

# ENSIGN Directional

Well Name: Ehrlich State PC F36-32D

Surface Location: Ehrlich State PC F36-31D Pad Sec.36-T5N-R65W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4703.0

+N/-S

+E/-W

Northing

Easting

Latitude

Longitude

0.0

0.0

1374317.05

3245653.77

40° 21' 27.180 N

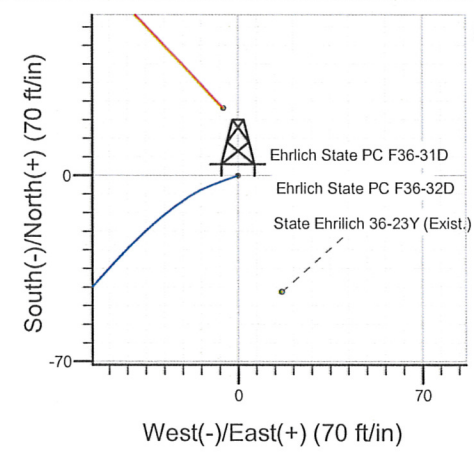
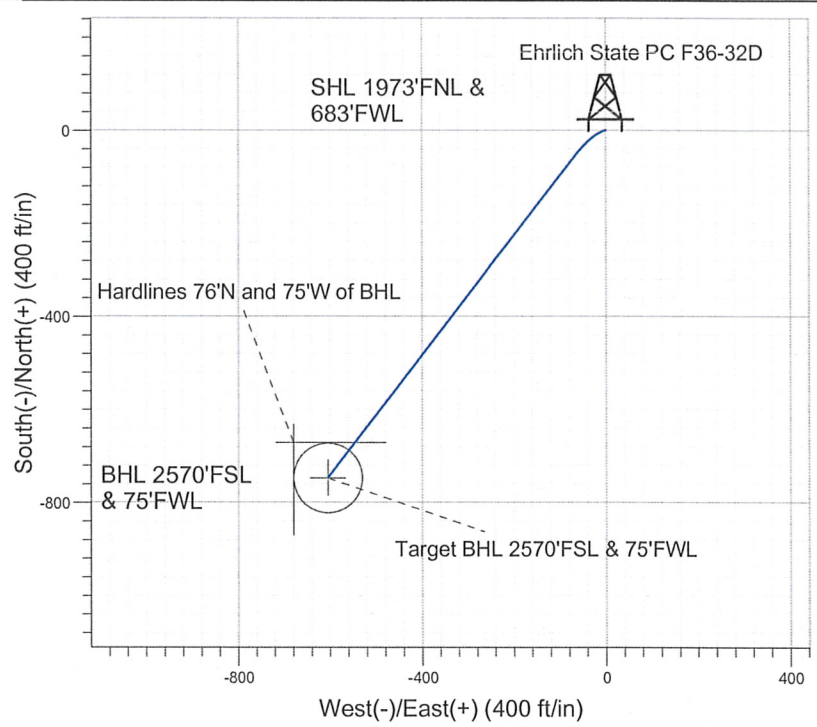
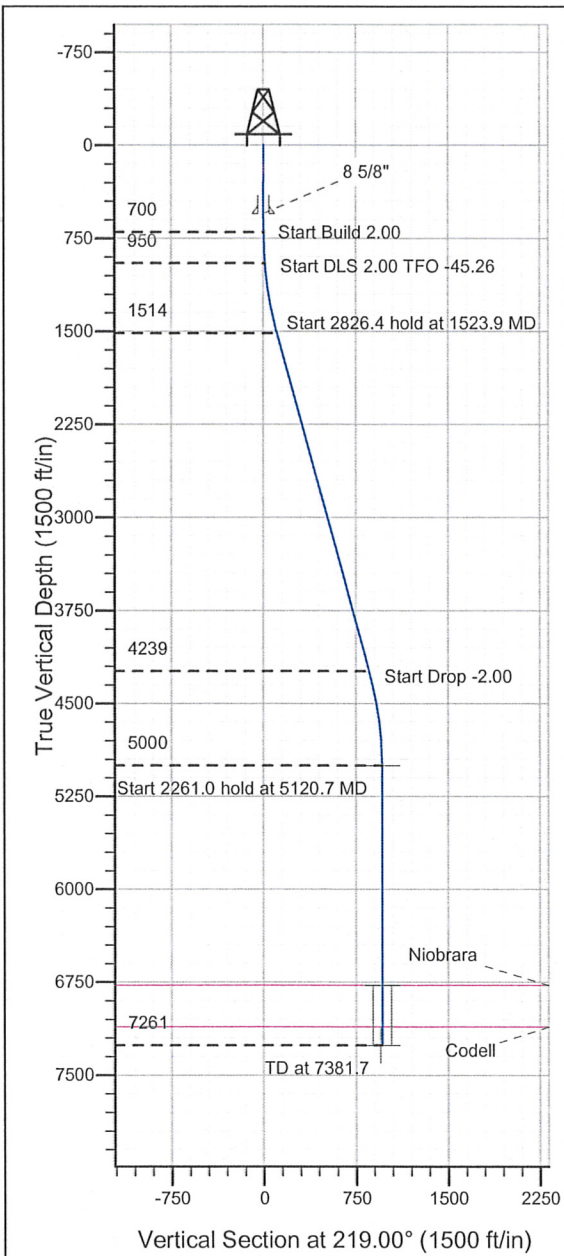
104° 37' 6.636 W

