



Weatherford®

Weatherford
2000 Oil Drive
Casper, WY 82604

Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	REIGLE 28N-4HZ
State:	CO
County:	WELD
API Number:	512336138
Datum:	NAD 83
Survey Calculation Method:	Minimum Curvature
North Reference:	True North

I, J. Aaron Underwood, hereby certify the attached
directional survey run from the measure depth of 942.00 feet
to the measured depth of 11,469.00 feet as accurate and true
to the best of my knowledge.

Signature

3-Jan-12

Date

J. Aaron Underwood
Directional Planning
Weatherford - Rockies District

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_REIGLE 15-4HZ PAD

REIGLE 28N-4HZ

REIGLE 28N-4HZ

Design: REIGLE 28N-4HZ

Standard Survey Report

03 January, 2013

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		WELD_REIGLE 15-4HZ PAD			
Site Position:		Northing:	1,303,020.80 usft	Latitude:	40.162192
From:	Lat/Long	Easting:	3,232,556.30 usft	Longitude:	-104.667906
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well	REIGLE 28N-4HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,302,961.04 usft	Latitude:	40.162028
	+E/-W	0.00 ft	Easting:	3,232,555.74 usft	Longitude:	-104.667910
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,858.00 ft

Wellbore	REIGLE 28N-4HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/25/2012	8.62	66.83	52,881

Design	REIGLE 28N-4HZ				
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	194.21	

Survey Program	Date	1/3/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
116.00	839.00	Survey #1 (REIGLE 28N-4HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
942.00	11,469.00	Survey #2 (REIGLE 28N-4HZ)	MWD	MWD - STANDARD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
116.00	0.53	170.95	116.00	-0.53	0.08	0.49	0.46	0.46	0.00	
216.00	0.46	185.87	215.99	-1.39	0.12	1.31	0.15	-0.07	14.92	
316.00	0.16	87.08	315.99	-1.78	0.21	1.67	0.51	-0.30	-98.79	
416.00	0.26	201.89	415.99	-1.98	0.27	1.85	0.36	0.10	114.81	
516.00	0.28	265.74	515.99	-2.21	-0.06	2.16	0.29	0.02	63.85	
616.00	0.15	152.38	615.99	-2.34	-0.24	2.33	0.37	-0.13	-113.36	
716.00	0.17	251.57	715.99	-2.51	-0.32	2.51	0.24	0.02	99.19	

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Survey Report

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Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
816.00	0.04	253.57	815.99	-2.56	-0.50	2.61	0.13	-0.13	2.00
839.00	0.74	325.01	838.99	-2.44	-0.59	2.51	3.17	3.04	310.61
TIE ON									
942.00	0.49	76.88	941.99	-1.80	-0.54	1.88	1.00	-0.24	108.61
FIRST MWD SURVEY									
1,033.00	0.44	64.42	1,032.98	-1.56	0.15	1.48	0.12	-0.05	-13.69
1,124.00	2.10	295.38	1,123.97	-0.69	-1.04	0.93	2.64	1.82	-141.80
1,214.00	4.15	279.22	1,213.83	0.53	-5.74	0.89	2.46	2.28	-17.96
1,305.00	5.92	275.87	1,304.47	1.54	-13.66	1.86	1.97	1.95	-3.68
1,396.00	6.21	260.84	1,394.97	1.24	-23.19	4.49	1.77	0.32	-16.52
1,493.00	6.31	264.36	1,491.39	-0.12	-33.67	8.39	0.41	0.10	3.63
1,586.00	6.43	258.50	1,583.82	-1.66	-43.86	12.38	0.71	0.13	-6.30
1,679.00	7.20	245.05	1,676.17	-5.16	-54.25	18.32	1.90	0.83	-14.46
1,773.00	7.02	243.55	1,769.44	-10.20	-64.74	25.79	0.28	-0.19	-1.60
1,866.00	7.38	225.13	1,861.72	-16.95	-74.06	34.61	2.50	0.39	-19.81
1,959.00	8.31	220.12	1,953.85	-26.30	-82.62	45.78	1.24	1.00	-5.39
2,053.00	7.77	206.74	2,046.94	-37.17	-89.86	58.10	2.07	-0.57	-14.23
2,146.00	7.00	206.63	2,139.16	-47.85	-95.23	69.77	0.83	-0.83	-0.12
2,239.00	7.61	215.79	2,231.41	-57.91	-101.37	81.03	1.41	0.66	9.85
2,332.00	6.86	218.92	2,323.67	-67.23	-108.46	91.80	0.91	-0.81	3.37
2,426.00	7.38	210.09	2,416.95	-76.82	-115.01	102.71	1.29	0.55	-9.39
2,519.00	8.96	210.47	2,509.00	-88.23	-121.68	115.41	1.70	1.70	0.41
2,612.00	7.94	211.22	2,600.99	-99.97	-128.68	128.50	1.10	-1.10	0.81
2,706.00	8.47	212.91	2,694.03	-111.33	-135.81	141.27	0.62	0.56	1.80
2,800.00	9.46	209.84	2,786.88	-123.84	-143.42	155.27	1.17	1.05	-3.27
2,885.00	9.14	209.69	2,870.76	-135.77	-150.23	168.50	0.38	-0.38	-0.18
2,970.00	8.26	210.18	2,954.78	-146.91	-156.65	180.88	1.04	-1.04	0.58
3,055.00	9.05	215.24	3,038.82	-157.65	-163.58	192.99	1.29	0.93	5.95
3,141.00	8.16	220.00	3,123.85	-167.85	-171.40	204.80	1.32	-1.03	5.53
3,226.00	7.71	213.71	3,208.04	-177.21	-178.44	215.61	1.15	-0.53	-7.40
3,312.00	8.60	210.73	3,293.17	-187.54	-184.93	227.21	1.15	1.03	-3.47
3,397.00	9.68	212.38	3,377.09	-199.04	-192.01	240.09	1.31	1.27	1.94
3,483.00	9.10	216.34	3,461.93	-210.62	-199.91	253.26	1.01	-0.67	4.60
3,568.00	7.73	220.17	3,546.02	-220.41	-207.58	264.63	1.74	-1.61	4.51
3,654.00	8.51	222.43	3,631.16	-229.52	-215.60	275.44	0.98	0.91	2.63
3,738.00	7.91	220.04	3,714.29	-238.54	-223.51	286.12	0.82	-0.71	-2.85
3,824.00	8.80	210.86	3,799.38	-248.71	-230.70	297.75	1.86	1.03	-10.67
3,909.00	8.25	210.34	3,883.45	-259.56	-237.11	309.83	0.65	-0.65	-0.61
3,995.00	9.61	207.97	3,968.40	-271.22	-243.60	322.73	1.64	1.58	-2.76
4,080.00	9.22	207.36	4,052.26	-283.54	-250.05	336.26	0.47	-0.46	-0.72
4,165.00	8.15	209.14	4,136.28	-294.85	-256.12	348.71	1.30	-1.26	2.09
4,251.00	7.08	211.84	4,221.52	-304.68	-261.88	359.65	1.31	-1.24	3.14

