

Noble Energy Inc.

Weld County, CO

Sec 8, T9N, R58W, 6th PM

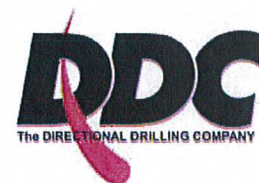
Timbro LD08-62HN

Wellbore #1

Survey: MWD **FINAL**

DDC Survey Report

03 August, 2012



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Timbro LD08-62HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4818.0usft (H&P #326)
Site:	Sec 8, T9N, R58W, 6th PM	MD Reference:	WELL @ 4818.0usft (H&P #326)
Well:	Timbro LD08-62HN	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 8, T9N, R58W, 6th PM			
Site Position:		Northing:	1,523,790.15 usft	Latitude:	40° 45' 35.810 N
From:	Map	Easting:	3,448,586.09 usft	Longitude:	103° 52' 50.340 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.05 °

Well	Timbro LD08-62HN					
Well Position	+N/-S	0.0 usft	Northing:	1,523,790.15 usft	Latitude:	40° 45' 35.810 N
	+E/-W	0.0 usft	Easting:	3,448,586.09 usft	Longitude:	103° 52' 50.340 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,788.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2012	8.26	67.45	53,297

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	270.48	

Survey Program		Date	8/3/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,692.0	9,269.0	MWD (Wellbore #1)	MWD default	MWD - Standard	

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 @ 1605' MD / 1605' TVD									
1,605.0	0.00	0.00	1,605.0	0.0	0.0	0.0	0.00	0.00	0.00
1,692.0	4.40	29.40	1,691.9	2.9	1.6	-1.6	5.06	5.06	0.00
1,784.0	5.20	40.30	1,783.6	9.2	6.1	-6.0	1.32	0.87	11.85
1,876.0	6.90	58.40	1,875.1	15.2	13.5	-13.3	2.76	1.85	19.67
1,970.0	8.30	63.50	1,968.3	21.2	24.4	-24.2	1.65	1.49	5.43
2,062.0	10.80	67.00	2,059.0	27.6	38.2	-38.0	2.79	2.72	3.80
2,154.0	13.60	69.80	2,148.9	34.7	56.3	-56.0	3.11	3.04	3.04
2,246.0	14.20	74.20	2,238.2	41.5	77.3	-77.0	1.32	0.65	4.78
2,339.0	15.40	74.00	2,328.1	48.0	100.2	-99.8	1.29	1.29	-0.22
2,431.0	14.70	73.50	2,417.0	54.7	123.1	-122.7	0.77	-0.76	-0.54