Original Well Elev

WELL @ 4716.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO



Ehrlich State PC F36-32D

Noble Ehrlich State PC F36-32D Plan #1 (8-10-10)

14:03, August 12 2010

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Azimuths to True North

Magnetic North: 8.94°

Magnetic Field

Strength: 53298.5snT

Dip Angle: 67.10°

Date: 12/31/2009

Model: IGRF200510

WELLBORE TARGET DETAILS (LAT/LONG)										
Name		TVD	+N/-S	+E/-W	Latitude	Longitude	Shape			
Target BHL 2570'FSL & 75'FWL		5000.0	-746.8	-604.8	40° 21' 19.800 N	104° 37' 14.448 W	Point			
Target Circle 2570'FSL & 75'FWL		6776.0	-746.8	-604.8	40° 21' 19.800 N	104° 37' 14.448 W	Circle (Radius: 75.0)			
Hardlines 76°N and 75°W of BHL		7261.0	-670.8	-679.8	40° 21' 20.551 N	104° 37' 15.417 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	Target BHL 2570'FSL & 75'FWL
2	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	950.0	5.00	250.00	949.7	-3.7	-10.2	2.00	250.00	9.3	
4	1523.9	15.41	217.86	1514.1	-72.7	-80.8	2.00	-45.26	107.3	
5	4350.3	15.41	217.86	4238.9	-665.5	-541.6	0.00	0.00	858.1	
6	5120.7	0.00	0.00	5000.0	-746.8	-604.8	2.00	180.00	961.0	
7	7381.7	0.00	0.00	7261.0	-746.8	-604.8	0.00	0.00	961.0	



## **Directional**

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

**SEC.36-T5N-R65W**

**Ehrlich State PC F36-31D Pad Sec.36-T5N-R65W**

**Ehrlich State PC F36-32D**

**Wellbore #1**

**Plan: Noble Ehrlich State PC F36-32D Plan #1 (8-10-10)**

### **Standard Planning Report**

**12 August, 2010**



**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.36-T5N-R65W  
**Site:** Ehrlich State PC F36-31D Pad  
 Sec.36-T5N-R65W  
**Well:** Ehrlich State PC F36-32D  
**Wellbore:** Wellbore #1  
**Design:** Noble Ehrlich State PC F36-32D Plan #1 (8-10)

