ENSIGN Directional

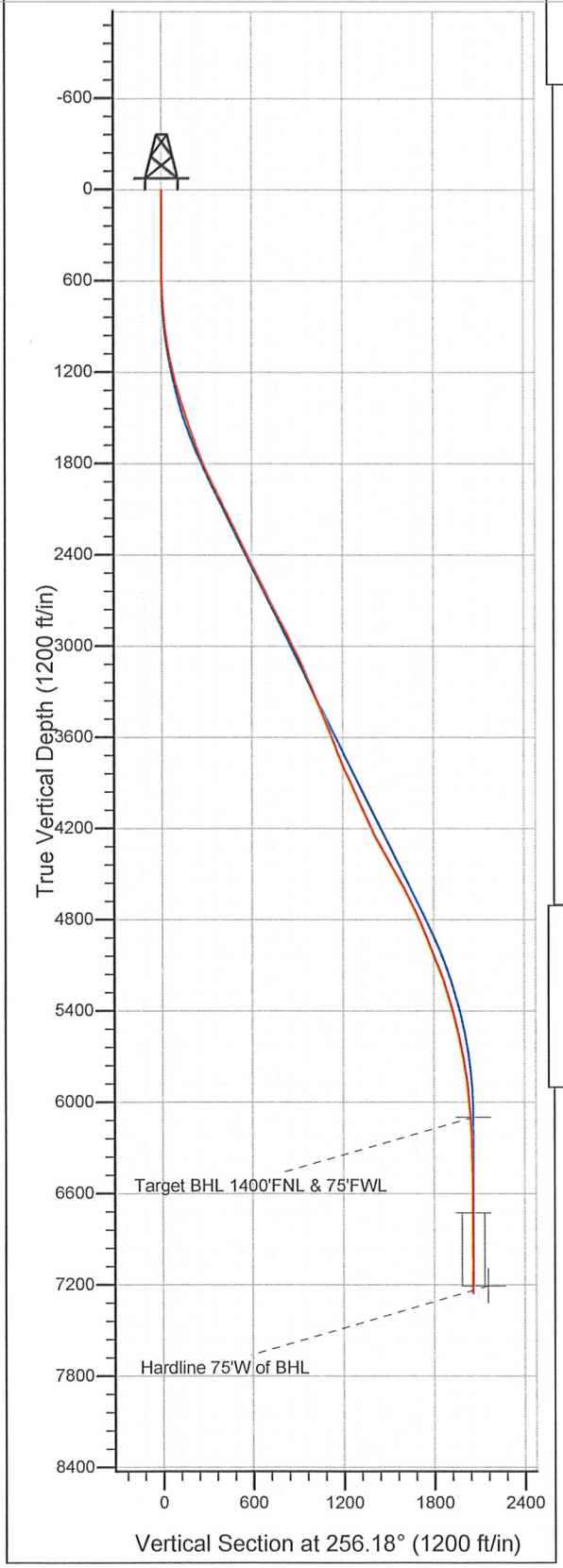
Well Name: **Weidenkeller PC G01-31D**

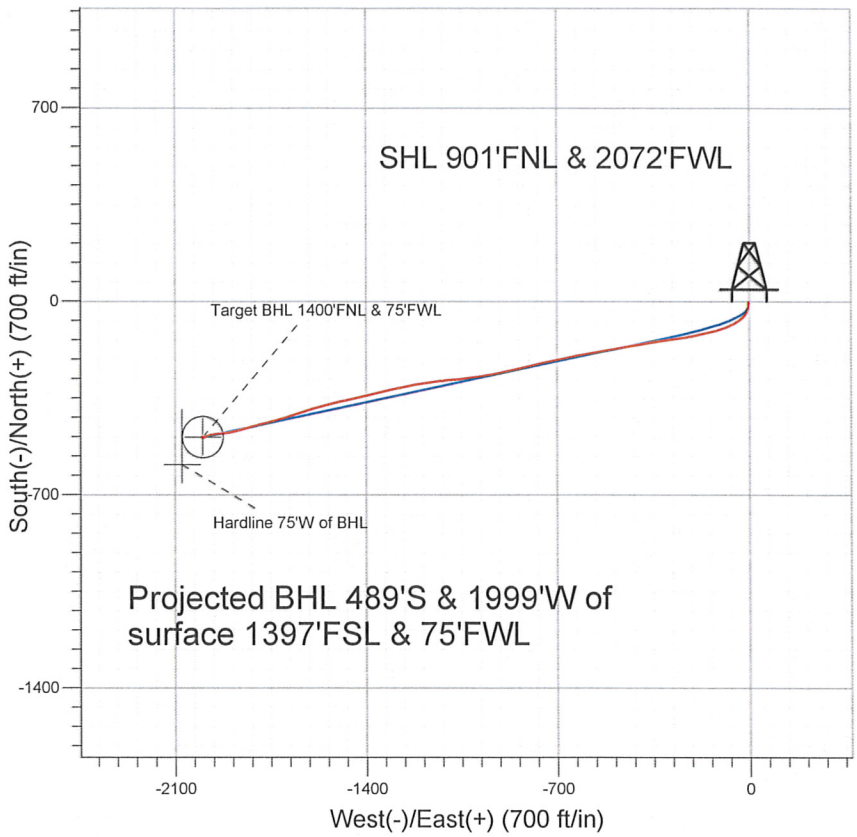
Surface Location: Weidenkeller PC G01-30D Pad Sec.1-T4N-R65W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4755.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1370109.19	3247108.85	40° 20' 45.456 N	104° 36' 48.384 W	

