

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	1882.0	21.64	200.32	1856.5	-189.3	-70.1	2.00	200.32	201.9	
4	5095.6	21.64	200.32	4843.5	-1300.7	-481.7	0.00	0.00	1387.0	
5	6177.6	0.00	0.00	5900.0	-1490.0	-551.8	2.00	180.00	1588.9	TARGET BHL 2402'FNL, 132'FEL
6	7829.6	0.00	0.00	7552.0	-1490.0	-551.8	0.00	0.00	1588.9	



Directional

**NOBLE ENERGY INC WELD
COUNTY CO**

SEC.31-T5N-R66W

Bernhardt PC J31-32D Pad Sec.31-T5N-R66W

Bernhardt PC J31-32D

Wellbore #1

Plan: Noble Bernhardt PC J31-32D Plan #1 (10-19-10)

Standard Planning Report

22 October, 2010



Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt PC J31-32D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4912.0ft (Original Well Elev)
Project:	SEC.31-T5N-R66W	MD Reference:	WELL @ 4912.0ft (Original Well Elev)
Site:	Bernhardt PC J31-32D Pad Sec.31-T5N-R66W	North Reference:	True
Well:	Bernhardt PC J31-32D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Bernhardt PC J31-32D Plan #1 (10-19-1		

Project	SEC.31-T5N-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	Bernhardt PC J31-32D Pad Sec.31-T5N-R66W				
Site Position:		Northing:	1,374,995.23 ft	Latitude:	40° 21' 38.988 N
From:	Lat/Long	Easting:	3,186,565.86 ft	Longitude:	104° 49' 49.836 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.43 °

Well	Bernhardt PC J31-32D					
Well Position	+N/-S	0.0 ft	Northing:	1,374,995.21 ft	Latitude:	40° 21' 38.988 N
	+E/-W	0.0 ft	Easting:	3,186,565.86 ft	Longitude:	104° 49' 49.836 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,899.0 ft

Wellbore	Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	IGRF2010	10/22/2010	8.98	67.03	53,171	

Design	Noble Bernhardt PC J31-32D Plan #1 (10-19-10)				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	200.32	

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	
1,882.0	21.64	200.32	1,856.5	-189.3	-70.1	2.00	2.00	0.00	200.32	
5,095.6	21.64	200.32	4,843.5	-1,300.7	-481.7	0.00	0.00	0.00	0.00	
6,177.6	0.00	0.00	5,900.0	-1,490.0	-551.8	2.00	-2.00	0.00	180.00	TARGET BHL 2402
7,829.6	0.00	0.00	7,552.0	-1,490.0	-551.8	0.00	0.00	0.00	0.00	

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.31-T5N-R66W
 Site: Bernhardt PC J31-32D Pad
 Sec.31-T5N-R66W
 Well: Bernhardt PC J31-32D
 Wellbore: Wellbore #1
 Design: Noble Bernhardt PC J31-32D Plan #1 (10-19-1

