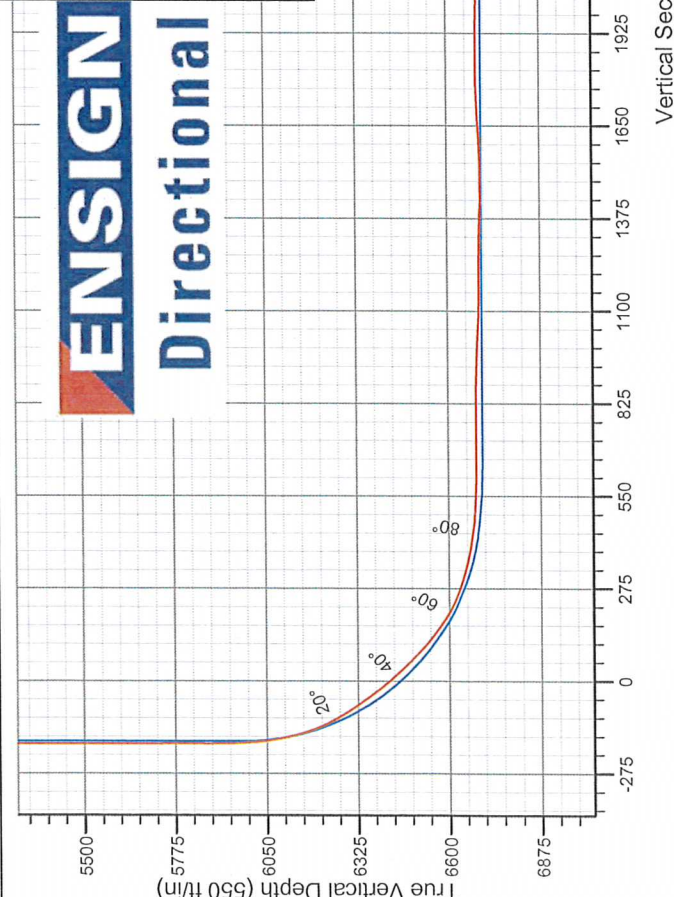
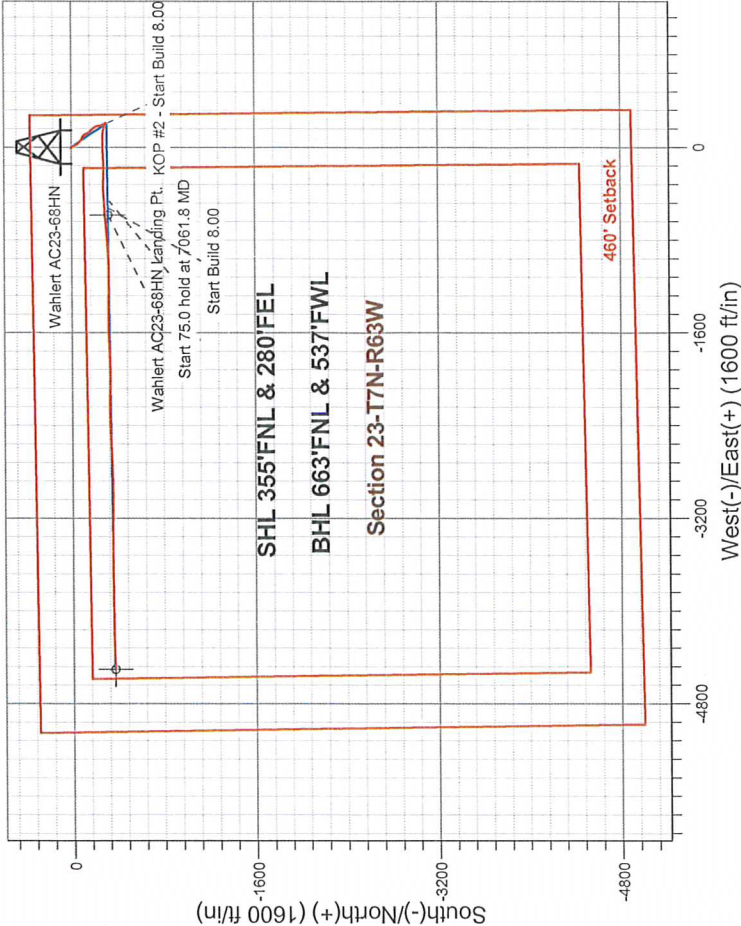


Noble Energy Inc.- Weld County, CO (Grid North)

