



# Weatherford®

Weatherford  
2000 Oil Drive  
Casper, WY 82604

## Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	REIGLE 2N-4HZ
State:	CO
County:	WELD
API Number:	512336141
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 969.00 feet  
to the measured depth of 11,371.00 feet as accurate and true  
to the best of my knowledge.

Signature

29-Nov-12

Date

**J. Aaron Underwood**  
Directional Planning  
Weatherford - Rockies District



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_REIGLE 15-4HZ PAD**

**REIGLE 2N-4HZ**

**REIGLE 2N-4HZ**

**Design: REIGLE 2N-4HZ**

## **Standard Survey Report**

**29 November, 2012**

# Andarko Petroleum Corporation

## Survey Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	edmp

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

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 2N-4HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,302,990.90 usft	Latitude:	40.162110
	+E/-W	0.00 ft	Easting:	3,232,556.02 usft	Longitude:	-104.667908
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,858.00 ft

<b>Wellbore</b>	REIGLE 2N-4HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/25/2012	8.62	66.83	52,882

<b>Design</b>	REIGLE 2N-4HZ				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	16.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	16.00	0.00	0.00	5.94	

<b>Survey Program</b>	<b>Date</b>	11/29/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
116.00	846.00	Survey #1 (REIGLE 2N-4HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
969.00	11,425.00	Survey #2 (REIGLE 2N-4HZ)	MWD	MWD - STANDARD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	
116.00	0.90	237.75	116.00	-0.42	-0.66	-0.49	0.90	0.90	0.00	
216.00	0.83	229.30	215.98	-1.31	-1.88	-1.50	0.15	-0.07	-8.45	
316.00	0.57	234.93	315.98	-2.07	-2.83	-2.35	0.27	-0.26	5.63	
416.00	0.31	296.70	415.97	-2.23	-3.48	-2.58	0.50	-0.26	61.77	
516.00	0.30	321.91	515.97	-1.91	-3.89	-2.30	0.13	-0.01	25.21	
616.00	0.28	283.82	615.97	-1.64	-4.28	-2.08	0.19	-0.02	-38.09	
716.00	0.25	331.30	715.97	-1.39	-4.63	-1.86	0.22	-0.03	47.48	

# Andarko Petroleum Corporation

## Survey Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	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	0.17	331.79	815.97	-1.07	-4.80	-1.56	0.08	-0.08	0.49
846.00	0.10	34.74	845.97	-1.01	-4.81	-1.50	0.51	-0.23	209.83
TIE ON									
969.00	0.16	286.22	968.97	-0.87	-4.91	-1.38	0.17	0.05	-88.23
FIRST MWD SURVEY									
1,063.00	0.14	249.58	1,062.97	-0.88	-5.14	-1.40	0.10	-0.02	-38.98
1,156.00	1.30	173.18	1,155.96	-1.96	-5.13	-2.48	1.37	1.25	-82.15
1,250.00	2.10	169.58	1,249.92	-4.72	-4.69	-5.18	0.86	0.85	-3.83
1,343.00	4.29	143.30	1,342.77	-9.18	-2.30	-9.37	2.77	2.35	-28.26
1,437.00	7.71	134.46	1,436.25	-16.42	4.30	-15.88	3.76	3.64	-9.40
1,522.00	6.80	141.15	1,520.57	-24.33	11.53	-23.01	1.46	-1.07	7.87
1,608.00	7.54	141.38	1,605.89	-32.70	18.25	-30.64	0.86	0.86	0.27
1,693.00	10.49	152.02	1,689.84	-43.90	25.36	-41.04	3.97	3.47	12.52
1,778.00	11.45	153.54	1,773.29	-58.29	32.75	-54.58	1.18	1.13	1.79
1,864.00	11.18	143.63	1,857.62	-72.64	41.50	-67.96	2.28	-0.31	-11.52
1,949.00	9.77	136.33	1,941.21	-84.49	51.36	-78.72	2.27	-1.66	-8.59
2,035.00	8.94	138.63	2,026.06	-94.79	60.82	-87.98	1.06	-0.97	2.67
2,120.00	8.74	131.78	2,110.06	-104.05	70.00	-96.24	1.26	-0.24	-8.06
2,206.00	8.79	137.65	2,195.05	-113.26	79.30	-104.44	1.04	0.06	6.83
2,291.00	8.35	133.51	2,279.10	-122.31	88.15	-112.53	0.89	-0.52	-4.87
2,376.00	7.48	145.37	2,363.30	-131.11	95.77	-120.49	2.17	-1.02	13.95
2,462.00	6.74	145.74	2,448.64	-139.89	101.79	-128.60	0.86	-0.86	0.43
2,547.00	8.26	146.90	2,532.91	-149.12	107.94	-137.15	1.80	1.79	1.36
2,632.00	7.99	149.57	2,617.06	-159.33	114.26	-146.65	0.55	-0.32	3.14
2,718.00	8.19	147.63	2,702.20	-169.66	120.57	-156.27	0.39	0.23	-2.26
2,803.00	8.32	145.89	2,786.32	-179.87	127.26	-165.73	0.33	0.15	-2.05
2,889.00	9.66	143.17	2,871.26	-190.79	135.07	-175.79	1.63	1.56	-3.16
2,974.00	9.30	142.05	2,955.10	-201.92	143.57	-185.97	0.48	-0.42	-1.32
3,059.00	8.86	141.13	3,039.03	-212.43	151.90	-195.57	0.55	-0.52	-1.08
3,145.00	8.63	141.01	3,124.04	-222.60	160.12	-204.83	0.27	-0.27	-0.14
3,230.00	7.69	141.05	3,208.17	-231.98	167.71	-213.38	1.11	-1.11	0.05
3,316.00	7.87	142.08	3,293.38	-241.10	174.94	-221.70	0.26	0.21	1.20
3,401.00	8.65	150.31	3,377.50	-251.24	181.69	-231.09	1.66	0.92	9.68
3,487.00	7.10	156.81	3,462.69	-261.75	186.98	-240.99	2.08	-1.80	7.56
3,572.00	7.14	158.61	3,547.04	-271.50	190.98	-250.27	0.27	0.05	2.12
3,658.00	8.00	151.48	3,632.29	-281.73	195.79	-259.95	1.48	1.00	-8.29
3,743.00	8.01	143.96	3,716.46	-291.72	202.09	-269.23	1.23	0.01	-8.85
3,829.00	7.22	144.23	3,801.70	-300.95	208.78	-277.72	0.92	-0.92	0.31
3,914.00	7.64	140.66	3,885.99	-309.65	215.48	-285.69	0.73	0.49	-4.20
3,999.00	7.61	142.99	3,970.24	-318.52	222.45	-293.78	0.37	-0.04	2.74
4,085.00	7.52	141.79	4,055.49	-327.48	229.36	-301.99	0.21	-0.10	-1.40
4,170.00	7.29	142.15	4,139.78	-336.11	236.11	-309.87	0.28	-0.27	0.42

