

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	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	1491.8	15.84	295.08	1481.8	46.1	-98.5	2.00	295.08	108.7	
4	5167.8	15.84	295.08	5018.2	471.3	-1007.0	0.00	0.00	1111.9	
5	5959.6	0.00	0.00	5800.0	517.4	-1105.5	2.00	180.00	1220.6	TARGET BHL 2545'FSL, 1320'FWL
6	7101.6	0.00	0.00	6942.0	517.4	-1105.5	0.00	0.00	1220.6	



## **Directional**

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

**SEC.10-T5N-R64W**

**Wacker B10-20D Pad Sec.10-T5N-R64W**

**Wacker B10-20D**

**Wellbore #1**

**Plan: Noble Wacker B10-20D Plan #1 (08-27-10)**

### **Standard Planning Report**

**27 August, 2010**



Database: Landmark  
Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.10-T5N-R64W  
Site: Wacker B10-20D Pad Sec.10-T5N-R64W  
Well: Wacker B10-20D  
Wellbore: Wellbore #1  
Design: Noble Wacker B10-20D Plan #1 (08-27-10)

Local Co-ordinate Reference: Well Wacker B10-20D  
TVD Reference: WELL @ 4617.0ft (Original Well Elev)  
MD Reference: WELL @ 4617.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature

Project	SEC.10-T5N-R64W		
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	Wacker B10-20D Pad Sec.10-T5N-R64W				
Site Position:		Northing:	1,394,431.92 ft	Latitude:	40° 24' 43.632 N
From:	Lat/Long	Easting:	3,268,168.96 ft	Longitude:	104° 32' 12.984 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.62 °

Well	Wacker B10-20D					
Well Position	+N/-S	0.0 ft	Northing:	1,394,431.92 ft	Latitude:	40° 24' 43.632 N
	+E/-W	0.0 ft	Easting:	3,268,168.96 ft	Longitude:	104° 32' 12.984 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,604.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2010	8.85	67.13	53,249

Design: Noble Wacker B10-20D Plan #1 (08-27-10)

#### 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	295.08

#### 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	
1,491.8	15.84	295.08	1,481.8	46.1	-98.5	2.00	2.00	0.00	295.08	
5,167.8	15.84	295.08	5,018.2	471.3	-1,007.0	0.00	0.00	0.00	0.00	
5,959.6	0.00	0.00	5,800.0	517.4	-1,105.5	2.00	-2.00	0.00	180.00	TARGET BHL 2545
7,101.6	0.00	0.00	6,942.0	517.4	-1,105.5	0.00	0.00	0.00	0.00	