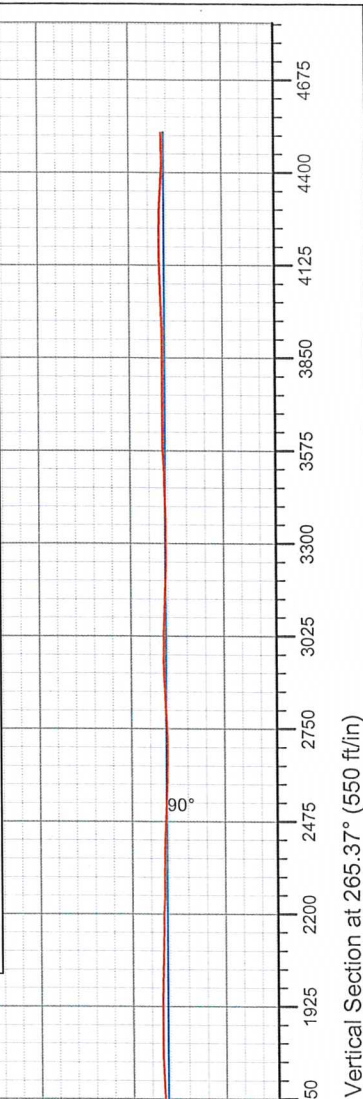
Well Name: **Wahlert AC23-68HN**
Surface Location: Wahlert AC23-69HN Pad Sec.23-T7N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4788.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1450831.75 3307049.43 40.565680 -104.394800
Ensign 121 RKB - 13' WELL @ 4801.0ft (Ensign 121 RKB - 13')

FINAL SURVEY

Projected Bottom Hole Location
11104' MD 6601' TVD 364' S & 4503' W of SHL
90.6 degree Incl @ 268.7 degree AZM



Wahlert AC23-69HN Pad Sec.23-T7N-R63W Wahlert AC23-68HN Wellbore #1 8:06, September 03 2013	ANNOTATIONS
No annotation data is available.	
LEGEND	
—x— Wahlert AC23-68HN, Wellbore #1, Plan A - Rev 1 (Updated 8-19-13) V0	
—□— Wellbore #1	





Directional

Noble Energy Inc.- Weld County, CO (Grid North)

Sec.23-T7N-R63W

Wahlert AC23-69HN Pad Sec.23-T7N-R63W

Wahlert AC23-68HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

03 September, 2013

Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Wahlert AC23-68HN
Project:	Sec.23-T7N-R63W	TVD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Site:	Wahlert AC23-69HN Pad Sec.23-T7N-R63W	MD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Well:	Wahlert AC23-68HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project			
Sec.23-T7N-R63W, Weld County, CO			
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Wahlert AC23-69HN Pad Sec.23-T7N-R63W											
Site Position:			Northing:			1,450,908.26 ft			Latitude:			40.565890					
From:			Lat/Long			Easting:			3,307,048.47 ft			Longitude:			-104.394800		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.71 °		

Well	Wahlert AC23-68HN					
Well Position	+N-S	0.0 ft	Northing:	1,450,831.75 ft	Latitude:	40.565680
	+E-W	0.0 ft	Easting:	3,307,049.43 ft	Longitude:	-104.394800
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,788.0 ft

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/19/2013	8.38	67.17	53.027

Design	Wellbore #1
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	265.37

Survey Program	Date 9/3/2013
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From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
291.0	654.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool
740.0	11,104.0	Survey #2 (Wellbore #1)	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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
291.0	0.50	283.53	291.0	0.3	-1.2	1.2	0.17	0.17	0.00
654.0	0.50	283.83	654.0	1.0	-4.3	4.2	0.00	0.00	0.08
740.0	0.40	95.40	740.0	1.1	-4.4	4.3	1.04	-0.12	199.50
835.0	0.30	91.90	835.0	1.1	-3.8	3.7	0.11	-0.11	-3.68
929.0	0.20	31.60	929.0	1.2	-3.5	3.4	0.28	-0.11	-64.15
1,024.0	0.30	61.30	1,024.0	1.5	-3.2	3.0	0.17	0.11	31.26
1,119.0	0.30	75.30	1,119.0	1.6	-2.7	2.6	0.08	0.00	14.74
1,213.0	0.40	65.20	1,213.0	1.8	-2.2	2.0	0.12	0.11	-10.74
1,305.0	0.70	49.00	1,305.0	2.3	-1.5	1.3	0.36	0.33	-17.61
1,399.0	0.60	36.80	1,399.0	3.1	-0.7	0.5	0.18	-0.11	-12.98

