

Well Name: **Carlson K23-22D**

Surface Location: Schmidt K23-24D Pad Sec.23-T4N-R66W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4726.0

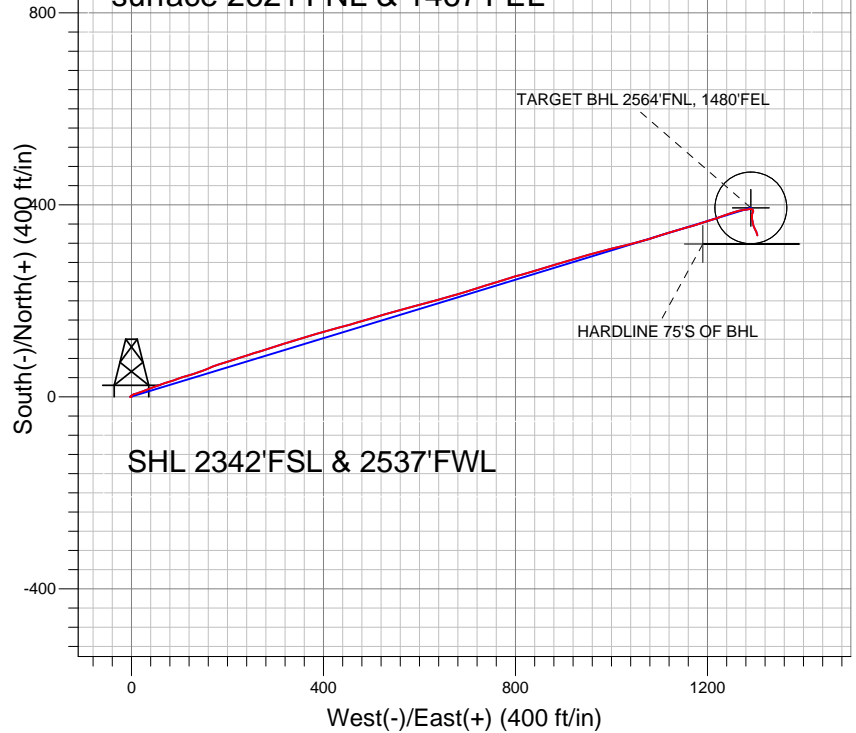
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1351785.66	3210626.99	40.296590	-104.744880

Original Well Elev WELL @ 4739.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO

Projected BHL 336'N & 1304'E of
surface 2621'FNL & 1467'FEL

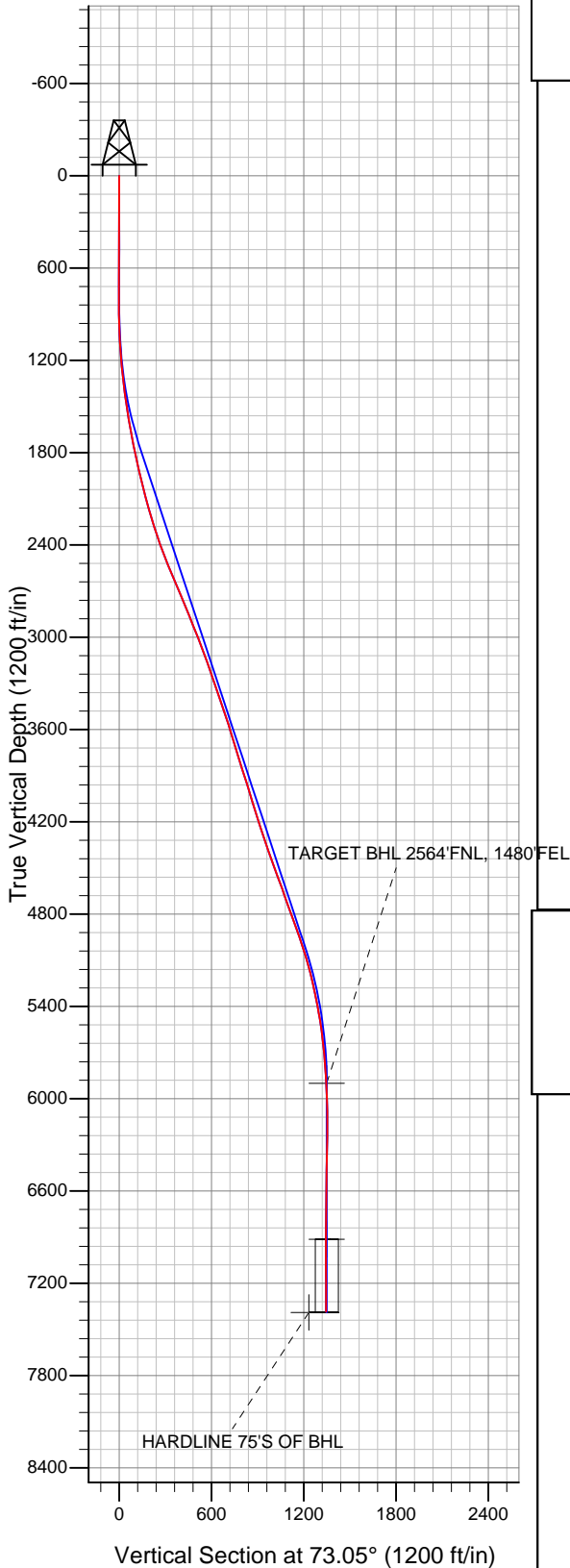


LEGEND

- Carlson K23-22D, Wellbore #1, Noble Carlson K23-22D Plan #3 (3-22-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7593'MD & 7385'TVD @ 1345'VS
3.6 deg Inc 168.0 deg AZ



Project: SEC.23-T4N-R66W
Site: Schmidt K23-24D Pad Sec.23-T4N-R66W
Well: Carlson K23-22D
Plan: Wellbore #1



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.23-T4N-R66W

Schmidt K23-24D Pad Sec.23-T4N-R66W

Carlson K23-22D

Wellbore #1

Survey: Survey #1

Standard Survey Report

12 April, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Carlson K23-22D
Project:	SEC.23-T4N-R66W	TVD Reference:	WELL @ 4739.0ft (Original Well Elev)
Site:	Schmidt K23-24D Pad Sec.23-T4N-R66W	MD Reference:	WELL @ 4739.0ft (Original Well Elev)
Well:	Carlson K23-22D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.23-T4N-R66W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Schmidt K23-24D Pad Sec.23-T4N-R66W		
Site Position:		Northing:	1,351,771.22 ft
From:	Lat/Long	Easting:	3,210,641.06 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.296550
		Longitude:	-104.744830
		Grid Convergence:	0.49 °

Well	Carlson K23-22D		
Well Position	+N/-S	0.0 ft	Northing: 1,351,785.66 ft
	+E/-W	0.0 ft	Easting: 3,210,626.99 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.296590
		Longitude:	-104.744880
		Ground Level:	4,726.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/7/2011	8.87	66.98	53,100

