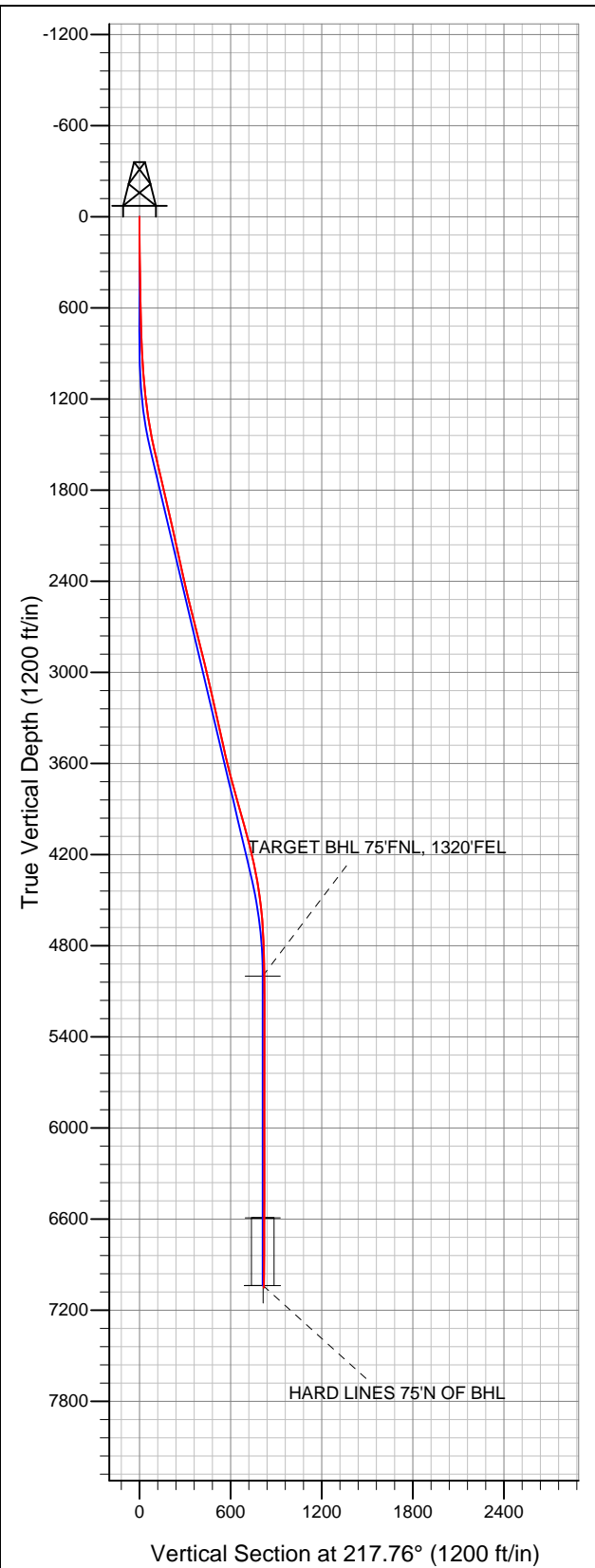




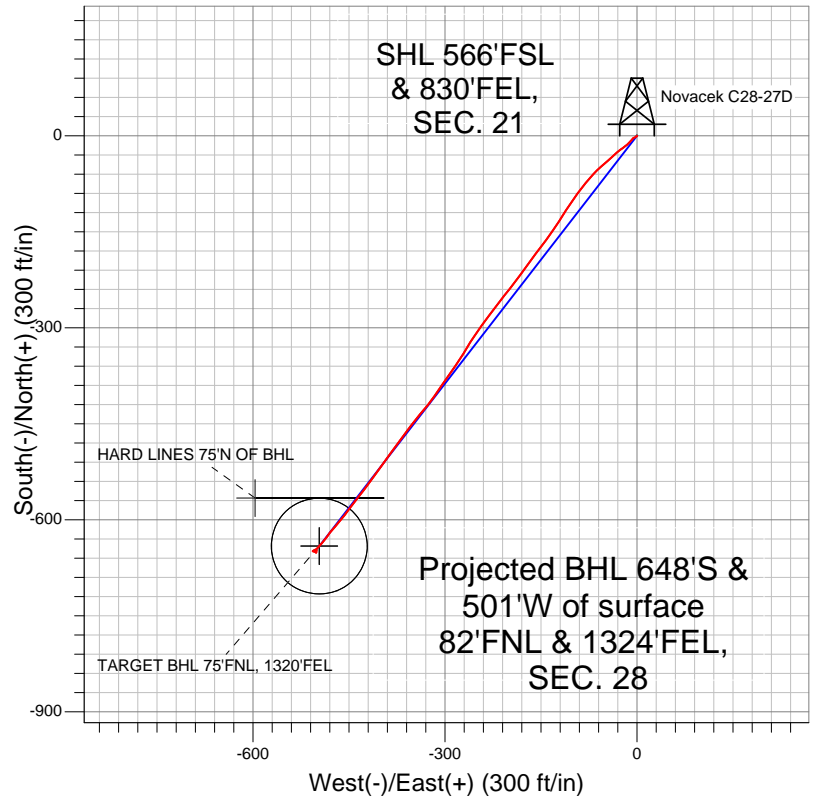
# Well Name: Novacek C28-27D

Surface Location: Novacek C28-27D Pad Sec.21-T4N-R64W  
North American Datum 1983 US State Plane 1983Colorado 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



### LEGEND

- Survey #1
- Novacek C28-27D, Wellbore #1, Noble Novacek C28-27D Plan #2 (1-27-12) V0
- Wellbore #1

## Final Survey Plot

Projected Final Survey -  
7140'MD & 7051'TVD @ 819°VS  
0.30 deg Inc 336.60 deg AZ

Project: SEC.21-T4N-R64W  
Site: Novacek C28-27D Pad Sec.21-T4N-R64W  
Well: Novacek C28-27D  
Plan: Wellbore #1



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.21-T4N-R64W**

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

**Novacek C28-27D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**16 February, 2012**



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

<b>Project</b>	SEC.21-T4N-R64W, 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		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

<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>
	IGRF2010	1/6/2012	8.66	66.98	53,040

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	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>	
	5,000.0	0.0	0.0	217.76	

