



Noble Energy Inc.

Weld County, CO
Sec 29, T9N, R59W, 6th PM
Trisha LC29-76HNB

Wellbore #1

Design: Wellbore #1 **FINAL**

DDC Survey Report

14 May, 2014



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Trisha LC29-76HNB
Project:	Weld County, CO	TVD Reference:	WELL @ 4909.0usft (H&P #326)
Site:	Sec 29, T9N, R59W, 6th PM	MD Reference:	WELL @ 4909.0usft (H&P #326)
Well:	Trisha LC29-76HNB	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 29, T9N, R59W, 6th PM			
Site Position:		Northing:	1,506,859.55 usft	Latitude:	40° 42' 53.970 N
From:	Map	Easting:	3,417,411.39 usft	Longitude:	103° 59' 39.130 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.97 °

Well		Trisha LC29-76HNB				
Well Position	+N/-S	0.0 usft	Northing:	1,506,786.49 usft	Latitude:	40° 42' 53.712 N
	+E/-W	0.0 usft	Easting:	3,414,638.06 usft	Longitude:	104° 0' 15.156 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,879.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/21/2014	8.09	67.32	53,072

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	358.82	

Survey Program	Date	5/14/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
275.0	630.0	MULTI SHOT SURVEY	Flexi-Shot	VES Flexi-Shot Tool	
728.0	6,553.0	MWD (Wellbore #1)	MWD default	MWD - Standard	
6,648.0	15,585.0	RAW SURVEYS (Wellbore #1)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
275.0	0.20	244.36	275.0	-0.2	-0.4	-0.2	0.07	0.07	0.00	
TIE IN @ 630' MD / 630' TVD										
630.0	0.40	92.46	630.0	-0.5	0.2	-0.5	0.16	0.06	-42.79	
728.0	0.40	91.40	728.0	-0.6	0.9	-0.6	0.01	0.00	-1.08	
820.0	0.40	105.50	820.0	-0.6	1.6	-0.7	0.11	0.00	15.33	
914.0	0.40	96.10	914.0	-0.8	2.2	-0.8	0.07	0.00	-10.00	
1,006.0	0.40	103.00	1,006.0	-0.9	2.8	-0.9	0.05	0.00	7.50	
1,099.0	0.40	109.70	1,099.0	-1.1	3.5	-1.1	0.05	0.00	7.20	

