

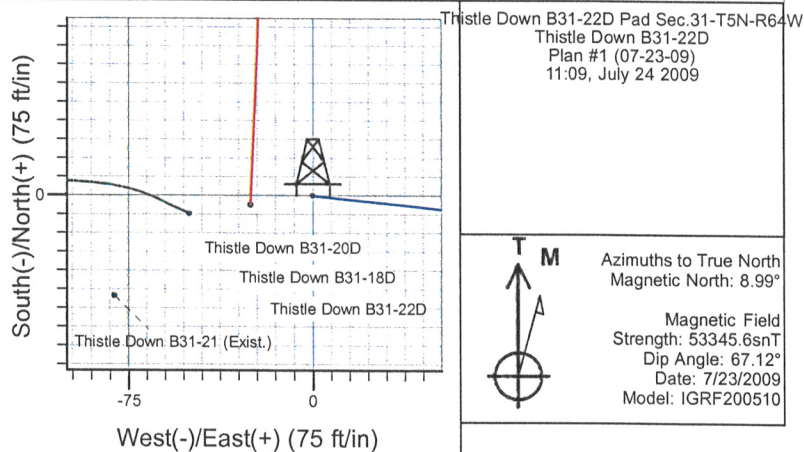
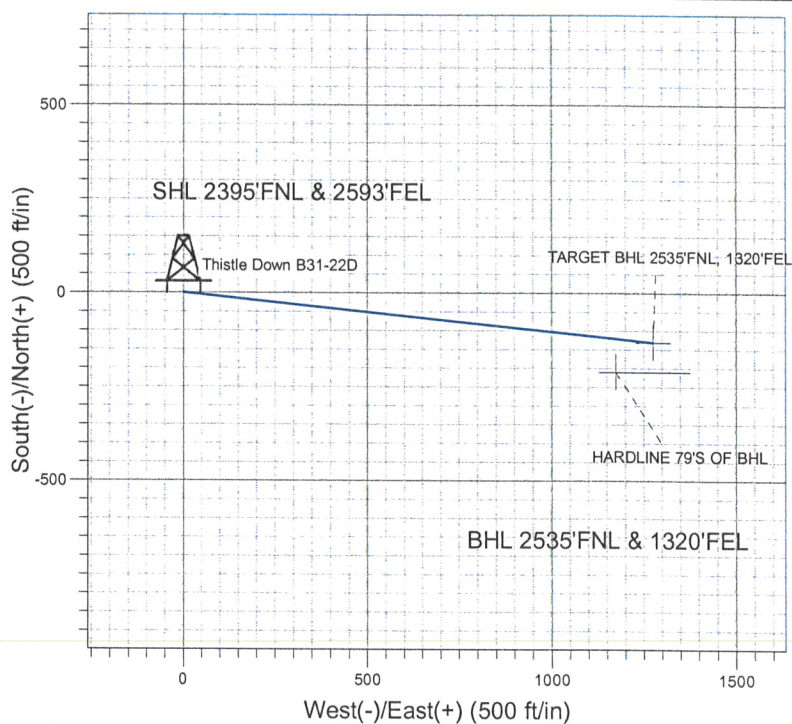
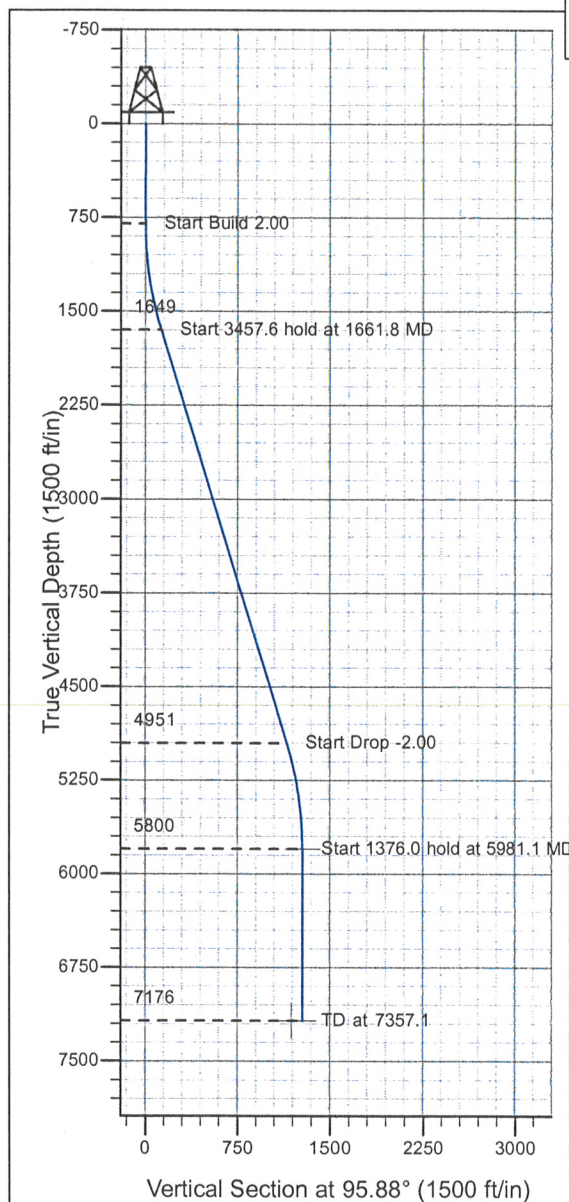
## Well Name: Thistle Down B31-22D