<b>Survey Program</b>	<b>Date</b>	2/16/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
112.0	7,140.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
112.0	0.40	182.90	112.0	-0.4	0.0	0.3	0.36	0.36	0.00	
239.0	0.50	254.10	239.0	-1.0	-0.6	1.1	0.42	0.08	56.06	
365.0	0.80	238.30	365.0	-1.6	-1.9	2.4	0.28	0.24	-12.54	
492.0	0.80	247.90	492.0	-2.4	-3.4	4.0	0.11	0.00	7.56	
618.0	1.60	231.10	617.9	-3.8	-5.6	6.5	0.69	0.63	-13.33	
746.0	2.50	220.20	745.9	-7.1	-8.8	11.0	0.76	0.70	-8.52	
862.0	2.40	223.90	861.8	-10.8	-12.1	15.9	0.16	-0.09	3.19	
926.0	2.60	226.80	925.7	-12.7	-14.1	18.7	0.37	0.31	4.53	
1,008.0	3.60	230.40	1,007.6	-15.6	-17.4	23.1	1.24	1.22	4.39	
1,089.0	5.00	234.60	1,088.3	-19.3	-22.3	28.9	1.77	1.73	5.19	
1,171.0	6.30	231.90	1,169.9	-24.2	-28.7	36.7	1.62	1.59	-3.29	
1,253.0	8.00	227.10	1,251.3	-30.8	-36.5	46.7	2.20	2.07	-5.85	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Novacek C28-27D
<b>Project:</b>	SEC.21-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4723.0ft (Original Well Elev)
<b>Site:</b>	Novacek C28-27D Pad Sec.21-T4N-R64W	<b>MD Reference:</b>	WELL @ 4723.0ft (Original Well Elev)
<b>Well:</b>	Novacek C28-27D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,334.0	9.60	228.40	1,331.4	-39.1	-45.6	58.9	1.99	1.98	1.60
1,416.0	10.90	228.80	1,412.0	-48.8	-56.6	73.2	1.59	1.59	0.49
1,498.0	11.60	222.70	1,492.5	-60.0	-68.0	89.0	1.68	0.85	-7.44
1,580.0	12.60	220.00	1,572.6	-72.9	-79.4	106.2	1.40	1.22	-3.29
1,662.0	13.30	216.00	1,652.6	-87.3	-90.6	124.6	1.39	0.85	-4.88
1,744.0	13.40	215.20	1,732.3	-102.7	-101.7	143.5	0.26	0.12	-0.98
1,825.0	13.50	212.00	1,811.1	-118.4	-112.1	162.3	0.93	0.12	-3.95
1,907.0	12.80	213.70	1,891.0	-134.1	-122.2	180.8	0.98	-0.85	2.07
1,989.0	12.40	213.30	1,971.0	-149.0	-132.1	198.7	0.50	-0.49	-0.49
2,071.0	12.60	217.60	2,051.1	-163.5	-142.4	216.4	1.16	0.24	5.24
2,153.0	13.10	217.80	2,131.0	-177.9	-153.5	234.6	0.61	0.61	0.24
2,234.0	12.50	215.20	2,210.0	-192.3	-164.2	252.6	1.03	-0.74	-3.21
2,316.0	12.30	217.50	2,290.1	-206.5	-174.6	270.2	0.65	-0.24	2.80
2,398.0	12.90	214.20	2,370.1	-221.0	-185.1	288.1	1.14	0.73	-4.02
2,479.0	12.80	220.10	2,449.1	-235.3	-196.0	306.0	1.62	-0.12	7.28
2,561.0	13.30	217.00	2,529.0	-249.8	-207.5	324.5	1.05	0.61	-3.78
2,643.0	14.20	217.50	2,608.6	-265.3	-219.3	344.0	1.11	1.10	0.61
2,725.0	14.00	217.40	2,688.1	-281.2	-231.4	364.0	0.25	-0.24	-0.12