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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)
1,191.0	0.50	93.40	1,191.0	-1.2	4.2	-1.3	0.18	0.11	-17.72
1,283.0	0.50	87.20	1,283.0	-1.2	5.0	-1.3	0.06	0.00	-6.74
1,375.0	0.80	80.80	1,375.0	-1.1	6.0	-1.2	0.33	0.33	-6.96
1,466.0	0.80	77.60	1,466.0	-0.8	7.2	-1.0	0.05	0.00	-3.52
1,558.0	1.00	97.20	1,558.0	-0.8	8.7	-1.0	0.40	0.22	21.30
1,650.0	0.90	75.40	1,649.9	-0.7	10.2	-0.9	0.40	-0.11	-23.70
1,744.0	0.80	87.30	1,743.9	-0.5	11.5	-0.7	0.22	-0.11	12.66
1,838.0	2.30	180.40	1,837.9	-2.4	12.2	-2.6	2.63	1.60	99.04
1,931.0	5.30	180.90	1,930.7	-8.5	12.1	-8.8	3.23	3.23	0.54
2,023.0	6.30	179.90	2,022.2	-17.8	12.0	-18.1	1.09	1.09	-1.09
2,115.0	8.00	179.50	2,113.5	-29.3	12.1	-29.5	1.85	1.85	-0.43
2,210.0	8.10	187.50	2,207.6	-42.5	11.3	-42.7	1.18	0.11	8.42
2,304.0	9.20	188.40	2,300.5	-56.5	9.3	-56.7	1.18	1.17	0.96
2,399.0	9.10	185.20	2,394.3	-71.5	7.5	-71.6	0.55	-0.11	-3.37
2,493.0	7.50	183.60	2,487.3	-85.0	6.5	-85.1	1.72	-1.70	-1.70
2,588.0	5.50	186.20	2,581.7	-95.7	5.6	-95.8	2.13	-2.11	2.74
2,682.0	3.80	204.50	2,675.4	-103.1	3.8	-103.1	2.38	-1.81	19.47
2,777.0	1.70	215.50	2,770.3	-107.1	1.7	-107.1	2.27	-2.21	11.58
2,872.0	0.40	344.00	2,865.2	-107.9	0.8	-107.9	2.08	-1.37	135.26
2,967.0	0.50	304.80	2,960.2	-107.3	0.4	-107.3	0.33	0.11	-41.26
3,062.0	0.60	308.50	3,055.2	-106.8	-0.4	-106.8	0.11	0.11	3.89
3,156.0	0.60	317.90	3,149.2	-106.1	-1.1	-106.1	0.10	0.00	10.00
3,251.0	0.60	320.50	3,244.2	-105.4	-1.7	-105.3	0.03	0.00	2.74
3,346.0	0.80	331.80	3,339.2	-104.4	-2.4	-104.3	0.25	0.21	11.89
3,441.0	1.10	327.60	3,434.2	-103.0	-3.2	-103.0	0.32	0.32	-4.42
3,535.0	0.90	356.10	3,528.2	-101.6	-3.7	-101.5	0.56	-0.21	30.32
3,629.0	1.40	152.50	3,622.2	-101.8	-3.2	-101.7	2.40	0.53	166.38
3,724.0	1.40	111.00	3,717.2	-103.3	-1.6	-103.2	1.04	0.00	-43.68
3,819.0	0.60	9.20	3,812.2	-103.2	-0.4	-103.2	1.72	-0.84	-107.16
3,913.0	0.60	310.20	3,906.1	-102.4	-0.7	-102.4	0.63	0.00	-62.77
4,007.0	1.10	313.60	4,000.1	-101.5	-1.8	-101.4	0.53	0.53	3.62
4,101.0	0.40	203.30	4,094.1	-101.1	-2.6	-101.1	1.38	-0.74	-117.34
4,196.0	0.90	247.10	4,189.1	-101.7	-3.4	-101.6	0.71	0.53	46.11
4,291.0	1.30	273.10	4,284.1	-102.0	-5.1	-101.8	0.66	0.42	27.37
4,385.0	0.70	242.40	4,378.1	-102.2	-6.7	-102.0	0.83	-0.64	-32.66
4,480.0	0.40	54.00	4,473.1	-102.2	-7.0	-102.1	1.16	-0.32	180.63
4,574.0	0.40	326.90	4,567.1	-101.8	-6.9	-101.6	0.59	0.00	-92.66
4,668.0	0.50	312.50	4,661.1	-101.2	-7.4	-101.1	0.16	0.11	-15.32
4,763.0	1.00	282.40	4,756.1	-100.8	-8.5	-100.6	0.65	0.53	-31.68
4,858.0	1.00	288.40	4,851.1	-100.3	-10.1	-100.1	0.11	0.00	6.32
4,952.0	1.20	285.80	4,945.0	-99.8	-11.8	-99.5	0.22	0.21	-2.77
5,047.0	1.30	292.10	5,040.0	-99.1	-13.7	-98.8	0.18	0.11	6.63
5,142.0	0.80	280.90	5,135.0	-98.6	-15.4	-98.3	0.57	-0.53	-11.79