Original Well Elev WELL @ 4768.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO





LEGEND

- Weidenkeller PC G01-31D, Wellbore #1, Noble Weidenkeller PC G01-31D Plan #1 (8-06-10)
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7675'MD & 7255'TVD @ 2058' VS
0.4 deg Inc 20.6 deg AZ

Project: SEC.1-T4N-R65W
Site: Weidenkeller PC G01-30D Pad Sec.1-T4N-R65W
Well: Weidenkeller PC G01-31D
Plan: Wellbore #1

ENSIGN Directional

Survey Report

noble energy

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Weidenkeller PC G01-31D
Project:	SEC.1-T4N-R65W	**TVD Reference:**	WELL @ 4768.0ft (Original Well Elev)
Site:	Weidenkeller PC G01-30D Pad Sec.1-T4N-R65W	**MD Reference:**	WELL @ 4768.0ft (Original Well Elev)
Well:	Weidenkeller PC G01-31D	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Project SEC.1-T4N-R65W, Weld County, Colorado

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 Weidenkeller PC G01-30D Pad Sec.1-T4N-R65W

Site Position:		**Northing:**	1,370,111.83 ft	**Latitude:**	40° 20' 45.492 N
From:	Lat/Long	**Easting:**	3,247,008.47 ft	**Longitude:**	104° 36' 49.680 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.57 °

Well Weidenkeller PC G01-31D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,370,109.19 ft	**Latitude:**	40° 20' 45.456 N
	+E/-W	0.0 ft	**Easting:**	3,247,108.85 ft	**Longitude:**	104° 36' 48.384 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,755.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/31/2010	8.88	67.06	53,203

Design Wellbore #1

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	256.18

Survey Program **Date** 2/21/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
335.0	7,675.0	Survey #1 (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
335.0	0.30	327.20	335.0	0.7	-0.5	0.3	0.09	0.09	0.00
420.0	1.20	190.40	420.0	0.0	-0.8	0.7	1.69	1.06	-160.94
506.0	2.90	177.40	505.9	-3.0	-0.8	1.5	2.04	1.98	-15.12
592.0	5.10	179.00	591.7	-9.0	-0.7	2.8	2.56	2.56	1.86
677.0	6.80	189.70	676.3	-17.7	-1.4	5.6	2.38	2.00	12.59
686.0	6.60	189.90	685.2	-18.8	-1.6	6.1	2.24	-2.22	2.22
772.0	7.60	196.40	770.5	-29.1	-4.1	10.9	1.49	1.16	7.56
857.0	8.40	210.60	854.7	-39.8	-8.8	18.1	2.50	0.94	16.71
943.0	9.50	221.60	939.7	-50.6	-16.7	28.3	2.36	1.28	12.79
1,028.0	11.30	230.40	1,023.3	-61.1	-27.8	41.6	2.82	2.12	10.35
1,114.0	12.00	236.80	1,107.5	-71.4	-41.8	57.6	1.71	0.81	7.44

