



Noble Energy Inc.

**Weld County, CO
Sec 1, T5N, R64W, 6th PM
SLW Ranch B01-62-1HN**

Wellbore #1

Design: Wellbore #1 FINAL

DDC Survey Report

01 April, 2013



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well SLW Ranch B01-62-1HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4634.0usft (H&P #326)
Site:	Sec 1, T5N, R64W, 6th PM	MD Reference:	WELL @ 4634.0usft (H&P #326)
Well:	SLW Ranch B01-62-1HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Sec 1, T5N, R64W, 6th PM				
Site Position:		Northing:	1,398,889.40 usft	Latitude:	40° 25' 26.328 N
From:	Lat/Long	Easting:	3,280,466.06 usft	Longitude:	104° 29' 33.360 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.65 °

Well	SLW Ranch B01-62-1HN					
Well Position	+N-S	0.0 usft	Northing:	1,398,889.40 usft	Latitude:	40° 25' 26.328 N
	+E-W	0.0 usft	Easting:	3,280,466.06 usft	Longitude:	104° 29' 33.360 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,604.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/13/2013	8.50	67.06	52,999

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.0	0.0	0.0	258.95	

Survey Program	Date	4/1/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
738.0	11,286.0	MWD (Wellbore #1)	MWD default	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
TIE IN @ 738' MD / 738' TVD										
738.0	0.50	134.60	738.0	-2.3	2.3	-1.8	0.07	0.07	0.00	
1,021.0	0.80	139.70	1,021.0	-4.6	4.4	-3.5	0.11	0.11	1.80	
1,210.0	2.40	128.40	1,209.9	-8.1	8.4	-6.7	0.86	0.85	-5.98	
1,309.0	5.90	119.80	1,308.6	-11.9	14.4	-11.9	3.58	3.54	-8.69	
1,403.0	8.20	113.30	1,401.9	-17.0	24.8	-21.1	2.59	2.45	-6.91	
1,495.0	9.90	116.50	1,492.8	-23.1	37.9	-32.8	1.93	1.85	3.48	
1,588.0	12.20	113.10	1,584.0	-30.5	54.1	-47.2	2.57	2.47	-3.66	
1,682.0	14.00	109.80	1,675.6	-38.3	73.9	-65.2	2.07	1.91	-3.51	
1,776.0	15.60	109.40	1,766.5	-46.3	96.6	-85.9	1.71	1.70	-0.43	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,869.0	16.30	109.40	1,855.9	-54.8	120.7	-107.9	0.75	0.75	0.00
1,962.0	17.00	114.20	1,945.0	-64.7	145.4	-130.3	1.66	0.75	5.16
2,055.0	16.50	117.20	2,034.0	-76.3	169.5	-151.7	1.07	-0.54	3.23
2,148.0	15.30	120.10	2,123.5	-88.5	191.9	-171.4	1.55	-1.29	3.12
2,241.0	14.10	120.00	2,213.4	-100.3	212.3	-189.1	1.29	-1.29	-0.11
2,334.0	15.10	114.50	2,303.4	-111.0	233.1	-207.5	1.84	1.08	-5.91
2,425.0	17.00	114.50	2,390.9	-121.5	256.0	-228.0	2.09	2.09	0.00
2,519.0	16.30	117.70	2,480.9	-133.3	280.2	-249.5	1.23	-0.74	3.40
2,612.0	17.10	115.60	2,570.0	-145.3	304.1	-270.6	1.08	0.86	-2.26
2,705.0	18.10	117.70	2,658.7	-157.9	329.2	-292.9	1.27	1.08	2.26
2,798.0	19.00	118.90	2,746.8	-171.9	355.3	-315.7	1.05	0.97	1.29
2,893.0	17.80	118.80	2,837.0	-186.4	381.5	-338.7	1.26	-1.26	-0.11
2,988.0	17.50	118.80	2,927.5	-200.3	406.8	-360.9	0.32	-0.32	0.00
3,083.0	16.20	118.90	3,018.4	-213.5	430.9	-382.0	1.37	-1.37	0.11
3,177.0	15.60	116.80	3,108.8	-225.6	453.7	-402.0	0.88	-0.64	-2.23
3,272.0	16.10	114.30	3,200.2	-236.8	477.1	-422.8	0.89	0.53	-2.63
3,367.0	17.20	118.80	3,291.2	-249.0	501.4	-444.4	1.78	1.16	4.74
3,462.0	17.50	113.50	3,381.9	-261.4	526.8	-466.9	1.69	0.32	-5.58
3,556.0	18.80	112.90	3,471.2	-272.9	553.7	-491.1	1.40	1.38	-0.64
3,651.0	20.90	114.70	3,560.6	-286.0	583.2	-517.6	2.30	2.21	1.89
3,746.0	22.30	115.90	3,648.9	-300.9	614.8	-545.7	1.55	1.47	1.26
CROSSED HARD LINE @ 3763' MD / 3665' TVD									
3,763.3	22.10	115.94	3,664.9	-303.8	620.7	-551.0	1.17	-1.17	0.20
3,840.0	21.20	116.10	3,736.2	-316.2	646.1	-573.5	1.17	-1.17	0.21
3,935.0	20.60	115.60	3,825.0	-331.0	676.6	-600.6	0.66	-0.63	-0.53
4,030.0	18.70	115.90	3,914.4	-344.9	705.4	-626.2	2.00	-2.00	0.32
4,124.0	17.10	116.50	4,003.9	-357.6	731.3	-649.2	1.71	-1.70	0.64
4,219.0	16.70	114.70	4,094.8	-369.5	756.2	-671.4	0.69	-0.42	-1.89
4,313.0	14.30	114.90	4,185.4	-380.1	779.0	-691.7	2.55	-2.55	0.21
4,408.0	14.30	117.20	4,277.4	-390.4	800.1	-710.4	0.60	0.00	2.42
4,503.0	16.10	117.70	4,369.1	-401.9	822.2	-729.9	1.90	1.89	0.53
4,597.0	15.10	116.50	4,459.6	-413.4	844.7	-749.8	1.12	-1.06	-1.28
4,692.0	15.20	118.80	4,551.3	-424.9	866.7	-769.2	0.64	0.11	2.42
4,787.0	16.40	119.10	4,642.7	-437.4	889.3	-789.0	1.27	1.26	0.32
4,882.0	15.90	112.80	4,734.0	-449.0	913.0	-810.1	1.92	-0.53	-6.63
4,977.0	16.90	110.70	4,825.1	-458.9	938.0	-832.6	1.22	1.05	-2.21
5,071.0	15.40	111.20	4,915.4	-468.3	962.4	-854.8	1.60	-1.60	0.53
5,166.0	13.10	111.50	5,007.5	-476.8	984.2	-874.5	2.42	-2.42	0.32
5,261.0	9.80	115.60	5,100.6	-484.2	1,001.5	-890.1	3.58	-3.47	4.32
5,356.0	6.80	123.70	5,194.6	-490.8	1,013.4	-900.6	3.38	-3.16	8.53
5,450.0	4.70	128.80	5,288.1	-496.3	1,021.1	-907.0	2.30	-2.23	5.43
5,545.0	4.40	127.40	5,382.8	-501.0	1,027.0	-911.9	0.34	-0.32	-1.47
5,640.0	3.10	117.50	5,477.6	-504.4	1,032.2	-916.4	1.52	-1.37	-10.42
5,735.0	1.60	162.30	5,572.5	-506.8	1,034.9	-918.5	2.38	-1.58	47.16

