

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 5-T3N-R65W

REI 31-5HZ

Plan #3

Design: Sperry MWD Surveys

Standard Survey Report

07 February, 2011

Halliburton Company

Survey Report

Company: Anadarko Petroleum Corp.	Local Co-ordinate Reference: Well REI 31-5HZ
Project: Weld County, CO (NAD 83)	TVD Reference: RKB 18' @ 4909.00ft (SST 54)
Site: Sec. 5-T3N-R65W	MD Reference: RKB 18' @ 4909.00ft (SST 54)
Well: REI 31-5HZ	North Reference: True
Wellbore: Plan #3	Survey Calculation Method: Minimum Curvature
Design: Sperry MWD 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. 5-T3N-R65W				
Site Position:	Northing: 1,334,441.04 ft	Latitude: 40.248537		
From: Lat/Long	Easting: 3,228,778.28 ft	Longitude: -104.680384		
Position Uncertainty: 0.00 ft	Slot Radius: "	Grid Convergence: 0.53 °		

Well REI 31-5HZ				
Well Position	+N/-S 0.00 ft	Northing: 1,334,441.04 ft	Latitude: 40.248537	
	+E/-W 0.00 ft	Easting: 3,228,778.28 ft	Longitude: -104.680384	
Position Uncertainty	0.00 ft	Wellhead Elevation: 4,908.00 ft	Ground Level: 4,891.00 ft	

Wellbore Plan #3					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	11/20/2010	8.84	66.97	53,101

Design Sperry MWD 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	310.52

Survey Program		Date 2/7/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
136.00	12,330.00	Sperry MWD Survey (Plan #3)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
136.00	0.25	136.50	136.00	-0.22	0.20	-0.30	0.18	0.18	0.00
First Sperry MWD Survey @ 136									
322.00	0.34	162.97	322.00	-1.04	0.65	-1.16	0.09	0.05	14.23
505.00	0.32	132.68	504.99	-1.90	1.18	-2.13	0.09	-0.01	-16.55
574.00	0.32	155.81	573.99	-2.21	1.40	-2.50	0.19	0.00	33.52
653.00	0.56	150.78	652.99	-2.75	1.68	-3.06	0.31	0.30	-6.37
745.00	0.55	142.71	744.99	-3.49	2.17	-3.91	0.09	-0.01	-8.77
836.00	0.75	169.80	835.98	-4.42	2.54	-4.80	0.40	0.22	29.77
928.00	0.22	174.73	927.98	-5.19	2.66	-5.40	0.58	-0.58	5.36
1,018.00	0.46	132.02	1,017.98	-5.61	2.94	-5.88	0.37	0.27	-47.46
1,110.00	0.47	183.16	1,109.97	-6.23	3.20	-6.48	0.44	0.01	55.59
1,202.00	0.30	167.75	1,201.97	-6.84	3.23	-6.90	0.21	-0.18	-16.75