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MD Reference: WELL @ 4617.0ft (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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.40	295.08	720.0	0.0	-0.1	0.1	2.00	2.00	0.00
760.0	1.20	295.08	760.0	0.3	-0.6	0.6	2.00	2.00	0.00
800.0	2.00	295.08	800.0	0.7	-1.6	1.7	2.00	2.00	0.00
840.0	2.80	295.08	839.9	1.4	-3.1	3.4	2.00	2.00	0.00
880.0	3.60	295.08	879.9	2.4	-5.1	5.7	2.00	2.00	0.00
920.0	4.40	295.08	919.8	3.6	-7.6	8.4	2.00	2.00	0.00
960.0	5.20	295.08	959.6	5.0	-10.7	11.8	2.00	2.00	0.00
1,000.0	6.00	295.08	999.5	6.7	-14.2	15.7	2.00	2.00	0.00
1,040.0	6.80	295.08	1,039.2	8.5	-18.3	20.2	2.00	2.00	0.00
1,080.0	7.60	295.08	1,078.9	10.7	-22.8	25.2	2.00	2.00	0.00
1,120.0	8.40	295.08	1,118.5	13.0	-27.8	30.7	2.00	2.00	0.00
1,160.0	9.20	295.08	1,158.0	15.6	-33.4	36.9	2.00	2.00	0.00
1,200.0	10.00	295.08	1,197.5	18.4	-39.4	43.5	2.00	2.00	0.00
1,240.0	10.80	295.08	1,236.8	21.5	-46.0	50.7	2.00	2.00	0.00
1,280.0	11.60	295.08	1,276.0	24.8	-53.0	58.5	2.00	2.00	0.00
1,320.0	12.40	295.08	1,315.2	28.3	-60.5	66.8	2.00	2.00	0.00
1,360.0	13.20	295.08	1,354.2	32.1	-68.6	75.7	2.00	2.00	0.00
1,400.0	14.00	295.08	1,393.1	36.1	-77.1	85.1	2.00	2.00	0.00
1,440.0	14.80	295.08	1,431.8	40.3	-86.1	95.0	2.00	2.00	0.00
1,480.0	15.60	295.08	1,470.4	44.7	-95.6	105.5	2.00	2.00	0.00
1,491.8	15.84	295.08	1,481.8	46.1	-98.5	108.7	2.00	2.00	0.00
1,520.0	15.84	295.08	1,508.9	49.3	-105.4	116.4	0.00	0.00	0.00
1,560.0	15.84	295.08	1,547.4	54.0	-115.3	127.3	0.00	0.00	0.00
1,600.0	15.84	295.08	1,585.9	58.6	-125.2	138.3	0.00	0.00	0.00
1,640.0	15.84	295.08	1,624.3	63.2	-135.1	149.2	0.00	0.00	0.00
1,680.0	15.84	295.08	1,662.8	67.9	-145.0	160.1	0.00	0.00	0.00
1,720.0	15.84	295.08	1,701.3	72.5	-154.9	171.0	0.00	0.00	0.00
1,760.0	15.84	295.08	1,739.8	77.1	-164.8	181.9	0.00	0.00	0.00
1,800.0	15.84	295.08	1,778.3	81.7	-174.7	192.8	0.00	0.00	0.00
1,840.0	15.84	295.08	1,816.7	86.4	-184.5	203.7	0.00	0.00	0.00
1,880.0	15.84	295.08	1,855.2	91.0	-194.4	214.7	0.00	0.00	0.00
1,920.0	15.84	295.08	1,893.7	95.6	-204.3	225.6	0.00	0.00	0.00
1,960.0	15.84	295.08	1,932.2	100.2	-214.2	236.5	0.00	0.00	0.00

