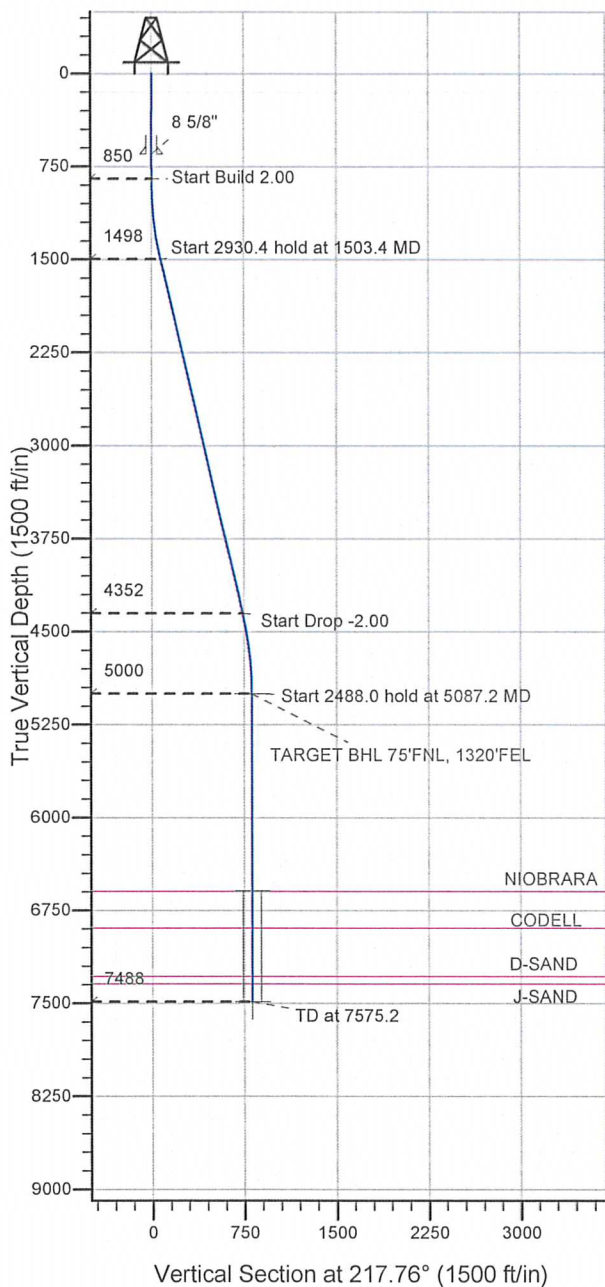


# ENSIGN

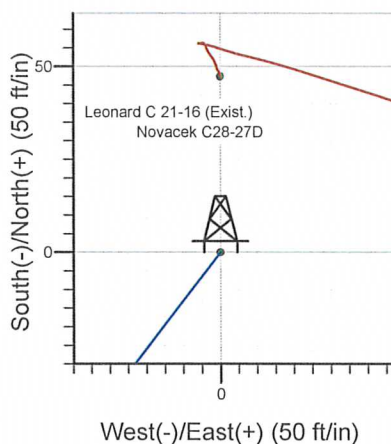
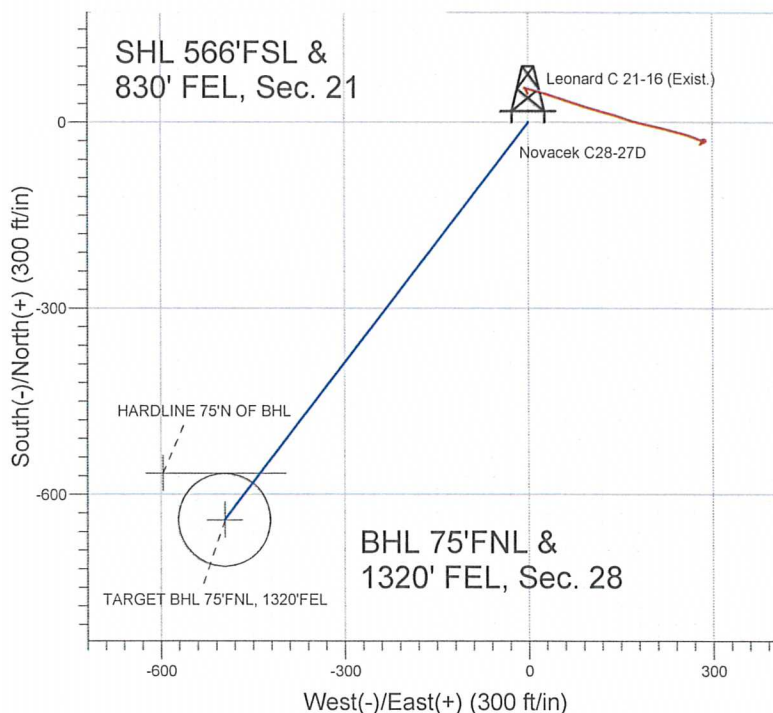
## Directional

