



Weatherford®

SURVEY REPORT

Report Date: **9/14/2013**
 Customer: **Anadarko Petroleum Corp** Field: **Wattenberg**
 Job Name: **4030233** Rig: **Xtreme 23**
 Well Name: **Howard 29C-28HZ** Rig Loc: **Colorado**

Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	359.65 deg	52617 nT	66.64 deg	8.65 deg	0.00 deg	8.65 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	946.00 ft	0.33 deg	8.67 deg	945.99 ft	2.58 ft	1.15 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head			
				NS (ft)	EW (ft)	VSect (ft)	Dogleg (deg/100ft)
1052.00	0.35	348.91	1051.99	3.20	1.13	3.19	0.11
1144.00	0.99	324.25	1143.98	4.12	0.62	4.12	0.75
1235.00	0.99	260.06	1234.97	4.62	-0.62	4.63	1.16
1327.00	3.23	231.77	1326.90	2.88	-3.44	2.90	2.61
1417.00	4.71	241.91	1416.69	-0.43	-8.69	-0.37	1.81
1605.00	7.58	245.38	1603.59	-9.23	-26.78	-9.07	1.54
1880.00	11.61	231.35	1874.72	-34.08	-64.90	-33.68	1.68
1972.00	12.60	231.39	1964.67	-46.13	-79.97	-45.64	1.08
2096.00	13.78	236.27	2085.40	-62.77	-102.82	-62.14	1.31
2219.00	14.86	237.23	2204.58	-79.44	-128.26	-78.65	0.90
2342.00	13.16	236.50	2323.92	-95.71	-153.20	-94.77	1.39
2435.00	11.78	236.26	2414.72	-106.82	-169.93	-105.78	1.48
2559.00	11.33	236.55	2536.21	-120.57	-190.62	-119.40	0.37
2652.00	12.16	234.99	2627.26	-131.22	-206.26	-129.96	0.96
2744.00	13.35	235.83	2716.99	-142.75	-222.99	-141.38	1.31
2836.00	11.81	235.03	2806.78	-154.11	-239.49	-152.64	1.68
2960.00	9.68	232.42	2928.60	-167.74	-258.15	-166.16	1.76
3053.00	8.15	230.35	3020.47	-176.72	-269.43	-175.07	1.68
3148.00	8.73	233.09	3114.44	-185.34	-280.37	-183.63	0.74
3273.00	9.47	241.28	3237.87	-195.98	-296.98	-194.16	1.19
3358.00	8.37	244.31	3321.84	-202.02	-308.69	-200.13	1.41
3443.00	7.25	246.34	3406.05	-206.86	-319.17	-204.90	1.36
3572.00	5.20	255.05	3534.29	-211.63	-332.28	-209.60	1.75
3700.00	3.08	245.30	3661.95	-214.57	-341.01	-212.48	1.74
3871.00	4.16	225.83	3832.61	-220.81	-349.63	-218.67	0.95
4169.00	2.11	221.77	4130.15	-232.43	-361.04	-230.22	0.69
4340.00	1.82	214.16	4301.05	-237.03	-364.66	-234.80	0.23
4554.00	1.62	232.62	4514.96	-241.68	-368.97	-239.42	0.27
4810.00	0.95	254.14	4770.89	-244.45	-373.89	-242.17	0.32
4981.00	0.81	225.98	4941.87	-245.68	-376.12	-243.38	0.26
5151.00	1.24	62.26	5111.86	-245.66	-375.36	-243.36	1.19
5408.00	1.01	24.31	5368.82	-242.30	-371.97	-240.02	0.30
5578.00	1.22	108.29	5538.79	-241.50	-369.63	-239.24	0.88
5749.00	0.56	56.47	5709.77	-241.61	-367.21	-239.37	0.57
5877.00	0.66	7.60	5837.77	-240.54	-366.59	-238.29	0.40