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Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
Well:	REI 31-5HZ	North Reference:	True
Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Surveys	Database:	EDM 2003.16 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,293.00	0.56	155.79	1,292.97	-7.48	3.46	-7.49	0.30	0.29	-13.14	
1,385.00	0.31	174.38	1,384.97	-8.14	3.67	-8.08	0.31	-0.27	20.21	
1,461.00	0.07	43.58	1,460.97	-8.31	3.72	-8.23	0.47	-0.32	-172.11	
1,549.00	2.44	189.19	1,548.94	-10.12	3.46	-9.21	2.84	2.69	165.47	
1,636.00	3.37	168.81	1,635.83	-14.46	3.66	-12.18	1.58	1.07	-23.43	
1,722.00	2.88	171.29	1,721.70	-19.07	4.48	-15.80	0.59	-0.57	2.88	
1,809.00	3.77	153.33	1,808.56	-23.79	6.09	-20.09	1.56	1.02	-20.64	
1,895.00	3.52	157.51	1,894.38	-28.76	8.37	-25.05	0.42	-0.29	4.86	
1,981.00	3.05	161.94	1,980.24	-33.37	10.09	-29.35	0.62	-0.55	5.15	
2,068.00	3.40	159.88	2,067.10	-37.99	11.70	-33.57	0.42	0.40	-2.37	
2,156.00	3.15	152.98	2,154.96	-42.60	13.69	-38.08	0.53	-0.28	-7.84	
2,245.00	2.88	161.15	2,243.84	-46.89	15.52	-42.27	0.57	-0.30	9.18	
2,335.00	2.43	157.51	2,333.74	-50.79	16.98	-45.91	0.53	-0.50	-4.04	
2,423.00	2.49	168.04	2,421.66	-54.39	18.09	-49.09	0.52	0.07	11.97	
2,510.00	1.73	155.58	2,508.60	-57.43	19.03	-51.78	1.02	-0.87	-14.32	
2,597.00	3.07	160.76	2,595.52	-60.83	20.34	-54.98	1.56	1.54	5.95	
2,684.00	2.77	169.59	2,682.41	-65.09	21.49	-58.63	0.62	-0.34	10.15	
2,774.00	2.77	173.47	2,772.30	-69.39	22.13	-61.91	0.21	0.00	4.31	
2,862.00	2.57	174.61	2,860.21	-73.47	22.55	-64.88	0.24	-0.23	1.30	
2,948.00	2.77	172.99	2,946.11	-77.45	22.99	-67.80	0.25	0.23	-1.88	
3,035.00	2.72	184.92	3,033.02	-81.60	23.07	-70.55	0.66	-0.06	13.71	
3,124.00	2.76	174.75	3,121.91	-85.83	23.08	-73.31	0.55	0.04	-11.43	
3,214.00	3.35	168.32	3,211.79	-90.57	23.81	-76.95	0.76	0.66	-7.14	
3,302.00	2.70	174.76	3,299.66	-95.15	24.52	-80.46	0.83	-0.74	7.32	
3,389.00	2.94	169.38	3,386.56	-99.38	25.12	-83.67	0.41	0.28	-6.18	
3,477.00	2.43	174.29	3,474.46	-103.46	25.72	-86.77	0.64	-0.58	5.58	
3,564.00	2.36	161.17	3,561.39	-106.99	26.49	-89.64	0.63	-0.08	-15.08	
3,652.00	2.92	149.82	3,649.29	-110.64	28.20	-93.32	0.87	0.64	-12.90	
3,740.00	2.93	134.60	3,737.18	-114.16	30.93	-97.68	0.88	0.01	-17.30	
3,829.00	3.25	139.98	3,826.05	-117.69	34.17	-102.43	0.48	0.36	6.04	
3,918.00	4.11	143.36	3,914.87	-122.18	37.69	-108.03	1.00	0.97	3.80	
4,006.00	3.96	148.05	4,002.65	-127.29	41.18	-114.01	0.41	-0.17	5.33	
4,096.00	3.68	152.71	4,092.45	-132.49	44.15	-119.64	0.46	-0.31	5.18	
4,184.00	2.45	163.83	4,180.32	-136.81	45.97	-123.83	1.55	-1.40	12.64	
4,271.00	3.14	143.19	4,267.22	-140.50	47.92	-127.71	1.39	0.79	-23.72	
4,357.00	3.69	148.27	4,353.07	-144.74	50.78	-132.64	0.73	0.64	5.91	
4,444.00	2.70	145.61	4,439.93	-148.81	53.41	-137.29	1.15	-1.14	-3.06	
4,533.00	3.64	151.08	4,528.79	-153.02	55.96	-141.96	1.11	1.06	6.15	
4,621.00	4.03	152.56	4,616.60	-158.20	58.74	-147.44	0.46	0.44	1.68	
4,708.00	3.00	155.06	4,703.43	-162.98	61.11	-152.34	1.20	-1.18	2.87	
4,796.00	2.96	152.09	4,791.31	-167.08	63.14	-156.55	0.18	-0.05	-3.37	
4,884.00	3.16	154.26	4,879.19	-171.27	65.26	-160.88	0.26	0.23	2.47	
4,972.00	3.11	150.52	4,967.06	-175.53	67.49	-165.35	0.24	-0.06	-4.25	
5,059.00	2.30	145.64	5,053.96	-179.03	69.63	-169.25	0.97	-0.93	-5.61	
5,147.00	2.93	146.38	5,141.87	-182.36	71.88	-173.12	0.72	0.72	0.84	
5,235.00	1.81	167.25	5,229.79	-185.59	73.43	-176.40	1.59	-1.27	23.72	
5,323.00	2.83	162.54	5,317.72	-189.02	74.39	-179.35	1.18	1.16	-5.35	
5,413.00	2.10	176.85	5,407.63	-192.78	75.14	-182.37	1.05	-0.81	15.90	
5,499.00	2.36	161.15	5,493.57	-196.03	75.80	-184.99	0.77	0.30	-18.26	
5,588.00	1.92	165.54	5,582.51	-199.21	76.77	-187.78	0.53	-0.49	4.93	
5,676.00	1.60	151.83	5,670.47	-201.72	77.72	-190.14	0.60	-0.36	-15.58	
5,763.00	3.06	153.72	5,757.39	-204.87	79.32	-193.40	1.68	1.68	2.17	
5,850.00	2.35	160.83	5,844.30	-208.64	80.93	-197.08	0.90	-0.82	8.17	
5,936.00	2.50	157.64	5,930.22	-212.04	82.22	-200.27	0.23	0.17	-3.71	