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MD Reference: WELL @ 4617.0ft (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)
2,000.0	15.84	295.08	1,970.7	104.9	-224.1	247.4	0.00	0.00	0.00
2,040.0	15.84	295.08	2,009.2	109.5	-234.0	258.3	0.00	0.00	0.00
2,080.0	15.84	295.08	2,047.6	114.1	-243.9	269.2	0.00	0.00	0.00
2,120.0	15.84	295.08	2,086.1	118.7	-253.7	280.2	0.00	0.00	0.00
2,160.0	15.84	295.08	2,124.6	123.4	-263.6	291.1	0.00	0.00	0.00
2,200.0	15.84	295.08	2,163.1	128.0	-273.5	302.0	0.00	0.00	0.00
2,240.0	15.84	295.08	2,201.6	132.6	-283.4	312.9	0.00	0.00	0.00
2,280.0	15.84	295.08	2,240.0	137.3	-293.3	323.8	0.00	0.00	0.00
2,320.0	15.84	295.08	2,278.5	141.9	-303.2	334.7	0.00	0.00	0.00
2,360.0	15.84	295.08	2,317.0	146.5	-313.1	345.6	0.00	0.00	0.00
2,400.0	15.84	295.08	2,355.5	151.1	-322.9	356.6	0.00	0.00	0.00
2,440.0	15.84	295.08	2,394.0	155.8	-332.8	367.5	0.00	0.00	0.00
2,480.0	15.84	295.08	2,432.5	160.4	-342.7	378.4	0.00	0.00	0.00
2,520.0	15.84	295.08	2,470.9	165.0	-352.6	389.3	0.00	0.00	0.00
2,560.0	15.84	295.08	2,509.4	169.6	-362.5	400.2	0.00	0.00	0.00
2,600.0	15.84	295.08	2,547.9	174.3	-372.4	411.1	0.00	0.00	0.00
2,640.0	15.84	295.08	2,586.4	178.9	-382.3	422.1	0.00	0.00	0.00
2,680.0	15.84	295.08	2,624.9	183.5	-392.2	433.0	0.00	0.00	0.00
2,720.0	15.84	295.08	2,663.3	188.1	-402.0	443.9	0.00	0.00	0.00
2,760.0	15.84	295.08	2,701.8	192.8	-411.9	454.8	0.00	0.00	0.00
2,800.0	15.84	295.08	2,740.3	197.4	-421.8	465.7	0.00	0.00	0.00
2,840.0	15.84	295.08	2,778.8	202.0	-431.7	476.6	0.00	0.00	0.00
2,880.0	15.84	295.08	2,817.3	206.7	-441.6	487.5	0.00	0.00	0.00
2,920.0	15.84	295.08	2,855.8	211.3	-451.5	498.5	0.00	0.00	0.00
2,960.0	15.84	295.08	2,894.2	215.9	-461.4	509.4	0.00	0.00	0.00
3,000.0	15.84	295.08	2,932.7	220.5	-471.2	520.3	0.00	0.00	0.00
3,040.0	15.84	295.08	2,971.2	225.2	-481.1	531.2	0.00	0.00	0.00
3,080.0	15.84	295.08	3,009.7	229.8	-491.0	542.1	0.00	0.00	0.00
3,120.0	15.84	295.08	3,048.2	234.4	-500.9	553.0	0.00	0.00	0.00
3,160.0	15.84	295.08	3,086.6	239.0	-510.8	564.0	0.00	0.00	0.00
3,200.0	15.84	295.08	3,125.1	243.7	-520.7	574.9	0.00	0.00	0.00
3,240.0	15.84	295.08	3,163.6	248.3	-530.6	585.8	0.00	0.00	0.00
3,280.0	15.84	295.08	3,202.1	252.9	-540.4	596.7	0.00	0.00	0.00
3,320.0	15.84	295.08	3,240.6	257.5	-550.3	607.6	0.00	0.00	0.00
3,360.0	15.84	295.08	3,279.1	262.2	-560.2	618.5	0.00	0.00	0.00
3,400.0	15.84	295.08	3,317.5	266.8	-570.1	629.4	0.00	0.00	0.00
3,440.0	15.84	295.08	3,356.0	271.4	-580.0	640.4	0.00	0.00	0.00
3,480.0	15.84	295.08	3,394.5	276.1	-589.9	651.3	0.00	0.00	0.00
3,520.0	15.84	295.08	3,433.0	280.7	-599.8	662.2	0.00	0.00	0.00
3,560.0	15.84	295.08	3,471.5	285.3	-609.7	673.1	0.00	0.00	0.00
3,600.0	15.84	295.08	3,509.9	289.9	-619.5	684.0	0.00	0.00	0.00
3,640.0	15.84	295.08	3,548.4	294.6	-629.4	694.9	0.00	0.00	0.00
3,680.0	15.84	295.08	3,586.9	299.2	-639.3	705.9	0.00	0.00	0.00
3,720.0	15.84	295.08	3,625.4	303.8	-649.2	716.8	0.00	0.00	0.00
3,760.0	15.84	295.08	3,663.9	308.4	-659.1	727.7	0.00	0.00	0.00
3,800.0	15.84	295.08	3,702.4	313.1	-669.0	738.6	0.00	0.00	0.00
3,840.0	15.84	295.08	3,740.8	317.7	-678.9	749.5	0.00	0.00	0.00
3,880.0	15.84	295.08	3,779.3	322.3	-688.7	760.4	0.00	0.00	0.00
3,920.0	15.84	295.08	3,817.8	326.9	-698.6	771.3	0.00	0.00	0.00
3,960.0	15.84	295.08	3,856.3	331.6	-708.5	782.3	0.00	0.00	0.00
4,000.0	15.84	295.08	3,894.8	336.2	-718.4	793.2	0.00	0.00	0.00
4,040.0	15.84	295.08	3,933.2	340.8	-728.3	804.1	0.00	0.00	0.00
4,080.0	15.84	295.08	3,971.7	345.5	-738.2	815.0	0.00	0.00	0.00
4,120.0	15.84	295.08	4,010.2	350.1	-748.1	825.9	0.00	0.00	0.00