**Local Co-ordinate Reference:** Well Ehrlich State PC F36-32D  
**TVD Reference:** WELL @ 4716.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4716.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	SEC.36-T5N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Ehrlich State PC F36-31D Pad Sec.36-T5N-R65W			
Site Position:		Northing:	1,374,342.50 ft	Latitude:	40° 21' 27.432 N
From:	Lat/Long	Easting:	3,245,647.95 ft	Longitude:	104° 37' 6.708 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.57 °

Well	Ehrlich State PC F36-32D					
Well Position	+N/-S	-25.5 ft	Northing:	1,374,317.05 ft	Latitude:	40° 21' 27.180 N
	+E/-W	5.6 ft	Easting:	3,245,653.77 ft	Longitude:	104° 37' 6.636 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,703.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/31/2009	8.94	67.10	53,298

**Design** Noble Ehrlich State PC F36-32D Plan #1 (8-10-10)

**Audit Notes:**

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

<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	219.00

**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	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
950.0	5.00	250.00	949.7	-3.7	-10.2	2.00	2.00	0.00	250.00	
1,523.9	15.41	217.86	1,514.1	-72.7	-80.8	2.00	1.81	-5.60	-45.26	
4,350.3	15.41	217.86	4,238.9	-665.5	-541.6	0.00	0.00	0.00	0.00	
5,120.7	0.00	0.00	5,000.0	-746.8	-604.8	2.00	-2.00	0.00	180.00	Target BHL 2570'F
7,381.7	0.00	0.00	7,261.0	-746.8	-604.8	0.00	0.00	0.00	0.00	

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Sec.36-T5N-R65W  
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MD Reference: WELL @ 4716.0ft (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)
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
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.40	250.00	720.0	0.0	-0.1	0.1	2.00	2.00	0.00
760.0	1.20	250.00	760.0	-0.2	-0.6	0.5	2.00	2.00	0.00
800.0	2.00	250.00	800.0	-0.6	-1.6	1.5	2.00	2.00	0.00
840.0	2.80	250.00	839.9	-1.2	-3.2	2.9	2.00	2.00	0.00
880.0	3.60	250.00	879.9	-1.9	-5.3	4.8	2.00	2.00	0.00
920.0	4.40	250.00	919.8	-2.9	-7.9	7.2	2.00	2.00	0.00
950.0	5.00	250.00	949.7	-3.7	-10.2	9.3	2.00	2.00	0.00
960.0	5.14	248.42	959.6	-4.0	-11.1	10.1	2.00	1.43	-15.85
1,000.0	5.75	242.89	999.5	-5.6	-14.5	13.5	2.00	1.51	-13.81
1,040.0	6.40	238.45	1,039.2	-7.7	-18.2	17.4	2.00	1.62	-11.11
1,080.0	7.07	234.84	1,079.0	-10.3	-22.1	21.9	2.00	1.70	-9.03
1,120.0	7.78	231.86	1,118.6	-13.4	-26.3	26.9	2.00	1.75	-7.43
1,160.0	8.50	229.38	1,158.2	-17.0	-30.6	32.5	2.00	1.80	-6.19
1,200.0	9.23	227.29	1,197.7	-21.1	-35.2	38.5	2.00	1.83	-5.23
1,240.0	9.97	225.51	1,237.2	-25.7	-40.1	45.2	2.00	1.86	-4.46
1,280.0	10.72	223.97	1,276.5	-30.8	-45.1	52.3	2.00	1.88	-3.84
1,320.0	11.48	222.64	1,315.8	-36.4	-50.4	60.0	2.00	1.89	-3.34
1,360.0	12.24	221.46	1,354.9	-42.5	-55.9	68.2	2.00	1.91	-2.93
1,400.0	13.01	220.42	1,394.0	-49.1	-61.6	76.9	2.00	1.92	-2.59
1,440.0	13.78	219.50	1,432.9	-56.2	-67.6	86.2	2.00	1.93	-2.31
1,480.0	14.55	218.67	1,471.7	-63.8	-73.7	96.0	2.00	1.93	-2.07
1,520.0	15.33	217.93	1,510.3	-71.9	-80.1	106.3	2.00	1.94	-1.86
1,523.9	15.41	217.86	1,514.1	-72.7	-80.8	107.3	2.00	1.94	-1.76
1,560.0	15.41	217.86	1,548.9	-80.3	-86.7	116.9	0.00	0.00	0.00
1,600.0	15.41	217.86	1,587.4	-88.7	-93.2	127.5	0.00	0.00	0.00
1,640.0	15.41	217.86	1,626.0	-97.1	-99.7	138.2	0.00	0.00	0.00
1,680.0	15.41	217.86	1,664.6	-105.4	-106.2	148.8	0.00	0.00	0.00
1,720.0	15.41	217.86	1,703.1	-113.8	-112.7	159.4	0.00	0.00	0.00
1,760.0	15.41	217.86	1,741.7	-122.2	-119.3	170.0	0.00	0.00	0.00
1,800.0	15.41	217.86	1,780.2	-130.6	-125.8	180.7	0.00	0.00	0.00
1,840.0	15.41	217.86	1,818.8	-139.0	-132.3	191.3	0.00	0.00	0.00
1,880.0	15.41	217.86	1,857.4	-147.4	-138.8	201.9	0.00	0.00	0.00