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## Survey Report

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<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	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)
4,255.00	7.55	141.58	4,224.07	-344.75	242.89	-317.76	0.32	0.31	-0.67
4,341.00	8.71	142.92	4,309.20	-354.37	250.33	-326.56	1.37	1.35	1.56
4,426.00	8.01	143.07	4,393.30	-364.24	257.77	-335.60	0.82	-0.82	0.18
4,512.00	7.81	143.91	4,478.48	-373.75	264.81	-344.33	0.27	-0.23	0.98
4,597.00	7.53	144.72	4,562.72	-382.96	271.43	-352.81	0.35	-0.33	0.95
4,683.00	8.38	144.49	4,647.89	-392.66	278.32	-361.75	0.99	0.99	-0.27
4,768.00	7.85	142.91	4,732.04	-402.34	285.42	-370.63	0.68	-0.62	-1.86
4,854.00	7.74	144.72	4,817.25	-411.75	292.31	-379.28	0.31	-0.13	2.10
4,939.00	8.35	137.74	4,901.41	-420.99	299.76	-387.70	1.35	0.72	-8.21
5,024.00	8.00	136.64	4,985.55	-429.86	307.97	-395.67	0.45	-0.41	-1.29
5,110.00	8.59	138.38	5,070.65	-439.01	316.35	-403.91	0.75	0.69	2.02
5,195.00	9.17	137.02	5,154.63	-448.71	325.18	-412.64	0.73	0.68	-1.60
5,280.00	8.30	144.11	5,238.64	-458.64	333.40	-421.67	1.63	-1.02	8.34
5,366.00	9.46	141.18	5,323.61	-469.17	341.47	-431.31	1.45	1.35	-3.41
5,451.00	8.21	139.66	5,407.60	-479.24	349.77	-440.47	1.50	-1.47	-1.79
5,536.00	6.93	139.82	5,491.86	-487.78	357.01	-448.21	1.51	-1.51	0.19
5,621.00	6.79	152.15	5,576.25	-496.15	362.67	-455.94	1.74	-0.16	14.51
5,707.00	6.62	149.16	5,661.67	-504.90	367.58	-464.14	0.45	-0.20	-3.48
5,792.00	5.78	145.43	5,746.17	-512.63	372.52	-471.32	1.10	-0.99	-4.39
5,877.00	4.87	138.85	5,830.80	-518.87	377.33	-477.03	1.29	-1.07	-7.74
5,963.00	3.47	138.92	5,916.57	-523.58	381.44	-481.29	1.63	-1.63	0.08
6,048.00	3.08	140.57	6,001.43	-527.28	384.58	-484.65	0.47	-0.46	1.94
6,133.00	2.51	143.57	6,086.33	-530.54	387.14	-487.63	0.69	-0.67	3.53
6,218.00	2.08	159.72	6,171.26	-533.49	388.78	-490.39	0.91	-0.51	19.00
6,304.00	0.36	141.96	6,257.24	-535.17	389.48	-491.98	2.02	-2.00	-20.65
6,385.00	0.56	137.53	6,338.24	-535.66	389.91	-492.43	0.25	0.25	-5.47
6,474.00	2.59	326.40	6,427.21	-534.30	389.09	-491.16	3.53	2.28	-192.28
6,517.00	5.91	352.84	6,470.09	-531.30	388.28	-488.26	8.77	7.72	61.49
6,559.00	8.85	4.41	6,511.74	-525.93	388.25	-482.92	7.81	7.00	27.55
6,602.00	12.83	5.71	6,553.97	-517.88	388.98	-474.84	9.27	9.26	3.02
6,644.00	16.74	2.75	6,594.57	-507.19	389.74	-464.13	9.48	9.31	-7.05
6,686.00	20.64	0.44	6,634.35	-493.74	390.09	-450.72	9.45	9.29	-5.50
6,729.00	24.28	0.32	6,674.08	-477.32	390.19	-434.37	8.47	8.47	-0.28
6,772.00	27.30	359.20	6,712.79	-458.61	390.10	-415.77	7.11	7.02	-2.60
6,815.00	30.84	357.88	6,750.37	-437.73	389.56	-395.06	8.37	8.23	-3.07
6,857.00	36.04	357.60	6,785.41	-414.61	388.64	-372.16	12.39	12.38	-0.67
6,900.00	40.35	0.78	6,819.19	-388.04	388.30	-345.77	11.01	10.02	7.40
6,942.00	44.46	3.89	6,850.20	-359.75	389.49	-317.51	10.98	9.79	7.40
6,985.00	49.65	3.03	6,879.49	-328.35	391.37	-286.08	12.16	12.07	-2.00
7,027.00	56.24	2.46	6,904.78	-294.88	392.97	-252.63	15.73	15.69	-1.36
7,070.00	62.33	1.28	6,926.74	-257.95	394.17	-215.77	14.36	14.16	-2.74
7,113.00	67.58	359.74	6,944.94	-219.01	394.50	-177.01	12.63	12.21	-3.58