Local Co-ordinate Reference: Well Bernhardt PC J31-32D
 TVD Reference: WELL @ 4912.0ft (Original Well Elev)
 MD Reference: WELL @ 4912.0ft (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
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	200.32	840.0	-0.3	-0.1	0.3	2.00	2.00	0.00
880.0	1.60	200.32	880.0	-1.0	-0.4	1.1	2.00	2.00	0.00
920.0	2.40	200.32	920.0	-2.4	-0.9	2.5	2.00	2.00	0.00
960.0	3.20	200.32	959.9	-4.2	-1.6	4.5	2.00	2.00	0.00
1,000.0	4.00	200.32	999.8	-6.5	-2.4	7.0	2.00	2.00	0.00
1,040.0	4.80	200.32	1,039.7	-9.4	-3.5	10.0	2.00	2.00	0.00
1,080.0	5.60	200.32	1,079.6	-12.8	-4.7	13.7	2.00	2.00	0.00
1,120.0	6.40	200.32	1,119.3	-16.7	-6.2	17.9	2.00	2.00	0.00
1,160.0	7.20	200.32	1,159.1	-21.2	-7.8	22.6	2.00	2.00	0.00
1,200.0	8.00	200.32	1,198.7	-26.1	-9.7	27.9	2.00	2.00	0.00
1,240.0	8.80	200.32	1,238.3	-31.6	-11.7	33.7	2.00	2.00	0.00
1,280.0	9.60	200.32	1,277.8	-37.6	-13.9	40.1	2.00	2.00	0.00
1,320.0	10.40	200.32	1,317.1	-44.1	-16.3	47.1	2.00	2.00	0.00
1,360.0	11.20	200.32	1,356.4	-51.2	-18.9	54.6	2.00	2.00	0.00
1,400.0	12.00	200.32	1,395.6	-58.7	-21.7	62.6	2.00	2.00	0.00
1,440.0	12.80	200.32	1,434.7	-66.8	-24.7	71.2	2.00	2.00	0.00
1,480.0	13.60	200.32	1,473.6	-75.3	-27.9	80.3	2.00	2.00	0.00
1,520.0	14.40	200.32	1,512.4	-84.4	-31.3	90.0	2.00	2.00	0.00
1,560.0	15.20	200.32	1,551.1	-94.0	-34.8	100.2	2.00	2.00	0.00
1,600.0	16.00	200.32	1,589.6	-104.1	-38.5	111.0	2.00	2.00	0.00
1,640.0	16.80	200.32	1,628.0	-114.7	-42.5	122.3	2.00	2.00	0.00
1,680.0	17.60	200.32	1,666.2	-125.8	-46.6	134.1	2.00	2.00	0.00
1,720.0	18.40	200.32	1,704.3	-137.3	-50.9	146.5	2.00	2.00	0.00
1,760.0	19.20	200.32	1,742.1	-149.4	-55.3	159.3	2.00	2.00	0.00
1,800.0	20.00	200.32	1,779.8	-162.0	-60.0	172.8	2.00	2.00	0.00
1,840.0	20.80	200.32	1,817.3	-175.1	-64.8	186.7	2.00	2.00	0.00
1,880.0	21.60	200.32	1,854.6	-188.7	-69.9	201.2	2.00	2.00	0.00
1,882.0	21.64	200.32	1,856.5	-189.3	-70.1	201.9	2.00	2.00	0.00
1,920.0	21.64	200.32	1,891.8	-202.5	-75.0	215.9	0.00	0.00	0.00
1,960.0	21.64	200.32	1,929.0	-216.3	-80.1	230.7	0.00	0.00	0.00
2,000.0	21.64	200.32	1,966.1	-230.2	-85.2	245.4	0.00	0.00	0.00
2,040.0	21.64	200.32	2,003.3	-244.0	-90.4	260.2	0.00	0.00	0.00

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.31-T5N-R66W
 Site: Bernhardt PC J31-32D Pad
 Sec.31-T5N-R66W
 Well: Bernhardt PC J31-32D
 Wellbore: Wellbore #1
 Design: Noble Bernhardt PC J31-32D Plan #1 (10-19-1