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	73.05	

Survey Program	Date	4/12/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
643.0	7,593.0	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	
643.0	0.50	256.50	643.0	-0.7	-2.7	-2.8	0.08	0.08	0.00	
729.0	0.00	6.90	729.0	-0.7	-3.1	-3.2	0.58	-0.58	0.00	
815.0	0.40	37.70	815.0	-0.5	-2.9	-2.9	0.47	0.47	0.00	
900.0	0.70	40.60	900.0	0.1	-2.4	-2.3	0.35	0.35	3.41	
986.0	2.10	51.10	986.0	1.5	-0.8	-0.3	1.65	1.63	12.21	
1,071.0	3.20	59.00	1,070.9	3.7	2.4	3.4	1.36	1.29	9.29	
1,157.0	4.40	74.40	1,156.7	5.8	7.7	9.0	1.82	1.40	17.91	
1,242.0	5.40	70.50	1,241.4	8.0	14.6	16.3	1.24	1.18	-4.59	
1,328.0	7.00	70.60	1,326.9	11.1	23.3	25.6	1.86	1.86	0.12	
1,413.0	7.90	67.90	1,411.1	15.1	33.6	36.6	1.14	1.06	-3.18	
1,499.0	7.70	70.00	1,496.3	19.3	44.5	48.2	0.40	-0.23	2.44	
1,585.0	9.70	69.70	1,581.4	23.7	56.7	61.2	2.33	2.33	-0.35	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Carlson K23-22D
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Site:	Schmidt K23-24D Pad Sec.23-T4N-R66W	MD Reference:	WELL @ 4739.0ft (Original Well Elev)
Well:	Carlson K23-22D	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)
1,670.0	10.40	73.10	1,665.0	28.5	70.8	76.0	1.08	0.82	4.00
1,756.0	11.30	69.90	1,749.5	33.6	86.1	92.2	1.26	1.05	-3.72
1,841.0	12.00	70.90	1,832.8	39.4	102.3	109.3	0.86	0.82	1.18
1,927.0	13.00	75.60	1,916.7	44.7	120.1	127.9	1.66	1.16	5.47
2,012.0	13.60	69.80	1,999.4	50.5	138.8	147.5	1.72	0.71	-6.82
2,098.0	15.20	67.50	2,082.7	58.3	158.7	168.8	1.98	1.86	-2.67
2,183.0	16.40	70.90	2,164.5	66.5	180.3	191.9	1.78	1.41	4.00
2,269.0	17.10	72.10	2,246.9	74.4	203.8	216.6	0.91	0.81	1.40
2,354.0	18.30	72.30	2,327.9	82.3	228.4	242.5	1.41	1.41	0.24
2,440.0	19.70	73.50	2,409.2	90.5	255.2	270.5	1.69	1.63	1.40
2,525.0	21.10	72.40	2,488.8	99.2	283.5	300.1	1.71	1.65	-1.29
2,611.0	22.90	72.10	2,568.6	109.0	314.2	332.3	2.10	2.09	-0.35
2,696.0	22.90	72.90	2,646.9	119.0	345.7	365.4	0.37	0.00	0.94
2,782.0	23.30	72.80	2,726.0	128.9	378.0	399.1	0.47	0.47	-0.12
2,867.0	22.80	75.90	2,804.2	137.9	410.0	432.4	1.54	-0.59	3.65
2,953.0	20.70	74.50	2,884.1	146.0	440.8	464.2	2.52	-2.44	-1.63
3,038.0	21.80	73.30	2,963.3	154.6	470.4	495.0	1.39	1.29	-1.41
3,124.0	21.40	73.70	3,043.2	163.6	500.7	526.7	0.50	-0.47	0.47
3,209.0	20.40	74.30	3,122.7	171.9	529.9	557.0	1.20	-1.18	0.71
3,295.0	19.20	73.00	3,203.6	180.1	557.8	586.1	1.49	-1.40	-1.51
3,380.0	18.90	75.30	3,283.9	187.7	584.5	613.9	0.95	-0.35	2.71
3,466.0	18.50	75.60	3,365.4	194.6	611.2	641.4	0.48	-0.47	0.35
3,551.0	19.00	75.10	3,445.9	201.5	637.7	668.7	0.62	0.59	-0.59
3,637.0	18.40	74.40	3,527.3	208.8	664.3	696.3	0.74	-0.70	-0.81
3,723.0	17.20	72.40	3,609.2	216.3	689.4	722.5	1.57	-1.40	-2.33
3,808.0	16.70	71.40	3,690.5	224.0	713.0	747.3	0.68	-0.59	-1.18
3,894.0	17.20	74.20	3,772.8	231.4	736.9	772.4	1.11	0.58	3.26
3,979.0	17.90	72.60	3,853.8	238.7	761.5	798.0	1.00	0.82	-1.88
4,065.0	18.20	72.30	3,935.6	246.7	786.9	824.7	0.37	0.35	-0.35
4,150.0	16.80	75.70	4,016.7	253.8	811.5	850.2	2.04	-1.65	4.00
4,236.0	16.90	72.90	4,099.0	260.6	835.5	875.1	0.95	0.12	-3.26
4,321.0	17.10	72.60	4,180.3	267.9	859.2	900.0	0.26	0.24	-0.35
4,407.0	18.40	73.70	4,262.2	275.5	884.3	926.2	1.56	1.51	1.28
4,492.0	18.90	72.70	4,342.7	283.4	910.3	953.4	0.70	0.59	-1.18
4,578.0	19.70	74.50	4,423.9	291.4	937.6	981.8	1.16	0.93	2.09
4,663.0	20.10	75.60	4,503.8	298.8	965.5	1,010.7	0.64	0.47	1.29
4,749.0	20.60	73.70	4,584.4	306.8	994.4	1,040.6	0.96	0.58	-2.21
4,834.0	19.20	78.00	4,664.3	313.9	1,022.4	1,069.5	2.38	-1.65	5.06
4,920.0	19.40	74.70	4,745.5	320.6	1,050.0	1,097.8	1.29	0.23	-3.84
5,005.0	19.40	73.20	4,825.7	328.4	1,077.1	1,126.1	0.59	0.00	-1.76
5,091.0	20.00	72.20	4,906.7	337.0	1,104.8	1,155.1	0.80	0.70	-1.16
5,176.0	19.30	74.40	4,986.7	345.2	1,132.2	1,183.6	1.20	-0.82	2.59
5,262.0	16.50	73.70	5,068.5	352.5	1,157.6	1,210.1	3.27	-3.26	-0.81
5,347.0	14.80	72.50	5,150.4	359.1	1,179.5	1,233.0	2.04	-2.00	-1.41
5,433.0	14.00	72.10	5,233.7	365.6	1,199.9	1,254.4	0.94	-0.93	-0.47
5,518.0	11.50	71.40	5,316.6	371.5	1,217.7	1,273.1	2.95	-2.94	-0.82
5,604.0	10.70	70.30	5,401.0	376.9	1,233.4	1,289.7	0.96	-0.93	-1.28
5,689.0	8.80	70.80	5,484.7	381.7	1,246.9	1,304.1	2.24	-2.24	0.59
5,775.0	7.80	73.00	5,569.8	385.6	1,258.7	1,316.5	1.22	-1.16	2.56
5,861.0	6.30	80.80	5,655.2	388.1	1,269.0	1,327.0	2.07	-1.74	9.07
5,946.0	4.70	80.10	5,739.8	389.4	1,277.0	1,335.0	1.88	-1.88	-0.82
6,032.0	3.60	83.30	5,825.6	390.3	1,283.2	1,341.2	1.31	-1.28	3.72
6,106.8	3.16	84.59	5,900.2	390.8	1,287.5	1,345.5	0.60	-0.59	1.73
TARGET BHL 2564'FNL, 1480'FEL									