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## Survey Report

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<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	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)
7,156.00	72.22	359.67	6,959.71	-178.64	394.29	-136.88	10.79	10.79	-0.16
7,198.00	76.03	0.42	6,971.20	-138.25	394.33	-96.70	9.23	9.07	1.79
7,241.00	79.46	2.01	6,980.32	-96.25	395.22	-54.83	8.76	7.98	3.70
7,263.00	81.83	2.64	6,983.90	-74.56	396.10	-33.17	11.13	10.76	2.88
7 IN. CASING									
7,266.00	82.15	2.73	6,984.32	-71.60	396.24	-30.20	11.13	10.76	2.86
7,354.00	89.44	1.51	6,990.77	16.05	399.48	57.31	8.40	8.28	-1.39
7,440.00	88.77	0.11	6,992.11	102.02	400.70	142.95	1.80	-0.78	-1.63
7,525.00	90.06	359.69	6,992.98	187.02	400.55	227.47	1.60	1.52	-0.49
7,611.00	90.12	0.01	6,992.84	273.02	400.32	312.98	0.38	0.07	0.37
7,696.00	89.82	0.98	6,992.89	358.01	401.06	397.60	1.19	-0.35	1.14
7,781.00	88.58	1.06	6,994.07	442.99	402.57	482.28	1.46	-1.46	0.09
7,867.00	89.75	0.98	6,995.33	528.97	404.10	567.95	1.36	1.36	-0.09
7,952.00	90.19	0.93	6,995.37	613.95	405.52	652.63	0.52	0.52	-0.06
8,038.00	89.63	1.19	6,995.51	699.94	407.11	738.31	0.72	-0.65	0.30
8,123.00	90.06	359.09	6,995.74	784.93	407.32	822.87	2.52	0.51	-2.47
8,209.00	88.77	358.43	6,996.61	870.91	405.46	908.19	1.68	-1.50	-0.77
8,294.00	89.20	0.14	6,998.12	955.88	404.40	992.60	2.07	0.51	2.01
8,380.00	88.52	359.79	6,999.83	1,041.86	404.34	1,078.12	0.89	-0.79	-0.41
8,465.00	89.01	0.33	7,001.66	1,126.84	404.43	1,162.65	0.86	0.58	0.64
8,550.00	88.40	0.28	7,003.58	1,211.82	404.89	1,247.22	0.72	-0.72	-0.06
8,636.00	88.95	0.34	7,005.57	1,297.80	405.35	1,332.78	0.64	0.64	0.07
8,721.00	90.43	0.83	7,006.03	1,382.79	406.22	1,417.41	1.83	1.74	0.58
8,807.00	89.69	0.27	7,005.94	1,468.78	407.04	1,503.02	1.08	-0.86	-0.65
8,892.00	89.88	0.84	7,006.26	1,553.78	407.87	1,587.65	0.71	0.22	0.67
8,977.00	89.38	359.88	7,006.81	1,638.77	408.40	1,672.24	1.27	-0.59	-1.13
9,063.00	90.12	359.77	7,007.18	1,724.77	408.14	1,757.75	0.87	0.86	-0.13
9,148.00	89.75	1.72	7,007.28	1,809.76	409.24	1,842.40	2.34	-0.44	2.29
9,234.00	89.63	2.40	7,007.75	1,895.70	412.34	1,928.20	0.80	-0.14	0.79
9,319.00	88.77	1.40	7,008.93	1,980.65	415.15	2,012.98	1.55	-1.01	-1.18
9,405.00	89.75	1.82	7,010.04	2,066.60	417.57	2,098.72	1.24	1.14	0.49
9,490.00	88.40	1.74	7,011.42	2,151.55	420.21	2,183.49	1.59	-1.59	-0.09
9,575.00	89.38	1.01	7,013.06	2,236.51	422.25	2,268.20	1.44	1.15	-0.86
9,661.00	89.51	1.04	7,013.90	2,322.49	423.79	2,353.88	0.16	0.15	0.03
9,746.00	89.45	0.96	7,014.67	2,407.47	425.27	2,438.56	0.12	-0.07	-0.09
9,831.00	88.77	0.74	7,015.99	2,492.45	426.53	2,523.21	0.84	-0.80	-0.26
9,917.00	90.99	0.88	7,016.17	2,578.44	427.75	2,608.86	2.59	2.58	0.16
10,002.00	90.37	0.51	7,015.16	2,663.43	428.78	2,693.50	0.85	-0.73	-0.44
10,087.00	89.69	359.85	7,015.11	2,748.42	429.04	2,778.07	1.11	-0.80	-0.78
10,173.00	89.57	359.49	7,015.67	2,834.42	428.55	2,863.55	0.44	-0.14	-0.42
10,258.00	90.99	0.04	7,015.25	2,919.42	428.20	2,948.06	1.79	1.67	0.65
10,343.00	92.10	1.28	7,012.96	3,004.38	429.18	3,032.66	1.96	1.31	1.46