**Well Name: Novacek C28-27D**

Surface Location: Novacek C28-27D Pad Sec.21-T4N-R64W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4710.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1350721.90 3265170.52 40.292230 -104.549390  
 Original Well Elev WELL @ 4723.0ft (Original Well Elev)



### NOBLE ENERGY INC WELD COUNTY CO



Novacek C28-27D Pad Sec.21-T4N-R64W  
 Novacek C28-27D  
 Noble Novacek C28-27D Plan #1 (8-04-11)  
 15:04, August 09 2011



Azimuths to True North  
 Magnetic North: 8.72°

Magnetic Field  
 Strength: 53084.6snT  
 Dip Angle: 66.99°  
 Date: 8/4/2011  
 Model: IGRF2010

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 75'FNL, 1320'FEL	5000.0	-641.2	-496.6	40.290470	-104.551170	Point
TARGET CIRCLE 75'FNL & 1320'FEL	6593.0	-641.2	-496.6	40.290470	-104.551170	Circle (Radius: 75.0)
HARD LINES 75'N OF BHL	7488.0	-566.2	-596.6	40.290676	-104.551529	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	850.0	0.00	0.00	850.0	0.0	0.0	0.00	0.00	0.0	
3	1503.4	13.07	217.76	1497.8	-58.7	-45.4	2.00	217.76	74.2	
4	4433.8	13.07	217.76	4352.2	-582.5	-451.1	0.00	0.00	736.8	
5	5087.2	0.00	0.00	5000.0	-641.2	-496.6	2.00	180.00	811.0	TARGET BHL 75'FNL, 1320'FEL
6	7575.2	0.00	0.00	7488.0	-641.2	-496.6	0.00	0.00	811.0	



## **Directional**

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

**SEC.21-T4N-R64W**

**Novacek C28-27D Pad Sec.21-T4N-R64W**

**Novacek C28-27D**

**Wellbore #1**

**Plan: Noble Novacek C28-27D Plan #1 (8-04-11)**

### **Standard Planning Report**

**09 August, 2011**



Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.21-T4N-R64W  
 Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
 Well: Novacek C28-27D  
 Wellbore: Wellbore #1  
 Design: Noble Novacek C28-27D Plan #1 (8-04-11)

Local Co-ordinate Reference: Well Novacek C28-27D  
 TVD Reference: WELL @ 4723.0ft (Original Well Elev)  
 MD Reference: WELL @ 4723.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

Project	SEC.21-T4N-R64W, 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	Novacek C28-27D Pad Sec.21-T4N-R64W				
Site Position:		Northing:	1,350,721.91 ft	Latitude:	40.292230
From:	Lat/Long	Easting:	3,265,170.52 ft	Longitude:	-104.549390
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.61 °

Well	Novacek C28-27D					
Well Position	+N/-S	0.0 ft	Northing:	1,350,721.90 ft	Latitude:	40.292230
	+E/-W	0.0 ft	Easting:	3,265,170.52 ft	Longitude:	-104.549390
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,710.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/4/2011	8.72	66.99	53,085

Design	Noble Novacek C28-27D Plan #1 (8-04-11)			
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	217.76

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	
850.0	0.00	0.00	850.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,503.4	13.07	217.76	1,497.8	-58.7	-45.4	2.00	2.00	0.00	217.76	
4,433.8	13.07	217.76	4,352.2	-582.5	-451.1	0.00	0.00	0.00	0.00	
5,087.2	0.00	0.00	5,000.0	-641.2	-496.6	2.00	-2.00	0.00	180.00	TARGET BHL 75'FI
7,575.2	0.00	0.00	7,488.0	-641.2	-496.6	0.00	0.00	0.00	0.00	



Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.21-T4N-R64W  
 Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
 Well: Novacek C28-27D  
 Wellbore: Wellbore #1  
 Design: Noble Novacek C28-27D Plan #1 (8-04-11)

