

Project: SEC.10-T5N-R64W
Site: Wacker B10-20D Pad Sec.10-T5N-R64W
Well: Wacker B10-20D
Plan: Wellbore #1

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: Wellbore #1

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
 Database: Landmark

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: 1,394,431.92ft Latitude: 40° 24' 43.632 N
 From: Lat/Long Easting: 3,268,168.96ft 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:	1,394,431.91 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	3/16/2011	8.78	67.11	53,190

Design Wellbore #1

Audit Notes:

Version: 1.0 Phase: ACTUAL 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

Survey Program Date 3/28/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
223.0	7,164.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

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
223.0	1.90	216.00	223.0	-3.0	-2.2	0.7	0.85	0.85	0.00
283.0	1.80	218.20	282.9	-4.5	-3.3	1.1	0.20	-0.17	3.67
371.0	1.00	211.20	370.9	-6.3	-4.6	1.5	0.93	-0.91	-7.95
456.0	0.80	166.50	455.9	-7.5	-4.8	1.2	0.83	-0.24	-52.59
522.0	1.00	158.30	521.9	-8.5	-4.5	0.5	0.36	0.30	-12.42
683.0	1.40	162.40	682.8	-11.7	-3.4	-1.9	0.25	0.25	2.55
768.0	1.30	143.20	767.8	-13.4	-2.5	-3.4	0.54	-0.12	-22.59
854.0	1.10	88.40	853.8	-14.2	-1.1	-5.0	1.30	-0.23	-63.72
939.0	1.70	11.60	938.8	-12.9	0.0	-5.4	2.12	0.71	-90.35
1,025.0	2.40	359.10	1,024.7	-9.9	0.2	-4.4	0.96	0.81	-14.53
1,110.0	4.40	341.70	1,109.6	-5.0	-0.9	-1.3	2.62	2.35	-20.47
1,196.0	5.30	335.80	1,195.3	1.8	-3.5	3.9	1.20	1.05	-6.86

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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)
1,281.0	6.30	321.50	1,279.8	9.0	-8.0	11.1	2.06	1.18	-16.82
1,367.0	7.30	311.10	1,365.2	16.3	-15.1	20.6	1.84	1.16	-12.09
1,452.0	8.20	300.60	1,449.5	22.9	-24.4	31.8	1.97	1.06	-12.35
1,538.0	9.30	298.30	1,534.5	29.3	-35.8	44.8	1.34	1.28	-2.67
1,623.0	10.20	293.00	1,618.2	35.5	-48.8	59.2	1.49	1.06	-6.24
1,709.0	11.60	292.40	1,702.7	41.8	-63.8	75.5	1.63	1.63	-0.70
1,794.0	13.70	291.20	1,785.6	48.7	-81.0	94.0	2.49	2.47	-1.41
1,880.0	15.70	292.00	1,868.8	56.7	-101.3	115.8	2.34	2.33	0.93
1,965.0	17.20	293.10	1,950.3	66.0	-123.6	139.9	1.80	1.76	1.29
2,051.0	18.90	293.60	2,032.1	76.5	-148.0	166.5	1.98	1.98	0.58
2,136.0	18.70	292.80	2,112.5	87.3	-173.2	193.9	0.38	-0.24	-0.94
2,222.0	18.20	292.10	2,194.1	97.7	-198.3	221.1	0.64	-0.58	-0.81
2,308.0	18.20	293.70	2,275.8	108.2	-223.1	247.9	0.58	0.00	1.86
2,393.0	18.80	294.00	2,356.4	119.1	-247.8	274.9	0.71	0.71	0.35
2,479.0	18.40	292.40	2,437.9	129.9	-273.0	302.3	0.75	-0.47	-1.86
2,564.0	17.90	293.80	2,518.7	140.3	-297.3	328.7	0.78	-0.59	1.65
2,650.0	17.50	294.10	2,600.6	150.9	-321.2	354.9	0.48	-0.47	0.35
2,735.0	17.80	294.30	2,681.6	161.5	-344.7	380.7	0.36	0.35	0.24
2,821.0	17.00	296.60	2,763.7	172.5	-367.9	406.4	1.23	-0.93	2.67
2,906.0	17.60	298.80	2,844.9	184.3	-390.3	431.6	1.04	0.71	2.59
2,992.0	17.70	299.50	2,926.8	197.0	-413.1	457.6	0.27	0.12	0.81
3,077.0	15.60	295.10	3,008.2	208.2	-434.7	481.9	2.88	-2.47	-5.18
3,163.0	15.20	295.40	3,091.2	217.9	-455.3	504.8	0.47	-0.47	0.35
3,248.0	16.10	295.60	3,173.0	227.8	-476.0	527.7	1.06	1.06	0.24
3,334.0	16.10	298.00	3,255.6	238.5	-497.3	551.5	0.77	0.00	2.79
3,419.0	15.40	296.10	3,337.4	249.0	-517.9	574.6	1.02	-0.82	-2.24
3,505.0	14.60	293.90	3,420.5	258.4	-538.0	596.8	1.14	-0.93	-2.56
3,590.0	15.80	294.80	3,502.5	267.6	-558.3	619.1	1.44	1.41	1.06
3,676.0	16.70	295.10	3,585.1	277.8	-580.1	643.2	1.05	1.05	0.35
3,761.0	17.20	294.10	3,666.4	288.1	-602.7	668.0	0.68	0.59	-1.18
3,847.0	17.40	293.00	3,748.5	298.3	-626.1	693.5	0.45	0.23	-1.28
3,932.0	17.60	292.50	3,829.6	308.2	-649.7	719.1	0.29	0.24	-0.59
4,018.0	17.10	294.40	3,911.7	318.4	-673.2	744.7	0.88	-0.58	2.21
4,103.0	18.30	292.40	3,992.6	328.7	-696.9	770.5	1.58	1.41	-2.35
4,189.0	17.20	300.20	4,074.6	340.2	-720.4	796.7	3.04	-1.28	9.07
4,274.0	18.20	302.00	4,155.5	353.6	-742.5	822.4	1.34	1.18	2.12
4,360.0	18.20	301.70	4,237.2	367.7	-765.3	849.1	0.11	0.00	-0.35
4,446.0	19.50	296.70	4,318.6	381.2	-789.6	876.8	2.41	1.51	-5.81
4,531.0	19.80	293.40	4,398.7	393.3	-815.5	905.3	1.35	0.35	-3.88
4,617.0	17.70	292.90	4,480.1	404.2	-840.9	933.0	2.45	-2.44	-0.58
4,702.0	17.10	295.80	4,561.2	414.7	-864.1	958.4	1.24	-0.71	3.41
4,788.0	18.00	296.10	4,643.2	426.0	-887.4	984.3	1.05	1.05	0.35
4,873.0	15.30	300.20	4,724.6	437.4	-908.9	1,008.6	3.46	-3.18	4.82
4,959.0	16.10	298.10	4,807.4	448.8	-929.2	1,031.8	1.14	0.93	-2.44
5,044.0	18.30	298.00	4,888.6	460.6	-951.4	1,056.9	2.59	2.59	-0.12
5,130.0	16.60	294.90	4,970.7	472.1	-974.4	1,082.7	2.25	-1.98	-3.60
5,215.0	15.30	294.80	5,052.4	481.9	-995.6	1,106.0	1.53	-1.53	-0.12
5,301.0	12.00	296.00	5,136.0	490.6	-1,014.0	1,126.3	3.85	-3.84	1.40
5,386.0	9.80	299.90	5,219.4	498.1	-1,028.2	1,142.4	2.73	-2.59	4.59
5,472.0	9.80	299.80	5,304.2	505.4	-1,040.9	1,157.0	0.02	0.00	-0.12
5,557.0	8.70	298.60	5,388.1	512.0	-1,052.8	1,170.6	1.31	-1.29	-1.41
5,643.0	7.40	294.80	5,473.2	517.5	-1,063.5	1,182.6	1.63	-1.51	-4.42
5,728.0	6.70	287.90	5,557.6	521.3	-1,073.2	1,193.0	1.29	-0.82	-8.12
5,814.0	6.10	285.40	5,643.0	524.0	-1,082.4	1,202.5	0.77	-0.70	-2.91