# Andarko Petroleum Corporation

## Survey Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	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)	
10,429.00	91.30	1.45	7,010.41	3,090.31	431.23	3,118.35	0.95	-0.93	0.20	
10,514.00	89.88	1.48	7,009.54	3,175.28	433.40	3,203.08	1.67	-1.67	0.04	
10,599.00	89.94	1.32	7,009.67	3,260.25	435.48	3,287.82	0.20	0.07	-0.19	
10,684.00	87.47	359.82	7,011.59	3,345.22	436.32	3,372.41	3.40	-2.91	-1.76	
10,770.00	87.91	358.98	7,015.06	3,431.14	435.42	3,457.78	1.10	0.51	-0.98	
10,855.00	88.15	358.83	7,017.98	3,516.08	433.80	3,542.09	0.33	0.28	-0.18	
10,940.00	89.32	359.39	7,019.86	3,601.05	432.48	3,626.47	1.53	1.38	0.66	
11,026.00	90.86	0.12	7,019.72	3,687.04	432.11	3,711.96	1.98	1.79	0.85	
11,111.00	89.57	359.53	7,019.40	3,772.04	431.85	3,796.48	1.67	-1.52	-0.69	
11,196.00	89.75	358.39	7,019.91	3,857.02	430.31	3,880.84	1.36	0.21	-1.34	
11,280.00	92.10	358.84	7,018.55	3,940.98	428.28	3,964.14	2.85	2.80	0.54	
11,371.00	91.85	358.77	7,015.41	4,031.91	426.38	4,054.38	0.29	-0.27	-0.08	
LAST MWD SURVEY										
11,425.00	91.70	358.65	7,013.74	4,085.87	425.17	4,107.93	0.36	-0.28	-0.22	
PROJECTION TO BIT										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
846.00	845.97	-1.01	-4.81	TIE ON	
969.00	968.97	-0.87	-4.91	FIRST MWD SURVEY	
7,263.00	6,983.90	-74.56	396.10	7 IN. CASING	
11,371.00	7,015.41	4,031.91	426.38	LAST MWD SURVEY	
11,425.00	7,013.74	4,085.87	425.17	PROJECTION TO BIT	

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

**COLORADO NORTHERN ZONE - 83**

**WELD\_REIGLE 15-4HZ PAD**

**REIGLE 2N-4HZ**

**REIGLE 2N-4HZ**

**Design: REIGLE 2N-4HZ**

## **Survey Report - Geographic**

**29 November, 2012**

# Andarko Petroleum Corporation

## Survey Report - Geographic

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	edmp

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

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 2N-4HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,302,990.90 usft	Latitude:	40.162110
	+E/-W	0.00 ft	Easting:	3,232,556.02 usft	Longitude:	-104.667908
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,858.00 ft

<b>Wellbore</b>	REIGLE 2N-4HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/25/2012	8.62	66.83	52,882

<b>Design</b>	REIGLE 2N-4HZ				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	16.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	16.00	0.00	0.00	5.94	

<b>Survey Program</b>	<b>Date</b>	11/29/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
116.00	846.00	Survey #1 (REIGLE 2N-4HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
969.00	11,425.00	Survey #2 (REIGLE 2N-4HZ)	MWD	MWD - STANDARD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
16.00	0.00	0.00	16.00	0.00	0.00	1,302,990.90	3,232,556.02	40.162110	-104.667908	
116.00	0.90	237.75	116.00	-0.42	-0.66	1,302,990.47	3,232,555.36	40.162109	-104.667911	
216.00	0.83	229.30	215.98	-1.31	-1.88	1,302,989.57	3,232,554.16	40.162106	-104.667915	
316.00	0.57	234.93	315.98	-2.07	-2.83	1,302,988.80	3,232,553.21	40.162104	-104.667918	
416.00	0.31	296.70	415.97	-2.23	-3.48	1,302,988.63	3,232,552.56	40.162104	-104.667921	
516.00	0.30	321.91	515.97	-1.91	-3.89	1,302,988.96	3,232,552.15	40.162105	-104.667922	
616.00	0.28	283.82	615.97	-1.64	-4.28	1,302,989.22	3,232,551.75	40.162106	-104.667924	
716.00	0.25	331.30	715.97	-1.39	-4.63	1,302,989.47	3,232,551.41	40.162106	-104.667925	
816.00	0.17	331.79	815.97	-1.07	-4.80	1,302,989.79	3,232,551.23	40.162107	-104.667925	