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well Novacek C28-27D  
 WELL @ 4723.0ft (Original Well Elev)  
 WELL @ 4723.0ft (Original Well Elev)  
 True  
 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
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.60	217.76	880.0	-0.1	-0.1	0.2	2.00	2.00	0.00
920.0	1.40	217.76	920.0	-0.7	-0.5	0.9	2.00	2.00	0.00
960.0	2.20	217.76	960.0	-1.7	-1.3	2.1	2.00	2.00	0.00
1,000.0	3.00	217.76	999.9	-3.1	-2.4	3.9	2.00	2.00	0.00
1,040.0	3.80	217.76	1,039.9	-5.0	-3.9	6.3	2.00	2.00	0.00
1,080.0	4.60	217.76	1,079.8	-7.3	-5.7	9.2	2.00	2.00	0.00
1,120.0	5.40	217.76	1,119.6	-10.1	-7.8	12.7	2.00	2.00	0.00
1,160.0	6.20	217.76	1,159.4	-13.2	-10.3	16.8	2.00	2.00	0.00
1,200.0	7.00	217.76	1,199.1	-16.9	-13.1	21.4	2.00	2.00	0.00
1,240.0	7.80	217.76	1,238.8	-21.0	-16.2	26.5	2.00	2.00	0.00
1,280.0	8.60	217.76	1,278.4	-25.5	-19.7	32.2	2.00	2.00	0.00
1,320.0	9.40	217.76	1,317.9	-30.4	-23.6	38.5	2.00	2.00	0.00
1,360.0	10.20	217.76	1,357.3	-35.8	-27.7	45.3	2.00	2.00	0.00
1,400.0	11.00	217.76	1,396.6	-41.6	-32.2	52.6	2.00	2.00	0.00
1,440.0	11.80	217.76	1,435.8	-47.9	-37.1	60.5	2.00	2.00	0.00
1,480.0	12.60	217.76	1,474.9	-54.5	-42.2	69.0	2.00	2.00	0.00
1,503.4	13.07	217.76	1,497.8	-58.7	-45.4	74.2	2.00	2.00	0.00
1,520.0	13.07	217.76	1,513.9	-61.6	-47.7	77.9	0.00	0.00	0.00
1,560.0	13.07	217.76	1,552.9	-68.8	-53.3	87.0	0.00	0.00	0.00
1,600.0	13.07	217.76	1,591.8	-75.9	-58.8	96.0	0.00	0.00	0.00
1,640.0	13.07	217.76	1,630.8	-83.1	-64.3	105.1	0.00	0.00	0.00
1,680.0	13.07	217.76	1,669.8	-90.2	-69.9	114.1	0.00	0.00	0.00
1,720.0	13.07	217.76	1,708.7	-97.4	-75.4	123.2	0.00	0.00	0.00
1,760.0	13.07	217.76	1,747.7	-104.5	-81.0	132.2	0.00	0.00	0.00
1,800.0	13.07	217.76	1,786.7	-111.7	-86.5	141.3	0.00	0.00	0.00
1,840.0	13.07	217.76	1,825.6	-118.8	-92.0	150.3	0.00	0.00	0.00
1,880.0	13.07	217.76	1,864.6	-126.0	-97.6	159.3	0.00	0.00	0.00
1,920.0	13.07	217.76	1,903.6	-133.1	-103.1	168.4	0.00	0.00	0.00
1,960.0	13.07	217.76	1,942.5	-140.3	-108.6	177.4	0.00	0.00	0.00

Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.21-T4N-R64W  
 Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
 Well: Novacek C28-27D  
 Wellbore: Wellbore #1  
 Design: Noble Novacek C28-27D Plan #1 (8-04-11)