Local Co-ordinate Reference: Well Bernhardt PC J31-32D
 TVD Reference: WELL @ 4912.0ft (Original Well Elev)
 MD Reference: WELL @ 4912.0ft (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)
2,080.0	21.64	200.32	2,040.5	-257.8	-95.5	274.9	0.00	0.00	0.00
2,120.0	21.64	200.32	2,077.7	-271.6	-100.6	289.7	0.00	0.00	0.00
2,160.0	21.64	200.32	2,114.9	-285.5	-105.7	304.4	0.00	0.00	0.00
2,200.0	21.64	200.32	2,152.0	-299.3	-110.9	319.2	0.00	0.00	0.00
2,240.0	21.64	200.32	2,189.2	-313.1	-116.0	333.9	0.00	0.00	0.00
2,280.0	21.64	200.32	2,226.4	-327.0	-121.1	348.7	0.00	0.00	0.00
2,320.0	21.64	200.32	2,263.6	-340.8	-126.2	363.4	0.00	0.00	0.00
2,360.0	21.64	200.32	2,300.8	-354.6	-131.3	378.2	0.00	0.00	0.00
2,400.0	21.64	200.32	2,337.9	-368.5	-136.5	392.9	0.00	0.00	0.00
2,440.0	21.64	200.32	2,375.1	-382.3	-141.6	407.7	0.00	0.00	0.00
2,480.0	21.64	200.32	2,412.3	-396.1	-146.7	422.4	0.00	0.00	0.00
2,520.0	21.64	200.32	2,449.5	-410.0	-151.8	437.2	0.00	0.00	0.00
2,560.0	21.64	200.32	2,486.7	-423.8	-157.0	451.9	0.00	0.00	0.00
2,600.0	21.64	200.32	2,523.9	-437.6	-162.1	466.7	0.00	0.00	0.00
2,640.0	21.64	200.32	2,561.0	-451.5	-167.2	481.4	0.00	0.00	0.00
2,680.0	21.64	200.32	2,598.2	-465.3	-172.3	496.2	0.00	0.00	0.00
2,720.0	21.64	200.32	2,635.4	-479.1	-177.5	510.9	0.00	0.00	0.00
2,760.0	21.64	200.32	2,672.6	-493.0	-182.6	525.7	0.00	0.00	0.00
2,800.0	21.64	200.32	2,709.8	-506.8	-187.7	540.4	0.00	0.00	0.00
2,840.0	21.64	200.32	2,746.9	-520.6	-192.8	555.2	0.00	0.00	0.00
2,880.0	21.64	200.32	2,784.1	-534.5	-197.9	569.9	0.00	0.00	0.00
2,920.0	21.64	200.32	2,821.3	-548.3	-203.1	584.7	0.00	0.00	0.00
2,960.0	21.64	200.32	2,858.5	-562.1	-208.2	599.4	0.00	0.00	0.00
3,000.0	21.64	200.32	2,895.7	-576.0	-213.3	614.2	0.00	0.00	0.00
3,040.0	21.64	200.32	2,932.8	-589.8	-218.4	629.0	0.00	0.00	0.00
3,080.0	21.64	200.32	2,970.0	-603.6	-223.6	643.7	0.00	0.00	0.00
3,120.0	21.64	200.32	3,007.2	-617.5	-228.7	658.5	0.00	0.00	0.00
3,160.0	21.64	200.32	3,044.4	-631.3	-233.8	673.2	0.00	0.00	0.00
3,200.0	21.64	200.32	3,081.6	-645.1	-238.9	688.0	0.00	0.00	0.00
3,240.0	21.64	200.32	3,118.7	-659.0	-244.0	702.7	0.00	0.00	0.00
3,280.0	21.64	200.32	3,155.9	-672.8	-249.2	717.5	0.00	0.00	0.00
3,320.0	21.64	200.32	3,193.1	-686.6	-254.3	732.2	0.00	0.00	0.00
3,360.0	21.64	200.32	3,230.3	-700.5	-259.4	747.0	0.00	0.00	0.00
3,400.0	21.64	200.32	3,267.5	-714.3	-264.5	761.7	0.00	0.00	0.00
3,440.0	21.64	200.32	3,304.6	-728.1	-269.7	776.5	0.00	0.00	0.00
3,480.0	21.64	200.32	3,341.8	-742.0	-274.8	791.2	0.00	0.00	0.00
3,520.0	21.64	200.32	3,379.0	-755.8	-279.9	806.0	0.00	0.00	0.00
3,560.0	21.64	200.32	3,416.2	-769.6	-285.0	820.7	0.00	0.00	0.00
3,600.0	21.64	200.32	3,453.4	-783.5	-290.2	835.5	0.00	0.00	0.00
3,640.0	21.64	200.32	3,490.6	-797.3	-295.3	850.2	0.00	0.00	0.00
3,680.0	21.64	200.32	3,527.7	-811.1	-300.4	865.0	0.00	0.00	0.00
3,720.0	21.64	200.32	3,564.9	-825.0	-305.5	879.7	0.00	0.00	0.00
3,760.0	21.64	200.32	3,602.1	-838.8	-310.6	894.5	0.00	0.00	0.00
3,800.0	21.64	200.32	3,639.3	-852.6	-315.8	909.2	0.00	0.00	0.00
3,840.0	21.64	200.32	3,676.5	-866.5	-320.9	924.0	0.00	0.00	0.00
3,880.0	21.64	200.32	3,713.6	-880.3	-326.0	938.7	0.00	0.00	0.00
3,920.0	21.64	200.32	3,750.8	-894.1	-331.1	953.5	0.00	0.00	0.00
3,960.0	21.64	200.32	3,788.0	-908.0	-336.3	968.2	0.00	0.00	0.00
4,000.0	21.64	200.32	3,825.2	-921.8	-341.4	983.0	0.00	0.00	0.00
4,040.0	21.64	200.32	3,862.4	-935.6	-346.5	997.7	0.00	0.00	0.00
4,080.0	21.64	200.32	3,899.5	-949.5	-351.6	1,012.5	0.00	0.00	0.00
4,120.0	21.64	200.32	3,936.7	-963.3	-356.8	1,027.2	0.00	0.00	0.00
4,160.0	21.64	200.32	3,973.9	-977.1	-361.9	1,042.0	0.00	0.00	0.00