2,806.0	14.60	214.90	2,766.6	-297.3	-243.2	384.0	1.06	0.74	-3.09
2,888.0	14.50	214.10	2,846.0	-314.3	-254.9	404.6	0.27	-0.12	-0.98
2,970.0	12.80	210.00	2,925.7	-330.7	-265.2	423.8	2.38	-2.07	-5.00
3,052.0	13.60	213.50	3,005.5	-346.6	-275.0	442.4	1.38	0.98	4.27
3,134.0	13.00	214.90	3,085.3	-362.2	-285.6	461.3	0.83	-0.73	1.71
3,215.0	12.80	215.00	3,164.3	-377.0	-296.0	479.3	0.25	-0.25	0.12
3,297.0	12.70	212.70	3,244.3	-392.0	-306.1	497.4	0.63	-0.12	-2.80
3,379.0	12.90	216.70	3,324.2	-407.0	-316.4	515.5	1.11	0.24	4.88
3,461.0	12.50	218.10	3,404.2	-421.3	-327.4	533.5	0.62	-0.49	1.71
3,543.0	12.60	221.50	3,484.3	-435.0	-338.8	551.3	0.91	0.12	4.15
3,624.0	12.80	216.40	3,563.3	-448.8	-350.0	569.1	1.41	0.25	-6.30
3,706.0	13.70	216.40	3,643.1	-463.9	-361.1	587.9	1.10	1.10	0.00
3,788.0	15.90	217.00	3,722.4	-480.7	-373.6	608.8	2.69	2.68	0.73
3,870.0	16.00	216.20	3,801.2	-498.8	-387.1	631.4	0.29	0.12	-0.98
3,951.0	16.50	215.10	3,879.0	-517.2	-400.3	654.0	0.72	0.62	-1.36
4,033.0	15.40	215.60	3,957.8	-535.6	-413.3	676.5	1.35	-1.34	0.61
4,115.0	14.90	218.20	4,037.0	-552.8	-426.2	698.0	1.03	-0.61	3.17
4,197.0	13.80	217.70	4,116.4	-568.8	-438.7	718.3	1.35	-1.34	-0.61
4,278.0	13.00	217.00	4,195.2	-583.7	-450.1	737.1	1.01	-0.99	-0.86
4,360.0	11.60	218.00	4,275.3	-597.6	-460.7	754.5	1.73	-1.71	1.22
4,442.0	10.70	221.20	4,355.8	-609.8	-470.8	770.4	1.33	-1.10	3.90
4,524.0	8.70	218.40	4,436.6	-620.4	-479.6	784.2	2.51	-2.44	-3.41
4,605.0	7.20	215.30	4,516.8	-629.3	-486.4	795.4	1.93	-1.85	-3.83
4,687.0	5.80	224.50	4,598.3	-636.5	-492.3	804.6	2.12	-1.71	11.22
4,769.0	3.80	220.90	4,680.0	-641.5	-496.9	811.4	2.47	-2.44	-4.39
4,851.0	2.50	224.60	4,761.9	-644.8	-500.0	815.9	1.60	-1.59	4.51
4,933.0	1.50	240.80	4,843.8	-646.6	-502.2	818.7	1.39	-1.22	19.76
5,089.0	1.02	243.89	4,999.8	-648.2	-505.2	821.8	0.31	-0.31	1.98
<b>TARGET BHL 75°FNL, 1320°FEL</b>									
5,096.0	1.00	244.10	5,006.8	-648.3	-505.3	821.9	0.31	-0.31	2.97
5,260.0	0.10	258.40	5,170.8	-648.9	-506.7	823.3	0.55	-0.55	8.72
5,423.0	0.20	121.80	5,333.8	-649.1	-506.6	823.4	0.17	0.06	-83.80
5,587.0	0.70	105.30	5,497.8	-649.5	-505.4	823.0	0.31	0.30	-10.06
5,750.0	0.50	95.20	5,660.8	-649.8	-503.8	822.2	0.14	-0.12	-6.20
5,914.0	0.40	119.80	5,824.7	-650.2	-502.5	821.8	0.13	-0.06	15.00
6,077.0	0.40	169.90	5,987.7	-651.0	-501.9	822.1	0.21	0.00	30.74