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Well:	Timbro LD08-62HN	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)
2,525.0	16.60	74.20	2,507.5	61.7	147.5	-147.0	2.03	2.02	0.74
2,620.0	17.20	74.20	2,598.4	69.2	174.0	-173.5	0.63	0.63	0.00
2,713.0	15.50	70.50	2,687.6	77.1	199.0	-198.3	2.14	-1.83	-3.98
2,807.0	15.30	70.00	2,778.2	85.6	222.5	-221.8	0.26	-0.21	-0.53
2,899.0	13.60	69.10	2,867.3	93.6	244.0	-243.2	1.86	-1.85	-0.98
2,994.0	13.00	67.30	2,959.8	101.7	264.3	-263.4	0.77	-0.63	-1.89
3,089.0	14.30	64.50	3,052.1	110.8	284.7	-283.8	1.53	1.37	-2.95
3,184.0	16.60	75.10	3,143.7	119.4	308.5	-307.4	3.82	2.42	11.16
3,279.0	17.90	75.80	3,234.4	126.5	335.7	-334.6	1.39	1.37	0.74
3,374.0	17.00	73.10	3,325.0	134.1	363.2	-362.0	1.27	-0.95	-2.84
3,469.0	14.60	68.70	3,416.4	142.5	387.6	-386.4	2.82	-2.53	-4.63
3,564.0	14.90	67.50	3,508.3	151.5	410.0	-408.8	0.45	0.32	-1.26
3,659.0	12.80	71.60	3,600.5	159.5	431.3	-430.0	2.44	-2.21	4.32
3,754.0	9.50	68.40	3,693.7	165.7	448.6	-447.2	3.53	-3.47	-3.37
3,850.0	5.60	64.30	3,788.9	170.6	460.2	-458.7	4.10	-4.06	-4.27
3,945.0	1.80	59.80	3,883.7	173.4	465.7	-464.2	4.01	-4.00	-4.74
4,040.0	1.70	72.10	3,978.6	174.6	468.3	-466.8	0.41	-0.11	12.95
4,135.0	0.30	221.00	4,073.6	174.8	469.5	-468.0	2.07	-1.47	156.74
4,230.0	1.70	252.80	4,168.6	174.2	468.0	-466.5	1.53	1.47	33.47
4,325.0	0.80	281.60	4,263.6	173.9	466.0	-464.5	1.13	-0.95	30.32
4,420.0	1.60	303.20	4,358.5	174.8	464.2	-462.7	0.95	0.84	22.74
4,515.0	1.30	248.20	4,453.5	175.1	462.1	-460.6	1.44	-0.32	-57.89
4,610.0	1.10	158.00	4,548.5	173.9	461.4	-460.0	1.80	-0.21	-94.95
4,705.0	1.40	130.60	4,643.5	172.3	462.7	-461.2	0.69	0.32	-28.84
4,800.0	1.10	117.10	4,738.5	171.1	464.4	-462.9	0.44	-0.32	-14.21
4,895.0	1.10	114.30	4,833.4	170.3	466.0	-464.6	0.06	0.00	-2.95
4,990.0	1.00	121.80	4,928.4	169.5	467.5	-466.1	0.18	-0.11	7.89
5,042.0	0.80	104.60	4,980.4	169.2	468.3	-466.8	0.64	-0.38	-33.08
5,085.0	1.00	110.80	5,023.4	169.0	468.9	-467.5	0.52	0.47	14.42
5,180.0	5.60	235.90	5,118.3	166.1	465.8	-464.4	6.56	4.84	131.68
5,225.0	9.80	245.70	5,162.9	163.3	460.5	-459.1	9.75	9.33	21.78
5,275.0	13.50	248.70	5,211.8	159.4	451.2	-449.9	7.50	7.40	6.00
5,320.0	15.40	248.40	5,255.4	155.3	440.8	-439.4	4.23	4.22	-0.67
5,370.0	18.50	256.30	5,303.2	151.0	426.9	-425.6	7.71	6.20	15.80
5,415.0	21.90	261.00	5,345.4	148.0	411.6	-410.4	8.37	7.56	10.44
5,465.0	25.40	267.50	5,391.3	146.0	391.7	-390.5	8.72	7.00	13.00
5,510.0	28.50	271.80	5,431.4	146.0	371.3	-370.1	8.13	6.89	9.56
5,560.0	33.80	273.30	5,474.1	147.1	345.5	-344.3	10.71	10.60	3.00
5,605.0	38.20	273.70	5,510.5	148.7	319.1	-317.9	9.79	9.78	0.89
5,654.0	42.80	272.80	5,547.8	150.5	287.3	-286.1	9.46	9.39	-1.84
5,699.0	45.30	272.30	5,580.1	151.9	256.1	-254.8	5.61	5.56	-1.11
5,749.0	49.10	272.50	5,614.1	153.5	219.4	-218.2	7.61	7.60	0.40
5,794.0	54.40	273.00	5,641.9	155.2	184.2	-182.9	11.81	11.78	1.11