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
6005.00	0.60	348.51	5965.76	-239.15	-366.62	-236.91	0.17
6133.00	0.28	25.52	6093.76	-238.21	-366.62	-235.97	0.32
6219.00	0.56	60.62	6179.75	-237.81	-366.16	-235.57	0.43
6304.00	0.56	35.39	6264.75	-237.27	-365.56	-235.03	0.29
6432.00	0.31	14.61	6392.75	-236.43	-365.11	-234.19	0.23
6518.00	0.60	5.20	6478.74	-235.75	-365.01	-233.52	0.35
6646.00	0.35	273.31	6606.74	-235.06	-365.34	-232.83	0.55
6732.00	0.40	113.65	6692.74	-235.17	-365.33	-232.93	0.86
6860.00	0.70	56.03	6820.73	-234.91	-364.27	-232.68	0.46
6945.00	1.51	110.84	6905.72	-235.02	-362.79	-232.80	1.47
7030.00	1.55	105.68	6990.69	-235.73	-360.64	-233.52	0.17
7116.00	1.30	94.54	7076.66	-236.12	-358.55	-233.93	0.43
7174.00	1.35	75.54	7134.65	-236.00	-357.23	-233.82	0.76
7206.00	1.47	74.31	7166.64	-235.80	-356.47	-233.61	0.39
7291.00	6.03	3.95	7251.46	-231.04	-355.11	-228.87	6.71
7376.00	11.01	352.03	7335.50	-218.54	-355.93	-216.36	6.19
7462.00	16.05	358.60	7419.09	-198.51	-357.36	-196.32	6.12
7547.00	22.41	357.94	7499.31	-170.54	-358.23	-168.35	7.49
7594.00	26.73	358.37	7542.04	-151.02	-358.85	-148.82	9.20
7633.00	30.27	0.31	7576.31	-132.41	-359.05	-130.22	9.38
7718.00	39.57	7.00	7645.96	-83.99	-355.63	-81.82	11.82
7803.00	57.71	7.74	7701.89	-20.99	-347.42	-18.87	21.35
7889.00	66.17	0.92	7742.34	54.56	-341.88	56.65	12.07
7932.00	71.72	0.69	7757.79	94.67	-341.32	96.75	12.92
7974.00	80.31	2.03	7767.93	135.37	-340.34	137.45	20.68
8007.00	84.68	3.95	7772.24	168.04	-338.63	170.10	14.44
8122.00	88.77	3.77	7778.80	282.56	-330.90	284.58	3.56
8207.00	89.26	3.30	7780.27	367.39	-325.66	369.37	0.80
8293.00	90.56	2.18	7780.40	453.29	-321.55	455.24	2.00
8378.00	90.49	1.38	7779.62	538.24	-318.91	540.18	0.94
8463.00	89.94	1.32	7779.30	623.22	-316.91	625.14	0.65
8549.00	90.68	1.33	7778.84	709.19	-314.92	711.10	0.86
8634.00	90.12	359.73	7778.24	794.18	-314.14	796.09	1.99
8720.00	91.79	359.41	7776.81	880.17	-314.78	882.07	1.98
8805.00	90.99	359.27	7774.75	965.14	-315.76	967.05	0.96
8891.00	90.49	359.06	7773.64	1051.12	-317.01	1053.04	0.63
8976.00	90.62	0.02	7772.81	1136.11	-317.70	1138.03	1.14
9061.00	90.49	0.30	7771.99	1221.11	-317.46	1223.02	0.36
9146.00	90.31	359.79	7771.40	1306.10	-317.39	1308.02	0.64
9232.00	90.18	358.76	7771.03	1392.10	-318.48	1394.02	1.21
9317.00	91.79	357.89	7769.57	1477.04	-320.96	1478.98	2.15
9402.00	92.22	357.60	7766.60	1561.92	-324.31	1563.88	0.61
9488.00	92.35	357.79	7763.17	1647.79	-327.76	1649.76	0.27
9573.00	90.93	357.88	7760.73	1732.69	-330.97	1734.68	1.67
9659.00	90.74	357.17	7759.48	1818.60	-334.69	1820.61	0.85
9744.00	90.00	355.70	7758.93	1903.43	-339.97	1905.47	1.94
9829.00	91.05	355.40	7758.15	1988.17	-346.57	1990.25	1.28
9914.00	91.23	356.83	7756.46	2072.95	-352.32	2075.07	1.70
10000.00	90.62	356.40	7755.07	2158.79	-357.40	2160.94	0.87
10085.00	90.80	357.89	7754.02	2243.68	-361.63	2245.85	1.77