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6,023.00	2.45	168.41	6,017.14	-215.62	83.32	-203.42	0.54	-0.06	12.38
6,111.00	2.32	167.15	6,105.06	-219.20	84.09	-206.34	0.16	-0.15	-1.43
6,199.00	1.96	159.32	6,193.00	-222.34	85.02	-209.09	0.53	-0.41	-8.90
6,242.00	1.54	153.42	6,235.98	-223.54	85.54	-210.26	1.06	-0.98	-13.72
6,278.00	1.36	153.27	6,271.97	-224.36	85.95	-211.10	0.50	-0.50	-0.42
6,308.00	1.18	255.56	6,301.96	-224.75	85.81	-211.25	6.60	-0.60	340.97
6,338.00	3.54	289.95	6,331.94	-224.51	84.64	-210.21	8.84	7.87	114.63
6,366.00	5.47	297.64	6,359.85	-223.60	82.64	-208.10	7.21	6.89	27.46
6,396.00	6.61	310.58	6,389.68	-221.81	80.06	-204.98	5.90	3.80	43.13
6,426.00	7.88	316.42	6,419.44	-219.20	77.34	-201.20	4.89	4.23	19.47
6,454.00	9.28	316.84	6,447.13	-216.16	74.47	-197.05	5.00	5.00	1.50
6,484.00	10.56	319.46	6,476.68	-212.31	71.03	-191.93	4.52	4.27	8.73
6,514.00	10.94	323.44	6,506.16	-207.93	67.54	-186.44	2.78	1.27	13.27
6,543.00	11.80	324.29	6,534.59	-203.32	64.17	-180.88	3.02	2.97	2.93
6,573.00	14.35	321.26	6,563.81	-197.92	60.06	-174.25	8.80	8.50	-10.10
6,603.00	16.12	317.65	6,592.75	-191.95	54.92	-166.46	6.69	5.90	-12.03
6,631.00	17.42	318.33	6,619.56	-185.94	49.52	-158.45	4.70	4.64	2.43
6,661.00	19.92	318.03	6,647.98	-178.79	43.11	-148.93	8.34	8.33	-1.00
6,691.00	21.79	318.05	6,676.01	-170.85	35.97	-138.34	6.23	6.23	0.07
6,719.00	23.04	318.03	6,701.90	-162.91	28.84	-127.76	4.46	4.46	-0.07
6,749.00	25.53	317.38	6,729.24	-153.78	20.53	-115.52	8.35	8.30	-2.17
6,779.00	27.97	314.38	6,756.03	-144.10	11.12	-102.08	9.29	8.13	-10.00
6,806.00	30.31	312.80	6,779.61	-135.04	1.60	-88.95	9.12	8.67	-5.85
6,836.00	33.73	312.40	6,805.04	-124.28	-10.11	-73.06	11.42	11.40	-1.33
6,866.00	35.67	312.83	6,829.70	-112.72	-22.68	-55.99	6.52	6.47	1.43
6,894.00	37.18	311.94	6,852.23	-101.51	-34.96	-39.38	5.71	5.39	-3.18
6,924.00	41.02	310.98	6,875.51	-88.99	-49.14	-20.46	12.96	12.80	-3.20
6,954.00	46.13	311.60	6,897.24	-75.35	-64.67	0.21	17.09	17.03	2.07
6,980.00	49.44	313.64	6,914.71	-62.31	-78.83	19.45	13.99	12.73	7.85
7,010.00	53.80	315.44	6,933.33	-45.81	-95.58	42.90	15.27	14.53	6.00
7,040.00	58.39	317.57	6,950.06	-27.74	-112.70	67.65	16.39	15.30	7.10
7,070.00	61.25	317.46	6,965.14	-8.62	-130.21	93.39	9.54	9.53	-0.37
7,100.00	63.76	317.17	6,978.99	10.94	-148.26	119.81	8.41	8.37	-0.97
7,130.00	66.42	317.18	6,991.62	30.89	-166.75	146.83	8.87	8.87	0.03
7,158.00	70.01	317.70	7,002.01	50.04	-184.33	172.64	12.94	12.82	1.86
7,188.00	74.04	318.03	7,011.27	71.20	-203.47	200.94	13.47	13.43	1.10
7,218.00	77.21	316.64	7,018.72	92.56	-223.16	229.79	11.48	10.57	-4.63
7,244.00	78.20	316.13	7,024.25	110.96	-240.69	255.06	4.26	3.81	-1.96
7,274.00	79.92	315.45	7,029.95	132.07	-261.23	284.39	6.15	5.73	-2.27
7,304.00	83.23	313.70	7,034.34	152.89	-282.36	313.98	12.45	11.03	-5.83
7,333.00	85.84	312.83	7,037.10	172.67	-303.38	342.81	9.48	9.00	-3.00
7,363.00	87.50	312.77	7,038.85	193.02	-325.36	372.74	5.54	5.53	-0.20
7,393.00	88.12	312.70	7,039.99	213.37	-347.38	402.69	2.08	2.07	-0.23
7,398.00	88.21	312.67	7,040.15	216.75	-351.05	407.69	1.90	1.80	-0.60
7,445.00	88.95	311.76	7,041.32	248.32	-385.85	454.65	2.50	1.57	-1.94
7,475.00	90.37	311.18	7,041.50	268.19	-408.33	484.65	5.11	4.73	-1.93
7,505.00	89.88	311.76	7,041.43	288.06	-430.80	514.64	2.53	-1.63	1.93
7,536.00	90.00	311.99	7,041.46	308.75	-453.89	545.63	0.84	0.39	0.74
7,579.00	89.26	311.66	7,041.74	337.42	-485.93	588.62	1.88	-1.72	-0.77
7,624.00	90.43	311.09	7,041.86	367.17	-519.70	633.62	2.89	2.60	-1.27
7,668.00	88.64	311.21	7,042.22	396.12	-552.82	677.61	4.08	-4.07	0.27
7,713.00	88.21	311.39	7,043.46	425.81	-586.62	722.59	1.04	-0.96	0.40
7,758.00	89.01	310.15	7,044.55	455.18	-620.69	767.57	3.28	1.78	-2.76
7,802.00	90.00	309.88	7,044.93	483.47	-654.38	811.57	2.33	2.25	-0.61