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Survey

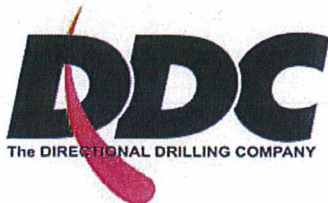
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,845.0	59.50	273.00	5,669.7	157.4	141.5	-140.2	10.00	10.00	0.00
5,890.0	61.50	273.30	5,691.9	159.6	102.4	-101.0	4.48	4.44	0.67
5,939.0	63.60	272.30	5,714.5	161.7	59.0	-57.6	4.65	4.29	-2.04
5,984.0	65.70	271.60	5,733.8	163.1	18.3	-16.9	4.87	4.67	-1.56
6,034.0	69.20	273.50	5,752.9	165.1	-27.8	29.2	7.83	7.00	3.80
6,079.0	71.30	274.60	5,768.1	168.1	-70.1	71.5	5.20	4.67	2.44
CROSSED HARD LINE @ 6115' MD / 5779' TVD									
6,115.0	72.67	274.17	5,779.3	170.7	-104.2	105.6	3.97	3.80	-1.20
6,129.0	73.20	274.00	5,783.4	171.7	-117.5	119.0	3.97	3.80	-1.19
6,174.0	76.60	271.60	5,795.1	173.8	-160.9	162.4	9.14	7.56	-5.33
6,202.0	79.60	270.20	5,800.9	174.2	-188.3	189.8	11.78	10.71	-5.00
6,269.0	83.80	269.80	5,810.5	174.2	-254.6	256.0	6.30	6.27	-0.60
6,363.0	89.10	270.00	5,816.4	174.1	-348.4	349.8	5.64	5.64	0.21
6,458.0	89.80	269.30	5,817.3	173.5	-443.4	444.8	1.04	0.74	-0.74
6,551.0	90.80	270.20	5,816.8	173.1	-536.4	537.8	1.45	1.08	0.97
6,646.0	89.00	269.10	5,817.0	172.5	-631.4	632.8	2.22	-1.89	-1.16
6,741.0	89.70	270.00	5,818.0	171.7	-726.4	727.8	1.20	0.74	0.95
6,836.0	90.00	269.00	5,818.3	170.9	-821.3	822.7	1.10	0.32	-1.05
6,931.0	90.10	269.10	5,818.2	169.3	-916.3	917.7	0.15	0.11	0.11
7,026.0	90.40	270.20	5,817.8	168.8	-1,011.3	1,012.7	1.20	0.32	1.16
7,121.0	89.40	269.60	5,817.9	168.6	-1,106.3	1,107.7	1.23	-1.05	-0.63
7,216.0	88.20	268.40	5,819.9	166.9	-1,201.3	1,202.6	1.79	-1.26	-1.26
7,311.0	88.00	267.90	5,823.1	163.9	-1,296.2	1,297.5	0.57	-0.21	-0.53
7,406.0	88.20	267.70	5,826.2	160.2	-1,391.1	1,392.4	0.30	0.21	-0.21
7,501.0	88.70	268.30	5,828.8	156.9	-1,486.0	1,487.2	0.82	0.53	0.63
7,596.0	89.10	268.10	5,830.6	153.9	-1,580.9	1,582.1	0.47	0.42	-0.21
7,691.0	88.80	267.40	5,832.4	150.2	-1,675.8	1,677.0	0.80	-0.32	-0.74
7,786.0	89.70	266.70	5,833.6	145.3	-1,770.7	1,771.8	1.20	0.95	-0.74
7,881.0	90.80	267.70	5,833.2	140.7	-1,865.6	1,866.7	1.56	1.16	1.05
7,976.0	89.70	267.50	5,832.8	136.7	-1,960.5	1,961.6	1.18	-1.16	-0.21
8,071.0	89.30	267.00	5,833.6	132.1	-2,055.4	2,056.4	0.67	-0.42	-0.53
8,166.0	89.30	267.70	5,834.8	127.7	-2,150.3	2,151.2	0.74	0.00	0.74
8,261.0	89.70	266.00	5,835.6	122.5	-2,245.1	2,246.1	1.84	0.42	-1.79
8,356.0	90.10	265.60	5,835.8	115.6	-2,339.8	2,340.7	0.60	0.42	-0.42
8,451.0	89.90	264.70	5,835.8	107.5	-2,434.5	2,435.3	0.97	-0.21	-0.95
8,546.0	89.60	263.50	5,836.2	97.8	-2,529.0	2,529.7	1.30	-0.32	-1.26
8,641.0	90.40	263.90	5,836.2	87.3	-2,623.4	2,624.1	0.94	0.84	0.42
8,736.0	90.80	264.20	5,835.2	77.5	-2,717.9	2,718.5	0.53	0.42	0.32
8,831.0	90.80	265.60	5,833.9	69.1	-2,812.5	2,813.0	1.47	0.00	1.47
8,926.0	90.20	265.40	5,833.0	61.6	-2,907.2	2,907.6	0.67	-0.63	-0.21
9,023.0	89.70	268.60	5,833.1	56.5	-3,004.1	3,004.4	3.34	-0.52	3.30
9,118.0	89.10	270.50	5,834.1	55.8	-3,099.1	3,099.4	2.10	-0.63	2.00
9,213.0	87.80	271.10	5,836.7	57.1	-3,194.0	3,194.4	1.51	-1.37	0.63