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.31-T5N-R66W
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Local Co-ordinate Reference: Well Bernhardt PC J31-32D
 TVD Reference: WELL @ 4912.0ft (Original Well Elev)
 MD Reference: WELL @ 4912.0ft (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)
4,200.0	21.64	200.32	4,011.1	-991.0	-367.0	1,056.7	0.00	0.00	0.00
4,240.0	21.64	200.32	4,048.3	-1,004.8	-372.1	1,071.5	0.00	0.00	0.00
4,280.0	21.64	200.32	4,085.4	-1,018.6	-377.2	1,086.2	0.00	0.00	0.00
4,320.0	21.64	200.32	4,122.6	-1,032.4	-382.4	1,101.0	0.00	0.00	0.00
4,360.0	21.64	200.32	4,159.8	-1,046.3	-387.5	1,115.7	0.00	0.00	0.00
4,400.0	21.64	200.32	4,197.0	-1,060.1	-392.6	1,130.5	0.00	0.00	0.00
4,440.0	21.64	200.32	4,234.2	-1,073.9	-397.7	1,145.2	0.00	0.00	0.00
4,480.0	21.64	200.32	4,271.3	-1,087.8	-402.9	1,160.0	0.00	0.00	0.00
4,520.0	21.64	200.32	4,308.5	-1,101.6	-408.0	1,174.7	0.00	0.00	0.00
4,560.0	21.64	200.32	4,345.7	-1,115.4	-413.1	1,189.5	0.00	0.00	0.00
4,600.0	21.64	200.32	4,382.9	-1,129.3	-418.2	1,204.2	0.00	0.00	0.00
4,640.0	21.64	200.32	4,420.1	-1,143.1	-423.4	1,219.0	0.00	0.00	0.00
4,680.0	21.64	200.32	4,457.3	-1,156.9	-428.5	1,233.7	0.00	0.00	0.00
4,720.0	21.64	200.32	4,494.4	-1,170.8	-433.6	1,248.5	0.00	0.00	0.00
4,760.0	21.64	200.32	4,531.6	-1,184.6	-438.7	1,263.2	0.00	0.00	0.00
4,800.0	21.64	200.32	4,568.8	-1,198.4	-443.8	1,278.0	0.00	0.00	0.00
4,840.0	21.64	200.32	4,606.0	-1,212.3	-449.0	1,292.7	0.00	0.00	0.00
4,880.0	21.64	200.32	4,643.2	-1,226.1	-454.1	1,307.5	0.00	0.00	0.00
4,920.0	21.64	200.32	4,680.3	-1,239.9	-459.2	1,322.2	0.00	0.00	0.00
4,960.0	21.64	200.32	4,717.5	-1,253.8	-464.3	1,337.0	0.00	0.00	0.00
5,000.0	21.64	200.32	4,754.7	-1,267.6	-469.5	1,351.7	0.00	0.00	0.00
5,040.0	21.64	200.32	4,791.9	-1,281.4	-474.6	1,366.5	0.00	0.00	0.00
5,080.0	21.64	200.32	4,829.1	-1,295.3	-479.7	1,381.2	0.00	0.00	0.00
5,095.6	21.64	200.32	4,843.5	-1,300.7	-481.7	1,387.0	0.00	0.00	0.00
5,120.0	21.15	200.32	4,866.3	-1,309.0	-484.8	1,395.9	2.00	-2.00	0.00
5,160.0	20.35	200.32	4,903.7	-1,322.3	-489.7	1,410.1	2.00	-2.00	0.00
5,200.0	19.55	200.32	4,941.3	-1,335.1	-494.5	1,423.7	2.00	-2.00	0.00
5,240.0	18.75	200.32	4,979.1	-1,347.4	-499.0	1,436.8	2.00	-2.00	0.00
5,280.0	17.95	200.32	5,017.0	-1,359.2	-503.4	1,449.4	2.00	-2.00	0.00
5,320.0	17.15	200.32	5,055.2	-1,370.5	-507.6	1,461.5	2.00	-2.00	0.00
5,360.0	16.35	200.32	5,093.5	-1,381.3	-511.6	1,473.0	2.00	-2.00	0.00
5,400.0	15.55	200.32	5,131.9	-1,391.7	-515.4	1,484.0	2.00	-2.00	0.00
5,440.0	14.75	200.32	5,170.5	-1,401.5	-519.0	1,494.5	2.00	-2.00	0.00
5,480.0	13.95	200.32	5,209.3	-1,410.8	-522.5	1,504.4	2.00	-2.00	0.00
5,520.0	13.15	200.32	5,248.2	-1,419.5	-525.7	1,513.8	2.00	-2.00	0.00
5,560.0	12.35	200.32	5,287.2	-1,427.8	-528.8	1,522.6	2.00	-2.00	0.00
5,600.0	11.55	200.32	5,326.3	-1,435.6	-531.7	1,530.9	2.00	-2.00	0.00
5,640.0	10.75	200.32	5,365.6	-1,442.8	-534.4	1,538.6	2.00	-2.00	0.00
5,680.0	9.95	200.32	5,404.9	-1,449.6	-536.9	1,545.8	2.00	-2.00	0.00
5,720.0	9.15	200.32	5,444.4	-1,455.8	-539.2	1,552.4	2.00	-2.00	0.00
5,760.0	8.35	200.32	5,483.9	-1,461.5	-541.3	1,558.5	2.00	-2.00	0.00
5,800.0	7.55	200.32	5,523.5	-1,466.7	-543.2	1,564.1	2.00	-2.00	0.00
5,840.0	6.75	200.32	5,563.2	-1,471.4	-544.9	1,569.0	2.00	-2.00	0.00
5,880.0	5.95	200.32	5,603.0	-1,475.5	-546.5	1,573.5	2.00	-2.00	0.00
5,920.0	5.15	200.32	5,642.8	-1,479.2	-547.8	1,577.3	2.00	-2.00	0.00
5,960.0	4.35	200.32	5,682.6	-1,482.3	-549.0	1,580.6	2.00	-2.00	0.00
6,000.0	3.55	200.32	5,722.5	-1,484.8	-549.9	1,583.4	2.00	-2.00	0.00
6,040.0	2.75	200.32	5,762.5	-1,486.9	-550.7	1,585.6	2.00	-2.00	0.00
6,080.0	1.95	200.32	5,802.4	-1,488.4	-551.2	1,587.2	2.00	-2.00	0.00
6,120.0	1.15	200.32	5,842.4	-1,489.5	-551.6	1,588.3	2.00	-2.00	0.00
6,160.0	0.35	200.32	5,882.4	-1,490.0	-551.8	1,588.9	2.00	-2.00	0.00
6,177.6	0.00	0.00	5,900.0	-1,490.0	-551.8	1,588.9	2.00	-2.00	0.00
6,200.0	0.00	0.00	5,922.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.31-T5N-R66W
 Site: Bernhardt PC J31-32D Pad
 Sec.31-T5N-R66W
 Well: Bernhardt PC J31-32D
 Wellbore: Wellbore #1
 Design: Noble Bernhardt PC J31-32D Plan #1 (10-19-1