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Well: Ehrlich State PC F36-32D  
Wellbore: Wellbore #1  
Design: Noble Ehrlich State PC F36-32D Plan #1 (8-10)

Local Co-ordinate Reference: Well Ehrlich State PC F36-32D  
TVD Reference: WELL @ 4716.0ft (Original Well Elev)  
MD Reference: WELL @ 4716.0ft (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)
1,920.0	15.41	217.86	1,895.9	-155.8	-145.4	212.5	0.00	0.00	0.00
1,960.0	15.41	217.86	1,934.5	-164.2	-151.9	223.2	0.00	0.00	0.00
2,000.0	15.41	217.86	1,973.1	-172.6	-158.4	233.8	0.00	0.00	0.00
2,040.0	15.41	217.86	2,011.6	-181.0	-164.9	244.4	0.00	0.00	0.00
2,080.0	15.41	217.86	2,050.2	-189.3	-171.4	255.0	0.00	0.00	0.00
2,120.0	15.41	217.86	2,088.7	-197.7	-178.0	265.7	0.00	0.00	0.00
2,160.0	15.41	217.86	2,127.3	-206.1	-184.5	276.3	0.00	0.00	0.00
2,200.0	15.41	217.86	2,165.9	-214.5	-191.0	286.9	0.00	0.00	0.00
2,240.0	15.41	217.86	2,204.4	-222.9	-197.5	297.5	0.00	0.00	0.00
2,280.0	15.41	217.86	2,243.0	-231.3	-204.0	308.2	0.00	0.00	0.00
2,320.0	15.41	217.86	2,281.6	-239.7	-210.6	318.8	0.00	0.00	0.00
2,360.0	15.41	217.86	2,320.1	-248.1	-217.1	329.4	0.00	0.00	0.00
2,400.0	15.41	217.86	2,358.7	-256.5	-223.6	340.0	0.00	0.00	0.00
2,440.0	15.41	217.86	2,397.2	-264.9	-230.1	350.7	0.00	0.00	0.00
2,480.0	15.41	217.86	2,435.8	-273.2	-236.7	361.3	0.00	0.00	0.00
2,520.0	15.41	217.86	2,474.4	-281.6	-243.2	371.9	0.00	0.00	0.00
2,560.0	15.41	217.86	2,512.9	-290.0	-249.7	382.5	0.00	0.00	0.00
2,600.0	15.41	217.86	2,551.5	-298.4	-256.2	393.2	0.00	0.00	0.00
2,640.0	15.41	217.86	2,590.1	-306.8	-262.7	403.8	0.00	0.00	0.00
2,680.0	15.41	217.86	2,628.6	-315.2	-269.3	414.4	0.00	0.00	0.00
2,720.0	15.41	217.86	2,667.2	-323.6	-275.8	425.0	0.00	0.00	0.00
2,760.0	15.41	217.86	2,705.7	-332.0	-282.3	435.7	0.00	0.00	0.00
2,800.0	15.41	217.86	2,744.3	-340.4	-288.8	446.3	0.00	0.00	0.00
2,840.0	15.41	217.86	2,782.9	-348.8	-295.4	456.9	0.00	0.00	0.00