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Survey Report

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Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
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Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Surveys	Database:	EDM 2003.16 Single User Db

Survey									
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7,847.00	89.94	310.27	7,044.95	512.44	-688.82	856.57	0.88	-0.13	0.87
7,892.00	90.37	308.59	7,044.83	541.02	-723.58	901.56	3.85	0.96	-3.73
7,936.00	89.07	310.56	7,045.05	569.05	-757.49	945.55	5.36	-2.95	4.48
7,981.00	89.94	310.24	7,045.43	598.22	-791.76	990.55	2.06	1.93	-0.71
8,026.00	89.44	310.88	7,045.68	627.48	-825.94	1,035.55	1.80	-1.11	1.42
8,070.00	89.38	311.36	7,046.13	656.41	-859.09	1,079.54	1.10	-0.14	1.09
8,114.00	89.57	311.78	7,046.53	685.61	-892.00	1,123.53	1.05	0.43	0.95
8,159.00	90.00	310.48	7,046.70	715.20	-925.90	1,168.53	3.04	0.96	-2.89
8,204.00	89.75	310.98	7,046.80	744.57	-960.00	1,213.53	1.24	-0.56	1.11
8,249.00	88.95	310.77	7,047.31	774.01	-994.02	1,258.52	1.84	-1.78	-0.47
8,292.00	90.19	310.63	7,047.63	802.05	-1,026.62	1,301.52	2.90	2.88	-0.33
8,335.00	89.01	310.10	7,047.93	829.90	-1,059.38	1,344.52	3.01	-2.74	-1.23
8,378.00	89.44	310.41	7,048.52	857.68	-1,092.20	1,387.51	1.23	1.00	0.72
8,422.00	89.32	310.39	7,048.99	886.20	-1,125.70	1,431.51	0.28	-0.27	-0.05
8,465.00	88.76	310.25	7,049.71	914.02	-1,158.48	1,474.50	1.34	-1.30	-0.33
8,510.00	89.26	310.02	7,050.49	943.02	-1,192.88	1,519.50	1.22	1.11	-0.51
8,553.00	89.75	309.43	7,050.86	970.50	-1,225.95	1,562.49	1.78	1.14	-1.37
8,598.00	89.44	309.69	7,051.18	999.16	-1,260.64	1,607.48	0.90	-0.69	0.58
8,641.00	88.83	309.98	7,051.83	1,026.70	-1,293.66	1,650.47	1.57	-1.42	0.67
8,685.00	88.64	309.87	7,052.80	1,054.93	-1,327.39	1,694.46	0.50	-0.43	-0.25
8,728.00	89.01	309.47	7,053.68	1,082.38	-1,360.48	1,737.45	1.27	0.86	-0.93
8,773.00	88.89	309.36	7,054.51	1,110.94	-1,395.24	1,782.43	0.36	-0.27	-0.24
8,816.00	88.95	309.07	7,055.32	1,138.12	-1,428.55	1,825.41	0.69	0.14	-0.67
8,859.00	90.68	309.87	7,055.46	1,165.46	-1,461.75	1,868.40	4.43	4.02	1.86
8,903.00	90.62	310.95	7,054.96	1,193.98	-1,495.25	1,912.40	2.46	-0.14	2.45