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,830.0	1.30	167.30	5,667.5	-509.2	1,035.5	-918.7	0.34	-0.32	5.26
5,925.0	1.30	164.30	5,762.5	-511.2	1,036.0	-918.8	0.07	0.00	-3.16
6,020.0	1.40	137.70	5,857.4	-513.1	1,037.1	-919.5	0.66	0.11	-28.00
6,115.0	5.20	240.70	5,952.3	-516.1	1,034.1	-916.0	5.98	4.00	108.42
6,210.0	12.90	278.50	6,046.1	-516.6	1,019.8	-901.9	9.83	8.11	39.79
6,304.0	20.50	281.50	6,136.1	-511.8	993.3	-876.8	8.13	8.09	3.19
6,398.0	24.20	273.80	6,223.0	-507.2	957.9	-842.9	5.01	3.94	-8.19
6,493.0	29.00	263.90	6,308.0	-508.4	915.6	-801.1	6.86	5.05	-10.42
6,587.0	39.50	264.10	6,385.6	-513.9	863.0	-748.5	11.17	11.17	0.21
6,682.0	52.90	263.40	6,451.2	-521.4	795.0	-680.3	14.12	14.11	-0.74
6,776.0	66.40	270.80	6,498.6	-525.1	714.3	-600.4	15.87	14.36	7.87
6,821.0	67.20	273.40	6,516.4	-523.6	672.9	-560.1	5.60	1.78	5.78
6,871.0	66.70	273.10	6,535.9	-521.0	627.0	-515.5	1.14	-1.00	-0.60
6,916.0	66.40	272.60	6,553.8	-519.0	585.8	-475.4	1.22	-0.67	-1.11
6,965.0	65.90	272.60	6,573.7	-516.9	541.0	-431.9	1.02	-1.02	0.00
CROSSED HARD LINE @ 6984' MD / 6581' TVD									
6,983.7	65.98	272.35	6,581.3	-516.2	523.9	-415.3	1.30	0.44	-1.33
7,010.0	66.10	272.00	6,592.0	-515.3	499.9	-391.9	1.30	0.45	-1.33
7,060.0	69.60	269.60	6,610.8	-514.6	453.6	-346.6	8.29	7.00	-4.80
7,105.0	73.90	267.80	6,624.9	-515.6	410.9	-304.5	10.28	9.56	-4.00
7,166.0	80.10	265.70	6,638.6	-519.0	351.6	-245.6	10.70	10.16	-3.44
CROSSED HARD LINE @ 7177' MD / 6641' TVD									
7,177.4	80.38	266.14	6,640.5	-519.8	340.4	-234.5	4.54	2.44	3.89
7,215.0	81.30	267.60	6,646.5	-521.8	303.3	-197.7	4.54	2.45	3.87
7,310.0	87.10	268.20	6,656.1	-525.3	208.9	-104.4	6.14	6.11	0.63
7,405.0	89.30	267.80	6,659.1	-528.6	114.0	-10.6	2.35	2.32	-0.42
7,500.0	91.50	266.90	6,658.4	-533.0	19.1	83.4	2.50	2.32	-0.95
7,594.0	91.60	266.40	6,655.9	-538.5	-74.7	176.5	0.54	0.11	-0.53
7,689.0	91.90	266.20	6,653.0	-544.6	-169.4	270.7	0.38	0.32	-0.21
7,784.0	91.00	265.40	6,650.6	-551.6	-264.1	365.0	1.27	-0.95	-0.84
7,879.0	89.20	264.10	6,650.4	-560.3	-358.7	459.5	2.34	-1.89	-1.37
7,974.0	89.20	264.50	6,651.8	-569.7	-453.3	554.0	0.42	0.00	0.42
8,069.0	88.30	267.60	6,653.8	-576.2	-548.0	648.3	3.40	-0.95	3.26
8,164.0	87.80	267.50	6,657.1	-580.3	-642.8	742.2	0.54	-0.53	-0.11
8,259.0	89.10	269.40	6,659.6	-582.9	-737.8	835.8	2.42	1.37	2.00
8,353.0	89.40	269.20	6,660.9	-584.0	-831.8	928.3	0.38	0.32	-0.21
8,448.0	89.70	268.20	6,661.6	-586.2	-926.7	1,021.9	1.10	0.32	-1.05
8,543.0	90.40	267.80	6,661.5	-589.5	-1,021.7	1,115.7	0.85	0.74	-0.42
8,638.0	90.90	267.80	6,660.5	-593.1	-1,116.6	1,209.6	0.53	0.53	0.00
8,733.0	90.80	266.60	6,659.0	-597.8	-1,211.5	1,303.6	1.27	-0.11	-1.26
8,828.0	91.50	267.10	6,657.1	-603.0	-1,306.3	1,397.7	0.91	0.74	0.53
8,923.0	88.10	267.80	6,657.5	-607.2	-1,401.2	1,491.6	3.65	-3.58	0.74
9,018.0	90.10	269.20	6,659.0	-609.7	-1,496.1	1,585.3	2.57	2.11	1.47
9,113.0	90.80	269.70	6,658.2	-610.6	-1,591.1	1,678.7	0.91	0.74	0.53