2,880.0	15.41	217.86	2,821.4	-357.1	-301.9	467.5	0.00	0.00	0.00
2,920.0	15.41	217.86	2,860.0	-365.5	-308.4	478.2	0.00	0.00	0.00
2,960.0	15.41	217.86	2,898.6	-373.9	-314.9	488.8	0.00	0.00	0.00
3,000.0	15.41	217.86	2,937.1	-382.3	-321.4	499.4	0.00	0.00	0.00
3,040.0	15.41	217.86	2,975.7	-390.7	-328.0	510.0	0.00	0.00	0.00
3,080.0	15.41	217.86	3,014.2	-399.1	-334.5	520.7	0.00	0.00	0.00
3,120.0	15.41	217.86	3,052.8	-407.5	-341.0	531.3	0.00	0.00	0.00
3,160.0	15.41	217.86	3,091.4	-415.9	-347.5	541.9	0.00	0.00	0.00
3,200.0	15.41	217.86	3,129.9	-424.3	-354.1	552.5	0.00	0.00	0.00
3,240.0	15.41	217.86	3,168.5	-432.7	-360.6	563.2	0.00	0.00	0.00
3,280.0	15.41	217.86	3,207.1	-441.0	-367.1	573.8	0.00	0.00	0.00
3,320.0	15.41	217.86	3,245.6	-449.4	-373.6	584.4	0.00	0.00	0.00
3,360.0	15.41	217.86	3,284.2	-457.8	-380.1	595.0	0.00	0.00	0.00
3,400.0	15.41	217.86	3,322.7	-466.2	-386.7	605.6	0.00	0.00	0.00
3,440.0	15.41	217.86	3,361.3	-474.6	-393.2	616.3	0.00	0.00	0.00
3,480.0	15.41	217.86	3,399.9	-483.0	-399.7	626.9	0.00	0.00	0.00
3,520.0	15.41	217.86	3,438.4	-491.4	-406.2	637.5	0.00	0.00	0.00
3,560.0	15.41	217.86	3,477.0	-499.8	-412.7	648.1	0.00	0.00	0.00
3,600.0	15.41	217.86	3,515.6	-508.2	-419.3	658.8	0.00	0.00	0.00
3,640.0	15.41	217.86	3,554.1	-516.6	-425.8	669.4	0.00	0.00	0.00
3,680.0	15.41	217.86	3,592.7	-524.9	-432.3	680.0	0.00	0.00	0.00
3,720.0	15.41	217.86	3,631.3	-533.3	-438.8	690.6	0.00	0.00	0.00
3,760.0	15.41	217.86	3,669.8	-541.7	-445.4	701.3	0.00	0.00	0.00
3,800.0	15.41	217.86	3,708.4	-550.1	-451.9	711.9	0.00	0.00	0.00
3,840.0	15.41	217.86	3,746.9	-558.5	-458.4	722.5	0.00	0.00	0.00
3,880.0	15.41	217.86	3,785.5	-566.9	-464.9	733.1	0.00	0.00	0.00
3,920.0	15.41	217.86	3,824.1	-575.3	-471.4	743.8	0.00	0.00	0.00
3,960.0	15.41	217.86	3,862.6	-583.7	-478.0	754.4	0.00	0.00	0.00
4,000.0	15.41	217.86	3,901.2	-592.1	-484.5	765.0	0.00	0.00	0.00