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Well:	Timbro LD08-62HN	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)
TD @ 9269' MD / 5839' TVD									
9,269.0	87.80	271.10	5,838.8	58.2	-3,250.0	3,250.3	0.00	0.00	0.00

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,605.0	1,605.0	0.0	0.0	TIE IN @ 1605' MD / 1605' TVD
6,115.0	5,779.3	170.7	-104.2	CROSSED HARD LINE @ 6115' MD / 5779' TVD
9,269.0	5,838.8	58.2	-3,250.0	TD @ 9269' MD / 5839' TVD

Checked By: _____ Approved By: _____ Date: _____



Survey Certification Sheet

Noble Energy
Company

RM-12547
Job Number

8/03/2012
Date

Sec 8, T9N, R58W, 6th PM
Lease

Timbro LD08-62HN
Well Name

Weld, CO
County & State

Surveyed from a depth of: 1605 feet to 9269 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Justin Webb

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.

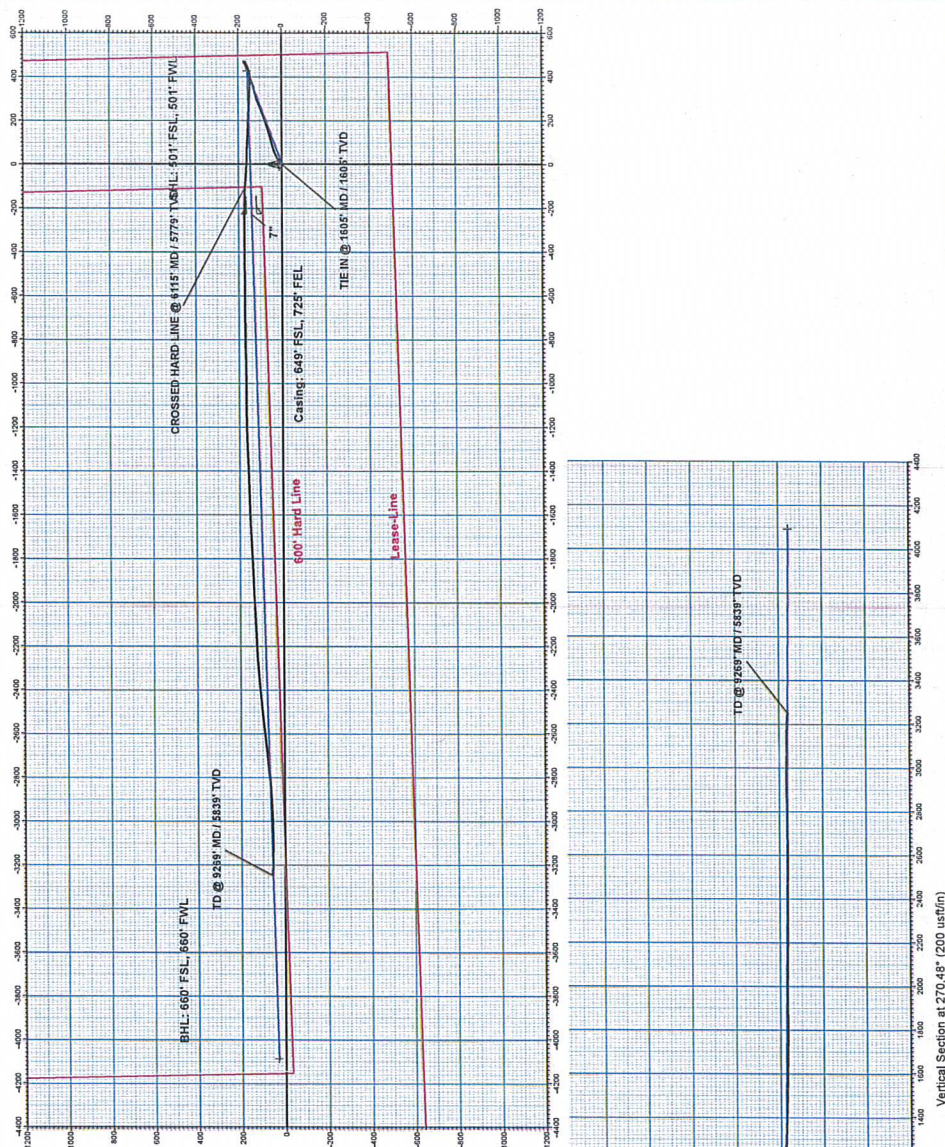
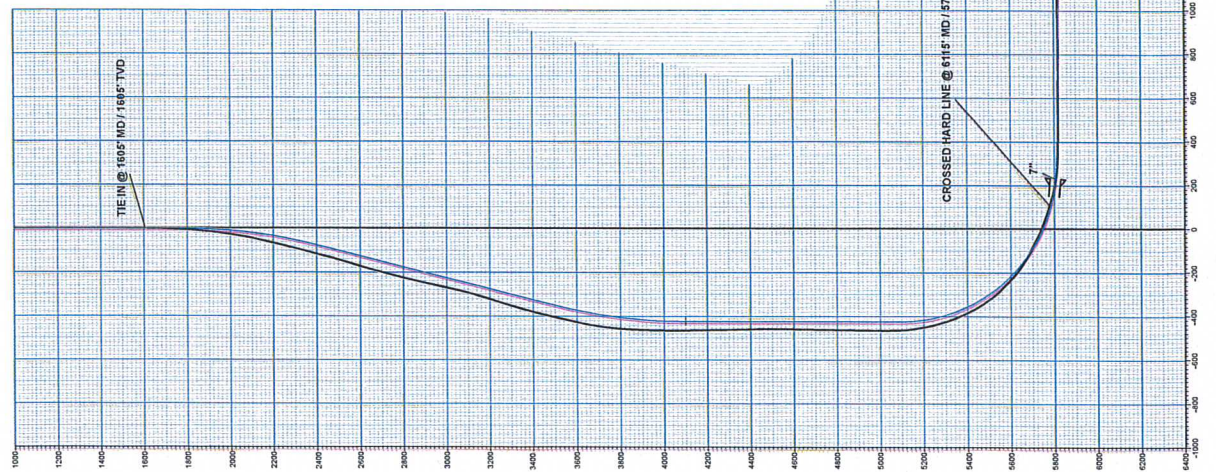
Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The
Directional Drilling Company,
ou=GM of Guidance Services,
email=larryw@directionaldrillers.c
om, c=US
Date: 2012.08.13 12:32:29 -05'00'