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Wahlert AC23-68HN
Project:	Sec.23-T7N-R63W	TVD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Site:	Wahlert AC23-69HN Pad Sec.23-T7N-R63W	MD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Well:	Wahlert AC23-68HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
1,494.0	0.60	82.70	1,494.0	3.6	0.1	-0.4	0.49	0.00	48.32
1,589.0	2.70	161.70	1,588.9	1.5	1.3	-1.4	2.79	2.21	83.16
1,684.0	4.50	162.40	1,683.7	-4.2	3.1	-2.7	1.90	1.89	0.74
1,778.0	5.20	157.60	1,777.4	-11.6	5.8	-4.9	0.86	0.74	-5.11
1,873.0	6.00	158.50	1,871.9	-20.2	9.3	-7.6	0.85	0.84	0.95
1,968.0	7.40	160.10	1,966.3	-30.6	13.2	-10.7	1.49	1.47	1.68
2,063.0	8.50	149.30	2,060.4	-42.4	18.9	-15.4	1.95	1.16	-11.37
2,158.0	8.50	137.90	2,154.3	-53.6	27.2	-22.7	1.77	0.00	-12.00
2,252.0	8.30	136.00	2,247.3	-63.7	36.5	-31.3	0.36	-0.21	-2.02
2,347.0	8.00	133.00	2,341.4	-73.1	46.1	-40.1	0.55	-0.32	-3.16
2,442.0	7.90	123.20	2,435.5	-81.2	56.4	-49.7	1.43	-0.11	-10.32
2,537.0	7.60	119.30	2,529.6	-87.8	67.4	-60.1	0.64	-0.32	-4.11
2,632.0	7.70	116.80	2,623.8	-93.8	78.5	-70.7	0.37	0.11	-2.63
2,726.0	7.10	119.60	2,717.0	-99.5	89.2	-80.9	0.74	-0.64	2.98
2,821.0	6.40	129.10	2,811.3	-105.7	98.4	-89.6	1.38	-0.74	10.00
2,916.0	6.40	142.80	2,905.7	-113.3	105.7	-96.2	1.60	0.00	14.42
3,011.0	7.70	153.90	3,000.0	-123.2	111.7	-101.4	1.98	1.37	11.68
3,106.0	7.70	150.90	3,094.2	-134.5	117.6	-106.4	0.42	0.00	-3.16
3,200.0	7.60	148.10	3,187.3	-145.3	124.0	-111.8	0.41	-0.11	-2.98
3,295.0	7.20	144.80	3,281.5	-155.5	130.7	-117.7	0.61	-0.42	-3.47
3,390.0	6.60	141.60	3,375.8	-164.6	137.5	-123.8	0.75	-0.63	-3.37
3,485.0	5.70	137.70	3,470.3	-172.4	144.1	-129.7	1.04	-0.95	-4.11
3,580.0	5.80	134.10	3,564.8	-179.2	150.7	-135.8	0.39	0.11	-3.79
3,674.0	6.00	135.10	3,658.3	-186.0	157.6	-142.1	0.24	0.21	1.06
3,769.0	5.70	150.40	3,752.8	-193.6	163.4	-147.3	1.67	-0.32	16.11
3,864.0	5.70	147.10	3,847.4	-201.7	168.3	-151.5	0.34	0.00	-3.47
3,959.0	5.90	145.70	3,941.9	-209.7	173.6	-156.2	0.26	0.21	-1.47
4,053.0	6.00	147.80	4,035.4	-217.8	179.0	-160.8	0.25	0.11	2.23
4,148.0	5.60	165.90	4,129.9	-226.5	182.8	-163.9	1.96	-0.42	19.05
4,243.0	4.80	173.30	4,224.5	-235.0	184.4	-164.8	1.10	-0.84	7.79
4,338.0	5.20	173.40	4,319.1	-243.2	185.3	-165.1	0.42	0.42	0.11
4,432.0	5.80	170.30	4,412.7	-252.1	186.6	-165.7	0.71	0.64	-3.30
4,527.0	6.90	154.10	4,507.1	-262.0	189.9	-168.2	2.20	1.16	-17.05
4,622.0	5.50	150.80	4,601.6	-271.1	194.6	-172.1	1.52	-1.47	-3.47
4,717.0	4.00	156.20	4,696.2	-278.1	198.2	-175.1	1.65	-1.58	5.68
4,811.0	3.30	145.10	4,790.0	-283.3	201.0	-177.5	1.05	-0.74	-11.81
4,906.0	3.60	149.30	4,884.9	-288.1	204.1	-180.2	0.41	0.32	4.42
5,001.0	3.10	142.70	4,979.7	-292.7	207.2	-182.9	0.66	-0.53	-6.95
5,096.0	2.00	158.70	5,074.6	-296.3	209.4	-184.8	1.37	-1.16	16.84
5,191.0	1.10	142.30	5,169.6	-298.6	210.5	-185.8	1.05	-0.95	-17.26
5,285.0	0.90	137.00	5,263.6	-299.8	211.6	-186.7	0.23	-0.21	-5.64
5,380.0	0.20	230.70	5,358.6	-300.5	212.0	-187.0	0.98	-0.74	98.63
5,475.0	0.20	186.10	5,453.6	-300.7	211.8	-186.9	0.16	0.00	-46.95
5,570.0	0.10	124.00	5,548.6	-301.0	211.9	-186.9	0.19	-0.11	-65.37
5,664.0	0.80	325.80	5,642.6	-300.5	211.6	-186.6	0.95	0.74	-168.30
5,759.0	0.40	319.20	5,737.6	-299.7	211.0	-186.1	0.43	-0.42	-6.95
5,854.0	0.20	45.80	5,832.6	-299.3	210.9	-186.1	0.46	-0.21	91.16
5,948.0	0.40	352.90	5,926.6	-298.9	211.0	-186.2	0.34	0.21	-56.28
6,043.0	6.20	288.40	6,021.4	-296.9	206.1	-181.4	6.36	6.11	-67.89
6,138.0	13.70	292.40	6,114.9	-291.0	190.8	-166.7	7.92	7.89	4.21
6,233.0	23.00	285.60	6,205.0	-281.7	162.4	-139.2	10.03	9.79	-7.16
6,328.0	33.20	275.20	6,288.7	-274.3	118.5	-96.0	11.87	10.74	-10.95
6,423.0	35.50	270.60	6,367.1	-271.7	65.0	-42.9	3.65	2.42	-4.84
6,517.0	41.60	266.90	6,440.6	-273.1	6.5	15.6	6.94	6.49	-3.94