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Survey									
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5,237.0	0.90	292.50	5,230.0	-98.2	-16.7	-97.8	0.21	0.11	12.21
5,319.0	1.00	279.30	5,312.0	-97.8	-18.0	-97.4	0.29	0.12	-16.10
5,425.0	0.90	304.50	5,418.0	-97.2	-19.6	-96.8	0.40	-0.09	23.77
5,520.0	3.50	69.90	5,512.9	-95.8	-17.5	-95.4	4.30	2.74	132.00
5,614.0	8.10	39.30	5,606.4	-89.7	-10.6	-89.4	5.73	4.89	-32.55
5,709.0	13.20	353.60	5,699.9	-73.7	-7.6	-73.5	9.98	5.37	-48.11
5,804.0	28.80	352.70	5,788.3	-40.0	-11.7	-39.7	16.42	16.42	-0.95
5,898.0	36.10	356.30	5,867.6	10.2	-16.4	10.5	8.03	7.77	3.83
5,993.0	48.90	355.70	5,937.5	74.1	-20.9	74.5	13.48	13.47	-0.63
CROSSED 460' HARDLINE @ 6053' MD / 5974' TVD									
6,052.6	54.58	359.20	5,974.4	120.8	-22.9	121.2	10.59	9.53	5.87
6,087.0	57.90	1.00	5,993.5	149.4	-22.9	149.8	10.59	9.65	5.23
6,182.0	57.20	358.30	6,044.5	229.5	-23.4	230.0	2.51	-0.74	-2.84
6,276.0	64.50	358.10	6,090.3	311.5	-25.9	312.0	7.77	7.77	-0.21
6,370.0	76.20	359.20	6,121.8	399.9	-28.0	400.4	12.50	12.45	1.17
6,447.0	86.40	2.20	6,133.4	475.9	-27.0	476.3	13.79	13.25	3.90
LAST DDC CORRECTED SURVEY @ 6553' MD / 6139' TVD									
6,553.0	87.60	1.84	6,139.0	581.7	-23.3	582.0	1.18	1.13	-0.34
FIRST RAW DATA SURVEY @ 6648' MD / 6144' TVD									
6,648.0	86.30	2.72	6,144.0	676.5	-19.5	676.7	1.65	-1.37	0.93
6,742.0	86.70	5.09	6,149.8	770.1	-13.1	770.2	2.55	0.43	2.52
6,837.0	88.20	6.80	6,154.0	864.4	-3.3	864.3	2.39	1.58	1.80
6,930.0	90.70	6.56	6,154.9	956.8	7.5	956.4	2.70	2.69	-0.26
7,025.0	91.10	6.42	6,153.4	1,051.2	18.2	1,050.6	0.45	0.42	-0.15
7,119.0	91.70	3.50	6,151.1	1,144.8	26.4	1,144.0	3.17	0.64	-3.11
7,214.0	90.80	1.99	6,149.0	1,239.7	30.9	1,238.8	1.85	-0.95	-1.59
7,309.0	90.60	1.43	6,147.9	1,334.6	33.7	1,333.6	0.63	-0.21	-0.59
7,403.0	89.80	359.78	6,147.6	1,428.6	34.7	1,427.6	1.95	-0.85	-1.76
7,498.0	91.70	358.93	6,146.3	1,523.6	33.7	1,522.6	2.19	2.00	-0.89
7,593.0	89.57	357.44	6,145.3	1,618.5	30.7	1,617.5	2.74	-2.24	-1.57
7,687.0	89.15	357.83	6,146.3	1,712.4	26.8	1,711.5	0.61	-0.45	0.41
7,782.0	89.47	357.86	6,147.5	1,807.4	23.2	1,806.5	0.34	0.34	0.03
7,876.0	88.48	357.38	6,149.1	1,901.3	19.3	1,900.5	1.17	-1.05	-0.51
7,971.0	89.89	357.87	6,150.5	1,996.2	15.4	1,995.4	1.57	1.48	0.52
8,066.0	89.64	356.91	6,150.9	2,091.1	11.0	2,090.4	1.04	-0.26	-1.01
8,160.0	89.81	357.77	6,151.3	2,185.0	6.7	2,184.4	0.93	0.18	0.91
8,255.0	91.04	358.39	6,150.6	2,279.9	3.5	2,279.3	1.45	1.29	0.65
8,349.0	92.50	0.47	6,147.7	2,373.8	2.6	2,373.3	2.70	1.55	2.21
8,443.0	91.08	358.36	6,144.8	2,467.8	1.6	2,467.2	2.70	-1.51	-2.24
8,538.0	89.10	358.53	6,144.6	2,562.7	-1.0	2,562.2	2.09	-2.08	0.18
8,632.0	89.08	358.70	6,146.1	2,656.7	-3.3	2,656.2	0.18	-0.02	0.18
8,727.0	90.22	357.91	6,146.7	2,751.7	-6.1	2,751.2	1.46	1.20	-0.83
8,822.0	89.78	357.83	6,146.7	2,846.6	-9.6	2,846.2	0.47	-0.46	-0.08
8,917.0	89.20	358.43	6,147.6	2,941.5	-12.7	2,941.2	0.88	-0.61	0.63

