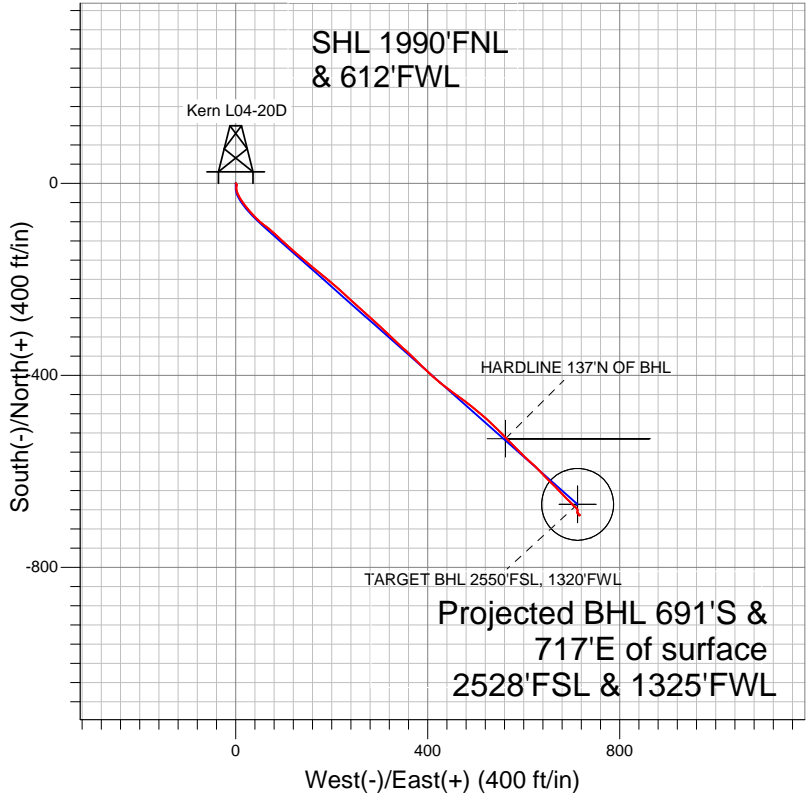


Well Name: Kern L04-20D

Surface Location: Kern L04-20D Pad Sec.4-T3N-R66W
 North American Datum 1983 US State Plane 1983Colorado Northern Zone
 Ground Elevation: 4794.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1336696.06	3198248.38	40.255450	-104.789690	
		Original Well Elev	WELL @ 4807.0ft (Original Well Elev)			