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,336.00	8.84	208.39	4,305.70	-314.87	-267.75	370.98	2.14	2.07	-4.06	
4,421.00	8.94	210.09	4,389.68	-326.33	-274.17	383.66	0.33	0.12	2.00	
4,507.00	9.44	211.87	4,474.57	-338.10	-281.24	396.81	0.67	0.58	2.07	
4,592.00	9.70	218.52	4,558.39	-349.63	-289.38	409.98	1.34	0.31	7.82	
4,677.00	9.69	219.08	4,642.18	-360.78	-298.35	423.00	0.11	-0.01	0.66	
4,763.00	8.16	222.87	4,727.14	-370.87	-307.07	434.92	1.90	-1.78	4.41	
4,848.00	6.52	228.01	4,811.44	-378.52	-314.76	444.22	2.08	-1.93	6.05	
4,934.00	7.20	220.36	4,896.82	-385.90	-321.88	453.12	1.32	0.79	-8.90	
5,019.00	7.99	216.31	4,981.08	-394.72	-328.83	463.38	1.12	0.93	-4.76	
5,105.00	9.91	207.18	5,066.03	-406.12	-335.75	476.13	2.77	2.23	-10.62	
5,190.00	8.16	205.48	5,149.97	-418.07	-341.68	489.17	2.08	-2.06	-2.00	
5,276.00	7.59	208.39	5,235.16	-428.58	-347.01	500.66	0.81	-0.66	3.38	
5,361.00	8.95	208.21	5,319.28	-439.34	-352.80	512.52	1.60	1.60	-0.21	
5,447.00	9.80	205.87	5,404.13	-451.82	-359.16	526.18	1.08	0.99	-2.72	
5,532.00	8.09	214.18	5,488.09	-463.28	-365.68	538.89	2.52	-2.01	9.78	
5,617.00	8.41	213.29	5,572.21	-473.43	-372.45	550.39	0.41	0.38	-1.05	
5,703.00	7.52	219.99	5,657.39	-483.00	-379.52	561.40	1.49	-1.03	7.79	
5,788.00	5.82	217.44	5,741.81	-490.68	-385.71	570.37	2.03	-2.00	-3.00	
5,874.00	4.51	216.46	5,827.46	-496.86	-390.37	577.50	1.53	-1.52	-1.14	
5,959.00	3.59	212.85	5,912.24	-501.78	-393.80	583.12	1.12	-1.08	-4.25	
6,044.00	2.04	200.08	5,997.14	-505.44	-395.77	587.15	1.96	-1.82	-15.02	
6,130.00	1.36	165.78	6,083.10	-507.87	-396.04	589.57	1.39	-0.79	-39.88	
6,215.00	0.66	183.44	6,168.09	-509.34	-395.82	590.93	0.89	-0.82	20.78	
6,301.00	0.73	158.45	6,254.08	-510.34	-395.65	591.87	0.36	0.08	-29.06	
6,386.00	0.70	170.43	6,339.08	-511.35	-395.36	592.78	0.18	-0.04	14.09	
6,462.00	0.35	176.72	6,415.07	-512.04	-395.27	593.43	0.47	-0.46	8.28	
6,518.00	1.38	359.06	6,471.07	-511.54	-395.28	592.94	3.09	1.84	-317.25	
6,561.00	7.58	357.15	6,513.92	-508.19	-395.43	589.72	14.42	14.42	-4.44	
6,603.00	13.07	0.22	6,555.22	-500.67	-395.54	582.46	13.13	13.07	7.31	
6,646.00	17.29	3.88	6,596.71	-489.42	-395.09	571.45	10.06	9.81	8.51	
6,689.00	20.21	6.02	6,637.43	-475.66	-393.88	557.81	6.98	6.79	4.98	
6,731.00	23.98	5.25	6,676.34	-459.94	-392.34	542.20	9.00	8.98	-1.83	
6,774.00	27.66	5.50	6,715.04	-441.30	-390.58	523.69	8.56	8.56	0.58	
6,817.00	30.30	5.86	6,752.65	-420.57	-388.52	503.09	6.15	6.14	0.84	
6,860.00	29.91	0.16	6,789.86	-399.05	-387.38	481.95	6.71	-0.91	-13.26	
6,902.00	33.50	357.37	6,825.58	-376.99	-387.88	460.69	9.23	8.55	-6.64	
6,945.00	38.81	358.78	6,860.29	-351.65	-388.72	436.33	12.50	12.35	3.28	
6,987.00	44.12	359.18	6,891.75	-323.85	-389.21	409.51	12.66	12.64	0.95	
7,030.00	49.84	359.37	6,921.08	-292.43	-389.60	379.14	13.31	13.30	0.44	
7,073.00	53.43	358.54	6,947.76	-258.73	-390.22	346.62	8.48	8.35	-1.93	
7,115.00	58.18	356.19	6,971.36	-224.04	-391.84	313.39	12.22	11.31	-5.60	
7,158.00	64.26	357.08	6,992.06	-186.43	-394.04	277.48	14.26	14.14	2.07	