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Survey

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9,207.0	90.80	269.00	6,656.9	-611.7	-1,685.1	1,771.1	0.74	0.00	-0.74
9,302.0	91.40	269.40	6,655.1	-613.0	-1,780.1	1,864.6	0.76	0.63	0.42
9,397.0	89.90	267.60	6,654.0	-615.5	-1,875.0	1,958.3	2.47	-1.58	-1.89
9,492.0	89.50	266.80	6,654.5	-620.1	-1,969.9	2,052.3	0.94	-0.42	-0.84
9,587.0	90.90	268.20	6,654.2	-624.3	-2,064.8	2,146.2	2.08	1.47	1.47
9,682.0	91.50	268.00	6,652.2	-627.4	-2,159.8	2,240.0	0.67	0.63	-0.21
9,777.0	90.20	266.00	6,650.8	-632.4	-2,254.6	2,334.0	2.51	-1.37	-2.11
9,871.0	90.10	266.00	6,650.5	-638.9	-2,348.4	2,427.3	0.11	-0.11	0.00
9,966.0	91.00	266.40	6,649.6	-645.2	-2,443.2	2,521.5	1.04	0.95	0.42
10,061.0	88.90	265.50	6,649.7	-651.9	-2,537.9	2,615.8	2.40	-2.21	-0.95
10,155.0	88.40	264.60	6,651.9	-660.1	-2,631.5	2,709.3	1.10	-0.53	-0.96
10,249.0	87.90	264.60	6,654.9	-668.9	-2,725.1	2,802.8	0.53	-0.53	0.00
10,344.0	89.30	265.00	6,657.3	-677.5	-2,819.7	2,897.2	1.53	1.47	0.42
10,439.0	89.60	265.00	6,658.2	-685.8	-2,914.3	2,991.7	0.32	0.32	0.00
10,534.0	90.70	265.00	6,657.9	-694.1	-3,008.9	3,086.2	1.16	1.16	0.00
10,628.0	88.60	265.40	6,658.5	-701.9	-3,102.6	3,179.6	2.27	-2.23	0.43
10,723.0	89.30	267.80	6,660.2	-707.6	-3,197.4	3,273.7	2.63	0.74	2.53
10,818.0	88.90	267.10	6,661.7	-711.8	-3,292.3	3,367.7	0.85	-0.42	-0.74
10,913.0	89.80	267.10	6,662.8	-716.6	-3,387.2	3,461.7	0.95	0.95	0.00
11,008.0	90.60	266.80	6,662.5	-721.6	-3,482.0	3,555.8	0.90	0.84	-0.32
11,102.0	91.30	266.20	6,660.9	-727.4	-3,575.8	3,649.0	0.98	0.74	-0.64
11,230.0	92.20	265.20	6,657.0	-737.0	-3,703.4	3,776.0	1.05	0.70	-0.78
TD @ 11286' MD / 6655' TVD									
11,286.0	92.20	265.20	6,654.9	-741.7	-3,759.2	3,831.6	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
738.0	738.0	-2.3	2.3	TIE IN @ 738' MD / 738' TVD
3,763.3	3,664.9	-303.8	620.7	CROSSED HARD LINE @ 3763' MD / 3665' TVD
6,983.7	6,581.3	-516.2	523.9	CROSSED HARD LINE @ 6984' MD / 6581' TVD
7,177.4	6,640.5	-519.8	340.4	CROSSED HARD LINE @ 7177' MD / 6641' TVD
11,286.0	6,654.9	-741.7	-3,759.2	TD @ 11286' MD / 6655' TVD

