7148.11 TVD, 7799.96 N, 349.80 E)									
- Point									
Weichel 27C-11HZ_B	0.00	0.00	7,131.00	9,651.64	300.00	1,302,030.97	3,244,068.71	40.159171	-104.626752
- actual wellpath misses target center by 53.48ft at 16557.00ft MD (7176.12 TVD, 9624.04 N, 292.09 E)									
- Point									
Weichel 27C-11HZ_W	0.00	0.00	7,135.71	6,800.00	328.00	1,299,179.86	3,244,124.75	40.151343	-104.626652
- actual wellpath misses target center by 30.84ft at 13729.37ft MD (7157.34 TVD, 6800.70 N, 306.03 E)									
- Point									
Weichel 27C-11HZ_S	0.00	0.00	0.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677	-104.627825
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-521.35	1,737.35	1,291,873.02	3,245,605.98		
Point 2			0.00	2,118.92	1,749.80	1,294,513.18	3,245,592.46		
Point 3			0.00	4,767.19	1,769.31	1,297,161.40	3,245,585.92		
Point 4			0.00	7,433.88	1,797.96	1,299,828.14	3,245,588.34		
Point 5			0.00	10,100.35	1,826.60	1,302,494.65	3,245,590.76		
Point 6			0.00	10,117.82	-851.17	1,302,485.78	3,242,913.05		
Point 7			0.00	10,135.04	-3,528.24	1,302,476.67	3,240,236.05		
Point 8			0.00	4,830.74	-3,553.66	1,297,172.60	3,240,262.81		
Point 9			0.00	2,178.83	-3,568.43	1,294,520.78	3,240,274.12		
Point 10			0.00	-473.74	-3,583.04	1,291,868.30	3,240,285.60		
Point 11			0.00	-498.56	-913.44	1,291,869.74	3,242,955.20		
Weichel 27C-11HZ_S	0.00	0.00	0.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677	-104.627825
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	4,767.19	1,769.31	1,297,161.40	3,245,585.92		
Point 2			0.00	4,799.08	-892.22	1,297,167.11	3,242,924.32		
Point 3			0.00	4,830.74	-3,553.66	1,297,172.60	3,240,262.81		
Weichel 27C-11HZ_B	0.00	0.00	7,143.00	9,651.64	100.62	1,302,029.00	3,243,869.35	40.159171	-104.627465
- actual wellpath misses target center by 196.25ft at 16557.00ft MD (7176.12 TVD, 9624.04 N, 292.09 E)									
- Point									
Weichel 27C-11HZ_S	0.00	0.00	0.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677	-104.627825
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-57.38	1,279.51	1,292,332.45	3,245,143.62		
Point 2			0.00	2,124.10	1,289.80	1,294,513.83	3,245,132.45		
Point 3			0.00	4,312.69	1,305.93	1,296,702.39	3,245,127.06		
Point 4			0.00	5,232.70	1,314.27	1,297,622.40	3,245,126.35		
Point 5			0.00	7,438.07	1,337.96	1,299,827.80	3,245,128.34		
Point 6			0.00	9,643.36	1,361.65	1,302,033.13	3,245,130.34		
Point 7			0.00	9,657.81	-854.72	1,302,025.78	3,242,914.03		
Point 8			0.00	9,672.07	-3,070.50	1,302,018.25	3,240,698.31		
Point 9			0.00	7,478.40	-3,081.32	1,299,824.67	3,240,709.06		
Point 10			0.00	5,285.29	-3,091.52	1,297,631.65	3,240,720.43		
Point 11			0.00	4,365.25	-3,096.23	1,296,711.65	3,240,724.77		
Point 12			0.00	2,173.65	-3,108.43	1,294,520.12	3,240,734.13		
Point 13			0.00	-18.00	-3,120.51	1,292,328.55	3,240,743.60		
Point 14			0.00	-38.54	-911.59	1,292,329.74	3,242,952.53		
Weichel 27C-11HZ_W	0.00	0.00	7,133.04	8,420.00	385.00	1,300,800.27	3,244,165.81	40.155790	-104.626448
- actual wellpath misses target center by 36.02ft at 15346.81ft MD (7155.57 TVD, 8416.74 N, 357.08 E)									
- Point									
Weichel 27N-11HZ_L:	0.00	0.00	0.00	20.04	22.37	1,292,397.49	3,243,885.83	40.132732	-104.627745
- actual wellpath misses target center by 30.03ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Weichel 27C-11HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Site:	Sec. 14-T2N-R65W	MD Reference:	RKB=25ft @ 4906.00ft (HP 308)
Well:	Weichel 27C-11HZ	North Reference:	True
Wellbore:	Plan C Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Point 1	0.00	-512.71	859.35	1,291,873.02	3,244,727.97		
Point 2	0.00	-503.79	-47.64	1,291,873.02	3,243,820.98		
Point 3	0.00	10,117.91	41.62	1,302,494.65	3,243,805.76		
Point 4	0.00	10,108.99	948.62	1,302,494.65	3,244,712.77		
Weichel 27C-11HZ_S	0.00	0.00	0.00	0.00	1,292,377.24	3,243,863.66	40.132677 -104.627825
- actual wellpath hits target center							
- Point							

Casing Points							
Measured Depth (ft)	Vertical Depth (ft)	Name			Casing Diameter (")	Hole Diameter (")	
7,483.00	7,145.95	7" Intermediate Casing @ 7483ft			7	8-3/4	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
25.00	25.00	0.00	0.00	H&P 308 - RKB=25ft	
125.00	125.00	-0.22	0.29	First Gyro Survey @ 125.00ft	
917.00	916.99	-2.11	0.01	Final Gyro Survey @ 917.00ft	
917.00	916.99	-2.11	0.01	Tie-On to Gyro Surveys @ 917.00ft	
1,011.00	1,010.99	-2.65	0.09	First Sperry MWD Survey @ 1011.00ft	
16,514.00	7,175.93	9,581.04	292.01	Final Sperry MWD Survey @ 16514.00ft	
16,557.00	7,176.12	9,624.04	292.09	Straight Line Projection to TD @ 16557ft	

Checked By: _____ Approved By: _____ Date: _____