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Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,201.00	70.99	359.93	7,008.42	-146.71	-395.05	239.22	16.81	15.65	6.63	
7,243.00	73.70	0.85	7,021.15	-106.69	-394.78	200.36	6.78	6.45	2.19	
7,286.00	76.86	2.25	7,032.08	-65.13	-393.65	159.79	7.99	7.35	3.26	
7,329.00	83.13	2.40	7,039.55	-22.84	-391.93	118.38	14.59	14.58	0.35	
7,364.00	84.95	2.15	7,043.18	11.94	-390.55	84.32	5.25	5.20	-0.71	
7,395.00	86.27	1.49	7,045.55	42.84	-389.57	54.13	4.75	4.25	-2.12	
7 IN CASING										
7,491.00	90.35	359.47	7,048.39	138.77	-388.76	-39.06	4.75	4.25	-2.11	
7,576.00	90.37	358.93	7,047.85	223.76	-389.95	-121.16	0.64	0.02	-0.64	
7,661.00	90.00	359.83	7,047.58	308.75	-390.87	-203.32	1.14	-0.44	1.06	
7,747.00	90.56	359.16	7,047.16	394.74	-391.63	-286.50	1.02	0.65	-0.78	
7,832.00	90.62	0.26	7,046.28	479.74	-392.06	-368.78	1.30	0.07	1.29	
7,918.00	89.88	0.83	7,045.91	565.73	-391.24	-452.34	1.09	-0.86	0.66	
8,003.00	88.46	357.92	7,047.14	650.71	-392.17	-534.49	3.81	-1.67	-3.42	
8,088.00	90.74	359.10	7,047.73	735.67	-394.38	-616.31	3.02	2.68	1.39	
8,174.00	91.67	0.35	7,045.92	821.65	-394.79	-699.55	1.81	1.08	1.45	
8,259.00	90.86	1.97	7,044.05	906.60	-393.07	-782.33	2.13	-0.95	1.91	
8,345.00	90.74	1.74	7,042.85	992.55	-390.29	-866.33	0.30	-0.14	-0.27	
8,430.00	89.38	1.54	7,042.76	1,077.51	-387.85	-949.29	1.62	-1.60	-0.24	
8,516.00	89.94	0.67	7,043.27	1,163.50	-386.19	-1,033.05	1.20	0.65	-1.01	
8,601.00	90.25	359.84	7,043.13	1,248.49	-385.82	-1,115.54	1.04	0.36	-0.98	
8,687.00	90.25	0.59	7,042.75	1,334.49	-385.49	-1,198.98	0.87	0.00	0.87	
8,772.00	90.43	359.70	7,042.25	1,419.49	-385.28	-1,281.43	1.07	0.21	-1.05	
8,857.00	89.75	1.36	7,042.11	1,504.48	-384.49	-1,364.01	2.11	-0.80	1.95	
8,943.00	88.89	0.39	7,043.13	1,590.46	-383.18	-1,447.68	1.51	-1.00	-1.13	
9,028.00	89.75	0.50	7,044.14	1,675.45	-382.52	-1,530.23	1.02	1.01	0.13	
9,114.00	90.25	0.06	7,044.14	1,761.45	-382.10	-1,613.70	0.77	0.58	-0.51	
9,199.00	90.99	358.99	7,043.22	1,846.44	-382.80	-1,695.92	1.53	0.87	-1.26	
9,284.00	90.18	0.34	7,042.36	1,931.44	-383.30	-1,778.19	1.85	-0.95	1.59	
9,370.00	90.18	1.50	7,042.09	2,017.42	-381.92	-1,861.88	1.35	0.00	1.35	
9,455.00	88.70	2.67	7,042.92	2,102.36	-378.83	-1,944.97	2.22	-1.74	1.38	
9,541.00	88.58	2.43	7,044.96	2,188.25	-375.00	-2,029.17	0.31	-0.14	-0.28	
9,626.00	88.21	1.55	7,047.34	2,273.16	-372.05	-2,112.21	1.12	-0.44	-1.04	
9,712.00	90.25	0.77	7,048.49	2,359.13	-370.31	-2,195.98	2.54	2.37	-0.91	
9,797.00	91.85	0.46	7,046.94	2,444.11	-369.40	-2,278.58	1.92	1.88	-0.36	
9,883.00	91.36	1.88	7,044.53	2,530.06	-367.64	-2,362.32	1.75	-0.57	1.65	
9,968.00	90.12	2.84	7,043.43	2,614.97	-364.14	-2,445.50	1.84	-1.46	1.13	
10,053.00	88.15	0.90	7,044.71	2,699.91	-361.37	-2,528.52	3.25	-2.32	-2.28	
10,139.00	87.53	0.40	7,047.95	2,785.84	-360.39	-2,612.06	0.93	-0.72	-0.58	
10,224.00	88.70	359.00	7,050.75	2,870.79	-360.84	-2,694.30	2.15	1.38	-1.65	
10,309.00	87.47	358.33	7,053.59	2,955.72	-362.82	-2,776.14	1.65	-1.45	-0.79	
10,394.00	89.81	356.70	7,055.61	3,040.61	-366.50	-2,857.53	3.35	2.75	-1.92	

