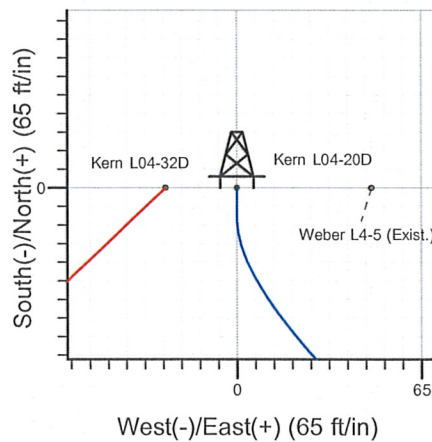
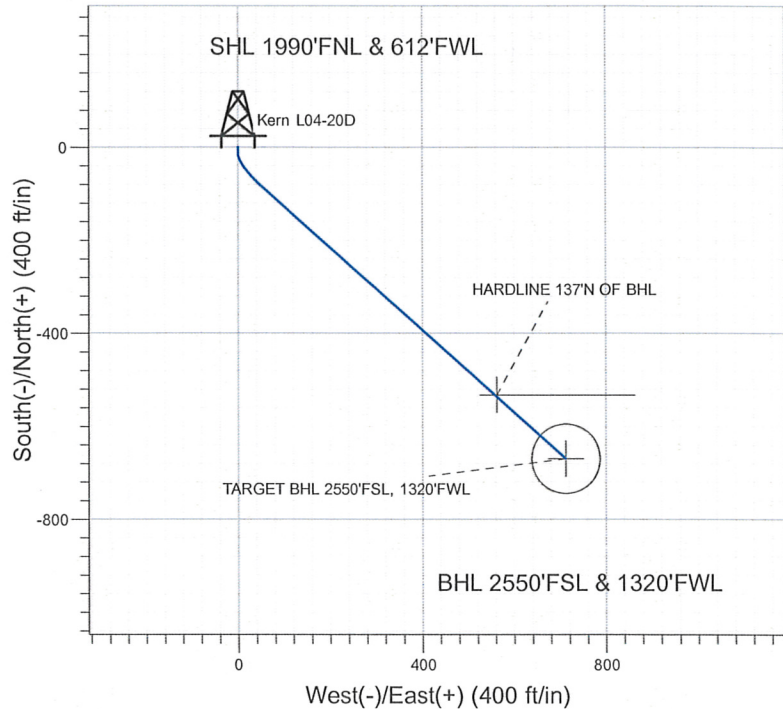
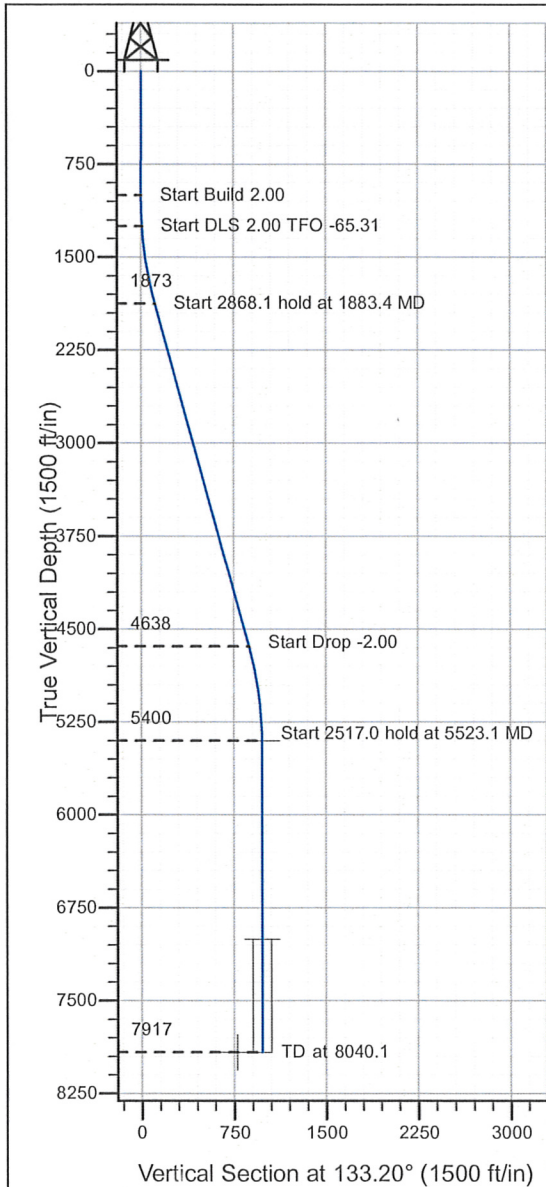