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MD Reference: WELL @ 4716.0ft (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)
4,040.0	15.41	217.86	3,939.8	-600.5	-491.0	775.6	0.00	0.00	0.00
4,080.0	15.41	217.86	3,978.3	-608.8	-497.5	786.3	0.00	0.00	0.00
4,120.0	15.41	217.86	4,016.9	-617.2	-504.1	796.9	0.00	0.00	0.00
4,160.0	15.41	217.86	4,055.4	-625.6	-510.6	807.5	0.00	0.00	0.00
4,200.0	15.41	217.86	4,094.0	-634.0	-517.1	818.1	0.00	0.00	0.00
4,240.0	15.41	217.86	4,132.6	-642.4	-523.6	828.8	0.00	0.00	0.00
4,280.0	15.41	217.86	4,171.1	-650.8	-530.1	839.4	0.00	0.00	0.00
4,320.0	15.41	217.86	4,209.7	-659.2	-536.7	850.0	0.00	0.00	0.00
4,350.3	15.41	217.86	4,238.9	-665.5	-541.6	858.1	0.00	0.00	0.00
4,360.0	15.21	217.86	4,248.3	-667.6	-543.2	860.6	2.00	-2.00	0.00
4,400.0	14.41	217.86	4,286.9	-675.6	-549.5	870.8	2.00	-2.00	0.00
4,440.0	13.61	217.86	4,325.7	-683.3	-555.4	880.5	2.00	-2.00	0.00
4,480.0	12.81	217.86	4,364.7	-690.5	-561.0	889.7	2.00	-2.00	0.00
4,520.0	12.01	217.86	4,403.7	-697.3	-566.3	898.3	2.00	-2.00	0.00
4,560.0	11.21	217.86	4,442.9	-703.6	-571.2	906.3	2.00	-2.00	0.00
4,600.0	10.41	217.86	4,482.2	-709.6	-575.8	913.8	2.00	-2.00	0.00
4,640.0	9.61	217.86	4,521.6	-715.1	-580.1	920.8	2.00	-2.00	0.00
4,680.0	8.81	217.86	4,561.1	-720.1	-584.0	927.2	2.00	-2.00	0.00
4,720.0	8.01	217.86	4,600.7	-724.7	-587.6	933.0	2.00	-2.00	0.00
4,760.0	7.21	217.86	4,640.3	-728.9	-590.9	938.3	2.00	-2.00	0.00
4,800.0	6.41	217.86	4,680.0	-732.7	-593.8	943.1	2.00	-2.00	0.00
4,840.0	5.61	217.86	4,719.8	-736.0	-596.4	947.3	2.00	-2.00	0.00
4,880.0	4.81	217.86	4,759.6	-738.8	-598.6	950.9	2.00	-2.00	0.00
4,920.0	4.01	217.86	4,799.5	-741.3	-600.5	954.0	2.00	-2.00	0.00
4,960.0	3.21	217.86	4,839.4	-743.3	-602.0	956.5	2.00	-2.00	0.00
5,000.0	2.41	217.86	4,879.4	-744.8	-603.2	958.5	2.00	-2.00	0.00
5,040.0	1.61	217.86	4,919.4	-745.9	-604.1	959.9	2.00	-2.00	0.00
5,080.0	0.81	217.86	4,959.4	-746.6	-604.6	960.7	2.00	-2.00	0.00
5,120.0	0.01	217.86	4,999.3	-746.8	-604.8	961.0	2.00	-2.00	0.00
5,120.7	0.00	0.00	5,000.0	-746.8	-604.8	961.0	2.00	-2.00	0.00
Target BHL 2570'FSL & 75'FWL									
5,160.0	0.00	0.00	5,039.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,079.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,119.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,159.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,199.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,239.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,279.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,319.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,359.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,399.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,439.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,479.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,519.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,559.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,599.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,639.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,679.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,719.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,759.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,799.3	-746.8	-604.8	961.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,839.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,879.3	-746.8	-604.8	961.0	0.00	0.00	0.00