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9,011.0	89.98	359.14	6,148.2	3,035.5	-14.7	3,035.2	1.12	0.83	0.76	
9,105.0	90.15	1.37	6,148.1	3,129.5	-14.3	3,129.1	2.38	0.18	2.37	
9,199.0	90.10	0.23	6,147.9	3,223.5	-13.0	3,223.1	1.21	-0.05	-1.21	
9,294.0	90.26	357.67	6,147.6	3,318.5	-14.7	3,318.1	2.70	0.17	-2.69	
9,388.0	89.87	356.52	6,147.5	3,412.3	-19.5	3,412.0	1.29	-0.41	-1.22	
9,482.0	89.79	357.04	6,147.8	3,506.2	-24.7	3,506.0	0.56	-0.09	0.55	
9,577.0	90.20	358.05	6,147.8	3,601.1	-28.8	3,600.9	1.15	0.43	1.06	
9,671.0	90.33	357.48	6,147.4	3,695.0	-32.5	3,694.9	0.62	0.14	-0.61	
9,766.0	89.03	356.25	6,147.9	3,789.9	-37.7	3,789.9	1.88	-1.37	-1.29	
9,860.0	89.20	356.85	6,149.3	3,883.7	-43.3	3,883.8	0.66	0.18	0.64	
9,955.0	89.44	357.17	6,150.5	3,978.6	-48.3	3,978.7	0.42	0.25	0.34	
10,050.0	89.33	356.90	6,151.5	4,073.4	-53.2	4,073.7	0.31	-0.12	-0.28	
10,144.0	90.27	357.86	6,151.8	4,167.3	-57.5	4,167.6	1.43	1.00	1.02	
10,238.0	90.29	356.56	6,151.4	4,261.2	-62.1	4,261.6	1.38	0.02	-1.38	
10,331.0	90.24	358.01	6,150.9	4,354.1	-66.5	4,354.6	1.56	-0.05	1.56	
10,423.0	90.91	357.39	6,150.0	4,446.0	-70.2	4,446.5	0.99	0.73	-0.67	
CROSSED 460' HARDLINE @ 10484' MD / 6149' TVD										
10,483.8	90.53	357.58	6,149.2	4,506.8	-72.8	4,507.3	0.70	-0.62	0.31	
10,516.0	90.33	357.68	6,149.0	4,538.9	-74.2	4,539.5	0.70	-0.62	0.31	
10,608.0	90.07	358.83	6,148.7	4,630.9	-77.0	4,631.5	1.28	-0.28	1.25	
10,702.0	90.13	0.11	6,148.5	4,724.9	-77.8	4,725.5	1.36	0.06	1.36	
10,795.0	90.38	359.48	6,148.1	4,817.9	-78.2	4,818.5	0.73	0.27	-0.68	
10,887.0	90.00	358.15	6,147.8	4,909.9	-80.1	4,910.5	1.50	-0.41	-1.45	
CROSSED SECTION LINE @ 10942' MD / 6148' TVD										
10,941.9	90.37	359.22	6,147.6	4,964.8	-81.3	4,965.4	2.06	0.67	1.95	
10,979.0	90.62	359.94	6,147.3	5,001.8	-81.6	5,002.5	2.06	0.67	1.95	
11,071.0	90.66	358.95	6,146.3	5,093.8	-82.5	5,094.5	1.08	0.04	-1.08	
11,163.0	92.29	359.87	6,143.9	5,185.8	-83.4	5,186.4	2.03	1.77	1.00	
11,255.0	91.18	1.86	6,141.1	5,277.7	-82.1	5,278.3	2.48	-1.21	2.16	
11,346.0	89.17	1.76	6,140.8	5,368.7	-79.2	5,369.2	2.21	-2.21	-0.11	
CROSSED 460' HARDLINE @ 11404' MD / 6142' TVD										
11,404.2	89.33	2.64	6,141.6	5,426.8	-76.9	5,427.3	1.54	0.28	1.52	
11,439.0	89.43	3.17	6,142.0	5,461.6	-75.2	5,462.0	1.54	0.28	1.52	
11,532.0	89.78	3.28	6,142.6	5,554.4	-69.9	5,554.7	0.39	0.38	0.12	
11,626.0	87.93	0.61	6,144.5	5,648.4	-66.8	5,648.5	3.46	-1.97	-2.84	
11,719.0	86.64	359.76	6,148.9	5,741.2	-66.5	5,741.4	1.66	-1.39	-0.91	
11,812.0	89.76	359.76	6,151.8	5,834.2	-66.8	5,834.3	3.35	3.35	0.00	
11,904.0	92.19	359.23	6,150.3	5,926.2	-67.7	5,926.3	2.70	2.64	-0.58	
11,998.0	92.02	358.68	6,146.8	6,020.1	-69.4	6,020.2	0.61	-0.18	-0.59	
12,092.0	92.17	358.70	6,143.4	6,114.0	-71.5	6,114.2	0.16	0.16	0.02	
12,187.0	91.55	359.78	6,140.3	6,208.9	-72.8	6,209.1	1.31	-0.65	1.14	
12,282.0	90.52	359.62	6,138.6	6,303.9	-73.3	6,304.1	1.10	-1.08	-0.17	
12,376.0	90.16	359.71	6,138.0	6,397.9	-73.8	6,398.1	0.39	-0.38	0.10	
12,471.0	89.95	359.96	6,137.9	6,492.9	-74.1	6,493.1	0.34	-0.22	0.26	

Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Trisha LC29-76HNB
Project:	Weld County, CO	TVD Reference:	WELL @ 4909.0usft (H&P #326)
Site:	Sec 29, T9N, R59W, 6th PM	MD Reference:	WELL @ 4909.0usft (H&P #326)
Well:	Trisha LC29-76HNB	North Reference:	Grid
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)	
12,566.0	89.09	358.01	6,138.7	6,587.9	-75.8	6,588.1	2.24	-0.91	-2.05	
12,660.0	88.54	357.71	6,140.7	6,681.8	-79.3	6,682.0	0.67	-0.59	-0.32	
12,755.0	90.05	358.97	6,141.8	6,776.8	-82.0	6,777.0	2.07	1.59	1.33	
12,849.0	90.10	357.51	6,141.7	6,870.7	-84.9	6,871.0	1.55	0.05	-1.55	
12,944.0	90.44	359.11	6,141.3	6,965.7	-87.7	6,966.0	1.72	0.36	1.68	
13,039.0	90.62	357.93	6,140.4	7,060.6	-90.2	7,061.0	1.26	0.19	-1.24	
13,133.0	90.00	358.95	6,139.9	7,154.6	-92.7	7,155.0	1.27	-0.66	1.09	
13,228.0	90.61	358.07	6,139.4	7,249.6	-95.2	7,250.0	1.13	0.64	-0.93	
13,323.0	91.21	357.65	6,137.9	7,344.5	-98.8	7,345.0	0.77	0.63	-0.44	
13,417.0	90.01	357.34	6,136.9	7,438.4	-102.9	7,438.9	1.32	-1.28	-0.33	
13,512.0	90.85	356.87	6,136.1	7,533.3	-107.7	7,533.9	1.01	0.88	-0.49	
13,607.0	89.12	357.16	6,136.2	7,628.1	-112.6	7,628.8	1.85	-1.82	0.31	
13,702.0	89.57	356.59	6,137.2	7,723.0	-117.8	7,723.8	0.76	0.47	-0.60	
13,796.0	89.87	356.37	6,137.7	7,816.8	-123.6	7,817.7	0.40	0.32	-0.23	
13,891.0	89.50	355.63	6,138.2	7,911.6	-130.2	7,912.6	0.87	-0.39	-0.78	
13,985.0	87.68	357.23	6,140.5	8,005.3	-136.0	8,006.4	2.58	-1.94	1.70	
14,080.0	89.67	356.77	6,142.7	8,100.2	-141.0	8,101.4	2.15	2.09	-0.48	
14,174.0	90.33	359.71	6,142.7	8,194.1	-143.9	8,195.4	3.21	0.70	3.13	
14,268.0	90.90	359.17	6,141.7	8,288.1	-144.8	8,289.3	0.84	0.61	-0.57	
14,363.0	91.23	357.54	6,140.0	8,383.1	-147.5	8,384.3	1.75	0.35	-1.72	
14,458.0	90.14	359.10	6,138.8	8,478.0	-150.3	8,479.3	2.00	-1.15	1.64	
14,552.0	90.14	0.47	6,138.6	8,572.0	-150.7	8,573.3	1.46	0.00	1.46	
14,647.0	90.00	0.06	6,138.5	8,667.0	-150.2	8,668.3	0.46	-0.15	-0.43	
14,741.0	90.52	0.50	6,138.1	8,761.0	-149.8	8,762.2	0.72	0.55	0.47	
14,836.0	90.59	359.60	6,137.1	8,856.0	-149.7	8,857.2	0.95	0.07	-0.95	
14,931.0	91.09	0.10	6,135.7	8,951.0	-149.9	8,952.2	0.74	0.53	0.53	
15,025.0	90.01	0.03	6,134.8	9,045.0	-149.8	9,046.1	1.15	-1.15	-0.07	
15,120.0	90.15	0.28	6,134.7	9,140.0	-149.6	9,141.1	0.30	0.15	0.26	
15,214.0	89.70	0.36	6,134.8	9,234.0	-149.1	9,235.1	0.49	-0.48	0.09	
15,309.0	89.64	0.07	6,135.4	9,329.0	-148.7	9,330.1	0.31	-0.06	-0.31	
15,404.0	90.08	359.63	6,135.6	9,424.0	-148.9	9,425.0	0.66	0.46	-0.46	
15,499.0	91.11	0.08	6,134.6	9,519.0	-149.2	9,520.0	1.18	1.08	0.47	
15,526.0	91.13	0.23	6,134.1	9,546.0	-149.1	9,547.0	0.56	0.07	0.56	
TD @ 15585' MD / 6133' TVD										
15,585.0	91.13	0.23	6,132.9	9,604.9	-148.9	9,606.0	0.00	0.00	0.00	

Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Trisha LC29-76HNB
Project:	Weld County, CO	TVD Reference:	WELL @ 4909.0usft (H&P #326)
Site:	Sec 29, T9N, R59W, 6th PM	MD Reference:	WELL @ 4909.0usft (H&P #326)
Well:	Trisha LC29-76HNB	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
630.0	630.0	-0.5	0.2	TIE IN @ 630' MD / 630' TVD
6,052.6	5,974.4	120.8	-22.9	CROSSED 460' HARDLINE @ 6053' MD / 5974' TVD
6,553.0	6,139.0	581.7	-23.3	LAST DDC CORRECTED SURVEY @ 6553' MD / 6139' TVD
6,648.0	6,144.0	676.5	-19.5	FIRST RAW DATA SURVEY @ 6648' MD / 6144' TVD
10,483.8	6,149.2	4,506.8	-72.8	CROSSED 460' HARDLINE @ 10484' MD / 6149' TVD
10,941.9	6,147.6	4,964.8	-81.3	CROSSED SECTION LINE @ 10942' MD / 6148' TVD
11,404.2	6,141.6	5,426.8	-76.9	CROSSED 460' HARDLINE @ 11404' MD / 6142' TVD
15,585.0	6,132.9	9,604.9	-148.9	TD @ 15585' MD / 6133' TVD