**ENSIGN****Directional****Well Name: Kern L04-20D**

Surface Location: Kern L04-20D Pad Sec.4-T3N-R66W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4794.0

+N/-S+E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1336696.06 3198248.38 40° 15' 19.620 N 104° 47' 22.884 W  
 Original Well Elev WELL @ 4807.0ft (Original Well Elev)

**NOBLE ENERGY INC WELD COUNTY CO**

Kern L04-20D Pad Sec.4-T3N-R66W  
 Kern L04-20D  
 Noble Kern L04-20D Plan #1 (03-04-10)  
 12:13, March 04 2010



Azimuths to True North  
 Magnetic North: 9.02°

Magnetic Field  
 Strength: 53225.8snT  
 Dip Angle: 66.99°  
 Date: 12/31/2009  
 Model: IGRF200510

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

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2550'FSL, 1320'FWL	5400.0	-668.8	712.2	40° 15' 13.011 N	104° 47' 13.698 W	Point
TARGET CIRCLE 2550'FSL, 1320'FWL	7002.0	-668.8	712.2	40° 15' 13.011 N	104° 47' 13.698 W	Circle (Radius: 75.0)
HARDLINE 137°N OF BHL	7917.0	-531.8	562.2	40° 15' 14.365 N	104° 47' 15.633 W	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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1250.0	5.00	180.00	1249.7	-10.9	0.0	2.00	180.00	7.5	
4	1883.4	15.43	131.50	1873.0	-94.7	63.4	2.00	-65.31	111.0	
5	4751.6	15.43	131.50	4637.8	-600.4	634.9	0.00	0.00	873.8	
6	5523.1	0.00	0.00	5400.0	-668.8	712.2	2.00	180.00	977.0	TARGET BHL 2550'FSL, 1320'FWL
7	8040.1	0.00	0.00	7917.0	-668.8	712.2	0.00	0.00	977.0	



## **Directional**

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

**SEC.4-T3N-R66W**

**Kern L04-20D Pad Sec.4-T3N-R66W**

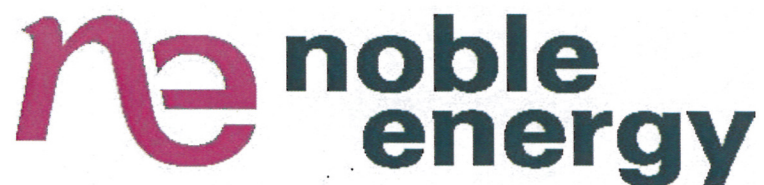
**Kern L04-20D**

**Wellbore #1**

**Plan: Noble Kern L04-20D Plan #1 (03-04-10)**

### **Standard Planning Report**

**04 March, 2010**





Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

Project	SEC.4-T3N-R66W, Weld County, CO		
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	Kern L04-20D Pad Sec.4-T3N-R66W				
Site Position:		Northing:	1,336,696.07 ft	Latitude:	40° 15' 19.620 N
From:	Lat/Long	Easting:	3,198,248.38 ft	Longitude:	104° 47' 22.884 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.46 °

Well	Kern L04-20D					
Well Position	+N/-S	0.0 ft	Northing:	1,336,696.06 ft	Latitude:	40° 15' 19.620 N
	+E/-W	0.0 ft	Easting:	3,198,248.38 ft	Longitude:	104° 47' 22.884 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,794.0 ft	

Wellbore	Wellbore #1				
----------	-------------	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.02	66.99	53,226

Design	Noble Kern L04-20D Plan #1 (03-04-10)				
--------	---------------------------------------	--	--	--	--

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	133.20	

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,250.0	5.00	180.00	1,249.7	-10.9	0.0	2.00	2.00	0.00	180.00	
1,883.4	15.43	131.50	1,873.0	-94.7	63.4	2.00	1.65	-7.66	-65.31	
4,751.6	15.43	131.50	4,637.8	-600.4	634.9	0.00	0.00	0.00	0.00	
5,523.1	0.00	0.00	5,400.0	-668.8	712.2	2.00	-2.00	0.00	180.00	TARGET BHL 255C
8,040.1	0.00	0.00	7,917.0	-668.8	712.2	0.00	0.00	0.00	0.00	