NOBLE ENERGY INC WELD COUNTY CO



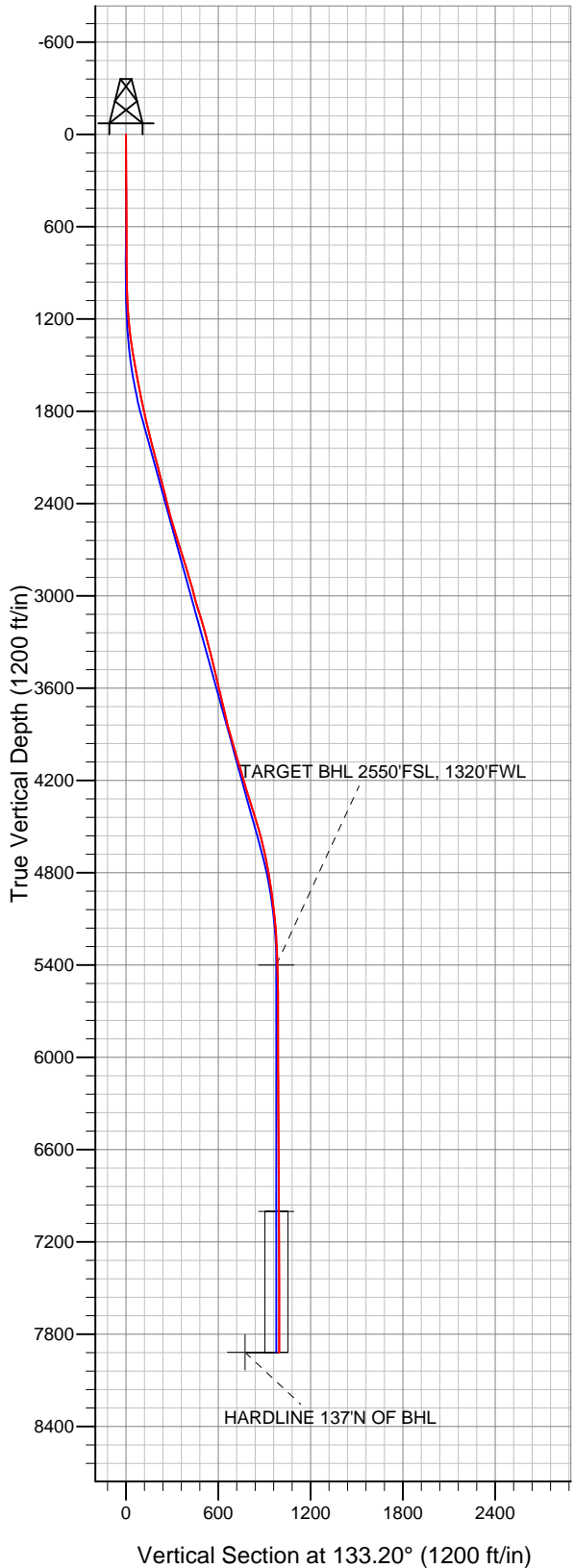
LEGEND

- Survey #1
- Kern L04-20D, Wellbore #1, Noble Kern L04-20D Plan #1 (03-04-10) V0
- Wellbore #1

Final Survey Plot

Projected Final Survey -
 8041'MD & 7919'TVD @ 996'VS
 0.30 deg Inc 89.20 deg AZ

Project: SEC.4-T3N-R66W
 Site: Kern L04-20D Pad Sec.4-T3N-R66W
 Well: Kern L04-20D
 Plan: Wellbore #1





NOBLE ENERGY INC WELD COUNTY CO

SEC.4-T3N-R66W

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

Kern L04-20D

Wellbore #1

Survey: Survey #1

Standard Survey Report

08 March, 2012



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

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
From:	Lat/Long	Easting:	3,198,248.38 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.255450
		Longitude:	-104.789690
		Grid Convergence:	0.46 °

Well	Kern L04-20D		
Well Position	+N/-S	0.0 ft	Northing: 1,336,696.06 ft
	+E/-W	0.0 ft	Easting: 3,198,248.38 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.255450
		Longitude:	-104.789690
		Ground Level:	4,794.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/6/2012	8.72	66.91	53,001

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 (°)	
	5,400.0	0.0	0.0	133.20	