Checked By: _____ Approved By: _____ Date: _____



Survey Certification Sheet

Noble Energy
Company

RM-13240
Job Number

4/5/13
Date

Sec1,T5N,R64W,6th PM
Lease

SLW Ranch B01-62-1HN
Well Name

Weld, CO
County & State

API: 05-123-36260

Surveyed from a depth of: 641 feet to 11286 feet MD

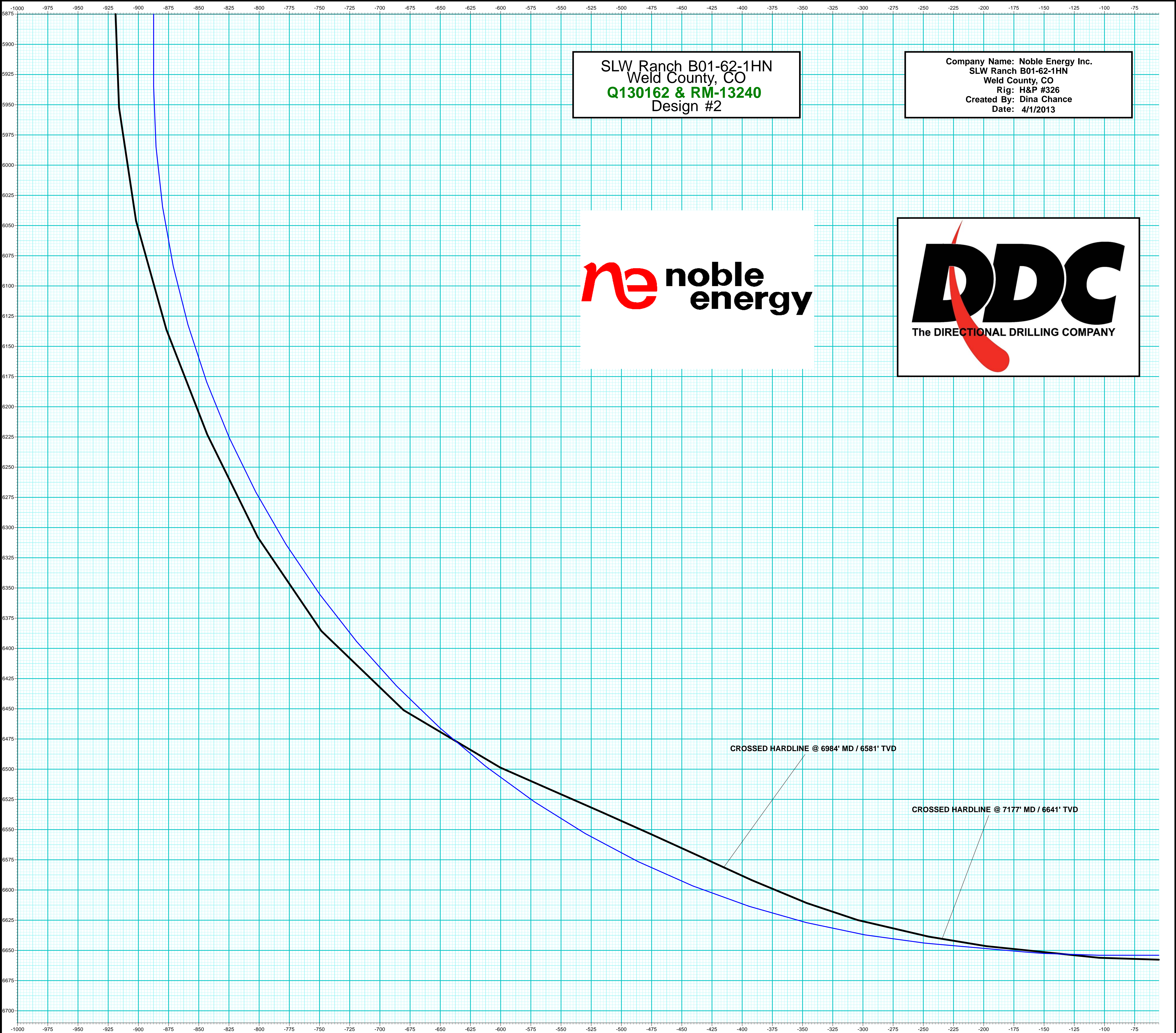
Type of Survey: MWD

Directional Supervisor/Surveyor: Chris Abbott

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The
Directional Drilling Company,
ou=GM of Guidance Services,
email=larryw@directionaldrillers.c
om, c=US
Date: 2013.04.08 16:05:10 -05'00'

Larry Wright
MWD General Manager



SLW Ranch B01-62-1HN
 Weld County, CO
Q130162 & RM-13240
 Design #2

Company Name: Noble Energy Inc.
 SLW Ranch B01-62-1HN
 Weld County, CO
 Rig: H&P #326
 Created By: Dina Chance
 Date: 4/1/2013