Checked By: _____ Approved By: _____ Date: _____



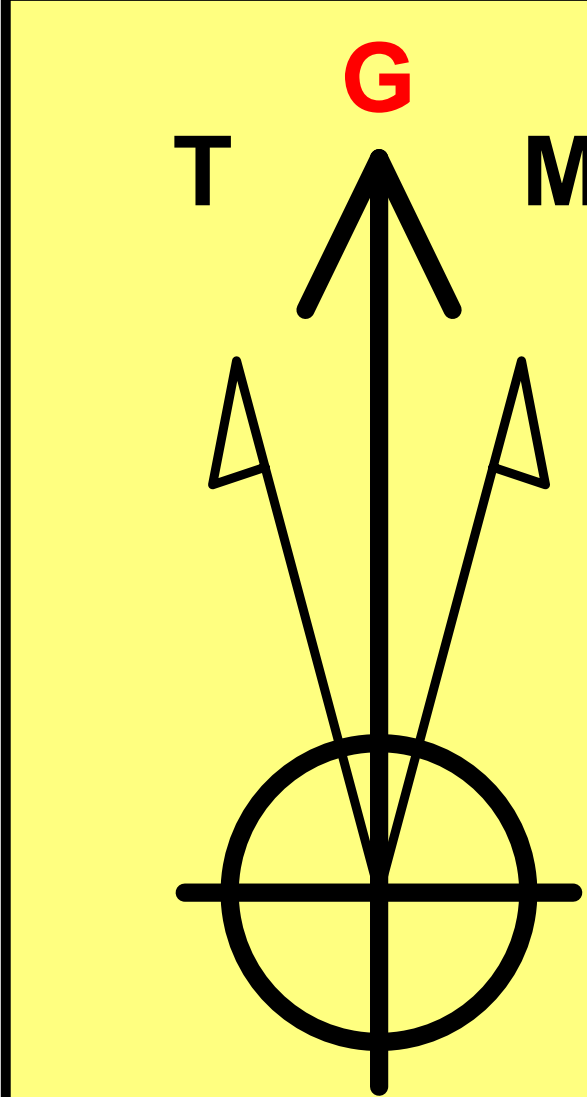
State of Colorado

County of **WELD**

I, **BRADY DALFREY**, certify that; I am employed by DrilTech MWD Rentals LLC. I did on the day(s) of **04/25/14** through **05/05/14** conduct or supervise the taking of the **162** survey(s) from a measured depth of **0** feet to a measured depth of **15,585** feet. The data is true, correct, complete and within the limitations of the tool as set forth by DrilTech MWD Rentals, LLC I am authorized and qualified to make this report, and this survey(s) was/were conducted at the request of **NOBLE ENERGY** for the **TRISHA LC29-76HNB**, API No. **05-123-38779** in **WELD** County, Colorado. I have reviewed this report, and find that it conforms to the principles and procedures as set forth by DrilTech MWD Rentals LLC.

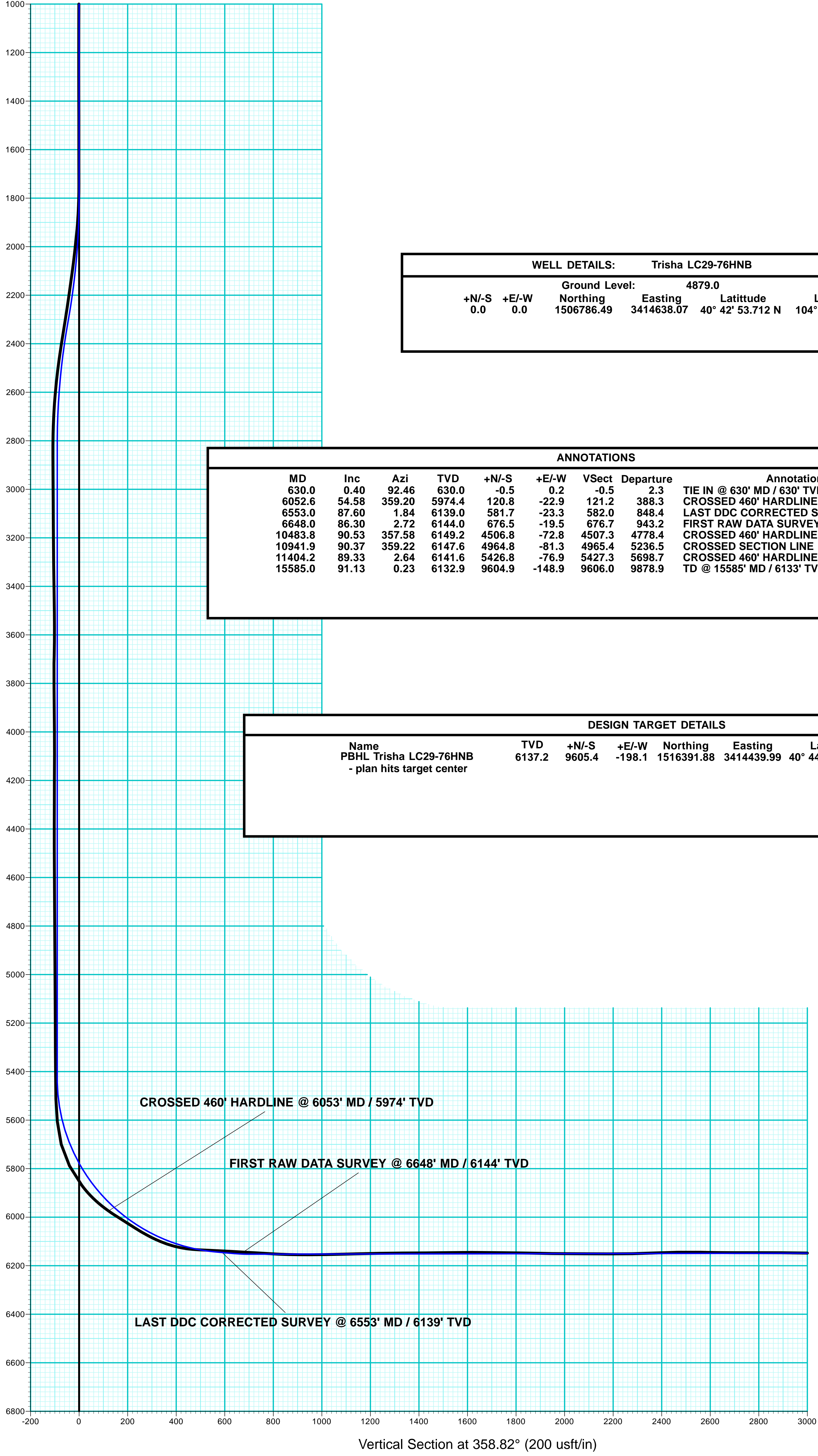
Company Name: Noble Energy Inc.
Trisha LC29-76HNB
Weld County, CO
Rig: H&P #326
Created By: James Dawson
Date: 5/14/2014