# Andarko Petroleum Corporation

## Survey Report - Geographic

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
846.00	0.10	34.74	845.97	-1.01	-4.81	1,302,989.85	3,232,551.22	40.162107	-104.667925
<b>TIE ON</b>									
969.00	0.16	286.22	968.97	-0.87	-4.91	1,302,989.98	3,232,551.12	40.162108	-104.667926
<b>FIRST MWD SURVEY</b>									
1,063.00	0.14	249.58	1,062.97	-0.88	-5.14	1,302,989.98	3,232,550.88	40.162108	-104.667927
1,156.00	1.30	173.18	1,155.96	-1.96	-5.13	1,302,988.89	3,232,550.91	40.162105	-104.667927
1,250.00	2.10	169.58	1,249.92	-4.72	-4.69	1,302,986.14	3,232,551.38	40.162097	-104.667925
1,343.00	4.29	143.30	1,342.77	-9.18	-2.30	1,302,981.70	3,232,553.81	40.162085	-104.667916
1,437.00	7.71	134.46	1,436.25	-16.42	4.30	1,302,974.52	3,232,560.48	40.162065	-104.667893
1,522.00	6.80	141.15	1,520.57	-24.33	11.53	1,302,966.68	3,232,567.78	40.162043	-104.667867
1,608.00	7.54	141.38	1,605.89	-32.70	18.25	1,302,958.37	3,232,574.57	40.162020	-104.667843
1,693.00	10.49	152.02	1,689.84	-43.90	25.36	1,302,947.24	3,232,581.79	40.161990	-104.667818
1,778.00	11.45	153.54	1,773.29	-58.29	32.75	1,302,932.92	3,232,589.31	40.161950	-104.667791
1,864.00	11.18	143.63	1,857.62	-72.64	41.50	1,302,918.65	3,232,598.20	40.161911	-104.667760
1,949.00	9.77	136.33	1,941.21	-84.49	51.36	1,302,906.89	3,232,608.17	40.161878	-104.667724
2,035.00	8.94	138.63	2,026.06	-94.79	60.82	1,302,896.69	3,232,617.73	40.161850	-104.667691
2,120.00	8.74	131.78	2,110.06	-104.05	70.00	1,302,887.51	3,232,626.99	40.161824	-104.667658
2,206.00	8.79	137.65	2,195.05	-113.26	79.30	1,302,878.39	3,232,636.38	40.161799	-104.667625
2,291.00	8.35	133.51	2,279.10	-122.31	88.15	1,302,869.43	3,232,645.31	40.161774	-104.667593
2,376.00	7.48	145.37	2,363.30	-131.11	95.77	1,302,860.70	3,232,653.02	40.161750	-104.667566
2,462.00	6.74	145.74	2,448.64	-139.89	101.79	1,302,851.98	3,232,659.12	40.161726	-104.667544
2,547.00	8.26	146.90	2,532.91	-149.12	107.94	1,302,842.80	3,232,665.35	40.161701	-104.667522
2,632.00	7.99	149.57	2,617.06	-159.33	114.26	1,302,832.65	3,232,671.77	40.161673	-104.667499
2,718.00	8.19	147.63	2,702.20	-169.66	120.57	1,302,822.38	3,232,678.18	40.161644	-104.667477
2,803.00	8.32	145.89	2,786.32	-179.87	127.26	1,302,812.24	3,232,684.96	40.161616	-104.667453
2,889.00	9.66	143.17	2,871.26	-190.79	135.07	1,302,801.38	3,232,692.88	40.161586	-104.667425
2,974.00	9.30	142.05	2,955.10	-201.92	143.57	1,302,790.34	3,232,701.48	40.161556	-104.667395
3,059.00	8.86	141.13	3,039.03	-212.43	151.90	1,302,779.91	3,232,709.91	40.161527	-104.667365
3,145.00	8.63	141.01	3,124.04	-222.60	160.12	1,302,769.81	3,232,718.22	40.161499	-104.667335
3,230.00	7.69	141.05	3,208.17	-231.98	167.71	1,302,760.50	3,232,725.90	40.161473	-104.667308
3,316.00	7.87	142.08	3,293.38	-241.10	174.94	1,302,751.45	3,232,733.22	40.161448	-104.667282
3,401.00	8.65	150.31	3,377.50	-251.24	181.69	1,302,741.37	3,232,740.06	40.161420	-104.667258
3,487.00	7.10	156.81	3,462.69	-261.75	186.98	1,302,730.92	3,232,745.45	40.161391	-104.667239
3,572.00	7.14	158.61	3,547.04	-271.50	190.98	1,302,721.21	3,232,749.54	40.161365	-104.667225
3,658.00	8.00	151.48	3,632.29	-281.73	195.79	1,302,711.02	3,232,754.44	40.161337	-104.667208
3,743.00	8.01	143.96	3,716.46	-291.72	202.09	1,302,701.09	3,232,760.84	40.161309	-104.667185
3,829.00	7.22	144.23	3,801.70	-300.95	208.78	1,302,691.93	3,232,767.61	40.161284	-104.667161
3,914.00	7.64	140.66	3,885.99	-309.65	215.48	1,302,683.29	3,232,774.40	40.161260	-104.667137
3,999.00	7.61	142.99	3,970.24	-318.52	222.45	1,302,674.49	3,232,781.45	40.161236	-104.667112
4,085.00	7.52	141.79	4,055.49	-327.48	229.36	1,302,665.58	3,232,788.44	40.161211	-104.667088
4,170.00	7.29	142.15	4,139.78	-336.11	236.11	1,302,657.02	3,232,795.27	40.161187	-104.667063
4,255.00	7.55	141.58	4,224.07	-344.75	242.89	1,302,648.45	3,232,802.13	40.161164	-104.667039
4,341.00	8.71	142.92	4,309.20	-354.37	250.33	1,302,638.90	3,232,809.66	40.161137	-104.667013
4,426.00	8.01	143.07	4,393.30	-364.24	257.77	1,302,629.10	3,232,817.19	40.161110	-104.666986
4,512.00	7.81	143.91	4,478.48	-373.75	264.81	1,302,619.65	3,232,824.32	40.161084	-104.666961
4,597.00	7.53	144.72	4,562.72	-382.96	271.43	1,302,610.50	3,232,831.03	40.161059	-104.666937
4,683.00	8.38	144.49	4,647.89	-392.66	278.32	1,302,600.87	3,232,838.01	40.161032	-104.666912
4,768.00	7.85	142.91	4,732.04	-402.34	285.42	1,302,591.26	3,232,845.20	40.161006	-104.666887
4,854.00	7.74	144.72	4,817.25	-411.75	292.31	1,302,581.91	3,232,852.18	40.160980	-104.666862
4,939.00	8.35	137.74	4,901.41	-420.99	299.76	1,302,572.74	3,232,859.72	40.160954	-104.666836
5,024.00	8.00	136.64	4,985.55	-429.86	307.97	1,302,563.95	3,232,868.01	40.160930	-104.666806
5,110.00	8.59	138.38	5,070.65	-439.01	316.35	1,302,554.88	3,232,876.47	40.160905	-104.666776
5,195.00	9.17	137.02	5,154.63	-448.71	325.18	1,302,545.26	3,232,885.40	40.160878	-104.666745