Surface Location: Thistle Down B31-22D Pad Sec.31-T5N-R64W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4789.0

+N/-S +E/-W		Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1373920.48	3252929.10	40° 21' 22.536 N	104° 35' 32.712 W	
Original Well Elev WELL @ 4801.0ft (Original Well Elev)						

**NOBLE ENERGY INC WELD COUNTY CO**



## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2535'FNL, 1320'FEL	5800.0	-131.3	1275.0	40° 21' 21.238 N	104° 35' 16.242 W	Point
HARDLINE 79'S OF BHL	7176.0	-210.3	1175.0	40° 21' 20.457 N	104° 35' 17.535 W	Polygon

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1661.8	17.24	95.88	1648.9	-13.2	128.0	2.00	95.88	128.6	
4	5119.4	17.24	95.88	4951.1	-118.1	1147.1	0.00	0.00	1153.1	
5	5981.1	0.00	0.00	5800.0	-131.3	1275.0	2.00	180.00	1281.8	TARGET BHL 2535°FNL, 1320°FEL
6	7357.1	0.00	0.00	7176.0	-131.3	1275.0	0.00	0.00	1281.8	



## **Directional**

### **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.31-T5N-R64W**

**Thistle Down B31-22D Pad Sec.31-T5N-R64W**

**Thistle Down B31-22D**

**Wellbore #1**

**Plan: Plan #1 (07-23-09)**

### **Standard Planning Report**

**24 July, 2009**





**Database:** EDM den0-adp01 Server Data  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.31-T5N-R64W  
**Site:** Thistle Down B31-22D Pad  
 Sec.31-T5N-R64W  
**Well:** Thistle Down B31-22D  
**Wellbore:** Wellbore #1  
**Design:** Plan #1 (07-23-09)

**Local Co-ordinate Reference:** Well Thistle Down B31-22D  
**TVD Reference:** WELL @ 4801.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4801.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Project** SEC.31-T5N-R64W

**Map System:** US State Plane 1983  
**Geo Datum:** North American Datum 1983  
**Map Zone:** Colorado Northern Zone

**System Datum:** Mean Sea Level  
 Using Well Reference Point  
 Using geodetic scale factor

**Site** Thistle Down B31-22D Pad Sec.31-T5N-R64W

<b>Site Position:</b>	<b>Northing:</b>	1,373,920.49ft	<b>Latitude:</b>	40° 21' 22.536 N
<b>From:</b> Lat/Long	<b>Easting:</b>	3,252,929.10ft	<b>Longitude:</b>	104° 35' 32.712 W
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	0.59 °

**Well** Thistle Down B31-22D

<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,373,920.48 ft	<b>Latitude:</b>	40° 21' 22.536 N
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,252,929.10 ft	<b>Longitude:</b>	104° 35' 32.712 W
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,789.0 ft