8,948.00	88.52	312.30	7,055.29	1,223.87	-1,528.88	1,957.39	5.55	-4.67	3.00
8,993.00	89.14	311.94	7,056.21	1,254.04	-1,562.25	2,002.36	1.59	1.38	-0.80
9,037.00	91.17	312.24	7,056.09	1,283.53	-1,594.90	2,046.34	4.66	4.61	0.68
9,082.00	90.80	312.46	7,055.32	1,313.84	-1,628.15	2,091.31	0.96	-0.82	0.49
9,125.00	91.30	312.37	7,054.53	1,342.84	-1,659.89	2,134.28	1.18	1.16	-0.21
9,170.00	90.62	312.42	7,053.78	1,373.18	-1,693.12	2,179.25	1.52	-1.51	0.11
9,215.00	89.63	312.33	7,053.68	1,403.51	-1,726.37	2,224.22	2.21	-2.20	-0.20
9,258.00	89.63	312.25	7,053.96	1,432.44	-1,758.17	2,267.20	0.19	0.00	-0.19
9,302.00	90.56	311.83	7,053.89	1,461.90	-1,790.85	2,311.19	2.32	2.11	-0.95
9,345.00	90.19	311.31	7,053.60	1,490.43	-1,823.02	2,354.18	1.48	-0.86	-1.21
9,388.00	90.68	310.91	7,053.28	1,518.71	-1,855.42	2,397.17	1.47	1.14	-0.93
9,433.00	90.49	311.63	7,052.82	1,548.39	-1,889.24	2,442.17	1.65	-0.42	1.60
9,478.00	90.19	312.38	7,052.55	1,578.50	-1,922.68	2,487.15	1.80	-0.67	1.67
9,521.00	89.51	312.27	7,052.66	1,607.45	-1,954.47	2,530.13	1.60	-1.58	-0.26
9,566.00	89.69	312.07	7,052.98	1,637.66	-1,987.82	2,575.11	0.60	0.40	-0.44
9,609.00	89.63	312.37	7,053.23	1,666.56	-2,019.66	2,618.09	0.71	-0.14	0.70
9,653.00	89.44	311.96	7,053.59	1,696.09	-2,052.28	2,662.07	1.03	-0.43	-0.93
9,696.00	89.57	311.87	7,053.96	1,724.82	-2,084.27	2,705.06	0.37	0.30	-0.21
9,738.00	90.56	312.67	7,053.91	1,753.06	-2,115.35	2,747.04	3.03	2.36	1.90
9,781.00	90.43	313.08	7,053.54	1,782.32	-2,146.86	2,790.00	1.00	-0.30	0.95
9,825.00	90.43	313.05	7,053.21	1,812.36	-2,179.01	2,833.95	0.07	0.00	-0.07
9,868.00	90.25	313.81	7,052.96	1,841.92	-2,210.23	2,876.90	1.82	-0.42	1.77
9,912.00	90.68	313.45	7,052.60	1,872.28	-2,242.08	2,920.83	1.27	0.98	-0.82
9,957.00	91.05	313.45	7,051.92	1,903.23	-2,274.74	2,965.77	0.82	0.82	0.00
10,000.00	90.19	314.11	7,051.46	1,932.98	-2,305.79	3,008.69	2.52	-2.00	1.53
10,044.00	91.24	314.45	7,050.91	1,963.69	-2,337.29	3,052.59	2.51	2.39	0.77
10,088.00	90.99	313.74	7,050.05	1,994.30	-2,368.88	3,096.50	1.71	-0.57	-1.61
10,133.00	90.06	313.66	7,049.64	2,025.39	-2,401.41	3,141.43	2.07	-2.07	-0.18
10,177.00	88.76	314.18	7,050.09	2,055.91	-2,433.10	3,185.35	3.18	-2.95	1.18
10,220.00	88.70	313.91	7,051.04	2,085.80	-2,464.00	3,228.26	0.64	-0.14	-0.63