Local Co-ordinate Reference: Well Bernhardt PC J31-32D
 TVD Reference: WELL @ 4912.0ft (Original Well Elev)
 MD Reference: WELL @ 4912.0ft (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)
6,240.0	0.00	0.00	5,962.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,280.0	0.00	0.00	6,002.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,320.0	0.00	0.00	6,042.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,360.0	0.00	0.00	6,082.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,122.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,440.0	0.00	0.00	6,162.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,480.0	0.00	0.00	6,202.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,520.0	0.00	0.00	6,242.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,282.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,322.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,362.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,402.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,442.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,482.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,522.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,562.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,602.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,642.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,682.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,722.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,762.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,802.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,120.0	0.00	0.00	6,842.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,160.0	0.00	0.00	6,882.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,922.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,240.0	0.00	0.00	6,962.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,280.0	0.00	0.00	7,002.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,320.0	0.00	0.00	7,042.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,360.0	0.00	0.00	7,082.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,122.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,440.0	0.00	0.00	7,162.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,202.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,520.0	0.00	0.00	7,242.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,560.0	0.00	0.00	7,282.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,322.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,362.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,680.0	0.00	0.00	7,402.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,720.0	0.00	0.00	7,442.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,760.0	0.00	0.00	7,482.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,522.4	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00
7,829.6	0.00	0.00	7,552.0	-1,490.0	-551.8	1,588.9	0.00	0.00	0.00