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,480.00	90.68	357.52	7,055.24	3,126.50	-370.84	-2,939.72	1.39	1.01	0.95	
10,565.00	91.23	0.73	7,053.82	3,211.46	-372.14	-3,021.77	3.83	0.65	3.78	
10,650.00	89.81	1.27	7,053.05	3,296.44	-370.65	-3,104.51	1.79	-1.67	0.64	
10,736.00	90.25	0.02	7,053.01	3,382.44	-369.69	-3,188.11	1.54	0.51	-1.45	
10,821.00	91.54	0.45	7,051.68	3,467.42	-369.34	-3,270.58	1.60	1.52	0.51	
10,907.00	91.05	2.39	7,049.74	3,553.37	-367.21	-3,354.42	2.33	-0.57	2.26	
10,992.00	91.42	1.91	7,047.90	3,638.29	-364.02	-3,437.52	0.71	0.44	-0.56	
11,078.00	88.77	2.49	7,047.76	3,724.22	-360.72	-3,521.63	3.15	-3.08	0.67	
11,163.00	89.57	0.98	7,048.99	3,809.17	-358.14	-3,604.61	2.01	0.94	-1.78	
11,248.00	90.43	359.24	7,048.99	3,894.16	-357.98	-3,687.04	2.28	1.01	-2.05	
11,334.00	89.69	359.47	7,048.90	3,980.16	-358.95	-3,770.17	0.90	-0.86	0.27	
11,411.00	89.08	0.62	7,049.73	4,057.15	-358.89	-3,844.82	1.69	-0.79	1.49	
LAST MWD SURVEY										
11,469.00	89.08	0.62	7,050.66	4,115.14	-358.26	-3,901.18	0.00	0.00	0.00	
PROJECTION TO TD										

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,869.13	3,844.00	Parkman				
4,466.90	4,435.00	Sussex				
6,938.25	6,855.00	Sharon Springs				
7,004.41	6,904.00	Niobrara A				
7,050.40	6,934.00	Niobrara B				
7,305.28	7,036.00	Niobrara C				

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
839.00	838.99	-2.44	-0.59	TIE ON	
942.00	941.99	-1.80	-0.54	FIRST MWD SURVEY	
7,395.00	7,045.55	42.84	-389.57	7 IN CASING	
11,411.00	7,049.73	4,057.15	-358.89	LAST MWD SURVEY	
11,469.00	7,050.66	4,115.14	-358.26	PROJECTION TO TD	

Checked By: _____	Approved By: _____	Date: _____
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US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_REIGLE 15-4HZ PAD

REIGLE 28N-4HZ

REIGLE 28N-4HZ

Design: REIGLE 28N-4HZ

Survey Report - Geographic

03 January, 2013

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		WELD_REIGLE 15-4HZ PAD			
Site Position:		Northing:	1,303,020.80 usft	Latitude:	40.162192
From:	Lat/Long	Easting:	3,232,556.30 usft	Longitude:	-104.667906
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well		REIGLE 28N-4HZ				
Well Position	+N/-S	0.00 ft	Northing:	1,302,961.04 usft	Latitude:	40.162028
	+E/-W	0.00 ft	Easting:	3,232,555.74 usft	Longitude:	-104.667910
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,858.00 ft

Wellbore	REIGLE 28N-4HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/25/2012	8.62	66.83	52,881

Design	REIGLE 28N-4HZ				
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	194.21	