**Wellbore** Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/23/2009	8.99	67.12	53,346

**Design** Plan #1 (07-23-09)

**Audit Notes:**

**Version:** **Phase:** PROTOTYPE **Tie On Depth:** 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	95.88

**Plan Sections**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,661.8	17.24	95.88	1,648.9	-13.2	128.0	2.00	2.00	0.00	95.88	
5,119.4	17.24	95.88	4,951.1	-118.1	1,147.1	0.00	0.00	0.00	0.00	
5,981.1	0.00	0.00	5,800.0	-131.3	1,275.0	2.00	-2.00	0.00	180.00	TARGET BHL 2535
7,357.1	0.00	0.00	7,176.0	-131.3	1,275.0	0.00	0.00	0.00	0.00	



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Thistle Down B31-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Project:</b>	SEC.31-T5N-R64W	<b>MD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Site:</b>	Thistle Down B31-22D Pad Sec.31-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Thistle Down B31-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (07-23-09)		

**Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.80	95.88	840.0	0.0	0.3	0.3	2.00	2.00	0.00
880.0	1.60	95.88	880.0	-0.1	1.1	1.1	2.00	2.00	0.00
920.0	2.40	95.88	920.0	-0.3	2.5	2.5	2.00	2.00	0.00
960.0	3.20	95.88	959.9	-0.5	4.4	4.5	2.00	2.00	0.00
1,000.0	4.00	95.88	999.8	-0.7	6.9	7.0	2.00	2.00	0.00
1,040.0	4.80	95.88	1,039.7	-1.0	10.0	10.0	2.00	2.00	0.00
1,080.0	5.60	95.88	1,079.6	-1.4	13.6	13.7	2.00	2.00	0.00
1,120.0	6.40	95.88	1,119.3	-1.8	17.8	17.9	2.00	2.00	0.00
1,160.0	7.20	95.88	1,159.1	-2.3	22.5	22.6	2.00	2.00	0.00
1,200.0	8.00	95.88	1,198.7	-2.9	27.7	27.9	2.00	2.00	0.00
1,240.0	8.80	95.88	1,238.3	-3.5	33.5	33.7	2.00	2.00	0.00
1,280.0	9.60	95.88	1,277.8	-4.1	39.9	40.1	2.00	2.00	0.00
1,320.0	10.40	95.88	1,317.1	-4.8	46.8	47.1	2.00	2.00	0.00
1,360.0	11.20	95.88	1,356.4	-5.6	54.3	54.6	2.00	2.00	0.00
1,400.0	12.00	95.88	1,395.6	-6.4	62.3	62.6	2.00	2.00	0.00
1,440.0	12.80	95.88	1,434.7	-7.3	70.8	71.2	2.00	2.00	0.00
1,480.0	13.60	95.88	1,473.6	-8.2	79.9	80.3	2.00	2.00	0.00
1,520.0	14.40	95.88	1,512.4	-9.2	89.5	90.0	2.00	2.00	0.00
1,560.0	15.20	95.88	1,551.1	-10.3	99.7	100.2	2.00	2.00	0.00
1,600.0	16.00	95.88	1,589.6	-11.4	110.4	111.0	2.00	2.00	0.00
1,640.0	16.80	95.88	1,628.0	-12.5	121.6	122.3	2.00	2.00	0.00
1,661.8	17.24	95.88	1,648.9	-13.2	128.0	128.6	2.00	2.00	0.00
1,680.0	17.24	95.88	1,666.2	-13.7	133.3	134.0	0.00	0.00	0.00
1,720.0	17.24	95.88	1,704.4	-14.9	145.1	145.9	0.00	0.00	0.00
1,760.0	17.24	95.88	1,742.7	-16.2	156.9	157.7	0.00	0.00	0.00
1,800.0	17.24	95.88	1,780.9	-17.4	168.7	169.6	0.00	0.00	0.00
1,840.0	17.24	95.88	1,819.1	-18.6	180.5	181.5	0.00	0.00	0.00
1,880.0	17.24	95.88	1,857.3	-19.8	192.3	193.3	0.00	0.00	0.00
1,920.0	17.24	95.88	1,895.5	-21.0	204.1	205.2	0.00	0.00	0.00
1,960.0	17.24	95.88	1,933.7	-22.2	215.9	217.0	0.00	0.00	0.00
2,000.0	17.24	95.88	1,971.9	-23.4	227.7	228.9	0.00	0.00	0.00
2,040.0	17.24	95.88	2,010.1	-24.7	239.4	240.7	0.00	0.00	0.00