# Andarko Petroleum Corporation

## Survey Report - Geographic

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,280.00	8.30	144.11	5,238.64	-458.64	333.40	1,302,535.41	3,232,893.71	40.160851	-104.666715
5,366.00	9.46	141.18	5,323.61	-469.17	341.47	1,302,524.95	3,232,901.87	40.160822	-104.666687
5,451.00	8.21	139.66	5,407.60	-479.24	349.77	1,302,514.96	3,232,910.28	40.160794	-104.666657
5,536.00	6.93	139.82	5,491.86	-487.78	357.01	1,302,506.49	3,232,917.59	40.160771	-104.666631
5,621.00	6.79	152.15	5,576.25	-496.15	362.67	1,302,498.18	3,232,923.33	40.160748	-104.666611
5,707.00	6.62	149.16	5,661.67	-504.90	367.58	1,302,489.48	3,232,928.33	40.160724	-104.666593
5,792.00	5.78	145.43	5,746.17	-512.63	372.52	1,302,481.79	3,232,933.34	40.160703	-104.666575
5,877.00	4.87	138.85	5,830.80	-518.87	377.33	1,302,475.59	3,232,938.20	40.160686	-104.666558
5,963.00	3.47	138.92	5,916.57	-523.58	381.44	1,302,470.92	3,232,942.36	40.160673	-104.666544
6,048.00	3.08	140.57	6,001.43	-527.28	384.58	1,302,467.25	3,232,945.53	40.160663	-104.666532
6,133.00	2.51	143.57	6,086.33	-530.54	387.14	1,302,464.01	3,232,948.12	40.160654	-104.666523
6,218.00	2.08	159.72	6,171.26	-533.49	388.78	1,302,461.08	3,232,949.79	40.160646	-104.666517
6,304.00	0.36	141.96	6,257.24	-535.17	389.48	1,302,459.41	3,232,950.51	40.160641	-104.666515
6,385.00	0.56	137.53	6,338.24	-535.66	389.91	1,302,458.92	3,232,950.94	40.160640	-104.666513
6,474.00	2.59	326.40	6,427.21	-534.30	389.09	1,302,460.27	3,232,950.10	40.160643	-104.666516
6,517.00	5.91	352.84	6,470.09	-531.30	388.28	1,302,463.27	3,232,949.26	40.160652	-104.666519
6,559.00	8.85	4.41	6,511.74	-525.93	388.25	1,302,468.64	3,232,949.19	40.160666	-104.666519
6,602.00	12.83	5.71	6,553.97	-517.88	388.98	1,302,476.70	3,232,949.85	40.160688	-104.666517
6,644.00	16.74	2.75	6,594.57	-507.19	389.74	1,302,487.39	3,232,950.50	40.160718	-104.666514
6,686.00	20.64	0.44	6,634.35	-493.74	390.09	1,302,500.84	3,232,950.72	40.160755	-104.666513
6,729.00	24.28	0.32	6,674.08	-477.32	390.19	1,302,517.27	3,232,950.67	40.160800	-104.666512
6,772.00	27.30	359.20	6,712.79	-458.61	390.10	1,302,535.97	3,232,950.41	40.160851	-104.666513
6,815.00	30.84	357.88	6,750.37	-437.73	389.56	1,302,556.84	3,232,949.67	40.160908	-104.666514
6,857.00	36.04	357.60	6,785.41	-414.61	388.64	1,302,579.95	3,232,948.54	40.160972	-104.666518
6,900.00	40.35	0.78	6,819.19	-388.04	388.30	1,302,606.52	3,232,947.95	40.161045	-104.666519