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Weidenkeller PC G01-31D
Project:	SEC.1-T4N-R65W	**TVD Reference:**	WELL @ 4768.0ft (Original Well Elev)
Site:	Weidenkeller PC G01-30D Pad Sec.1-T4N-R65W	**MD Reference:**	WELL @ 4768.0ft (Original Well Elev)
Well:	Weidenkeller PC G01-31D	**North Reference:**	True
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)
1,199.0	14.00	242.10	1,190.3	-81.0	-58.3	75.9	2.74	2.35	6.24
1,285.0	15.10	247.20	1,273.6	-90.2	-77.8	97.1	1.96	1.28	5.93
1,370.0	16.40	251.90	1,355.4	-98.3	-99.4	120.0	2.14	1.53	5.53
1,456.0	18.00	253.80	1,437.5	-105.7	-123.7	145.4	1.97	1.86	2.21
1,541.0	19.30	258.50	1,518.1	-112.2	-150.1	172.5	2.34	1.53	5.53
1,627.0	19.30	258.00	1,599.2	-118.0	-177.9	200.9	0.19	0.00	-0.58
1,712.0	20.70	258.40	1,679.1	-123.9	-206.4	230.0	1.65	1.65	0.47
1,798.0	22.40	261.30	1,759.1	-129.5	-237.5	261.5	2.33	1.98	3.37
1,883.0	24.90	261.60	1,837.0	-134.5	-271.2	295.5	2.94	2.94	0.35
1,969.0	26.80	261.70	1,914.4	-140.0	-308.3	332.8	2.21	2.21	0.12
2,054.0	26.50	261.50	1,990.3	-145.5	-346.0	370.7	0.37	-0.35	-0.24
2,140.0	25.80	259.80	2,067.5	-151.7	-383.4	408.5	1.19	-0.81	-1.98
2,225.0	25.80	260.60	2,144.1	-158.0	-419.8	445.4	0.41	0.00	0.94
2,310.0	26.60	258.80	2,220.3	-164.7	-456.8	482.9	1.33	0.94	-2.12
2,396.0	26.00	259.40	2,297.4	-171.9	-494.2	520.9	0.76	-0.70	0.70
2,481.0	25.40	259.70	2,374.0	-178.6	-530.4	557.7	0.72	-0.71	0.35
2,567.0	26.10	260.80	2,451.5	-184.9	-567.2	595.0	0.99	0.81	1.28
2,652.0	26.90	259.90	2,527.5	-191.3	-604.6	632.8	1.05	0.94	-1.06
2,740.0	26.30	257.50	2,606.2	-199.0	-643.3	672.2	1.40	-0.68	-2.73
2,824.0	27.60	259.50	2,681.1	-206.6	-680.6	710.2	1.89	1.55	2.38
2,909.0	27.70	257.10	2,756.4	-214.6	-719.2	749.6	1.32	0.12	-2.82
2,995.0	27.40	256.60	2,832.6	-223.6	-757.9	789.4	0.44	-0.35	-0.58
3,080.0	27.90	257.00	2,907.9	-232.6	-796.3	828.8	0.63	0.59	0.47
3,165.0	25.80	257.60	2,983.8	-241.1	-833.8	867.2	2.49	-2.47	0.71
3,251.0	24.20	257.80	3,061.7	-248.8	-869.3	903.5	1.86	-1.86	0.23
3,336.0	24.60	258.20	3,139.1	-256.1	-903.6	938.6	0.51	0.47	0.47
3,422.0	24.70	258.90	3,217.3	-263.2	-938.8	974.5	0.36	0.12	0.81
3,508.0	21.90	261.40	3,296.3	-269.1	-972.3	1,008.4	3.45	-3.26	2.91
3,593.0	22.20	264.00	3,375.0	-273.1	-1,003.9	1,040.1	1.20	0.35	3.06
3,679.0	21.80	261.50	3,454.8	-277.2	-1,035.9	1,072.1	1.18	-0.47	-2.91
3,764.0	22.80	265.00	3,533.4	-281.0	-1,067.9	1,104.1	1.96	1.18	4.12
3,850.0	21.40	265.90	3,613.1	-283.5	-1,100.1	1,136.0	1.67	-1.63	1.05
3,936.0	20.20	262.70	3,693.5	-286.6	-1,130.5	1,166.2	1.92	-1.40	-3.72
4,021.0	23.70	262.10	3,772.3	-290.8	-1,162.0	1,197.8	4.13	4.12	-0.71
4,106.0	24.60	261.10	3,849.9	-295.9	-1,196.4	1,232.4	1.16	1.06	-1.18
4,192.0	25.10	259.10	3,927.9	-302.1	-1,232.0	1,268.5	1.14	0.58	-2.33
4,277.0	24.70	257.80	4,005.0	-309.2	-1,267.1	1,304.3	0.80	-0.47	-1.53
4,363.0	24.10	257.90	4,083.3	-316.7	-1,301.8	1,339.8	0.70	-0.70	0.12
4,449.0	24.00	254.80	4,161.9	-325.0	-1,335.8	1,374.8	1.47	-0.12	-3.60
4,534.0	26.30	258.00	4,238.8	-333.4	-1,371.0	1,410.9	3.14	2.71	3.76
4,620.0	29.10	258.00	4,315.0	-341.7	-1,410.0	1,450.9	3.26	3.26	0.00
4,706.0	29.60	255.90	4,389.9	-351.3	-1,451.1	1,493.0	1.33	0.58	-2.44
4,791.0	29.10	257.70	4,464.0	-360.8	-1,491.7	1,534.7	1.19	-0.59	2.12
4,877.0	29.80	256.40	4,538.9	-370.3	-1,532.9	1,576.9	1.10	0.81	-1.51
4,962.0	27.60	252.80	4,613.5	-381.1	-1,572.2	1,617.7	3.29	-2.59	-4.24
5,048.0	26.30	253.80	4,690.1	-392.3	-1,609.5	1,656.6	1.60	-1.51	1.16
5,133.0	24.40	252.80	4,766.9	-402.7	-1,644.4	1,693.0	2.29	-2.24	-1.18
5,219.0	22.80	250.10	4,845.7	-413.6	-1,677.0	1,727.3	2.24	-1.86	-3.14
5,305.0	20.90	252.50	4,925.6	-423.9	-1,707.3	1,759.2	2.44	-2.21	2.79
5,390.0	21.90	256.30	5,004.7	-432.2	-1,737.2	1,790.2	2.01	1.18	4.47
5,475.0	23.20	257.30	5,083.2	-439.7	-1,768.9	1,822.8	1.59	1.53	1.18
5,561.0	20.50	255.90	5,163.0	-447.1	-1,800.1	1,854.8	3.20	-3.14	-1.63
5,646.0	17.40	253.30	5,243.4	-454.3	-1,826.7	1,882.3	3.78	-3.65	-3.06