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Thistle Down B31-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Project:</b>	SEC.31-T5N-R64W	<b>MD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Site:</b>	Thistle Down B31-22D Pad	<b>North Reference:</b>	True
	Sec.31-T5N-R64W		
<b>Well:</b>	Thistle Down B31-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (07-23-09)		

Planned 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)
2,080.0	17.24	95.88	2,048.3	-25.9	251.2	252.6	0.00	0.00	0.00
2,120.0	17.24	95.88	2,086.5	-27.1	263.0	264.4	0.00	0.00	0.00
2,160.0	17.24	95.88	2,124.7	-28.3	274.8	276.3	0.00	0.00	0.00
2,200.0	17.24	95.88	2,162.9	-29.5	286.6	288.1	0.00	0.00	0.00
2,240.0	17.24	95.88	2,201.1	-30.7	298.4	300.0	0.00	0.00	0.00
2,280.0	17.24	95.88	2,239.3	-31.9	310.2	311.8	0.00	0.00	0.00
2,320.0	17.24	95.88	2,277.5	-33.2	322.0	323.7	0.00	0.00	0.00
2,360.0	17.24	95.88	2,315.7	-34.4	333.8	335.5	0.00	0.00	0.00
2,400.0	17.24	95.88	2,353.9	-35.6	345.6	347.4	0.00	0.00	0.00
2,440.0	17.24	95.88	2,392.1	-36.8	357.3	359.2	0.00	0.00	0.00
2,480.0	17.24	95.88	2,430.3	-38.0	369.1	371.1	0.00	0.00	0.00
2,520.0	17.24	95.88	2,468.5	-39.2	380.9	382.9	0.00	0.00	0.00
2,560.0	17.24	95.88	2,506.7	-40.4	392.7	394.8	0.00	0.00	0.00
2,600.0	17.24	95.88	2,544.9	-41.6	404.5	406.6	0.00	0.00	0.00
2,640.0	17.24	95.88	2,583.1	-42.9	416.3	418.5	0.00	0.00	0.00
2,680.0	17.24	95.88	2,621.3	-44.1	428.1	430.3	0.00	0.00	0.00
2,720.0	17.24	95.88	2,659.5	-45.3	439.9	442.2	0.00	0.00	0.00
2,760.0	17.24	95.88	2,697.7	-46.5	451.7	454.1	0.00	0.00	0.00
2,800.0	17.24	95.88	2,735.9	-47.7	463.5	465.9	0.00	0.00	0.00
2,840.0	17.24	95.88	2,774.2	-48.9	475.2	477.8	0.00	0.00	0.00
2,880.0	17.24	95.88	2,812.4	-50.1	487.0	489.6	0.00	0.00	0.00
2,920.0	17.24	95.88	2,850.6	-51.4	498.8	501.5	0.00	0.00	0.00
2,960.0	17.24	95.88	2,888.8	-52.6	510.6	513.3	0.00	0.00	0.00