6,942.00	44.46	3.89	6,850.20	-359.75	389.49	1,302,634.82	3,232,948.86	40.161122	-104.666515
6,985.00	49.65	3.03	6,879.49	-328.35	391.37	1,302,666.24	3,232,950.46	40.161209	-104.666508
7,027.00	56.24	2.46	6,904.78	-294.88	392.97	1,302,699.72	3,232,951.74	40.161301	-104.666502
7,070.00	62.33	1.28	6,926.74	-257.95	394.17	1,302,736.66	3,232,952.59	40.161402	-104.666498
7,113.00	67.58	359.74	6,944.94	-219.01	394.50	1,302,775.60	3,232,952.56	40.161509	-104.666497
7,156.00	72.22	359.67	6,959.71	-178.64	394.29	1,302,815.96	3,232,951.97	40.161620	-104.666498
7,198.00	76.03	0.42	6,971.20	-138.25	394.33	1,302,856.35	3,232,951.63	40.161730	-104.666497
7,241.00	79.46	2.01	6,980.32	-96.25	395.22	1,302,898.36	3,232,952.13	40.161846	-104.666494
7,263.00	81.83	2.64	6,983.90	-74.56	396.10	1,302,920.06	3,232,952.81	40.161905	-104.666491
<b>7 IN. CASING</b>									
7,266.00	82.15	2.73	6,984.32	-71.60	396.24	1,302,923.02	3,232,952.92	40.161913	-104.666491
7,354.00	89.44	1.51	6,990.77	16.05	399.48	1,303,010.69	3,232,955.33	40.162154	-104.666479
7,440.00	88.77	0.11	6,992.11	102.02	400.70	1,303,096.68	3,232,955.74	40.162390	-104.666475
7,525.00	90.06	359.69	6,992.98	187.02	400.55	1,303,181.67	3,232,954.80	40.162623	-104.666475
7,611.00	90.12	0.01	6,992.84	273.02	400.32	1,303,267.66	3,232,953.76	40.162859	-104.666476
7,696.00	89.82	0.98	6,992.89	358.01	401.06	1,303,352.66	3,232,953.70	40.163093	-104.666473
7,781.00	88.58	1.06	6,994.07	442.99	402.57	1,303,437.65	3,232,954.42	40.163326	-104.666468
7,867.00	89.75	0.98	6,995.33	528.97	404.10	1,303,523.63	3,232,955.14	40.163562	-104.666462
7,952.00	90.19	0.93	6,995.37	613.95	405.52	1,303,608.63	3,232,955.76	40.163795	-104.666457
8,038.00	89.63	1.19	6,995.51	699.94	407.11	1,303,694.63	3,232,956.54	40.164031	-104.666452
8,123.00	90.06	359.09	6,995.74	784.93	407.32	1,303,779.62	3,232,955.95	40.164265	-104.666451
8,209.00	88.77	358.43	6,996.61	870.91	405.46	1,303,865.57	3,232,953.29	40.164501	-104.666457
8,294.00	89.20	0.14	6,998.12	955.88	404.40	1,303,950.53	3,232,951.43	40.164734	-104.666461
8,380.00	88.52	359.79	6,999.83	1,041.86	404.34	1,304,036.51	3,232,950.57	40.164970	-104.666461
8,465.00	89.01	0.33	7,001.66	1,126.84	404.43	1,304,121.49	3,232,949.86	40.165203	-104.666461
8,550.00	88.40	0.28	7,003.58	1,211.82	404.89	1,304,206.46	3,232,949.52	40.165437	-104.666460
8,636.00	88.95	0.34	7,005.57	1,297.80	405.35	1,304,292.44	3,232,949.17	40.165673	-104.666458
8,721.00	90.43	0.83	7,006.03	1,382.79	406.22	1,304,377.44	3,232,949.25	40.165906	-104.666455