Database: Landmark  
Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.36-T5N-R65W  
Site: Ehrlich State PC F36-31D Pad  
Sec.36-T5N-R65W  
Well: Ehrlich State PC F36-32D  
Wellbore: #1  
Design: Noble Ehrlich State PC F36-32D Plan #1 (8-10)

Local Co-ordinate Reference: Well Ehrlich State PC F36-32D  
TVD Reference: WELL @ 4716.0ft (Original Well Elev)  
MD Reference: WELL @ 4716.0ft (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)
6,040.0	0.00	0.00	5,919.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,080.0	0.00	0.00	5,959.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,120.0	0.00	0.00	5,999.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,039.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,079.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,119.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,159.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,199.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,239.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,279.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,319.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,359.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,399.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,439.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,479.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,519.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,559.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,599.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,639.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,679.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,719.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,759.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,896.7	0.00	0.00	6,776.0	-746.8	-604.8	961.0	0.00	0.00	0.00
<b>Niobrara - Target Circle 2570'FSL &amp; 75'FWL</b>									
6,920.0	0.00	0.00	6,799.3	-746.8	-604.8	961.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,839.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,879.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,040.0	0.00	0.00	6,919.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,080.0	0.00	0.00	6,959.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,120.0	0.00	0.00	6,999.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,160.0	0.00	0.00	7,039.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,079.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,231.7	0.00	0.00	7,111.0	-746.8	-604.8	961.0	0.00	0.00	0.00
<b>Codell</b>									
7,240.0	0.00	0.00	7,119.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,159.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,199.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,360.0	0.00	0.00	7,239.3	-746.8	-604.8	961.0	0.00	0.00	0.00
7,381.7	0.00	0.00	7,261.0	-746.8	-604.8	961.0	0.00	0.00	0.00
<b>Hardlines 76'N and 75'W of BHL</b>									

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.36-T5N-R65W  
**Site:** Ehrlich State PC F36-31D Pad  
 Sec.36-T5N-R65W  
**Well:** Ehrlich State PC F36-32D  
**Wellbore:** Wellbore #1  
**Design:** Noble Ehrlich State PC F36-32D Plan #1 (8-10)

**Local Co-ordinate Reference:** Well Ehrlich State PC F36-32D  
**TVD Reference:** WELL @ 4716.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4716.0ft (Original Well Elev)  
**North Reference:** True

**Survey Calculation Method:** Minimum Curvature

## 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
Hardlines 76°N and 76°E - plan misses by 106.8ft at 7381.7ft MD (7261.0 TVD, -746.8 N, -604.8 E) - Polygon	0.00	0.00	7,261.0	-670.8	-679.8	1,373,639.55	3,244,980.68	40° 21' 20.551 N	104° 37' 15.417 W
Point 1			7,261.0	0.0	0.0	1,373,639.55	3,244,980.68		
Point 2			7,261.0	0.0	200.0	1,373,641.54	3,245,180.66		
Point 3			7,261.0	0.0	0.0	1,373,639.55	3,244,980.68		
Point 4			7,261.0	-200.0	0.0	1,373,439.57	3,244,982.67		
Target BHL 2570'FSL - plan hits target - Point	0.00	0.00	5,000.0	-746.8	-604.8	1,373,564.29	3,245,056.46	40° 21' 19.800 N	104° 37' 14.448 W
Target Circle 2570'FS - plan hits target - Circle (radius 75.0)	0.00	0.00	6,776.0	-746.8	-604.8	1,373,564.29	3,245,056.46	40° 21' 19.800 N	104° 37' 14.448 W

## Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
550.0	550.0	8 5/8"	8-5/8	12-1/4

## Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,896.7	6,776.0	Niobrara		0.00	
7,231.7	7,111.0	Codell		0.00	