3,000.0	17.24	95.88	2,927.0	-53.8	522.4	525.2	0.00	0.00	0.00
3,040.0	17.24	95.88	2,965.2	-55.0	534.2	537.0	0.00	0.00	0.00
3,080.0	17.24	95.88	3,003.4	-56.2	546.0	548.9	0.00	0.00	0.00
3,120.0	17.24	95.88	3,041.6	-57.4	557.8	560.7	0.00	0.00	0.00
3,160.0	17.24	95.88	3,079.8	-58.6	569.6	572.6	0.00	0.00	0.00
3,200.0	17.24	95.88	3,118.0	-59.9	581.4	584.4	0.00	0.00	0.00
3,240.0	17.24	95.88	3,156.2	-61.1	593.1	596.3	0.00	0.00	0.00
3,280.0	17.24	95.88	3,194.4	-62.3	604.9	608.1	0.00	0.00	0.00
3,320.0	17.24	95.88	3,232.6	-63.5	616.7	620.0	0.00	0.00	0.00
3,360.0	17.24	95.88	3,270.8	-64.7	628.5	631.8	0.00	0.00	0.00
3,400.0	17.24	95.88	3,309.0	-65.9	640.3	643.7	0.00	0.00	0.00
3,440.0	17.24	95.88	3,347.2	-67.1	652.1	655.5	0.00	0.00	0.00
3,480.0	17.24	95.88	3,385.4	-68.4	663.9	667.4	0.00	0.00	0.00
3,520.0	17.24	95.88	3,423.6	-69.6	675.7	679.2	0.00	0.00	0.00
3,560.0	17.24	95.88	3,461.8	-70.8	687.5	691.1	0.00	0.00	0.00
3,600.0	17.24	95.88	3,500.0	-72.0	699.3	702.9	0.00	0.00	0.00
3,640.0	17.24	95.88	3,538.2	-73.2	711.0	714.8	0.00	0.00	0.00
3,680.0	17.24	95.88	3,576.4	-74.4	722.8	726.7	0.00	0.00	0.00
3,720.0	17.24	95.88	3,614.6	-75.6	734.6	738.5	0.00	0.00	0.00
3,760.0	17.24	95.88	3,652.8	-76.9	746.4	750.4	0.00	0.00	0.00
3,800.0	17.24	95.88	3,691.0	-78.1	758.2	762.2	0.00	0.00	0.00
3,840.0	17.24	95.88	3,729.2	-79.3	770.0	774.1	0.00	0.00	0.00
3,880.0	17.24	95.88	3,767.4	-80.5	781.8	785.9	0.00	0.00	0.00
3,920.0	17.24	95.88	3,805.7	-81.7	793.6	797.8	0.00	0.00	0.00
3,960.0	17.24	95.88	3,843.9	-82.9	805.4	809.6	0.00	0.00	0.00
4,000.0	17.24	95.88	3,882.1	-84.1	817.2	821.5	0.00	0.00	0.00
4,040.0	17.24	95.88	3,920.3	-85.3	828.9	833.3	0.00	0.00	0.00
4,080.0	17.24	95.88	3,958.5	-86.6	840.7	845.2	0.00	0.00	0.00
4,120.0	17.24	95.88	3,996.7	-87.8	852.5	857.0	0.00	0.00	0.00
4,160.0	17.24	95.88	4,034.9	-89.0	864.3	868.9	0.00	0.00	0.00