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well Novacek C28-27D  
 WELL @ 4723.0ft (Original Well Elev)  
 WELL @ 4723.0ft (Original Well Elev)  
 True  
 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)
2,000.0	13.07	217.76	1,981.5	-147.4	-114.2	186.5	0.00	0.00	0.00
2,040.0	13.07	217.76	2,020.5	-154.6	-119.7	195.5	0.00	0.00	0.00
2,080.0	13.07	217.76	2,059.4	-161.7	-125.3	204.6	0.00	0.00	0.00
2,120.0	13.07	217.76	2,098.4	-168.9	-130.8	213.6	0.00	0.00	0.00
2,160.0	13.07	217.76	2,137.3	-176.0	-136.3	222.7	0.00	0.00	0.00
2,200.0	13.07	217.76	2,176.3	-183.2	-141.9	231.7	0.00	0.00	0.00
2,240.0	13.07	217.76	2,215.3	-190.3	-147.4	240.7	0.00	0.00	0.00
2,280.0	13.07	217.76	2,254.2	-197.5	-152.9	249.8	0.00	0.00	0.00
2,320.0	13.07	217.76	2,293.2	-204.6	-158.5	258.8	0.00	0.00	0.00
2,360.0	13.07	217.76	2,332.2	-211.8	-164.0	267.9	0.00	0.00	0.00
2,400.0	13.07	217.76	2,371.1	-218.9	-169.6	276.9	0.00	0.00	0.00
2,440.0	13.07	217.76	2,410.1	-226.1	-175.1	286.0	0.00	0.00	0.00
2,480.0	13.07	217.76	2,449.1	-233.2	-180.6	295.0	0.00	0.00	0.00
2,520.0	13.07	217.76	2,488.0	-240.4	-186.2	304.1	0.00	0.00	0.00
2,560.0	13.07	217.76	2,527.0	-247.5	-191.7	313.1	0.00	0.00	0.00
2,600.0	13.07	217.76	2,565.9	-254.7	-197.3	322.1	0.00	0.00	0.00
2,640.0	13.07	217.76	2,604.9	-261.8	-202.8	331.2	0.00	0.00	0.00
2,680.0	13.07	217.76	2,643.9	-269.0	-208.3	340.2	0.00	0.00	0.00
2,720.0	13.07	217.76	2,682.8	-276.1	-213.9	349.3	0.00	0.00	0.00
2,760.0	13.07	217.76	2,721.8	-283.3	-219.4	358.3	0.00	0.00	0.00
2,800.0	13.07	217.76	2,760.8	-290.4	-224.9	367.4	0.00	0.00	0.00
2,840.0	13.07	217.76	2,799.7	-297.6	-230.5	376.4	0.00	0.00	0.00
2,880.0	13.07	217.76	2,838.7	-304.7	-236.0	385.5	0.00	0.00	0.00
2,920.0	13.07	217.76	2,877.7	-311.9	-241.6	394.5	0.00	0.00	0.00
2,960.0	13.07	217.76	2,916.6	-319.0	-247.1	403.5	0.00	0.00	0.00
3,000.0	13.07	217.76	2,955.6	-326.2	-252.6	412.6	0.00	0.00	0.00
3,040.0	13.07	217.76	2,994.6	-333.3	-258.2	421.6	0.00	0.00	0.00
3,080.0	13.07	217.76	3,033.5	-340.5	-263.7	430.7	0.00	0.00	0.00
3,120.0	13.07	217.76	3,072.5	-347.6	-269.2	439.7	0.00	0.00	0.00
3,160.0	13.07	217.76	3,111.4	-354.8	-274.8	448.8	0.00	0.00	0.00
3,200.0	13.07	217.76	3,150.4	-361.9	-280.3	457.8	0.00	0.00	0.00
3,240.0	13.07	217.76	3,189.4	-369.1	-285.9	466.9	0.00	0.00	0.00
3,280.0	13.07	217.76	3,228.3	-376.3	-291.4	475.9	0.00	0.00	0.00
3,320.0	13.07	217.76	3,267.3	-383.4	-296.9	484.9	0.00	0.00	0.00
3,360.0	13.07	217.76	3,306.3	-390.6	-302.5	494.0	0.00	0.00	0.00
3,400.0	13.07	217.76	3,345.2	-397.7	-308.0	503.0	0.00	0.00	0.00
3,440.0	13.07	217.76	3,384.2	-404.9	-313.6	512.1	0.00	0.00	0.00
3,480.0	13.07	217.76	3,423.2	-412.0	-319.1	521.1	0.00	0.00	0.00
3,520.0	13.07	217.76	3,462.1	-419.2	-324.6	530.2	0.00	0.00	0.00
3,560.0	13.07	217.76	3,501.1	-426.3	-330.2	539.2	0.00	0.00	0.00
3,600.0	13.07	217.76	3,540.1	-433.5	-335.7	548.3	0.00	0.00	0.00
3,640.0	13.07	217.76	3,579.0	-440.6	-341.2	557.3	0.00	0.00	0.00
3,680.0	13.07	217.76	3,618.0	-447.8	-346.8	566.3	0.00	0.00	0.00
3,720.0	13.07	217.76	3,656.9	-454.9	-352.3	575.4	0.00	0.00	0.00
3,760.0	13.07	217.76	3,695.9	-462.1	-357.9	584.4	0.00	0.00	0.00
3,800.0	13.07	217.76	3,734.9	-469.2	-363.4	593.5	0.00	0.00	0.00
3,840.0	13.07	217.76	3,773.8	-476.4	-368.9	602.5	0.00	0.00	0.00
3,880.0	13.07	217.76	3,812.8	-483.5	-374.5	611.6	0.00	0.00	0.00
3,920.0	13.07	217.76	3,851.8	-490.7	-380.0	620.6	0.00	0.00	0.00
3,960.0	13.07	217.76	3,890.7	-497.8	-385.5	629.7	0.00	0.00	0.00
4,000.0	13.07	217.76	3,929.7	-505.0	-391.1	638.7	0.00	0.00	0.00
4,040.0	13.07	217.76	3,968.7	-512.1	-396.6	647.7	0.00	0.00	0.00
4,080.0	13.07	217.76	4,007.6	-519.3	-402.2	656.8	0.00	0.00	0.00
4,120.0	13.07	217.76	4,046.6	-526.4	-407.7	665.8	0.00	0.00	0.00