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Wahlert AC23-68HN
Project:	Sec 23-T7N-R63W	TVD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Site:	Wahlert AC23-69HN Pad Sec.23-T7N-R63W	MD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Well:	Wahlert AC23-68HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
6,612.0	46.10	266.60	6,509.1	-276.8	-59.2	81.3	4.74	4.74	-0.32
6,707.0	54.20	269.10	6,569.9	-279.4	-132.0	154.1	8.76	8.53	2.63
6,802.0	64.70	271.00	6,618.2	-279.3	-213.7	235.5	11.19	11.05	2.00
6,897.0	76.30	270.30	6,649.8	-278.3	-303.1	324.6	12.23	12.21	-0.74
6,944.0	77.30	270.10	6,660.6	-278.1	-348.9	370.2	2.17	2.13	-0.43
6,992.0	80.50	267.70	6,669.8	-279.1	-395.9	417.2	8.28	6.67	-5.00
7,058.0	85.70	266.10	6,677.7	-282.6	-461.3	482.6	8.24	7.88	-2.42
7,115.0	87.50	267.10	6,681.1	-286.0	-518.1	539.5	3.61	3.16	1.75
7,162.0	88.60	266.20	6,682.7	-288.7	-565.0	586.5	3.02	2.34	-1.91
7,184.7	89.26	266.20	6,683.1	-290.2	-587.7	609.2	2.92	2.92	0.00
Wahlert AC23-68HN Landing Pt.									
7,210.0	90.00	266.20	6,683.3	-291.9	-612.9	634.5	2.92	2.92	0.00
7,304.0	90.00	264.70	6,683.3	-299.4	-706.6	728.5	1.60	0.00	-1.60
7,399.0	89.80	264.50	6,683.5	-308.3	-801.2	823.5	0.30	-0.21	-0.21
7,494.0	88.50	266.10	6,684.9	-316.1	-895.9	918.4	2.17	-1.37	1.68
7,588.0	86.10	268.00	6,689.3	-320.9	-989.6	1,012.3	3.25	-2.55	2.02
7,683.0	88.60	270.50	6,693.7	-322.2	-1,084.5	1,107.0	3.72	2.63	2.63
7,778.0	90.60	270.10	6,694.3	-321.7	-1,179.5	1,201.6	2.15	2.11	-0.42
7,873.0	88.70	271.20	6,694.9	-320.6	-1,274.5	1,296.2	2.31	-2.00	1.16
7,967.0	87.70	270.50	6,697.9	-319.2	-1,368.4	1,389.7	1.30	-1.06	-0.74
8,062.0	89.90	269.40	6,699.9	-319.3	-1,463.4	1,484.4	2.59	2.32	-1.16
8,157.0	92.60	269.60	6,697.8	-320.1	-1,558.4	1,579.1	2.85	2.84	0.21
8,252.0	93.70	268.70	6,692.6	-321.5	-1,653.2	1,673.8	1.50	1.16	-0.95
8,347.0	91.90	267.10	6,687.9	-325.0	-1,748.0	1,768.5	2.53	-1.89	-1.68
8,442.0	89.90	266.40	6,686.4	-330.4	-1,842.8	1,863.5	2.23	-2.11	-0.74
8,537.0	88.90	269.40	6,687.4	-333.9	-1,937.8	1,958.4	3.33	-1.05	3.16
8,631.0	88.10	273.10	6,689.9	-331.8	-2,031.7	2,051.8	4.03	-0.85	3.94
8,726.0	89.50	272.00	6,691.9	-327.6	-2,126.6	2,146.1	1.87	1.47	-1.16