# Andarko Petroleum Corporation

## Survey Report - Geographic

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well REIGLE 2N-4HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Site:</b>	WELD_REIGLE 15-4HZ PAD	<b>MD Reference:</b>	GL + 16' RKB XTREME 23 @ 4874.00ft (XTREME 23)
<b>Well:</b>	REIGLE 2N-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	REIGLE 2N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	REIGLE 2N-4HZ	<b>Database:</b>	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,807.00	89.69	0.27	7,005.94	1,468.78	407.04	1,304,463.43	3,232,949.26	40.166142	-104.666452
8,892.00	89.88	0.84	7,006.26	1,553.78	407.87	1,304,548.43	3,232,949.29	40.166375	-104.666449
8,977.00	89.38	359.88	7,006.81	1,638.77	408.40	1,304,633.43	3,232,949.03	40.166609	-104.666447
9,063.00	90.12	359.77	7,007.18	1,724.77	408.14	1,304,719.42	3,232,947.96	40.166845	-104.666448
9,148.00	89.75	1.72	7,007.28	1,809.76	409.24	1,304,804.42	3,232,948.26	40.167078	-104.666444
9,234.00	89.63	2.40	7,007.75	1,895.70	412.34	1,304,890.38	3,232,950.55	40.167314	-104.666433
9,319.00	88.77	1.40	7,008.93	1,980.65	415.15	1,304,975.35	3,232,952.57	40.167547	-104.666423
9,405.00	89.75	1.82	7,010.04	2,066.60	417.57	1,305,061.33	3,232,954.18	40.167783	-104.666414
9,490.00	88.40	1.74	7,011.42	2,151.55	420.21	1,305,146.29	3,232,956.02	40.168016	-104.666405
9,575.00	89.38	1.01	7,013.06	2,236.51	422.25	1,305,231.27	3,232,957.26	40.168249	-104.666397
9,661.00	89.51	1.04	7,013.90	2,322.49	423.79	1,305,317.26	3,232,957.99	40.168486	-104.666392
9,746.00	89.45	0.96	7,014.67	2,407.47	425.27	1,305,402.25	3,232,958.68	40.168719	-104.666387
9,831.00	88.77	0.74	7,015.99	2,492.45	426.53	1,305,487.24	3,232,959.14	40.168952	-104.666382
9,917.00	90.99	0.88	7,016.17	2,578.44	427.75	1,305,573.23	3,232,959.55	40.169188	-104.666378
10,002.00	90.37	0.51	7,015.16	2,663.43	428.78	1,305,658.23	3,232,959.79	40.169421	-104.666374
10,087.00	89.69	359.85	7,015.11	2,748.42	429.04	1,305,743.22	3,232,959.26	40.169655	-104.666373
10,173.00	89.57	359.49	7,015.67	2,834.42	428.55	1,305,829.21	3,232,957.95	40.169891	-104.666375
10,258.00	90.99	0.04	7,015.25	2,919.42	428.20	1,305,914.20	3,232,956.81	40.170124	-104.666376
10,343.00	92.10	1.28	7,012.96	3,004.38	429.18	1,305,999.17	3,232,956.99	40.170357	-104.666372
10,429.00	91.30	1.45	7,010.41	3,090.31	431.23	1,306,085.12	3,232,958.23	40.170593	-104.666365
10,514.00	89.88	1.48	7,009.54	3,175.28	433.40	1,306,170.10	3,232,959.61	40.170827	-104.666357
10,599.00	89.94	1.32	7,009.67	3,260.25	435.48	1,306,255.09	3,232,960.88	40.171060	-104.666350
10,684.00	87.47	359.82	7,011.59	3,345.22	436.32	1,306,340.06	3,232,960.93	40.171293	-104.666347
10,770.00	87.91	358.98	7,015.06	3,431.14	435.42	1,306,425.97	3,232,959.23	40.171529	-104.666350
10,855.00	88.15	358.83	7,017.98	3,516.08	433.80	1,306,510.89	3,232,956.81	40.171762	-104.666356
10,940.00	89.32	359.39	7,019.86	3,601.05	432.48	1,306,595.84	3,232,954.69	40.171995	-104.666361
11,026.00	90.86	0.12	7,019.72	3,687.04	432.11	1,306,681.83	3,232,953.51	40.172231	-104.666362
11,111.00	89.57	359.53	7,019.40	3,772.04	431.85	1,306,766.82	3,232,952.46	40.172465	-104.666363
11,196.00	89.75	358.39	7,019.91	3,857.02	430.31	1,306,851.78	3,232,950.12	40.172698	-104.666368
11,280.00	92.10	358.84	7,018.55	3,940.98	428.28	1,306,935.72	3,232,947.30	40.172928	-104.666376
11,371.00	91.85	358.77	7,015.41	4,031.91	426.38	1,307,026.62	3,232,944.55	40.173178	-104.666382
LAST MWD SURVEY									
11,425.00	91.70	358.65	7,013.74	4,085.87	425.17	1,307,080.57	3,232,942.83	40.173326	-104.666387
PROJECTION TO BIT									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
846.00	845.97	-1.01	-4.81	TIE ON
969.00	968.97	-0.87	-4.91	FIRST MWD SURVEY
7,263.00	6,983.90	-74.56	396.10	7 IN. CASING
11,371.00	7,015.41	4,031.91	426.38	LAST MWD SURVEY
11,425.00	7,013.74	4,085.87	425.17	PROJECTION TO BIT

Checked By: _____	Approved By: _____	Date: _____
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