Halliburton Company

Survey Report

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well REI 31-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 18' @ 4909.00ft (SST 54)
Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
Well:	REI 31-5HZ	North Reference:	True
Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,265.00	89.20	313.85	7,051.87	2,116.98	-2,496.43	3,273.17	1.12	1.11	-0.13
10,308.00	89.57	313.82	7,052.33	2,146.76	-2,527.45	3,316.10	0.86	0.86	-0.07
10,351.00	90.56	313.71	7,052.28	2,176.51	-2,558.50	3,359.03	2.32	2.30	-0.26
10,394.00	90.19	313.52	7,052.00	2,206.17	-2,589.63	3,401.96	0.97	-0.86	-0.44
10,438.00	89.51	313.34	7,052.11	2,236.42	-2,621.59	3,445.91	1.60	-1.55	-0.41
10,483.00	88.70	312.84	7,052.82	2,267.15	-2,654.45	3,490.85	2.12	-1.80	-1.11
10,528.00	88.89	312.70	7,053.76	2,297.70	-2,687.47	3,535.81	0.52	0.42	-0.31
10,573.00	89.13	312.78	7,054.54	2,328.24	-2,720.52	3,580.77	0.56	0.53	0.18
10,616.00	88.95	311.92	7,055.26	2,357.20	-2,752.29	3,623.74	2.04	-0.42	-2.00
10,661.00	88.64	311.29	7,056.21	2,387.08	-2,785.93	3,668.72	1.56	-0.69	-1.40
10,706.00	89.07	309.62	7,057.11	2,416.27	-2,820.16	3,713.71	3.83	0.96	-3.71
10,750.00	89.57	309.11	7,057.63	2,444.17	-2,854.18	3,757.70	1.62	1.14	-1.16
10,794.00	90.19	310.30	7,057.72	2,472.28	-2,888.03	3,801.69	3.05	1.41	2.70
10,837.00	91.30	310.71	7,057.16	2,500.21	-2,920.72	3,844.69	2.75	2.58	0.95
10,882.00	90.93	310.10	7,056.29	2,529.37	-2,954.98	3,889.68	1.59	-0.82	-1.36
10,926.00	89.26	310.61	7,056.21	2,557.86	-2,988.51	3,933.68	3.97	-3.80	1.16
10,970.00	89.57	310.58	7,056.66	2,586.49	-3,021.92	3,977.68	0.71	0.70	-0.07
11,015.00	89.01	310.95	7,057.22	2,615.87	-3,056.00	4,022.67	1.49	-1.24	0.82
11,058.00	88.08	311.70	7,058.31	2,644.25	-3,088.28	4,065.65	2.78	-2.16	1.74
11,102.00	88.15	311.69	7,059.76	2,673.51	-3,121.12	4,109.62	0.16	0.16	-0.02
11,147.00	88.89	311.69	7,060.92	2,703.42	-3,154.71	4,154.60	1.64	1.64	0.00
11,192.00	89.69	311.75	7,061.48	2,733.37	-3,188.29	4,199.58	1.78	1.78	0.13
11,237.00	89.57	311.94	7,061.77	2,763.39	-3,221.82	4,244.57	0.50	-0.27	0.42
11,282.00	87.71	312.78	7,062.84	2,793.70	-3,255.06	4,289.53	4.54	-4.13	1.87
11,325.00	88.21	312.73	7,064.37	2,822.87	-3,286.61	4,332.47	1.17	1.16	-0.12
11,370.00	88.70	313.31	7,065.58	2,853.56	-3,319.50	4,377.41	1.69	1.09	1.29
11,413.00	90.06	311.53	7,066.05	2,882.56	-3,351.24	4,420.38	5.21	3.16	-4.14
11,458.00	88.33	311.60	7,066.68	2,912.42	-3,384.90	4,465.37	3.85	-3.84	0.16
11,503.00	88.27	310.54	7,068.02	2,941.97	-3,418.81	4,510.35	2.36	-0.13	-2.36
11,548.00	88.70	309.91	7,069.21	2,971.02	-3,453.16	4,555.33	1.69	0.96	-1.40
11,592.00	89.01	310.06	7,070.08	2,999.29	-3,486.87	4,599.32	0.78	0.70	0.34
11,637.00	89.69	310.75	7,070.59	3,028.45	-3,521.13	4,644.31	2.15	1.51	1.53
11,682.00	89.01	309.90	7,071.11	3,057.57	-3,555.43	4,689.31	2.42	-1.51	-1.89
11,727.00	89.51	310.09	7,071.69	3,086.49	-3,589.91	4,734.30	1.19	1.11	0.42
11,772.00	90.31	309.80	7,071.76	3,115.38	-3,624.40	4,779.30	1.89	1.78	-0.64
11,817.00	89.51	310.08	7,071.83	3,144.27	-3,658.91	4,824.30	1.88	-1.78	0.62
11,861.00	89.63	310.46	7,072.16	3,172.71	-3,692.48	4,868.30	0.91	0.27	0.86
11,904.00	90.31	310.86	7,072.18	3,200.73	-3,725.10	4,911.30	1.83	1.58	0.93
11,949.00	90.31	309.63	7,071.94	3,229.80	-3,759.44	4,956.30	2.73	0.00	-2.73
11,992.00	90.43	310.14	7,071.66	3,257.37	-3,792.44	4,999.29	1.22	0.28	1.19
12,037.00	89.69	310.32	7,071.61	3,286.44	-3,826.79	5,044.29	1.69	-1.64	0.40
12,082.00	88.82	310.09	7,072.20	3,315.48	-3,861.16	5,089.29	2.00	-1.93	-0.51
12,127.00	88.27	310.16	7,073.34	3,344.47	-3,895.56	5,134.27	1.23	-1.22	0.16
12,171.00	88.21	309.29	7,074.69	3,372.58	-3,929.38	5,178.24	1.98	-0.14	-1.98
12,216.00	89.20	308.93	7,075.71	3,400.96	-3,964.29	5,223.22	2.34	2.20	-0.80
12,261.00	89.07	308.40	7,076.39	3,429.07	-3,999.42	5,268.19	1.21	-0.29	-1.18
12,294.00	89.38	308.44	7,076.83	3,449.57	-4,025.27	5,301.16	0.95	0.94	0.12
Final Sperry MWD Survey @ 12294									
12,330.00	89.38	308.44	7,077.22	3,471.95	-4,053.47	5,337.14	0.00	0.00	0.00
Straight Line Projection to TD @ 12330									