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MD Reference: WELL @ 4617.0ft (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)
4,160.0	15.84	295.08	4,048.7	354.7	-757.9	836.8	0.00	0.00	0.00
4,200.0	15.84	295.08	4,087.2	359.3	-767.8	847.8	0.00	0.00	0.00
4,240.0	15.84	295.08	4,125.7	364.0	-777.7	858.7	0.00	0.00	0.00
4,280.0	15.84	295.08	4,164.1	368.6	-787.6	869.6	0.00	0.00	0.00
4,320.0	15.84	295.08	4,202.6	373.2	-797.5	880.5	0.00	0.00	0.00
4,360.0	15.84	295.08	4,241.1	377.8	-807.4	891.4	0.00	0.00	0.00
4,400.0	15.84	295.08	4,279.6	382.5	-817.3	902.3	0.00	0.00	0.00
4,440.0	15.84	295.08	4,318.1	387.1	-827.2	913.2	0.00	0.00	0.00
4,480.0	15.84	295.08	4,356.5	391.7	-837.0	924.2	0.00	0.00	0.00
4,520.0	15.84	295.08	4,395.0	396.3	-846.9	935.1	0.00	0.00	0.00
4,560.0	15.84	295.08	4,433.5	401.0	-856.8	946.0	0.00	0.00	0.00
4,600.0	15.84	295.08	4,472.0	405.6	-866.7	956.9	0.00	0.00	0.00
4,640.0	15.84	295.08	4,510.5	410.2	-876.6	967.8	0.00	0.00	0.00
4,680.0	15.84	295.08	4,549.0	414.8	-886.5	978.7	0.00	0.00	0.00
4,720.0	15.84	295.08	4,587.4	419.5	-896.4	989.7	0.00	0.00	0.00
4,760.0	15.84	295.08	4,625.9	424.1	-906.2	1,000.6	0.00	0.00	0.00
4,800.0	15.84	295.08	4,664.4	428.7	-916.1	1,011.5	0.00	0.00	0.00
4,840.0	15.84	295.08	4,702.9	433.4	-926.0	1,022.4	0.00	0.00	0.00
4,880.0	15.84	295.08	4,741.4	438.0	-935.9	1,033.3	0.00	0.00	0.00
4,920.0	15.84	295.08	4,779.8	442.6	-945.8	1,044.2	0.00	0.00	0.00
4,960.0	15.84	295.08	4,818.3	447.2	-955.7	1,055.1	0.00	0.00	0.00
5,000.0	15.84	295.08	4,856.8	451.9	-965.6	1,066.1	0.00	0.00	0.00
5,040.0	15.84	295.08	4,895.3	456.5	-975.4	1,077.0	0.00	0.00	0.00
5,080.0	15.84	295.08	4,933.8	461.1	-985.3	1,087.9	0.00	0.00	0.00
5,120.0	15.84	295.08	4,972.3	465.7	-995.2	1,098.8	0.00	0.00	0.00
5,160.0	15.84	295.08	5,010.7	470.4	-1,005.1	1,109.7	0.00	0.00	0.00
5,167.8	15.84	295.08	5,018.2	471.3	-1,007.0	1,111.9	0.00	0.00	0.00
5,200.0	15.19	295.08	5,049.3	474.9	-1,014.8	1,120.5	2.00	-2.00	0.00
5,240.0	14.39	295.08	5,087.9	479.3	-1,024.1	1,130.7	2.00	-2.00	0.00
5,280.0	13.59	295.08	5,126.8	483.3	-1,032.8	1,140.3	2.00	-2.00	0.00
5,320.0	12.79	295.08	5,165.7	487.2	-1,041.1	1,149.5	2.00	-2.00	0.00
5,360.0	11.99	295.08	5,204.8	490.9	-1,048.9	1,158.1	2.00	-2.00	0.00
5,400.0	11.19	295.08	5,244.0	494.3	-1,056.2	1,166.1	2.00	-2.00	0.00
5,440.0	10.39	295.08	5,283.2	497.4	-1,062.9	1,173.6	2.00	-2.00	0.00
5,480.0	9.59	295.08	5,322.6	500.4	-1,069.2	1,180.5	2.00	-2.00	0.00
5,520.0	8.79	295.08	5,362.1	503.1	-1,075.0	1,186.9	2.00	-2.00	0.00
5,560.0	7.99	295.08	5,401.7	505.6	-1,080.3	1,192.8	2.00	-2.00	0.00
5,600.0	7.19	295.08	5,441.3	507.8	-1,085.1	1,198.0	2.00	-2.00	0.00
5,640.0	6.39	295.08	5,481.1	509.8	-1,089.4	1,202.8	2.00	-2.00	0.00
5,680.0	5.59	295.08	5,520.8	511.6	-1,093.2	1,206.9	2.00	-2.00	0.00
5,720.0	4.79	295.08	5,560.7	513.1	-1,096.4	1,210.6	2.00	-2.00	0.00
5,760.0	3.99	295.08	5,600.6	514.4	-1,099.2	1,213.6	2.00	-2.00	0.00
5,800.0	3.19	295.08	5,640.5	515.5	-1,101.5	1,216.1	2.00	-2.00	0.00
5,840.0	2.39	295.08	5,680.4	516.3	-1,103.2	1,218.1	2.00	-2.00	0.00
5,880.0	1.59	295.08	5,720.4	516.9	-1,104.5	1,219.5	2.00	-2.00	0.00
5,920.0	0.79	295.08	5,760.4	517.2	-1,105.3	1,220.3	2.00	-2.00	0.00
5,959.6	0.00	0.00	5,800.0	517.4	-1,105.5	1,220.6	2.00	-2.00	0.00
TARGET BHL 2545'FSL, 1320'FWL									
5,960.0	0.00	0.00	5,800.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,840.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,040.0	0.00	0.00	5,880.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,080.0	0.00	0.00	5,920.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,120.0	0.00	0.00	5,960.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,000.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.10-T5N-R64W  
**Site:** Wacker B10-20D Pad Sec.10-T5N-R64W  
**Well:** Wacker B10-20D  
**Wellbore:** Wellbore #1  
**Design:** Noble Wacker B10-20D Plan #1 (08-27-10)