8,821.0	88.20	270.30	6,693.8	-325.7	-2,221.5	2,240.6	2.25	-1.37	-1.79
8,916.0	89.80	268.00	6,695.5	-327.1	-2,316.5	2,335.3	2.95	1.68	-2.42
9,011.0	87.80	267.30	6,697.4	-331.0	-2,411.4	2,430.2	2.23	-2.11	-0.74
9,106.0	87.40	266.20	6,701.4	-336.4	-2,506.2	2,525.1	1.23	-0.42	-1.16
9,201.0	88.60	267.80	6,704.7	-341.3	-2,601.0	2,620.0	2.10	1.26	1.68
9,295.0	91.10	267.50	6,705.0	-345.2	-2,694.9	2,713.9	2.68	2.66	-0.32
9,390.0	93.40	268.20	6,701.3	-348.7	-2,789.7	2,808.8	2.53	2.42	0.74
9,485.0	92.20	269.40	6,696.6	-350.7	-2,884.6	2,903.5	1.79	-1.26	1.26
9,580.0	89.20	268.40	6,695.5	-352.5	-2,979.6	2,998.3	3.33	-3.16	-1.05
9,675.0	87.70	270.50	6,698.0	-353.5	-3,074.5	3,093.0	2.72	-1.58	2.21
9,769.0	87.80	271.30	6,701.7	-352.0	-3,168.4	3,186.5	0.86	0.11	0.85
9,864.0	90.10	271.30	6,703.5	-349.8	-3,263.4	3,281.0	2.42	2.42	0.00
9,959.0	91.00	271.00	6,702.5	-347.9	-3,358.4	3,375.5	1.00	0.95	-0.32
10,053.0	91.70	268.90	6,700.3	-348.0	-3,452.3	3,469.1	2.35	0.74	-2.23
10,148.0	92.80	270.10	6,696.6	-348.8	-3,547.2	3,563.8	1.71	1.16	1.26
10,243.0	90.40	269.60	6,693.9	-349.1	-3,642.2	3,658.5	2.58	-2.53	-0.53
10,338.0	89.00	269.20	6,694.4	-350.1	-3,737.2	3,753.2	1.53	-1.47	-0.42
10,433.0	90.50	269.40	6,694.9	-351.2	-3,832.2	3,848.0	1.59	1.58	0.21
10,527.0	90.90	269.20	6,693.7	-352.4	-3,926.2	3,941.8	0.48	0.43	-0.21
10,622.0	91.50	269.60	6,691.7	-353.4	-4,021.1	4,036.5	0.76	0.63	0.42
10,717.0	91.70	269.40	6,689.1	-354.2	-4,116.1	4,131.3	0.30	0.21	-0.21
10,812.0	89.50	268.40	6,688.1	-356.0	-4,211.1	4,226.1	2.54	-2.32	-1.05
10,906.0	86.20	268.00	6,691.6	-359.0	-4,304.9	4,319.9	3.54	-3.51	-0.43
11,001.0	88.60	268.40	6,695.9	-362.0	-4,399.8	4,414.6	2.56	2.53	0.42
11,049.0	90.60	268.70	6,696.2	-363.2	-4,447.8	4,462.6	4.21	4.17	0.63

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Wahlert AC23-68HN
Project:	Sec.23-T7N-R63W	TVD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Site:	Wahlert AC23-69HN Pad Sec.23-T7N-R63W	MD Reference:	WELL @ 4801.0ft (Ensign 121 RKB - 13')
Well:	Wahlert AC23-68HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
11,104.0	90.60	268.70	6,695.7	-364.4	-4,502.8	4,517.5	0.00	0.00	0.00
Wahlert AC23-68HN BHL 660'FNL & 535'FWL									

Checked By: _____ Approved By: _____ Date: _____