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.31-T5N-R66W
 Site: Bernhardt PC J31-32D Pad
 Sec.31-T5N-R66W
 Well: Bernhardt PC J31-32D
 Wellbore: Wellbore #1
 Design: Noble Bernhardt PC J31-32D Plan #1 (10-19-1

Local Co-ordinate Reference: Well Bernhardt PC J31-32D
 TVD Reference: WELL @ 4912.0ft (Original Well Elev)
 MD Reference: WELL @ 4912.0ft (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
HARD LINES 243'S & - plan misses by 276.5ft at 7829.6ft MD (7552.0 TVD, -1490.0 N, -551.8 E) - Polygon	0.00	0.00	7,552.0	-1,733.0	-419.8	1,373,259.17	3,186,159.17	40° 21' 21.863 N	104° 49' 55.259 W
Point 1			7,552.0	0.0	0.0	1,373,259.17	3,186,159.17		
Point 2			7,552.0	400.0	0.0	1,373,659.14	3,186,156.15		
Point 3			7,552.0	0.0	0.0	1,373,259.17	3,186,159.17		
Point 4			7,552.0	0.0	-300.0	1,373,256.90	3,185,859.20		
TARGET CIRCLE 24C - plan hits target - Circle (radius 75.0)	0.00	0.00	7,062.0	-1,490.0	-551.8	1,373,501.15	3,186,025.32	40° 21' 24.264 N	104° 49' 56.964 W
TARGET BHL 2402'F - plan hits target - Point	0.00	0.00	5,900.0	-1,490.0	-551.8	1,373,501.15	3,186,025.32	40° 21' 24.264 N	104° 49' 56.964 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
600.0	600.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,339.6	7,062.0	NIOBRARA		0.00	
7,679.6	7,402.0	CODELL		0.00	