Survey Program	Date	1/3/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
116.00	839.00	Survey #1 (REIGLE 28N-4HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
942.00	11,469.00	Survey #2 (REIGLE 28N-4HZ)	MWD	MWD - STANDARD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	1,302,961.04	3,232,555.74	40.162028	-104.667910	
116.00	0.53	170.95	116.00	-0.53	0.08	1,302,960.51	3,232,555.83	40.162027	-104.667910	
216.00	0.46	185.87	215.99	-1.39	0.12	1,302,959.65	3,232,555.87	40.162024	-104.667910	
316.00	0.16	87.08	315.99	-1.78	0.21	1,302,959.26	3,232,555.97	40.162023	-104.667909	
416.00	0.26	201.89	415.99	-1.98	0.27	1,302,959.06	3,232,556.03	40.162023	-104.667909	
516.00	0.28	265.74	515.99	-2.21	-0.06	1,302,958.83	3,232,555.70	40.162022	-104.667910	
616.00	0.15	152.38	615.99	-2.34	-0.24	1,302,958.69	3,232,555.52	40.162022	-104.667911	
716.00	0.17	251.57	715.99	-2.51	-0.32	1,302,958.53	3,232,555.44	40.162021	-104.667911	
816.00	0.04	253.57	815.99	-2.56	-0.50	1,302,958.47	3,232,555.27	40.162021	-104.667912	

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
839.00	0.74	325.01	838.99	-2.44	-0.59	1,302,958.59	3,232,555.18	40.162021	-104.667912
TIE ON									
942.00	0.49	76.88	941.99	-1.80	-0.54	1,302,959.23	3,232,555.22	40.162023	-104.667912
FIRST MWD SURVEY									
1,033.00	0.44	64.42	1,032.98	-1.56	0.15	1,302,959.48	3,232,555.91	40.162024	-104.667910
1,124.00	2.10	295.38	1,123.97	-0.69	-1.04	1,302,960.33	3,232,554.71	40.162026	-104.667914
1,214.00	4.15	279.22	1,213.83	0.53	-5.74	1,302,961.52	3,232,549.99	40.162030	-104.667931
1,305.00	5.92	275.87	1,304.47	1.54	-13.66	1,302,962.45	3,232,542.06	40.162032	-104.667959
1,396.00	6.21	260.84	1,394.97	1.24	-23.19	1,302,962.06	3,232,532.54	40.162031	-104.667993
1,493.00	6.31	264.36	1,491.39	-0.12	-33.67	1,302,960.60	3,232,522.07	40.162028	-104.668031
1,586.00	6.43	258.50	1,583.82	-1.66	-43.86	1,302,958.96	3,232,511.90	40.162023	-104.668067
1,679.00	7.20	245.05	1,676.17	-5.16	-54.25	1,302,955.37	3,232,501.54	40.162014	-104.668104
1,773.00	7.02	243.55	1,769.44	-10.20	-64.74	1,302,950.23	3,232,491.10	40.162000	-104.668142
1,866.00	7.38	225.13	1,861.72	-16.95	-74.06	1,302,943.40	3,232,481.85	40.161982	-104.668175
1,959.00	8.31	220.12	1,953.85	-26.30	-82.62	1,302,933.96	3,232,473.37	40.161956	-104.668206
2,053.00	7.77	206.74	2,046.94	-37.17	-89.86	1,302,923.02	3,232,466.24	40.161926	-104.668232
2,146.00	7.00	206.63	2,139.16	-47.85	-95.23	1,302,912.29	3,232,460.97	40.161897	-104.668251
2,239.00	7.61	215.79	2,231.41	-57.91	-101.37	1,302,902.18	3,232,454.92	40.161869	-104.668273
2,332.00	6.86	218.92	2,323.67	-67.23	-108.46	1,302,892.79	3,232,447.92	40.161843	-104.668298
2,426.00	7.38	210.09	2,416.95	-76.82	-115.01	1,302,883.14	3,232,441.45	40.161817	-104.668322
2,519.00	8.96	210.47	2,509.00	-88.23	-121.68	1,302,871.67	3,232,434.89	40.161786	-104.668346
2,612.00	7.94	211.22	2,600.99	-99.97	-128.68	1,302,859.87	3,232,428.00	40.161754	-104.668371