Larry Wright
MWD General Manager

Timbro LD08-62HN
Weld County, CO
Q120532 & RM-12547



The diagram shows a circular magnetic field with a central point. A vertical line with an arrow pointing upwards represents the magnetic field vector. To the left of this vector, the text 'S' is written above 'T'. To the right of the vector, the text 'M' is written above 'N'. The vector is labeled 'Magnetic Field Strength: 53297.1snT'. The angle between the vector and the horizontal is labeled 'Dip Angle: 67.45°'. The date 'Date: 7/11/2012' and the model 'Model: IGRF2010' are also shown.



WELL DETAILS:			Timbro LD08-42HN	
	Ground Level:		4798.0	
	Northing	Easting	Latitude	Longitude
	1523790.15	3448556.09	40° 45' 35.810 N	103° 52' 50.340 W
+N-S	+E-W			
0.0	0.0			

ANNOTATIONS				
MD	Inc	Azi	TVD	Annotation
6115.0	72.67	5779.3	170.7	*E+W VseDeparture
5263.0	87.30	5835.8	55.2	CROSSED HARD LINE @ 6115 MD / 5779' TVD TO 5269 MD / 10039 TVD

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	

DESIGN TARGET DETAILS						
Name	TVD	+N/S	+E/W	Northing	Latitude	Longitude
TEIN @ 1605 MD / 1605 TVD	1605.0	0.0	0.0	1523790.15	34.4886,09° 40' 48" 35.10 N	52° 50' 30.340 W
Y Timbo 1605-02HN	4100.0	158.0	426.0	1523945.15	34.49012,09° 40' 48" 37.034 N	103° 52' 44.787 W
plan hit target center						
PJBL	9645.0	34.0	-4098.0	1523824.12	34.44497,05° 40' 46" 35.800 N	103° 53' 43.460 W
plan hit target center						