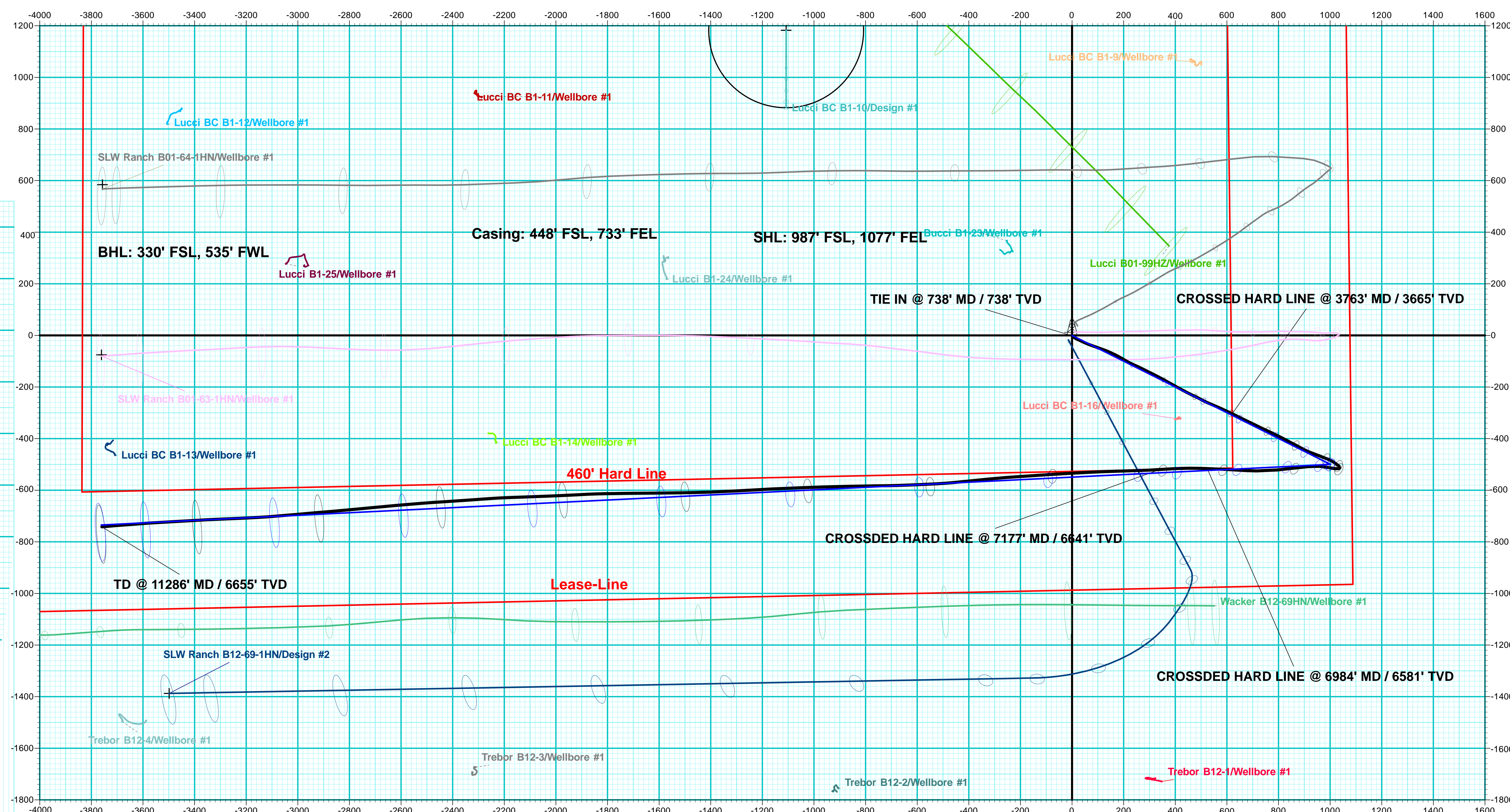
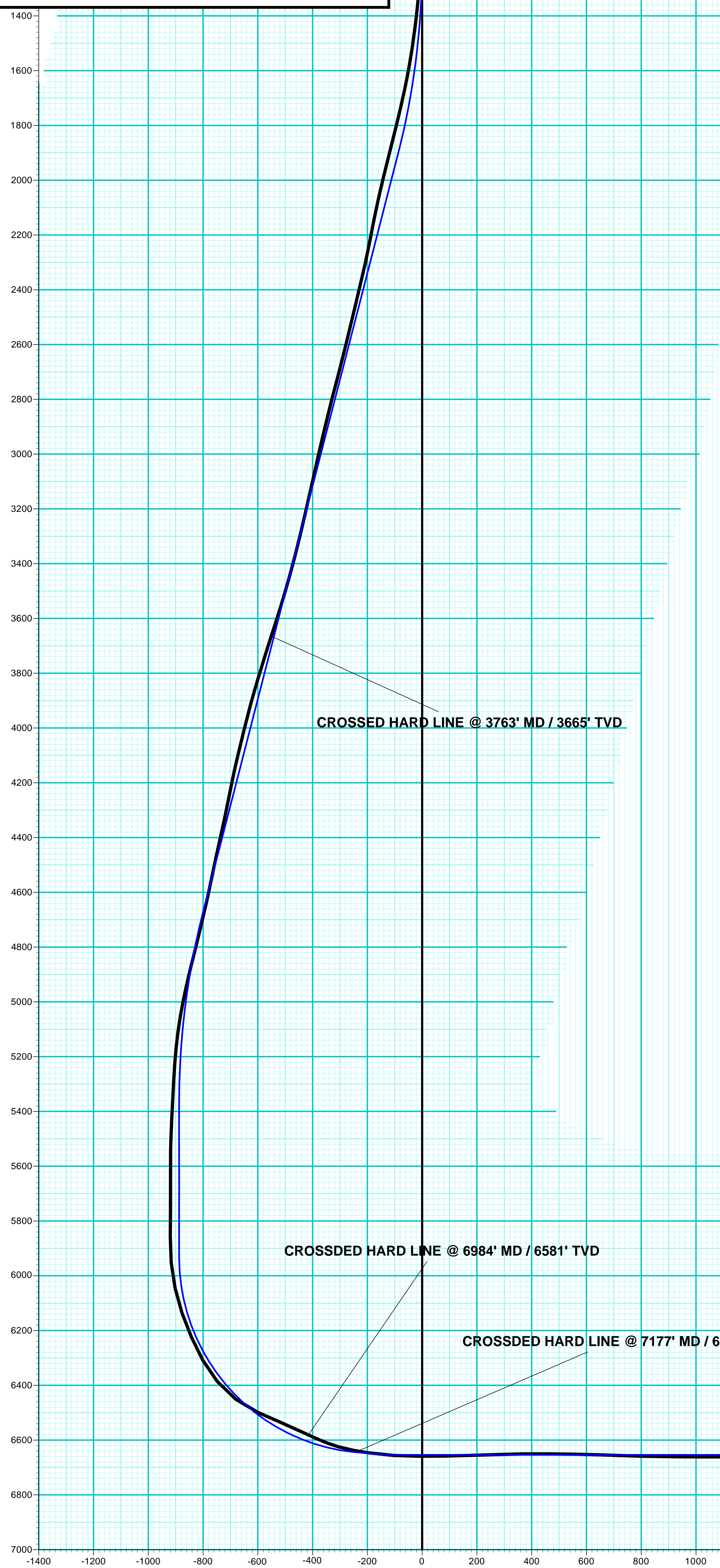
Vertical Section at 258.95° (25 usft/in)