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Thistle Down B31-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Project:</b>	SEC.31-T5N-R64W	<b>MD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Site:</b>	Thistle Down B31-22D Pad	<b>North Reference:</b>	True
<b>Well:</b>	Thistle Down B31-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (07-23-09)		

Planned 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)
4,200.0	17.24	95.88	4,073.1	-90.2	876.1	880.7	0.00	0.00	0.00
4,240.0	17.24	95.88	4,111.3	-91.4	887.9	892.6	0.00	0.00	0.00
4,280.0	17.24	95.88	4,149.5	-92.6	899.7	904.4	0.00	0.00	0.00
4,320.0	17.24	95.88	4,187.7	-93.8	911.5	916.3	0.00	0.00	0.00
4,360.0	17.24	95.88	4,225.9	-95.1	923.3	928.1	0.00	0.00	0.00
4,400.0	17.24	95.88	4,264.1	-96.3	935.1	940.0	0.00	0.00	0.00
4,440.0	17.24	95.88	4,302.3	-97.5	946.8	951.8	0.00	0.00	0.00
4,480.0	17.24	95.88	4,340.5	-98.7	958.6	963.7	0.00	0.00	0.00
4,520.0	17.24	95.88	4,378.7	-99.9	970.4	975.6	0.00	0.00	0.00
4,560.0	17.24	95.88	4,416.9	-101.1	982.2	987.4	0.00	0.00	0.00
4,600.0	17.24	95.88	4,455.1	-102.3	994.0	999.3	0.00	0.00	0.00
4,640.0	17.24	95.88	4,493.3	-103.6	1,005.8	1,011.1	0.00	0.00	0.00
4,680.0	17.24	95.88	4,531.5	-104.8	1,017.6	1,023.0	0.00	0.00	0.00
4,720.0	17.24	95.88	4,569.7	-106.0	1,029.4	1,034.8	0.00	0.00	0.00
4,760.0	17.24	95.88	4,607.9	-107.2	1,041.2	1,046.7	0.00	0.00	0.00
4,800.0	17.24	95.88	4,646.1	-108.4	1,052.9	1,058.5	0.00	0.00	0.00
4,840.0	17.24	95.88	4,684.3	-109.6	1,064.7	1,070.4	0.00	0.00	0.00
4,880.0	17.24	95.88	4,722.5	-110.8	1,076.5	1,082.2	0.00	0.00	0.00
4,920.0	17.24	95.88	4,760.7	-112.1	1,088.3	1,094.1	0.00	0.00	0.00
4,960.0	17.24	95.88	4,798.9	-113.3	1,100.1	1,105.9	0.00	0.00	0.00
5,000.0	17.24	95.88	4,837.2	-114.5	1,111.9	1,117.8	0.00	0.00	0.00
5,040.0	17.24	95.88	4,875.4	-115.7	1,123.7	1,129.6	0.00	0.00	0.00
5,080.0	17.24	95.88	4,913.6	-116.9	1,135.5	1,141.5	0.00	0.00	0.00
5,119.4	17.24	95.88	4,951.1	-118.1	1,147.1	1,153.1	0.00	0.00	0.00
5,120.0	17.22	95.88	4,951.8	-118.1	1,147.3	1,153.3	2.00	-2.00	0.00
5,160.0	16.42	95.88	4,990.1	-119.3	1,158.8	1,164.9	2.00	-2.00	0.00
5,200.0	15.62	95.88	5,028.5	-120.4	1,169.8	1,176.0	2.00	-2.00	0.00
5,240.0	14.82	95.88	5,067.1	-121.5	1,180.2	1,186.5	2.00	-2.00	0.00
5,280.0	14.02	95.88	5,105.8	-122.5	1,190.1	1,196.4	2.00	-2.00	0.00
5,320.0	13.22	95.88	5,144.7	-123.5	1,199.5	1,205.8	2.00	-2.00	0.00
5,360.0	12.42	95.88	5,183.7	-124.4	1,208.3	1,214.7	2.00	-2.00	0.00
5,400.0	11.62	95.88	5,222.8	-125.3	1,216.6	1,223.0	2.00	-2.00	0.00
5,440.0	10.82	95.88	5,262.1	-126.1	1,224.4	1,230.8	2.00	-2.00	0.00
5,480.0	10.02	95.88	5,301.4	-126.8	1,231.6	1,238.1	2.00	-2.00	0.00
5,520.0	9.22	95.88	5,340.8	-127.5	1,238.2	1,244.8	2.00	-2.00	0.00
5,560.0	8.42	95.88	5,380.4	-128.1	1,244.3	1,250.9	2.00	-2.00	0.00
5,600.0	7.62	95.88	5,420.0	-128.7	1,249.9	1,256.5	2.00	-2.00	0.00
5,640.0	6.82	95.88	5,459.7	-129.2	1,254.9	1,261.5	2.00	-2.00	0.00
5,680.0	6.02	95.88	5,499.4	-129.7	1,259.3	1,266.0	2.00	-2.00	0.00
5,720.0	5.22	95.88	5,539.2	-130.1	1,263.2	1,269.9	2.00	-2.00	0.00
5,760.0	4.42	95.88	5,579.1	-130.4	1,266.6	1,273.3	2.00	-2.00	0.00
5,800.0	3.62	95.88	5,619.0	-130.7	1,269.4	1,276.1	2.00	-2.00	0.00
5,840.0	2.82	95.88	5,658.9	-130.9	1,271.6	1,278.3	2.00	-2.00	0.00
5,880.0	2.02	95.88	5,698.9	-131.1	1,273.3	1,280.0	2.00	-2.00	0.00
5,920.0	1.22	95.88	5,738.9	-131.2	1,274.4	1,281.1	2.00	-2.00	0.00
5,960.0	0.42	95.88	5,778.9	-131.3	1,275.0	1,281.7	2.00	-2.00	0.00
5,981.1	0.00	0.00	5,800.0	-131.3	1,275.0	1,281.8	2.00	-2.00	-453.42
TARGET BHL 2535'FNL, 1320'FEL									
6,000.0	0.00	0.00	5,818.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,040.0	0.00	0.00	5,858.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,080.0	0.00	0.00	5,898.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,120.0	0.00	0.00	5,938.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,160.0	0.00	0.00	5,978.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00