2,706.00	8.47	212.91	2,694.03	-111.33	-135.81	1,302,848.44	3,232,420.98	40.161722	-104.668396
2,800.00	9.46	209.84	2,786.88	-123.84	-143.42	1,302,835.85	3,232,413.49	40.161688	-104.668423
2,885.00	9.14	209.69	2,870.76	-135.77	-150.23	1,302,823.87	3,232,406.79	40.161655	-104.668448
2,970.00	8.26	210.18	2,954.78	-146.91	-156.65	1,302,812.66	3,232,400.48	40.161625	-104.668471
3,055.00	9.05	215.24	3,038.82	-157.65	-163.58	1,302,801.86	3,232,393.65	40.161595	-104.668496
3,141.00	8.16	220.00	3,123.85	-167.85	-171.40	1,302,791.59	3,232,385.92	40.161567	-104.668524
3,226.00	7.71	213.71	3,208.04	-177.21	-178.44	1,302,782.16	3,232,378.97	40.161542	-104.668549
3,312.00	8.60	210.73	3,293.17	-187.54	-184.93	1,302,771.77	3,232,372.58	40.161513	-104.668572
3,397.00	9.68	212.38	3,377.09	-199.04	-192.01	1,302,760.21	3,232,365.61	40.161482	-104.668597
3,483.00	9.10	216.34	3,461.93	-210.62	-199.91	1,302,748.55	3,232,357.82	40.161450	-104.668626
3,568.00	7.73	220.17	3,546.02	-220.41	-207.58	1,302,738.69	3,232,350.24	40.161423	-104.668653
3,654.00	8.51	222.43	3,631.16	-229.52	-215.60	1,302,729.50	3,232,342.30	40.161398	-104.668682
3,738.00	7.91	220.04	3,714.29	-238.54	-223.51	1,302,720.42	3,232,334.48	40.161373	-104.668710
3,824.00	8.80	210.86	3,799.38	-248.71	-230.70	1,302,710.17	3,232,327.39	40.161345	-104.668736
3,909.00	8.25	210.34	3,883.45	-259.56	-237.11	1,302,699.27	3,232,321.08	40.161316	-104.668759
3,995.00	9.61	207.97	3,968.40	-271.22	-243.60	1,302,687.54	3,232,314.70	40.161283	-104.668782
4,080.00	9.22	207.36	4,052.26	-283.54	-250.05	1,302,675.17	3,232,308.36	40.161250	-104.668805
4,165.00	8.15	209.14	4,136.28	-294.85	-256.12	1,302,663.80	3,232,302.40	40.161219	-104.668827
4,251.00	7.08	211.84	4,221.52	-304.68	-261.88	1,302,653.92	3,232,296.73	40.161192	-104.668847
4,336.00	8.84	208.39	4,305.70	-314.87	-267.75	1,302,643.67	3,232,290.96	40.161164	-104.668868
4,421.00	8.94	210.09	4,389.68	-326.33	-274.17	1,302,632.15	3,232,284.65	40.161132	-104.668891
4,507.00	9.44	211.87	4,474.57	-338.10	-281.24	1,302,620.31	3,232,277.69	40.161100	-104.668917
4,592.00	9.70	218.52	4,558.39	-349.63	-289.38	1,302,608.71	3,232,269.65	40.161068	-104.668946
4,677.00	9.69	219.08	4,642.18	-360.78	-298.35	1,302,597.47	3,232,260.79	40.161038	-104.668978
4,763.00	8.16	222.87	4,727.14	-370.87	-307.07	1,302,587.30	3,232,252.17	40.161010	-104.669009
4,848.00	6.52	228.01	4,811.44	-378.52	-314.76	1,302,579.58	3,232,244.55	40.160989	-104.669036
4,934.00	7.20	220.36	4,896.82	-385.90	-321.88	1,302,572.14	3,232,237.50	40.160969	-104.669062
5,019.00	7.99	216.31	4,981.08	-394.72	-328.83	1,302,563.25	3,232,230.64	40.160944	-104.669087
5,105.00	9.91	207.18	5,066.03	-406.12	-335.75	1,302,551.79	3,232,223.82	40.160913	-104.669112
5,190.00	8.16	205.48	5,149.97	-418.07	-341.68	1,302,539.78	3,232,218.00	40.160880	-104.669133
5,276.00	7.59	208.39	5,235.16	-428.58	-347.01	1,302,529.22	3,232,212.77	40.160852	-104.669152