Survey Program	Date	3/8/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
732.0	8,041.0	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	
732.0	0.50	138.00	732.0	-2.4	2.1	3.2	0.07	0.07	0.00	
817.0	0.50	169.40	817.0	-3.0	2.5	3.9	0.32	0.00	36.94	
903.0	0.80	192.90	903.0	-4.0	2.4	4.5	0.46	0.35	27.33	
988.0	2.60	199.20	987.9	-6.4	1.6	5.5	2.13	2.12	7.41	
1,074.0	3.30	176.40	1,073.8	-10.7	1.1	8.1	1.57	0.81	-26.51	
1,159.0	5.00	166.10	1,158.6	-16.7	2.2	13.0	2.18	2.00	-12.12	
1,245.0	6.40	153.90	1,244.2	-24.7	5.2	20.7	2.14	1.63	-14.19	
1,330.0	7.90	145.80	1,328.5	-33.7	10.6	30.8	2.12	1.76	-9.53	
1,416.0	9.30	142.10	1,413.6	-44.1	18.1	43.4	1.75	1.63	-4.30	
1,501.0	9.70	142.70	1,497.4	-55.2	26.7	57.3	0.48	0.47	0.71	
1,587.0	10.60	136.00	1,582.0	-66.7	36.6	72.3	1.72	1.05	-7.79	
1,672.0	11.70	132.80	1,665.4	-78.2	48.3	88.8	1.48	1.29	-3.76	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Kern L04-20D
Project:	SEC.4-T3N-R66W	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Well:	Kern L04-20D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
1,758.0	12.10	126.00	1,749.6	-89.4	62.0	106.4	1.69	0.47	-7.91
1,843.0	12.20	131.80	1,832.7	-100.6	75.9	124.2	1.44	0.12	6.82
1,929.0	13.50	133.50	1,916.5	-113.6	90.0	143.4	1.57	1.51	1.98
2,014.0	14.30	132.20	1,999.0	-127.5	105.0	163.8	1.01	0.94	-1.53
2,100.0	15.40	130.30	2,082.2	-142.0	121.5	185.8	1.40	1.28	-2.21
2,185.0	14.80	131.20	2,164.2	-156.4	138.3	207.9	0.76	-0.71	1.06
2,271.0	14.10	130.10	2,247.5	-170.4	154.6	229.4	0.87	-0.81	-1.28
2,356.0	14.10	129.30	2,330.0	-183.6	170.5	250.0	0.23	0.00	-0.94
2,442.0	14.60	129.40	2,413.3	-197.2	187.0	271.3	0.58	0.58	0.12
2,527.0	15.30	130.30	2,495.4	-211.2	203.8	293.2	0.87	0.82	1.06
2,613.0	16.90	132.00	2,578.0	-226.9	221.8	317.0	1.94	1.86	1.98
2,698.0	16.90	132.70	2,659.3	-243.6	240.1	341.7	0.24	0.00	0.82
2,784.0	17.60	131.60	2,741.5	-260.7	259.0	367.2	0.90	0.81	-1.28
2,869.0	17.40	132.40	2,822.5	-277.8	278.0	392.8	0.37	-0.24	0.94
2,955.0	15.60	133.40	2,905.0	-294.4	295.9	417.2	2.12	-2.09	1.16
3,040.0	15.30	132.00	2,986.9	-309.7	312.5	439.8	0.56	-0.35	-1.65
3,126.0	16.70	134.10	3,069.6	-325.9	329.8	463.5	1.76	1.63	2.44
3,211.0	16.80	132.00	3,151.0	-342.7	347.7	488.0	0.72	0.12	-2.47
3,297.0	15.30	133.40	3,233.6	-358.8	365.2	511.8	1.80	-1.74	1.63
3,382.0	15.00	135.50	3,315.7	-374.3	381.0	534.0	0.74	-0.35	2.47
3,468.0	14.40	131.90	3,398.9	-389.4	396.8	555.8	1.27	-0.70	-4.19
3,553.0	13.20	133.10	3,481.4	-403.1	411.8	576.1	1.45	-1.41	1.41
3,639.0	13.00	129.80	3,565.2	-416.0	426.4	595.6	0.90	-0.23	-3.84
3,724.0	13.30	125.60	3,648.0	-427.8	441.7	614.8	1.18	0.35	-4.94
3,810.0	13.80	125.10	3,731.6	-439.5	458.1	634.8	0.60	0.58	-0.58
3,895.0	13.50	128.20	3,814.2	-451.4	474.2	654.7	0.93	-0.35	3.65
3,981.0	15.60	129.20	3,897.4	-464.9	491.0	676.2	2.46	2.44	1.16
4,066.0	16.00	129.40	3,979.2	-479.6	508.9	699.3	0.47	0.47	0.24
4,152.0	16.80	132.00	4,061.7	-495.4	527.3	723.6	1.26	0.93	3.02
4,237.0	17.00	134.90	4,143.0	-512.4	545.3	748.3	1.02	0.24	3.41
4,323.0	15.80	136.60	4,225.5	-529.8	562.2	772.5	1.50	-1.40	1.98
4,408.0	17.50	135.90	4,306.9	-547.4	579.1	796.8	2.01	2.00	-0.82
4,494.0	17.60	133.40	4,388.9	-565.6	597.5	822.8	0.88	0.12	-2.91
4,579.0	16.70	132.30	4,470.2	-582.7	615.9	847.8	1.13	-1.06	-1.29
4,665.0	15.40	135.80	4,552.8	-599.2	633.0	871.6	1.88	-1.51	4.07
4,750.0	13.30	135.60	4,635.2	-614.3	647.7	892.6	2.47	-2.47	-0.24
4,836.0	11.40	134.20	4,719.2	-627.2	660.7	911.0	2.24	-2.21	-1.63
4,921.0	9.50	137.90	4,802.8	-638.3	671.4	926.4	2.37	-2.24	4.35
5,007.0	8.60	135.50	4,887.7	-648.2	680.7	939.9	1.13	-1.05	-2.79
5,092.0	7.70	135.10	4,971.8	-656.7	689.2	951.9	1.06	-1.06	-0.47
5,178.0	6.50	134.10	5,057.2	-664.2	696.7	962.6	1.40	-1.40	-1.16
5,263.0	4.80	139.40	5,141.7	-670.2	702.5	970.9	2.09	-2.00	6.24
5,349.0	3.50	124.00	5,227.5	-674.4	707.0	977.1	1.98	-1.51	-17.91
5,434.0	2.50	142.70	5,312.4	-677.4	710.3	981.5	1.63	-1.18	22.00
5,520.0	1.70	153.70	5,398.3	-680.0	712.0	984.5	1.04	-0.93	12.79
5,521.4	1.69	154.14	5,399.7	-680.0	712.0	984.6	1.34	-0.94	31.97
TARGET BHL 2550'FSL, 1320'FWL									
5,605.0	1.20	195.50	5,483.3	-682.0	712.3	986.1	1.34	-0.58	49.46
5,691.0	1.10	200.20	5,569.3	-683.6	711.8	986.9	0.16	-0.12	5.47
5,776.0	0.80	186.90	5,654.3	-685.0	711.4	987.5	0.44	-0.35	-15.65
5,862.0	0.40	165.50	5,740.3	-685.9	711.4	988.1	0.53	-0.47	-24.88
5,947.0	0.40	167.50	5,825.3	-686.5	711.6	988.6	0.02	0.00	2.35
6,033.0	0.20	206.10	5,911.3	-686.9	711.6	988.9	0.32	-0.23	44.88
6,118.0	0.10	147.00	5,996.3	-687.1	711.6	989.0	0.20	-0.12	-69.53