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5,899.0	4.70	284.10	5,727.7	526.1	-1,090.1	1,210.4	1.65	-1.65	-1.53
5,972.1	3.93	278.27	5,800.6	527.2	-1,095.5	1,215.7	1.21	-1.05	-7.98
TARGET BHL 2545'FSL, 1320'FWL									
5,985.0	3.80	277.00	5,813.4	527.3	-1,096.4	1,216.5	1.21	-1.01	-9.85
6,070.0	2.50	235.60	5,898.3	526.6	-1,100.7	1,220.2	2.98	-1.53	-48.71
6,156.0	1.40	148.50	5,984.3	524.6	-1,101.7	1,220.2	3.26	-1.28	-101.28
6,241.0	1.20	78.80	6,069.2	523.9	-1,100.3	1,218.6	1.76	-0.24	-82.00
6,327.0	0.90	91.40	6,155.2	524.1	-1,098.7	1,217.3	0.44	-0.35	14.65
6,412.0	1.40	119.30	6,240.2	523.6	-1,097.2	1,215.7	0.87	0.59	32.82
6,498.0	1.70	140.50	6,326.2	522.1	-1,095.4	1,213.5	0.75	0.35	24.65
6,584.0	1.90	150.70	6,412.1	519.8	-1,093.9	1,211.1	0.44	0.23	11.86
6,648.7	1.98	154.09	6,476.8	517.9	-1,092.9	1,209.4	0.21	0.12	5.24
TARGET CIRCLE 2545'FSL, 1320'FWL									
6,669.0	2.00	155.10	6,497.1	517.3	-1,092.6	1,208.9	0.21	0.12	4.98
6,755.0	2.00	162.70	6,583.0	514.5	-1,091.5	1,206.7	0.31	0.00	8.84
6,840.0	2.20	166.80	6,668.0	511.5	-1,090.7	1,204.7	0.29	0.24	4.82
6,926.0	2.50	166.90	6,753.9	508.0	-1,089.9	1,202.5	0.35	0.35	0.12
7,011.0	2.60	161.10	6,838.8	504.4	-1,088.9	1,200.0	0.33	0.12	-6.82
7,108.4	2.50	152.23	6,936.2	500.4	-1,087.2	1,196.8	0.42	-0.10	-9.11
HARDLINE 75'N OF BHL									
7,114.0	2.50	151.70	6,941.7	500.2	-1,087.1	1,196.6	0.42	-0.07	-9.44
7,164.0	2.50	151.70	6,991.7	498.3	-1,086.0	1,194.8	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____