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Novacek C28-27D
<b>Project:</b>	SEC.21-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4723.0ft (Original Well Elev)
<b>Site:</b>	Novacek C28-27D Pad Sec.21-T4N-R64W	<b>MD Reference:</b>	WELL @ 4723.0ft (Original Well Elev)
<b>Well:</b>	Novacek C28-27D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
6,241.0	0.10	107.10	6,151.7	-651.6	-501.7	822.4	0.22	-0.18	-38.29	
6,404.0	0.20	53.60	6,314.7	-651.5	-501.3	822.1	0.10	0.06	-32.82	
6,568.0	0.20	20.90	6,478.7	-651.1	-501.0	821.5	0.07	0.00	-19.94	
6,682.3	0.33	347.36	6,593.0	-650.6	-501.0	821.1	0.17	0.11	-29.34	
TARGET CIRCLE 75'FNL & 1320'FEL										
6,731.0	0.40	340.60	6,641.7	-650.3	-501.1	820.9	0.17	0.15	-13.88	
6,895.0	0.40	20.20	6,805.7	-649.2	-501.1	820.1	0.17	0.00	24.15	
7,058.0	0.40	33.40	6,968.7	-648.2	-500.6	819.0	0.06	0.00	8.10	
7,127.6	0.29	346.56	7,038.3	-647.8	-500.5	818.6	0.42	-0.15	-67.28	
HARD LINES 75'N OF BHL										
7,140.0	0.30	336.60	7,050.7	-647.7	-500.5	818.6	0.42	0.06	-80.45	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_