Trisha LC29-76HNB
Weld County, CO
Q140264 & RM-140379
Design #1



Azimuths to Grid North
Correction: 7.12°
Magnetic Field
Strength: 53071.6snT
Dip Angle: 67.32°
Date: 4/21/2014
Model: IGRF2010

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:		Trisha LC29-76HNB
Ground Level:		4879.0
+N/-S	+E/-W	0.0 0.0
North	East	1506786.49 3414638.07
Latitude	Longitude	40° 42' 53.712 N 104° 0' 15.156 W

ANNOTATIONS											
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation			
630.0	0.40	92.46	630.0	-0.5	0.2	-0.5	2.3	TIE IN @ 630' MD / 630' TVD			
6052.6	54.58	359.20	5974.4	120.8	-22.9	121.2	388.3	CROSSED 460' HARDLINE @ 6053' MD / 5974' TVD			
6553.0	87.60	1.84	6139.0	581.7	-23.3	582.0	848.4	LAST DDC CORRECTED SURVEY @ 6553' MD / 6139' TVD			
6648.0	86.30	2.72	6144.0	676.5	-19.5	676.7	943.2	FIRST RAW DATA SURVEY @ 6648' MD / 6144' TVD			
10483.8	90.53	357.58	6149.2	4506.8	-72.8	4507.3	4778.4	CROSSED 460' HARDLINE @ 10484' MD / 6149' TVD			
10941.9	90.37	359.22	6147.6	4964.8	-81.3	4965.4	5236.5	CROSSED SECTION LINE @ 10942' MD / 6148' TVD			
11404.2	89.33	2.64	6141.6	5426.8	-76.9	5427.3	5899.7	CROSSED 460' HARDLINE @ 11404' MD / 6142' TVD			
15585.0	91.13	0.23	6132.9	9604.9	-148.9	9606.0	9878.9	TD @ 15585' MD / 6133' TVD			

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	North	East	Latitude	Longitude
PBHL Trisha LC29-76HNB - plan hits target center	6137.2	9605.4	-198.1	1516391.88	3414439.99	40° 44' 28.644 N	104° 0' 15.624 W