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		Vsect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
10171.00	90.86	357.74	7752.77	2329.61	-364.91	2331.79	0.19
10256.00	90.86	357.23	7751.50	2414.52	-368.64	2416.72	0.60
10341.00	91.91	357.14	7749.44	2499.39	-372.81	2501.62	1.24
10427.00	91.59	357.19	7746.82	2585.24	-377.07	2587.50	0.38
10512.00	91.30	358.46	7744.67	2670.15	-380.29	2672.42	1.53
10598.00	91.23	1.25	7742.78	2756.12	-380.51	2758.39	3.24
10683.00	90.86	0.40	7741.22	2841.10	-379.29	2843.36	1.09
10768.00	90.12	359.43	7740.50	2926.09	-379.41	2928.36	1.44
10854.00	89.53	0.56	7740.76	3012.09	-379.42	3014.35	1.48
10939.00	90.12	359.30	7741.02	3097.09	-379.52	3099.35	1.64
11025.00	91.54	358.69	7739.77	3183.06	-381.03	3185.33	1.80
11110.00	90.80	0.26	7738.04	3268.04	-381.81	3270.31	2.04
11195.00	90.68	0.49	7736.94	3353.03	-381.25	3355.30	0.31
11281.00	90.43	359.82	7736.11	3439.02	-381.02	3441.29	0.83
11366.00	90.43	358.91	7735.47	3524.02	-381.96	3526.28	1.07
11452.00	90.31	358.04	7734.91	3609.98	-384.25	3612.26	1.02
11537.00	90.18	357.62	7734.55	3694.92	-387.47	3697.22	0.52
11622.00	90.99	358.42	7733.68	3779.86	-390.41	3782.18	1.34
11708.00	91.54	358.74	7731.78	3865.82	-392.54	3868.14	0.74
11794.00	91.06	0.72	7729.83	3951.79	-392.94	3954.12	2.37
11879.00	88.39	358.46	7730.24	4036.77	-393.55	4039.10	4.12
11965.00	90.49	358.50	7731.08	4122.73	-395.83	4125.07	2.44
12050.00	91.98	359.79	7729.25	4207.70	-397.10	4210.05	2.32
12135.00	91.85	358.78	7726.41	4292.64	-398.16	4295.00	1.20
12221.00	92.04	358.80	7723.49	4378.58	-399.97	4380.94	0.22
12306.00	90.86	359.70	7721.34	4463.54	-401.09	4465.91	1.75
12391.00	88.77	358.91	7721.61	4548.53	-402.12	4550.90	2.63
12477.00	90.12	1.21	7722.45	4634.52	-402.03	4636.88	3.10
12562.00	90.88	1.95	7721.71	4719.48	-399.68	4721.83	1.25
12648.00	91.36	2.55	7720.02	4805.40	-396.31	4807.73	0.89
12748.00	91.72	2.60	7717.34	4905.26	-391.82	4907.56	0.36
Projected to Total Depth:							
12805.00	91.72	2.60	7715.63	4962.17	-389.23	4964.46	0.00

Weatherford surveys from 1052 ft MD to 12748 ft MD.

Well TD'd at 12805 ft MD.

The total correction is 8.65 deg relative to True North.