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,361.00	8.95	208.21	5,319.28	-439.34	-352.80	1,302,518.40	3,232,207.08	40.160822	-104.669173
5,447.00	9.80	205.87	5,404.13	-451.82	-359.16	1,302,505.86	3,232,200.84	40.160788	-104.669195
5,532.00	8.09	214.18	5,488.09	-463.28	-365.68	1,302,494.34	3,232,194.43	40.160756	-104.669219
5,617.00	8.41	213.29	5,572.21	-473.43	-372.45	1,302,484.14	3,232,187.75	40.160728	-104.669243
5,703.00	7.52	219.99	5,657.39	-483.00	-379.52	1,302,474.50	3,232,180.77	40.160702	-104.669268
5,788.00	5.82	217.44	5,741.81	-490.68	-385.71	1,302,466.76	3,232,174.65	40.160681	-104.669290
5,874.00	4.51	216.46	5,827.46	-496.86	-390.37	1,302,460.54	3,232,170.05	40.160664	-104.669307
5,959.00	3.59	212.85	5,912.24	-501.78	-393.80	1,302,455.58	3,232,166.67	40.160651	-104.669319
6,044.00	2.04	200.08	5,997.14	-505.44	-395.77	1,302,451.91	3,232,164.74	40.160641	-104.669326
6,130.00	1.36	165.78	6,083.10	-507.87	-396.04	1,302,449.48	3,232,164.49	40.160634	-104.669327
6,215.00	0.66	183.44	6,168.09	-509.34	-395.82	1,302,448.01	3,232,164.72	40.160630	-104.669326
6,301.00	0.73	158.45	6,254.08	-510.34	-395.65	1,302,447.01	3,232,164.90	40.160627	-104.669326
6,386.00	0.70	170.43	6,339.08	-511.35	-395.36	1,302,446.00	3,232,165.19	40.160624	-104.669325
6,462.00	0.35	176.72	6,415.07	-512.04	-395.27	1,302,445.31	3,232,165.29	40.160622	-104.669325
6,518.00	1.38	359.06	6,471.07	-511.54	-395.28	1,302,445.81	3,232,165.28	40.160624	-104.669325
6,561.00	7.58	357.15	6,513.92	-508.19	-395.43	1,302,449.16	3,232,165.10	40.160633	-104.669325
6,603.00	13.07	0.22	6,555.22	-500.67	-395.54	1,302,456.68	3,232,164.91	40.160654	-104.669325
6,646.00	17.29	3.88	6,596.71	-489.42	-395.09	1,302,467.93	3,232,165.26	40.160685	-104.669324
6,689.00	20.21	6.02	6,637.43	-475.66	-393.88	1,302,481.71	3,232,166.34	40.160722	-104.669320
6,731.00	23.98	5.25	6,676.34	-459.94	-392.34	1,302,497.44	3,232,167.74	40.160765	-104.669314
6,774.00	27.66	5.50	6,715.04	-441.30	-390.58	1,302,516.10	3,232,169.32	40.160817	-104.669308
6,817.00	30.30	5.86	6,752.65	-420.57	-388.52	1,302,536.84	3,232,171.19	40.160874	-104.669300
6,860.00	29.91	0.16	6,789.86	-399.05	-387.38	1,302,558.37	3,232,172.12	40.160933	-104.669296
6,902.00	33.50	357.37	6,825.58	-376.99	-387.88	1,302,580.42	3,232,171.41	40.160993	-104.669298
6,945.00	38.81	358.78	6,860.29	-351.65	-388.72	1,302,605.76	3,232,170.34	40.161063	-104.669301
6,987.00	44.12	359.18	6,891.75	-323.85	-389.21	1,302,633.55	3,232,169.59	40.161139	-104.669303
7,030.00	49.84	359.37	6,921.08	-292.43	-389.60	1,302,664.97	3,232,168.90	40.161225	-104.669304
7,073.00	53.43	358.54	6,947.76	-258.73	-390.22	1,302,698.66	3,232,167.97	40.161318	-104.669306
7,115.00	58.18	356.19	6,971.36	-224.04	-391.84	1,302,733.33	3,232,166.02	40.161413	-104.669312
7,158.00	64.26	357.08	6,992.06	-186.43	-394.04	1,302,770.92	3,232,163.47	40.161516	-104.669320
7,201.00	70.99	359.93	7,008.42	-146.71	-395.05	1,302,810.63	3,232,162.08	40.161625	-104.669324
7,243.00	73.70	0.85	7,021.15	-106.69	-394.78	1,302,850.64	3,232,161.98	40.161735	-104.669323
7,286.00	76.86	2.25	7,032.08	-65.13	-393.65	1,302,892.22	3,232,162.72	40.161849	-104.669319
7,329.00	83.13	2.40	7,039.55	-22.84	-391.93	1,302,934.52	3,232,164.04	40.161965	-104.669313
7,364.00	84.95	2.15	7,043.18	11.94	-390.55	1,302,969.32	3,232,165.10	40.162061	-104.669308
7,395.00	86.27	1.49	7,045.55	42.84	-389.57	1,303,000.22	3,232,165.79	40.162146	-104.669304
7 IN CASING									
7,491.00	90.35	359.47	7,048.39	138.77	-388.76	1,303,096.15	3,232,165.69	40.162409	-104.669301
7,576.00	90.37	358.93	7,047.85	223.76	-389.95	1,303,181.12	3,232,163.71	40.162642	-104.669306
7,661.00	90.00	359.83	7,047.58	308.75	-390.87	1,303,266.11	3,232,161.99	40.162876	-104.669309
7,747.00	90.56	359.16	7,047.16	394.74	-391.63	1,303,352.09	3,232,160.43	40.163112	-104.669312
7,832.00	90.62	0.26	7,046.28	479.74	-392.06	1,303,437.07	3,232,159.20	40.163345	-104.669313
7,918.00	89.88	0.83	7,045.91	565.73	-391.24	1,303,523.07	3,232,159.21	40.163581	-104.669310
8,003.00	88.46	357.92	7,047.14	650.71	-392.17	1,303,608.03	3,232,157.49	40.163814	-104.669313
8,088.00	90.74	359.10	7,047.73	735.67	-394.38	1,303,692.97	3,232,154.48	40.164048	-104.669321
8,174.00	91.67	0.35	7,045.92	821.65	-394.79	1,303,778.94	3,232,153.26	40.164284	-104.669323
8,259.00	90.86	1.97	7,044.05	906.60	-393.07	1,303,863.91	3,232,154.18	40.164517	-104.669317
8,345.00	90.74	1.74	7,042.85	992.55	-390.29	1,303,949.88	3,232,156.16	40.164753	-104.669307
8,430.00	89.38	1.54	7,042.76	1,077.51	-387.85	1,304,034.86	3,232,157.80	40.164986	-104.669298
8,516.00	89.94	0.67	7,043.27	1,163.50	-386.19	1,304,120.86	3,232,158.65	40.165222	-104.669292
8,601.00	90.25	359.84	7,043.13	1,248.49	-385.82	1,304,205.85	3,232,158.23	40.165455	-104.669291
8,687.00	90.25	0.59	7,042.75	1,334.49	-385.49	1,304,291.85	3,232,157.74	40.165691	-104.669290
8,772.00	90.43	359.70	7,042.25	1,419.49	-385.28	1,304,376.85	3,232,157.16	40.165925	-104.669289