Database:	Landmark	Local Co-ordinate Reference:	Well Novacek C28-27D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4723.0ft (Original Well Elev)
Project:	SEC.21-T4N-R64W	MD Reference:	WELL @ 4723.0ft (Original Well Elev)
Site:	Novacek C28-27D Pad Sec.21-T4N-R64W	North Reference:	True
Well:	Novacek C28-27D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Novacek C28-27D Plan #1 (8-04-11)		

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)
4,160.0	13.07	217.76	4,085.5	-533.6	-413.2	674.9	0.00	0.00	0.00
4,200.0	13.07	217.76	4,124.5	-540.7	-418.8	683.9	0.00	0.00	0.00
4,240.0	13.07	217.76	4,163.5	-547.9	-424.3	693.0	0.00	0.00	0.00
4,280.0	13.07	217.76	4,202.4	-555.0	-429.9	702.0	0.00	0.00	0.00
4,320.0	13.07	217.76	4,241.4	-562.2	-435.4	711.1	0.00	0.00	0.00
4,360.0	13.07	217.76	4,280.4	-569.3	-440.9	720.1	0.00	0.00	0.00
4,400.0	13.07	217.76	4,319.3	-576.5	-446.5	729.1	0.00	0.00	0.00
4,433.8	13.07	217.76	4,352.2	-582.5	-451.1	736.8	0.00	0.00	0.00
4,440.0	12.94	217.76	4,358.3	-583.6	-452.0	738.2	2.00	-2.00	0.00
4,480.0	12.14	217.76	4,397.3	-590.5	-457.3	746.9	2.00	-2.00	0.00
4,520.0	11.34	217.76	4,436.5	-596.9	-462.3	755.0	2.00	-2.00	0.00
4,560.0	10.54	217.76	4,475.8	-602.9	-467.0	762.6	2.00	-2.00	0.00
4,600.0	9.74	217.76	4,515.2	-608.5	-471.3	769.6	2.00	-2.00	0.00
4,640.0	8.94	217.76	4,554.6	-613.6	-475.2	776.1	2.00	-2.00	0.00
4,680.0	8.14	217.76	4,594.2	-618.3	-478.9	782.1	2.00	-2.00	0.00
4,720.0	7.34	217.76	4,633.8	-622.6	-482.2	787.5	2.00	-2.00	0.00
4,760.0	6.54	217.76	4,673.5	-626.4	-485.1	792.3	2.00	-2.00	0.00
4,800.0	5.74	217.76	4,713.3	-629.8	-487.8	796.6	2.00	-2.00	0.00
4,840.0	4.94	217.76	4,753.1	-632.7	-490.0	800.3	2.00	-2.00	0.00
4,880.0	4.14	217.76	4,793.0	-635.2	-492.0	803.5	2.00	-2.00	0.00
4,920.0	3.34	217.76	4,832.9	-637.3	-493.6	806.1	2.00	-2.00	0.00
4,960.0	2.54	217.76	4,872.8	-638.9	-494.8	808.1	2.00	-2.00	0.00
5,000.0	1.74	217.76	4,912.8	-640.1	-495.8	809.6	2.00	-2.00	0.00
5,040.0	0.94	217.76	4,952.8	-640.9	-496.3	810.6	2.00	-2.00	0.00
5,080.0	0.14	217.76	4,992.8	-641.2	-496.6	811.0	2.00	-2.00	0.00
5,087.2	0.00	0.00	5,000.0	-641.2	-496.6	811.0	2.00	-2.00	0.00
5,120.0	0.00	0.00	5,032.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,072.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,112.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,152.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,192.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,232.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,272.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,312.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,352.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,392.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,432.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,472.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,512.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,552.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,592.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,632.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,672.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,712.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,752.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,792.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,832.8	-641.2	-496.6	811.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,872.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,912.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,040.0	0.00	0.00	5,952.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,080.0	0.00	0.00	5,992.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,120.0	0.00	0.00	6,032.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,072.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,112.8	-641.2	-496.6	811.0	0.00	0.00	0.00

Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.21-T4N-R64W  
 Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
 Well: Novacek C28-27D  
 Wellbore: Wellbore #1  
 Design: Noble Novacek C28-27D Plan #1 (8-04-11)

Local Co-ordinate Reference: Well Novacek C28-27D  
 TVD Reference: WELL @ 4723.0ft (Original Well Elev)  
 MD Reference: WELL @ 4723.0ft (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	6,152.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,192.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,232.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,272.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,312.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,352.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,392.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,432.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,472.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,512.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,552.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,592.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,680.2	0.00	0.00	6,593.0	-641.2	-496.6	811.0	0.00	0.00	0.00
<b>NIOBRARA</b>									
6,720.0	0.00	0.00	6,632.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,672.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,712.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,752.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,792.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,920.0	0.00	0.00	6,832.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,872.8	-641.2	-496.6	811.0	0.00	0.00	0.00
6,975.2	0.00	0.00	6,888.0	-641.2	-496.6	811.0	0.00	0.00	0.00
<b>CODELL</b>									
7,000.0	0.00	0.00	6,912.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,040.0	0.00	0.00	6,952.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,080.0	0.00	0.00	6,992.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,120.0	0.00	0.00	7,032.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,160.0	0.00	0.00	7,072.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,112.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,240.0	0.00	0.00	7,152.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,192.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,232.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,360.0	0.00	0.00	7,272.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,365.2	0.00	0.00	7,278.0	-641.2	-496.6	811.0	0.00	0.00	0.00
<b>D-SAND</b>									
7,400.0	0.00	0.00	7,312.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,425.2	0.00	0.00	7,338.0	-641.2	-496.6	811.0	0.00	0.00	0.00
<b>J-SAND</b>									
7,440.0	0.00	0.00	7,352.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,480.0	0.00	0.00	7,392.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,520.0	0.00	0.00	7,432.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,560.0	0.00	0.00	7,472.8	-641.2	-496.6	811.0	0.00	0.00	0.00
7,575.2	0.00	0.00	7,488.0	-641.2	-496.6	811.0	0.00	0.00	0.00



Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.21-T4N-R64W  
 Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
 Well: Novacek C28-27D  
 Wellbore: Wellbore #1  
 Design: Noble Novacek C28-27D Plan #1 (8-04-11)

Local Co-ordinate Reference: Well Novacek C28-27D  
 TVD Reference: WELL @ 4723.0ft (Original Well Elev)  
 MD Reference: WELL @ 4723.0ft (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
TARGET CIRCLE 75' - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,593.0	-641.2	-496.6	1,350,075.48	3,264,680.88	40.290470	-104.551170
HARD LINES 75'N OF - plan misses target center by 125.0ft at 7575.2ft MD (7488.0 TVD, -641.2 N, -496.6 E) - Polygon	0.00	0.00	7,488.0	-566.2	-596.6	1,350,149.36	3,264,580.05	40.290676	-104.551529
Point 1			7,488.0	0.0	0.0	1,350,149.36	3,264,580.05		
Point 2			7,488.0	0.0	200.0	1,350,151.51	3,264,780.03		
TARGET BHL 75'FNL - plan hits target center - Point	0.00	0.00	5,000.0	-641.2	-496.6	1,350,075.48	3,264,680.88	40.290470	-104.551170

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
650.0	650.0	8 5/8"	8-5/8	12-1/4

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,680.2	6,593.0	NIOBRARA		0.00	
6,975.2	6,888.0	CODELL		0.00	
7,365.2	7,278.0	D-SAND		0.00	
7,425.2	7,338.0	J-SAND		0.00	