Company Name: Noble Energy Inc.
 SLW Ranch B01-62-1HN
 Weld County, CO
 Rig: H&P #326
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SLW Ranch B01-62-1HN
 Weld County, CO
 Q130162 & RM-13240
 Design #2

PROJECT DETAILS: Weld County, CO

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level



WELL DETAILS:		SLW Ranch B01-62-1HN			
		Ground Level: 4604.0			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1398889.40	3280466.06	40° 25' 26.328 N	104° 29' 33.360 W

ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
738.0	0.50	134.60	738.0	-2.3	2.3	-1.8	3.2	TIE IN @ 738' MD / 738' TVD
3763.3	22.10	115.94	3664.9	-303.8	620.7	-551.0	692.6	CROSSED HARD LINE @ 3763' MD / 3665' TVD
6983.7	65.98	272.35	6581.3	-516.2	523.9	-415.3	1680.4	CROSSED HARD LINE @ 6984' MD / 6581' TVD
7177.4	80.38	266.14	6640.5	-519.8	340.4	-234.5	1864.1	CROSSED HARD LINE @ 7177' MD / 6641' TVD
11286.0	92.20	265.20	6654.9	-741.7	-3759.2	3831.6	5970.9	TD @ 11286' MD / 6655' TVD

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL SLW Ranch B01-62-1HN Design #2	6654.0	-734.7	-3761.7	1398154.74	3276704.36	40° 25' 19.488 N	104° 30' 22.104 W
- plan hits target center							

T G M

Azimuths to Grid North
 Magnetic North: 7.84°
 Magnetic Field
 Strength: 52998.7snT
 Dip Angle: 67.06°
 Date: 2/13/2013
 Model: IGRF2010

Vertical Section at 258.95° (200 usft/in)