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,857.00	89.75	1.36	7,042.11	1,504.48	-384.49	1,304,461.84	3,232,157.15	40.166158	-104.669286
8,943.00	88.89	0.39	7,043.13	1,590.46	-383.18	1,304,547.83	3,232,157.66	40.166394	-104.669281
9,028.00	89.75	0.50	7,044.14	1,675.45	-382.52	1,304,632.83	3,232,157.52	40.166627	-104.669279
9,114.00	90.25	0.06	7,044.14	1,761.45	-382.10	1,304,718.82	3,232,157.13	40.166863	-104.669277
9,199.00	90.99	358.99	7,043.22	1,846.44	-382.80	1,304,803.80	3,232,155.63	40.167097	-104.669280
9,284.00	90.18	0.34	7,042.36	1,931.44	-383.30	1,304,888.79	3,232,154.34	40.167330	-104.669282
9,370.00	90.18	1.50	7,042.09	2,017.42	-381.92	1,304,974.78	3,232,154.91	40.167566	-104.669277
9,455.00	88.70	2.67	7,042.92	2,102.36	-378.83	1,305,059.74	3,232,157.20	40.167799	-104.669266
9,541.00	88.58	2.43	7,044.96	2,188.25	-375.00	1,305,145.67	3,232,160.22	40.168035	-104.669252
9,626.00	88.21	1.55	7,047.34	2,273.16	-372.05	1,305,230.60	3,232,162.38	40.168268	-104.669242
9,712.00	90.25	0.77	7,048.49	2,359.13	-370.31	1,305,316.59	3,232,163.31	40.168504	-104.669235
9,797.00	91.85	0.46	7,046.94	2,444.11	-369.40	1,305,401.57	3,232,163.43	40.168737	-104.669232
9,883.00	91.36	1.88	7,044.53	2,530.06	-367.64	1,305,487.53	3,232,164.37	40.168973	-104.669226
9,968.00	90.12	2.84	7,043.43	2,614.97	-364.14	1,305,572.47	3,232,167.08	40.169206	-104.669213
10,053.00	88.15	0.90	7,044.71	2,699.91	-361.37	1,305,657.43	3,232,169.05	40.169440	-104.669203
10,139.00	87.53	0.40	7,047.95	2,785.84	-360.39	1,305,743.37	3,232,169.22	40.169676	-104.669200
10,224.00	88.70	359.00	7,050.75	2,870.79	-360.84	1,305,828.31	3,232,167.98	40.169909	-104.669201
10,309.00	87.47	358.33	7,053.59	2,955.72	-362.82	1,305,913.22	3,232,165.20	40.170142	-104.669209
10,394.00	89.81	356.70	7,055.61	3,040.61	-366.50	1,305,998.07	3,232,160.72	40.170375	-104.669222
10,480.00	90.68	357.52	7,055.24	3,126.50	-370.84	1,306,083.91	3,232,155.58	40.170611	-104.669237
10,565.00	91.23	0.73	7,053.82	3,211.46	-372.14	1,306,168.86	3,232,153.49	40.170844	-104.669242
10,650.00	89.81	1.27	7,053.05	3,296.44	-370.65	1,306,253.85	3,232,154.17	40.171077	-104.669237
10,736.00	90.25	0.02	7,053.01	3,382.44	-369.69	1,306,339.85	3,232,154.33	40.171313	-104.669233
10,821.00	91.54	0.45	7,051.68	3,467.42	-369.34	1,306,424.84	3,232,153.88	40.171547	-104.669232
10,907.00	91.05	2.39	7,049.74	3,553.37	-367.21	1,306,510.80	3,232,155.21	40.171782	-104.669224
10,992.00	91.42	1.91	7,047.90	3,638.29	-364.02	1,306,595.74	3,232,157.60	40.172016	-104.669213
11,078.00	88.77	2.49	7,047.76	3,724.22	-360.72	1,306,681.70	3,232,160.09	40.172251	-104.669201
11,163.00	89.57	0.98	7,048.99	3,809.17	-358.14	1,306,766.67	3,232,161.87	40.172485	-104.669192
11,248.00	90.43	359.24	7,048.99	3,894.16	-357.98	1,306,851.66	3,232,161.24	40.172718	-104.669191
11,334.00	89.69	359.47	7,048.90	3,980.16	-358.95	1,306,937.64	3,232,159.46	40.172954	-104.669195
11,411.00	89.08	0.62	7,049.73	4,057.15	-358.89	1,307,014.63	3,232,158.80	40.173165	-104.669195
LAST MWD SURVEY									
11,469.00	89.08	0.62	7,050.66	4,115.14	-358.26	1,307,072.63	3,232,158.88	40.173325	-104.669192
PROJECTION TO TD									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,869.13	3,844.00	Parkman				
4,466.90	4,435.00	Sussex				
6,938.25	6,855.00	Sharon Springs				
7,004.41	6,904.00	Niobrara A				
7,050.40	6,934.00	Niobrara B				
7,305.28	7,036.00	Niobrara C				

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well REIGLE 28N-4HZ
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Site:	WELD_REIGLE 15-4HZ PAD	MD Reference:	GL+16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
Well:	REIGLE 28N-4HZ	North Reference:	True
Wellbore:	REIGLE 28N-4HZ	Survey Calculation Method:	Minimum Curvature
Design:	REIGLE 28N-4HZ	Database:	edmp

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
839.00	838.99	-2.44	-0.59	TIE ON	
942.00	941.99	-1.80	-0.54	FIRST MWD SURVEY	
7,395.00	7,045.55	42.84	-389.57	7 IN CASING	
11,411.00	7,049.73	4,057.15	-358.89	LAST MWD SURVEY	
11,469.00	7,050.66	4,115.14	-358.26	PROJECTION TO TD	

Checked By: _____	Approved By: _____	Date: _____
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