Halliburton Company

Survey Report

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well REI 31-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 18' @ 4909.00ft (SST 54)
Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
Well:	REI 31-5HZ	North Reference:	True
Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD 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										
HSR-Parker 12-5A	0.00	0.00	0.00	1,786.37	-3,152.99	1,336,198.12	3,225,609.05	40.253440	-104.691680	
- actual wellpath misses target center by 3623.88ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
REI 31-5HZ Section Line	0.00	0.00	0.00	0.00	0.00	1,334,441.04	3,228,778.28	40.248537	-104.680384	
- actual wellpath hits target center										
- Polygon										
Point 1			0.00	4,794.00	748.00	1,339,241.54	3,229,481.91			
Point 2			0.00	-511.00	748.00	1,333,937.00	3,229,530.94			
Point 3			0.00	-511.00	-4,548.00	1,333,888.05	3,224,235.39			
Point 4			0.00	4,794.00	-4,548.00	1,339,192.60	3,224,186.36			
REI 35-5	0.00	0.00	0.00	299.95	-2,505.57	1,334,717.81	3,226,270.15	40.249360	-104.689360	
- actual wellpath misses target center by 2523.46ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
REI 23-5	0.00	0.00	0.00	1,287.21	-2,566.88	1,335,704.42	3,226,199.72	40.252070	-104.689580	
- actual wellpath misses target center by 2871.55ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
Beebe Draw UPRR 32-5	0.00	0.00	0.00	2,878.39	-1,347.83	1,337,306.72	3,227,403.96	40.256438	-104.685213	
- actual wellpath misses target center by 3178.33ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
Aristocrat 32-5 2	0.00	0.00	0.00	2,791.68	-1,240.94	1,337,221.01	3,227,511.65	40.256200	-104.684830	
- actual wellpath misses target center by 3055.06ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
Ludwig 21-5	0.00	0.00	0.00	3,564.05	-2,050.30	1,337,985.84	3,226,695.22	40.258320	-104.687730	
- actual wellpath misses target center by 4111.72ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
HSR-Oborne 9-5	0.00	0.00	0.00	1,359.94	154.64	1,335,802.29	3,228,920.34	40.252270	-104.679830	
- actual wellpath misses target center by 1368.70ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
REI 22-5	0.00	0.00	0.00	1,855.59	-3,151.59	1,336,267.34	3,225,609.82	40.253630	-104.691675	
- actual wellpath misses target center by 3657.28ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
UPRR 39 Pan AM F 1	0.00	0.00	0.00	1,243.50	-2,583.63	1,335,660.55	3,226,183.38	40.251950	-104.689640	
- actual wellpath misses target center by 2867.31ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
Ludwig 29-5	0.00	0.00	0.00	4,223.49	-2,588.90	1,338,640.24	3,226,150.56	40.260130	-104.689660	
- actual wellpath misses target center by 4953.82ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
REI 31-5HZ Plan #3 Wa	0.00	0.00	7,064.00	2,387.73	-2,793.63	1,336,802.75	3,225,962.83	40.255091	-104.690393	
- actual wellpath misses target center by 8.91ft at 10667.44ft MD (7056.36 TVD, 2391.31 N, -2790.78 E)										
- Point										
UPRR 39 Pan Am C 1	0.00	0.00	0.00	146.84	-1,154.54	1,334,577.20	3,227,622.49	40.248940	-104.684520	
- actual wellpath misses target center by 1163.84ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Circle (radius 300.00)										
REI 31-5HZ 460' Setbac	0.00	0.00	0.00	0.00	0.00	1,334,441.04	3,228,778.28	40.248537	-104.680384	
- actual wellpath hits target center										
- Polygon										
Point 1			0.00	4,334.00	288.00	1,338,777.33	3,229,026.20			
Point 2			0.00	-51.00	288.00	1,334,392.71	3,229,066.73			
Point 3			0.00	-51.00	-4,088.00	1,334,352.26	3,224,691.10			
Point 4			0.00	4,334.00	-4,088.00	1,338,736.89	3,224,650.58			
HSR-Rogers 3-5	0.00	0.00	0.00	4,172.49	-2,580.54	1,338,589.32	3,226,159.40	40.259990	-104.689630	
- actual wellpath misses target center by 4906.00ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										