**Local Co-ordinate Reference:** Well Wacker B10-20D  
**TVD Reference:** WELL @ 4617.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4617.0ft (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	6,040.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,240.0	0.00	0.00	6,080.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,280.0	0.00	0.00	6,120.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,320.0	0.00	0.00	6,160.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,360.0	0.00	0.00	6,200.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,240.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,440.0	0.00	0.00	6,280.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,480.0	0.00	0.00	6,320.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,520.0	0.00	0.00	6,360.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,560.0	0.00	0.00	6,400.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,440.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,636.6	0.00	0.00	6,477.0	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
<b>NIOBRARA - TARGET CIRCLE 2545'FSL, 1320'FWL</b>									
6,640.0	0.00	0.00	6,480.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,680.0	0.00	0.00	6,520.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,720.0	0.00	0.00	6,560.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,760.0	0.00	0.00	6,600.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,640.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,840.0	0.00	0.00	6,680.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,880.0	0.00	0.00	6,720.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,920.0	0.00	0.00	6,760.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
6,951.6	0.00	0.00	6,792.0	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
<b>CODELL</b>									
6,960.0	0.00	0.00	6,800.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,840.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
7,040.0	0.00	0.00	6,880.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
7,080.0	0.00	0.00	6,920.4	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
7,101.6	0.00	0.00	6,942.0	517.4	-1,105.5	1,220.6	0.00	0.00	0.00
<b>HARDLINE 75'N OF BHL</b>									

**Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET CIRCLE 2545'FSL	0.00	0.00	6,477.0	517.4	-1,105.5	1,394,937.22	3,267,057.94	40° 24' 48.744 N	104° 32' 27.276 W
- plan hits target									
- Circle (radius 75.0)									
TARGET BHL 2545'FSL	0.00	0.00	5,800.0	517.4	-1,105.5	1,394,937.22	3,267,057.94	40° 24' 48.744 N	104° 32' 27.276 W
- plan hits target									
- Point									
HARDLINE 75'N OF E	0.00	0.00	6,942.0	592.4	-1,205.5	1,395,011.17	3,266,957.15	40° 24' 49.485 N	104° 32' 28.569 W
- plan misses by 125.0ft at 7101.6ft MD (6942.0 TVD, 517.4 N, -1105.5 E)									
- Polygon									
Point 1			6,942.0	0.0	0.0	1,395,011.17	3,266,957.15		
Point 2			6,942.0	0.0	200.0	1,395,013.34	3,267,157.13		



Database: Landmark  
Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.10-T5N-R64W  
Site: Wacker B10-20D Pad Sec.10-T5N-R64W  
Well: Wacker B10-20D  
Wellbore: Wellbore #1  
Design: Noble Wacker B10-20D Plan #1 (08-27-10)

Local Co-ordinate Reference: Well Wacker B10-20D  
TVD Reference: WELL @ 4617.0ft (Original Well Elev)  
MD Reference: WELL @ 4617.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	8 5/8"	8-5/8	12-1/4

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,636.6	6,477.0	NIOBRARA		0.00	
6,951.6	6,792.0	CODELL		0.00	