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Well:	Carlson K23-22D	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)	
6,117.0	3.10	84.80	5,910.4	390.8	1,288.1	1,346.1	0.60	-0.59	2.01	
6,203.0	2.20	103.50	5,996.3	390.7	1,292.0	1,349.8	1.44	-1.05	21.74	
6,288.0	1.50	141.10	6,081.3	389.4	1,294.3	1,351.6	1.60	-0.82	44.24	
6,374.0	0.80	161.40	6,167.3	388.0	1,295.2	1,352.0	0.93	-0.81	23.60	
6,459.0	1.30	184.00	6,252.2	386.5	1,295.3	1,351.7	0.75	0.59	26.59	
6,545.0	1.40	210.80	6,338.2	384.6	1,294.7	1,350.6	0.74	0.12	31.16	
6,630.0	1.80	200.10	6,423.2	382.4	1,293.7	1,349.0	0.59	0.47	-12.59	
6,716.0	1.80	197.40	6,509.2	379.9	1,292.9	1,347.4	0.10	0.00	-3.14	
6,801.0	2.20	178.20	6,594.1	377.0	1,292.5	1,346.3	0.91	0.47	-22.59	
6,887.0	1.50	176.10	6,680.1	374.2	1,292.6	1,345.6	0.82	-0.81	-2.44	
6,972.0	1.70	171.80	6,765.0	371.8	1,292.9	1,345.1	0.27	0.24	-5.06	
7,058.0	2.10	171.90	6,851.0	369.0	1,293.3	1,344.7	0.47	0.47	0.12	
7,119.9	2.54	172.68	6,912.9	366.5	1,293.6	1,344.3	0.71	0.71	1.25	
TARGET CIRCLE 2564'FNL, 1480'FEL										
7,143.0	2.70	172.90	6,935.9	365.5	1,293.8	1,344.1	0.71	0.71	0.97	
7,229.0	3.70	168.00	7,021.8	360.8	1,294.6	1,343.5	1.20	1.16	-5.70	
7,314.0	4.60	158.70	7,106.5	354.9	1,296.4	1,343.5	1.32	1.06	-10.94	
7,400.0	4.50	151.40	7,192.3	348.7	1,299.3	1,344.5	0.68	-0.12	-8.49	
7,485.0	4.10	159.60	7,277.0	343.0	1,301.9	1,345.3	0.86	-0.47	9.65	
7,547.0	3.70	164.00	7,338.9	339.0	1,303.2	1,345.4	0.81	-0.65	7.10	
7,593.0	3.60	168.00	7,384.8	336.1	1,304.0	1,345.3	0.59	-0.22	8.70	
HARDLINE 75'S OF BHL										

Checked By: _____	Approved By: _____	Date: _____
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