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Kern L04-20D
Project:	SEC.4-T3N-R66W	TVD Reference:	WELL @ 4807.0ft (Original Well Elev)
Site:	Kern L04-20D Pad Sec.4-T3N-R66W	MD Reference:	WELL @ 4807.0ft (Original Well Elev)
Well:	Kern L04-20D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)	
6,204.0	0.20	58.60	6,082.3	-687.1	711.7	989.2	0.26	0.12	-102.79	
6,289.0	0.40	81.10	6,167.3	-686.9	712.1	989.4	0.27	0.24	26.47	
6,375.0	0.40	165.30	6,253.3	-687.2	712.5	989.8	0.62	0.00	97.91	
6,460.0	0.40	111.60	6,338.3	-687.6	712.9	990.3	0.43	0.00	-63.18	
6,588.0	0.40	114.20	6,466.3	-687.9	713.7	991.2	0.01	0.00	2.03	
6,717.0	0.10	132.90	6,595.3	-688.2	714.2	991.7	0.24	-0.23	14.50	
6,845.0	0.40	175.30	6,723.3	-688.7	714.3	992.2	0.26	0.23	33.13	
6,973.0	0.30	142.80	6,851.3	-689.4	714.5	992.8	0.17	-0.08	-25.39	
7,101.0	0.30	179.00	6,979.3	-690.0	714.7	993.4	0.15	0.00	28.28	
7,123.6	0.28	178.86	7,001.9	-690.1	714.8	993.5	0.08	-0.08	-0.60	
TARGET CIRCLE 2550'FSL, 1320'FWL										
7,230.0	0.20	177.90	7,108.3	-690.6	714.8	993.8	0.08	-0.08	-0.91	
7,358.0	0.30	178.10	7,236.3	-691.1	714.8	994.2	0.08	0.08	0.16	
7,486.0	0.30	150.00	7,364.3	-691.8	715.0	994.7	0.11	0.00	-21.95	
7,614.0	0.40	73.50	7,492.3	-691.9	715.6	995.3	0.34	0.08	-59.77	
7,743.0	0.30	8.90	7,621.3	-691.5	716.0	995.3	0.30	-0.08	-50.08	
7,871.0	0.20	84.70	7,749.3	-691.1	716.3	995.3	0.25	-0.08	59.22	
7,994.0	0.30	89.20	7,872.3	-691.1	716.9	995.7	0.08	0.08	3.66	
8,037.9	0.30	89.20	7,916.2	-691.1	717.1	995.8	0.00	0.00	0.00	
HARDLINE 137'N OF BHL										
8,041.0	0.30	89.20	7,919.3	-691.1	717.1	995.8	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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