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Weidenkeller PC G01-31D
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Well:	Weidenkeller PC G01-31D	**North Reference:**	True
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)
5,732.0	16.40	255.10	5,325.7	-461.2	-1,850.7	1,907.3	1.31	-1.16	2.09
5,818.0	15.50	255.20	5,408.4	-467.2	-1,873.6	1,930.9	1.05	-1.05	0.12
5,903.0	13.40	258.80	5,490.7	-472.0	-1,894.2	1,952.1	2.69	-2.47	4.24
5,989.0	12.10	261.70	5,574.6	-475.3	-1,912.9	1,971.1	1.68	-1.51	3.37
6,075.0	11.40	266.80	5,658.8	-477.0	-1,930.3	1,988.4	1.46	-0.81	5.93
6,160.0	9.40	264.80	5,742.4	-478.1	-1,945.6	2,003.5	2.39	-2.35	-2.35
6,245.0	7.90	258.70	5,826.4	-479.9	-1,958.3	2,016.2	2.07	-1.76	-7.18
6,331.0	6.90	257.80	5,911.7	-482.2	-1,969.1	2,027.3	1.17	-1.16	-1.05
6,416.0	5.60	253.20	5,996.2	-484.4	-1,978.1	2,036.5	1.64	-1.53	-5.41
6,502.0	4.30	247.20	6,081.9	-486.9	-1,985.1	2,043.9	1.63	-1.51	-6.98
6,521.0	3.96	245.70	6,100.8	-487.4	-1,986.3	2,045.3	1.89	-1.80	-7.88
Target BHL 1400'FNL & 75'FWL									
6,587.0	2.80	237.70	6,166.7	-489.2	-1,989.8	2,049.0	1.89	-1.75	-12.13
6,672.0	1.80	245.30	6,251.6	-490.9	-1,992.7	2,052.3	1.23	-1.18	8.94
6,758.0	1.30	249.10	6,337.6	-491.8	-1,994.9	2,054.6	0.59	-0.58	4.42
6,844.0	0.80	257.60	6,423.6	-492.3	-1,996.4	2,056.2	0.61	-0.58	9.88
6,929.0	0.40	244.20	6,508.6	-492.6	-1,997.2	2,057.1	0.50	-0.47	-15.76
7,015.0	0.40	286.20	6,594.6	-492.6	-1,997.8	2,057.6	0.33	0.00	48.84
7,101.0	0.60	331.60	6,680.6	-492.1	-1,998.3	2,058.0	0.50	0.23	52.79
7,148.4	0.43	324.96	6,728.0	-491.8	-1,998.5	2,058.1	0.38	-0.36	-14.00
Target Circle 1400'FNL & 75'FWL									
7,186.0	0.30	314.40	6,765.6	-491.6	-1,998.6	2,058.2	0.38	-0.34	-28.11
7,272.0	0.50	330.20	6,851.6	-491.1	-1,999.0	2,058.4	0.26	0.23	18.37
7,357.0	0.60	346.50	6,936.6	-490.3	-1,999.3	2,058.5	0.22	0.12	19.18
7,443.0	0.30	8.20	7,022.5	-489.7	-1,999.4	2,058.4	0.40	-0.35	25.23
7,528.0	0.30	37.60	7,107.5	-489.3	-1,999.2	2,058.2	0.18	0.00	34.59
7,614.0	0.30	33.00	7,193.5	-488.9	-1,998.9	2,057.8	0.03	0.00	-5.35
7,627.7	0.40	20.80	7,207.2	-488.8	-1,998.9	2,057.8	0.89	0.71	-89.07
Hardline 75'W of BHL									
7,628.0	0.40	20.60	7,207.5	-488.8	-1,998.9	2,057.8	0.89	0.76	-66.30
7,675.0	0.40	20.60	7,254.5	-488.5	-1,998.8	2,057.6	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____