**Database:** EDM den0-adp01 Server Data  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.31-T5N-R64W  
**Site:** Thistle Down B31-22D Pad  
 Sec.31-T5N-R64W  
**Well:** Thistle Down B31-22D  
**Wellbore:** Wellbore #1  
**Design:** Plan #1 (07-23-09)

**Local Co-ordinate Reference:** Well Thistle Down B31-22D  
**TVD Reference:** WELL @ 4801.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4801.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Planned 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)
6,200.0	0.00	0.00	6,018.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,240.0	0.00	0.00	6,058.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,098.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,138.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,360.0	0.00	0.00	6,178.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,218.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,440.0	0.00	0.00	6,258.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,480.0	0.00	0.00	6,298.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,520.0	0.00	0.00	6,338.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,560.0	0.00	0.00	6,378.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,418.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,640.0	0.00	0.00	6,458.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,680.0	0.00	0.00	6,498.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,720.0	0.00	0.00	6,538.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,760.0	0.00	0.00	6,578.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,618.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,840.0	0.00	0.00	6,658.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,880.0	0.00	0.00	6,698.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,903.1	0.00	0.00	6,722.0	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
<b>NIOBRARA</b>									
6,920.0	0.00	0.00	6,738.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
6,960.0	0.00	0.00	6,778.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,818.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,040.0	0.00	0.00	6,858.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,080.0	0.00	0.00	6,898.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,120.0	0.00	0.00	6,938.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,160.0	0.00	0.00	6,978.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,200.0	0.00	0.00	7,018.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,207.1	0.00	0.00	7,026.0	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
<b>CODELL</b>									
7,240.0	0.00	0.00	7,058.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,280.0	0.00	0.00	7,098.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,320.0	0.00	0.00	7,138.9	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
7,357.1	0.00	0.00	7,176.0	-131.3	1,275.0	1,281.8	0.00	0.00	0.00
<b>HARDLINE 79'S OF BHL</b>									

**Targets**

Target Name	- hit/miss target	- Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TARGET BHL 2535'F	- plan hits target center	- Point	0.00	0.00	5,800.0	-131.3	1,275.0	1,373,802.26	3,254,205.37	40° 21' 21.238 N	104° 35' 16.242 W
HARDLINE 79'S OF E	- plan misses target center by 127.5ft at 7357.1ft MD (7176.0 TVD, -131.3 N, 1275.0 E)	- Polygon	0.00	0.00	7,176.0	-210.3	1,175.0	1,373,722.22	3,254,106.14	40° 21' 20.457 N	104° 35' 17.535 W
	Point 1				7,176.0	0.0	0.0	1,373,722.22	3,254,106.14		
	Point 2				7,176.0	0.0	200.0	1,373,724.27	3,254,306.12		

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Thistle Down B31-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Project:</b>	SEC.31-T5N-R64W	<b>MD Reference:</b>	WELL @ 4801.0ft (Original Well Elev)
<b>Site:</b>	Thistle Down B31-22D Pad	<b>North Reference:</b>	True
	Sec.31-T5N-R64W		
<b>Well:</b>	Thistle Down B31-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (07-23-09)		

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,903.1	6,722.0	NIOBRARA		0.00	
7,207.1	7,026.0	CODELL		0.00	