Halliburton Company

Survey Report

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well REI 31-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 18' @ 4909.00ft (SST 54)
Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
Well:	REI 31-5HZ	North Reference:	True
Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Surveys	Database:	EDM 2003.16 Single User Db

- Circle (radius 300.00)									
Ludwig 17-5	0.00	0.00	0.00	3,618.63	-903.18	1,338,051.01	3,227,841.73	40.258470	-104.683620
- actual wellpath misses target center by 3729.64ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
REI 24-5	0.00	0.00	0.00	1,724.26	-894.88	1,336,156.88	3,227,867.55	40.253270	-104.683590
- actual wellpath misses target center by 1942.64ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
Beebe Draw UPRR 42-5	0.00	0.00	0.00	2,802.58	109.97	1,337,244.39	3,228,862.34	40.256230	-104.679990
- actual wellpath misses target center by 2804.73ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
UPRR 39 Pan AM C 2	0.00	0.00	0.00	1,461.94	112.77	1,335,903.90	3,228,877.53	40.252550	-104.679980
- actual wellpath misses target center by 1466.29ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
Arist. Angus Ranch 41-5	0.00	0.00	0.00	4,114.06	118.34	1,338,555.85	3,228,858.58	40.259830	-104.679960
- actual wellpath misses target center by 4115.77ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
REI 19-5	0.00	0.00	0.00	1,272.65	-2,622.71	1,335,689.34	3,226,144.04	40.252030	-104.689780
- actual wellpath misses target center by 2915.17ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
REI 33-5	0.00	0.00	0.00	77.88	-3,775.70	1,334,484.02	3,225,002.19	40.248750	-104.693910
- actual wellpath misses target center by 3776.50ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
HRS-Pickrell 13-5A	0.00	0.00	0.00	12.31	-3,753.38	1,334,418.66	3,225,025.11	40.248570	-104.693830
- actual wellpath misses target center by 3753.40ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
Ludwig 1-5 1	0.00	0.00	0.00	3,665.99	-908.76	1,338,098.32	3,227,835.72	40.258600	-104.683640
- actual wellpath misses target center by 3776.95ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
HSR-Ream 15-5	0.00	0.00	0.00	14.96	-1,083.92	1,334,445.98	3,227,694.32	40.248578	-104.684267
- actual wellpath misses target center by 1084.02ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
HRS-Rafalovich 14-5	0.00	0.00	0.00	310.87	-2,458.12	1,334,729.17	3,226,317.50	40.249390	-104.689190
- actual wellpath misses target center by 2477.70ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
REI 31-5HZ Plan #3 BH	0.00	0.00	7,087.00	3,493.63	-4,087.78	1,337,896.59	3,224,658.57	40.258126	-104.695030
- actual wellpath misses target center by 41.74ft at 12330.00ft MD (7077.22 TVD, 3471.95 N, -4053.47 E)									
- Point									
REI 10-5	0.00	0.00	0.00	1,735.19	-947.91	1,336,167.32	3,227,814.42	40.253300	-104.683780
- actual wellpath misses target center by 1977.22ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
Beebe Draw 41-5A	0.00	0.00	0.00	4,015.70	115.55	1,338,457.47	3,228,856.70	40.259560	-104.679970
- actual wellpath misses target center by 4017.36ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									
Ludwig-UPRR 31-5 1	0.00	0.00	0.00	4,172.38	-1,221.33	1,338,601.78	3,227,518.49	40.259990	-104.684760
- actual wellpath misses target center by 4347.46ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 300.00)									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
136.00	136.00	-0.22	0.20	First Sperry MWD Survey @ 136
12,294.00	7,076.83	3,449.57	-4,025.27	Final Sperry MWD Survey @ 12294
12,330.00	7,077.22	3,471.95	-4,053.47	Straight Line Projection to TD @ 12330

Halliburton Company

Survey Report

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well REI 31-5HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 18' @ 4909.00ft (SST 54)
Site:	Sec. 5-T3N-R65W	MD Reference:	RKB 18' @ 4909.00ft (SST 54)
Well:	REI 31-5HZ	North Reference:	True
Wellbore:	Plan #3	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Surveys	Database:	EDM 2003.16 Single User Db

Checked By: _____ Approved By: _____ Date: _____