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

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	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.80	180.00	1,040.0	-0.3	0.0	0.2	2.00	2.00	0.00
1,080.0	1.60	180.00	1,080.0	-1.1	0.0	0.8	2.00	2.00	0.00
1,120.0	2.40	180.00	1,120.0	-2.5	0.0	1.7	2.00	2.00	0.00
1,160.0	3.20	180.00	1,159.9	-4.5	0.0	3.1	2.00	2.00	0.00
1,200.0	4.00	180.00	1,199.8	-7.0	0.0	4.8	2.00	2.00	0.00
1,240.0	4.80	180.00	1,239.7	-10.0	0.0	6.9	2.00	2.00	0.00
1,250.0	5.00	180.00	1,249.7	-10.9	0.0	7.5	2.00	2.00	0.00
1,280.0	5.28	174.06	1,279.6	-13.6	0.1	9.4	2.00	0.93	-19.79
1,320.0	5.73	167.15	1,319.4	-17.4	0.8	12.4	2.00	1.12	-17.29
1,360.0	6.25	161.30	1,359.2	-21.4	1.9	16.0	2.00	1.30	-14.61
1,400.0	6.82	156.40	1,398.9	-25.6	3.6	20.1	2.00	1.43	-12.27
1,440.0	7.44	152.27	1,438.6	-30.1	5.7	24.8	2.00	1.54	-10.31
1,480.0	8.08	148.79	1,478.2	-34.8	8.4	29.9	2.00	1.62	-8.71
1,520.0	8.76	145.83	1,517.8	-39.7	11.6	35.6	2.00	1.68	-7.40
1,560.0	9.45	143.29	1,557.3	-44.8	15.2	41.8	2.00	1.73	-6.34
1,600.0	10.16	141.10	1,596.7	-50.2	19.4	48.5	2.00	1.77	-5.47
1,640.0	10.88	139.20	1,636.0	-55.8	24.1	55.8	2.00	1.80	-4.76
1,680.0	11.61	137.53	1,675.3	-61.6	29.3	63.5	2.00	1.83	-4.17
1,720.0	12.35	136.06	1,714.4	-67.7	34.9	71.8	2.00	1.85	-3.68
1,760.0	13.09	134.75	1,753.4	-74.0	41.1	80.6	2.00	1.87	-3.27
1,800.0	13.85	133.58	1,792.3	-80.4	47.8	89.9	2.00	1.88	-2.92
1,840.0	14.60	132.53	1,831.1	-87.2	55.0	99.8	2.00	1.89	-2.62
1,880.0	15.36	131.58	1,869.7	-94.1	62.7	110.1	2.00	1.90	-2.37
1,883.4	15.43	131.50	1,873.0	-94.7	63.4	111.0	2.00	1.91	-2.25
1,920.0	15.43	131.50	1,908.3	-101.1	70.7	120.7	0.00	0.00	0.00
1,960.0	15.43	131.50	1,946.8	-108.2	78.6	131.4	0.00	0.00	0.00
2,000.0	15.43	131.50	1,985.4	-115.2	86.6	142.0	0.00	0.00	0.00
2,040.0	15.43	131.50	2,024.0	-122.3	94.6	152.6	0.00	0.00	0.00



Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

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	15.43	131.50	2,062.5	-129.3	102.5	163.3	0.00	0.00	0.00
2,120.0	15.43	131.50	2,101.1	-136.4	110.5	173.9	0.00	0.00	0.00
2,160.0	15.43	131.50	2,139.6	-143.4	118.5	184.6	0.00	0.00	0.00
2,200.0	15.43	131.50	2,178.2	-150.5	126.4	195.2	0.00	0.00	0.00
2,240.0	15.43	131.50	2,216.8	-157.6	134.4	205.8	0.00	0.00	0.00
2,280.0	15.43	131.50	2,255.3	-164.6	142.4	216.5	0.00	0.00	0.00
2,320.0	15.43	131.50	2,293.9	-171.7	150.4	227.1	0.00	0.00	0.00
2,360.0	15.43	131.50	2,332.4	-178.7	158.3	237.8	0.00	0.00	0.00
2,400.0	15.43	131.50	2,371.0	-185.8	166.3	248.4	0.00	0.00	0.00
2,440.0	15.43	131.50	2,409.5	-192.8	174.3	259.0	0.00	0.00	0.00
2,480.0	15.43	131.50	2,448.1	-199.9	182.2	269.7	0.00	0.00	0.00
2,520.0	15.43	131.50	2,486.7	-206.9	190.2	280.3	0.00	0.00	0.00
2,560.0	15.43	131.50	2,525.2	-214.0	198.2	290.9	0.00	0.00	0.00
2,600.0	15.43	131.50	2,563.8	-221.0	206.1	301.6	0.00	0.00	0.00
2,640.0	15.43	131.50	2,602.3	-228.1	214.1	312.2	0.00	0.00	0.00
2,680.0	15.43	131.50	2,640.9	-235.1	222.1	322.9	0.00	0.00	0.00
2,720.0	15.43	131.50	2,679.5	-242.2	230.1	333.5	0.00	0.00	0.00
2,760.0	15.43	131.50	2,718.0	-249.2	238.0	344.1	0.00	0.00	0.00
2,800.0	15.43	131.50	2,756.6	-256.3	246.0	354.8	0.00	0.00	0.00
2,840.0	15.43	131.50	2,795.1	-263.3	254.0	365.4	0.00	0.00	0.00
2,880.0	15.43	131.50	2,833.7	-270.4	261.9	376.0	0.00	0.00	0.00
2,920.0	15.43	131.50	2,872.2	-277.4	269.9	386.7	0.00	0.00	0.00
2,960.0	15.43	131.50	2,910.8	-284.5	277.9	397.3	0.00	0.00	0.00
3,000.0	15.43	131.50	2,949.4	-291.5	285.9	408.0	0.00	0.00	0.00
3,040.0	15.43	131.50	2,987.9	-298.6	293.8	418.6	0.00	0.00	0.00
3,080.0	15.43	131.50	3,026.5	-305.7	301.8	429.2	0.00	0.00	0.00
3,120.0	15.43	131.50	3,065.0	-312.7	309.8	439.9	0.00	0.00	0.00
3,160.0	15.43	131.50	3,103.6	-319.8	317.7	450.5	0.00	0.00	0.00
3,200.0	15.43	131.50	3,142.1	-326.8	325.7	461.1	0.00	0.00	0.00
3,240.0	15.43	131.50	3,180.7	-333.9	333.7	471.8	0.00	0.00	0.00
3,280.0	15.43	131.50	3,219.3	-340.9	341.6	482.4	0.00	0.00	0.00
3,320.0	15.43	131.50	3,257.8	-348.0	349.6	493.1	0.00	0.00	0.00
3,360.0	15.43	131.50	3,296.4	-355.0	357.6	503.7	0.00	0.00	0.00
3,400.0	15.43	131.50	3,334.9	-362.1	365.6	514.3	0.00	0.00	0.00
3,440.0	15.43	131.50	3,373.5	-369.1	373.5	525.0	0.00	0.00	0.00
3,480.0	15.43	131.50	3,412.1	-376.2	381.5	535.6	0.00	0.00	0.00
3,520.0	15.43	131.50	3,450.6	-383.2	389.5	546.2	0.00	0.00	0.00
3,560.0	15.43	131.50	3,489.2	-390.3	397.4	556.9	0.00	0.00	0.00
3,600.0	15.43	131.50	3,527.7	-397.3	405.4	567.5	0.00	0.00	0.00
3,640.0	15.43	131.50	3,566.3	-404.4	413.4	578.2	0.00	0.00	0.00
3,680.0	15.43	131.50	3,604.8	-411.4	421.3	588.8	0.00	0.00	0.00
3,720.0	15.43	131.50	3,643.4	-418.5	429.3	599.4	0.00	0.00	0.00
3,760.0	15.43	131.50	3,682.0	-425.5	437.3	610.1	0.00	0.00	0.00
3,800.0	15.43	131.50	3,720.5	-432.6	445.3	620.7	0.00	0.00	0.00
3,840.0	15.43	131.50	3,759.1	-439.7	453.2	631.4	0.00	0.00	0.00
3,880.0	15.43	131.50	3,797.6	-446.7	461.2	642.0	0.00	0.00	0.00
3,920.0	15.43	131.50	3,836.2	-453.8	469.2	652.6	0.00	0.00	0.00
3,960.0	15.43	131.50	3,874.8	-460.8	477.1	663.3	0.00	0.00	0.00
4,000.0	15.43	131.50	3,913.3	-467.9	485.1	673.9	0.00	0.00	0.00
4,040.0	15.43	131.50	3,951.9	-474.9	493.1	684.5	0.00	0.00	0.00
4,080.0	15.43	131.50	3,990.4	-482.0	501.0	695.2	0.00	0.00	0.00
4,120.0	15.43	131.50	4,029.0	-489.0	509.0	705.8	0.00	0.00	0.00
4,160.0	15.43	131.50	4,067.5	-496.1	517.0	716.5	0.00	0.00	0.00
4,200.0	15.43	131.50	4,106.1	-503.1	525.0	727.1	0.00	0.00	0.00



Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

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)
4,240.0	15.43	131.50	4,144.7	-510.2	532.9	737.7	0.00	0.00	0.00
4,280.0	15.43	131.50	4,183.2	-517.2	540.9	748.4	0.00	0.00	0.00
4,320.0	15.43	131.50	4,221.8	-524.3	548.9	759.0	0.00	0.00	0.00
4,360.0	15.43	131.50	4,260.3	-531.3	556.8	769.6	0.00	0.00	0.00
4,400.0	15.43	131.50	4,298.9	-538.4	564.8	780.3	0.00	0.00	0.00
4,440.0	15.43	131.50	4,337.5	-545.4	572.8	790.9	0.00	0.00	0.00
4,480.0	15.43	131.50	4,376.0	-552.5	580.8	801.6	0.00	0.00	0.00
4,520.0	15.43	131.50	4,414.6	-559.5	588.7	812.2	0.00	0.00	0.00
4,560.0	15.43	131.50	4,453.1	-566.6	596.7	822.8	0.00	0.00	0.00
4,600.0	15.43	131.50	4,491.7	-573.6	604.7	833.5	0.00	0.00	0.00
4,640.0	15.43	131.50	4,530.2	-580.7	612.6	844.1	0.00	0.00	0.00
4,680.0	15.43	131.50	4,568.8	-587.8	620.6	854.7	0.00	0.00	0.00
4,720.0	15.43	131.50	4,607.4	-594.8	628.6	865.4	0.00	0.00	0.00
4,751.6	15.43	131.50	4,637.8	-600.4	634.9	873.8	0.00	0.00	0.00
4,760.0	15.26	131.50	4,645.9	-601.8	636.5	876.0	2.00	-2.00	0.00
4,800.0	14.46	131.50	4,684.6	-608.6	644.2	886.3	2.00	-2.00	0.00
4,840.0	13.66	131.50	4,723.4	-615.1	651.5	896.0	2.00	-2.00	0.00
4,880.0	12.86	131.50	4,762.3	-621.2	658.4	905.1	2.00	-2.00	0.00
4,920.0	12.06	131.50	4,801.4	-626.9	664.8	913.8	2.00	-2.00	0.00
4,960.0	11.26	131.50	4,840.6	-632.2	670.9	921.9	2.00	-2.00	0.00
5,000.0	10.46	131.50	4,879.8	-637.2	676.5	929.4	2.00	-2.00	0.00
5,040.0	9.66	131.50	4,919.2	-641.9	681.8	936.4	2.00	-2.00	0.00
5,080.0	8.86	131.50	4,958.7	-646.1	686.6	942.8	2.00	-2.00	0.00
5,120.0	8.06	131.50	4,998.3	-650.0	691.0	948.7	2.00	-2.00	0.00
5,160.0	7.26	131.50	5,037.9	-653.6	695.0	954.0	2.00	-2.00	0.00
5,200.0	6.46	131.50	5,077.6	-656.7	698.6	958.8	2.00	-2.00	0.00
5,240.0	5.66	131.50	5,117.4	-659.5	701.7	963.0	2.00	-2.00	0.00
5,280.0	4.86	131.50	5,157.2	-662.0	704.5	966.7	2.00	-2.00	0.00
5,320.0	4.06	131.50	5,197.1	-664.0	706.8	969.8	2.00	-2.00	0.00
5,360.0	3.26	131.50	5,237.0	-665.7	708.7	972.4	2.00	-2.00	0.00
5,400.0	2.46	131.50	5,277.0	-667.0	710.2	974.3	2.00	-2.00	0.00
5,440.0	1.66	131.50	5,316.9	-668.0	711.3	975.8	2.00	-2.00	0.00
5,480.0	0.86	131.50	5,356.9	-668.6	712.0	976.7	2.00	-2.00	0.00
5,520.0	0.06	131.50	5,396.9	-668.8	712.2	977.0	2.00	-2.00	0.00
5,523.1	0.00	0.00	5,400.0	-668.8	712.2	977.0	2.00	-2.00	0.00
TARGET BHL 2550'FSL, 1320'FWL									
5,560.0	0.00	0.00	5,436.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,476.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,516.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,556.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,596.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,636.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,676.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,716.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,756.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,796.9	-668.8	712.2	977.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,836.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,876.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,040.0	0.00	0.00	5,916.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,080.0	0.00	0.00	5,956.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,120.0	0.00	0.00	5,996.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,036.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,076.9	-668.8	712.2	977.0	0.00	0.00	0.00



Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

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	6,116.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,156.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,196.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,236.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,276.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,316.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,356.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,396.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,436.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,476.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,516.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,556.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,596.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,636.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,676.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,716.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,756.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,920.0	0.00	0.00	6,796.9	-668.8	712.2	977.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,836.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,876.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,040.0	0.00	0.00	6,916.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,080.0	0.00	0.00	6,956.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,120.0	0.00	0.00	6,996.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,125.1	0.00	0.00	7,002.0	-668.8	712.2	977.0	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 2550'FSL, 1320'FWL									
7,160.0	0.00	0.00	7,036.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,076.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,240.0	0.00	0.00	7,116.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,156.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,196.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,360.0	0.00	0.00	7,236.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,276.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,430.1	0.00	0.00	7,307.0	-668.8	712.2	977.0	0.00	0.00	0.00
CODELL									
7,440.0	0.00	0.00	7,316.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,480.0	0.00	0.00	7,356.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,520.0	0.00	0.00	7,396.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,560.0	0.00	0.00	7,436.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,476.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,640.0	0.00	0.00	7,516.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,680.0	0.00	0.00	7,556.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,720.0	0.00	0.00	7,596.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,760.0	0.00	0.00	7,636.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,676.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,824.1	0.00	0.00	7,701.0	-668.8	712.2	977.0	0.00	0.00	0.00
D-SAND									
7,840.0	0.00	0.00	7,716.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,880.0	0.00	0.00	7,756.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,890.1	0.00	0.00	7,767.0	-668.8	712.2	977.0	0.00	0.00	0.00
J-SAND									
7,920.0	0.00	0.00	7,796.9	-668.8	712.2	977.0	0.00	0.00	0.00
7,960.0	0.00	0.00	7,836.9	-668.8	712.2	977.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,876.9	-668.8	712.2	977.0	0.00	0.00	0.00
8,040.0	0.00	0.00	7,916.9	-668.8	712.2	977.0	0.00	0.00	0.00

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Kern L04-20D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Project:	SEC.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	North Reference:	True
Well:	Kern L04-20D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Kern L04-20D Plan #1 (03-04-10)		

**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)
8,040.1	0.00	0.00	7,917.0	-668.8	712.2	977.0	0.00	0.00	0.00
HARDLINE 137°N OF BHL									

**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 BHL 2550°F	0.00	0.00	5,400.0	-668.8	712.2	1,336,033.02	3,198,965.88	40° 15' 13.011 N	104° 47' 13.698 W
- plan hits target center									
- Point									
TARGET CIRCLE 25'	0.00	0.00	7,002.0	-668.8	712.2	1,336,033.02	3,198,965.88	40° 15' 13.011 N	104° 47' 13.698 W
- plan hits target center									
- Circle (radius 75.0)									
HARDLINE 137°N OF	0.00	0.00	7,917.0	-531.8	562.2	1,336,168.81	3,198,814.80	40° 15' 14.365 N	104° 47' 15.633 W
- plan misses target center by 203.1ft at 8040.1ft MD (7917.0 TVD, -668.8 N, 712.2 E)									
- Polygon									
Point 1			7,917.0	0.0	0.0	1,336,168.81	3,198,814.80		
Point 2			7,917.0	0.0	300.0	1,336,171.21	3,199,114.77		

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,125.1	7,002.0	NIOBRARA		0.00	
7,430.1	7,307.0	CODELL		0.00	
7,824.1	7,701.0	D-SAND		0.00	
7,890.1	7,767.0	J-SAND		0.00	