



Noble Energy Inc.

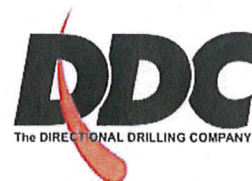
Weld County, CO
Sec. 12, T6N, R64W
Shoemaker AA07-65HN

Wellbore #1

Survey: MWD Final

DDC Survey Report

13 February, 2012



Company: Noble Energy Inc.
Project: Weld County, CO
Site: Sec. 12, T6N, R64W
Well: Shoemaker AA07-65HN
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Shoemaker AA07-65HN
TVD Reference: WELL @ 4712.0usft (Original Well Elev)
MD Reference: WELL @ 4712.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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. 12, T6N, R64W		
Site Position:		Northing:	1,426,325.46 usft
From:	Lat/Long	Easting:	3,280,671.66 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	40° 29' 57.408 N
		Longitude:	104° 29' 26.664 W
		Grid Convergence:	0.65 °

Well	Shoemaker AA07-65HN		
Well Position	+N/-S	0.0 usft	Northing: 1,426,303.60 usft
	+E/-W	0.0 usft	Easting: 3,280,671.91 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	40° 29' 57.192 N
		Longitude:	104° 29' 26.664 W
		Ground Level:	4,688.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	12/27/2011	8.65
		Dip Angle (°)	67.16
		Field Strength (nT)	53,157

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)
	0.0	0.0	0.0
		Direction (°)	82.37

Survey Program	Date 2/13/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
963.0	11,188.0	MWD (Wellbore #1)	MWD default
			Description
			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)
872.0	0.00	0.00	872.0	0.0	0.0	0.0	0.00	0.00	0.00
First Survey @ 963' MD / 963' TVD									
963.0	0.20	98.50	963.0	0.0	0.2	0.2	0.22	0.22	0.00
1,246.0	0.30	131.70	1,246.0	-0.6	1.2	1.1	0.06	0.04	11.73
1,436.0	0.60	153.40	1,436.0	-1.8	2.0	1.8	0.18	0.16	11.42
1,530.0	1.40	24.30	1,530.0	-1.2	2.7	2.5	1.96	0.85	-137.34
1,625.0	4.00	21.70	1,624.9	2.9	4.4	4.8	2.74	2.74	-2.74
1,720.0	6.50	35.40	1,719.5	10.4	8.8	10.1	2.93	2.63	14.42
1,814.0	7.90	31.20	1,812.7	20.3	15.2	17.7	1.59	1.49	-4.47
1,909.0	10.10	36.10	1,906.5	32.6	23.5	27.6	2.45	2.32	5.16
2,003.0	12.00	37.90	1,998.8	46.9	34.3	40.3	2.05	2.02	1.91

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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)
2,097.0	13.70	33.00	2,090.4	64.0	46.4	54.5	2.15	1.81	-5.21
2,197.0	16.10	31.40	2,187.1	85.8	60.1	70.9	2.43	2.40	-1.60
2,292.0	15.60	31.50	2,278.5	107.9	73.6	87.3	0.53	-0.53	0.11
Crossed Section Line @ 2316' MD / 2302' TVD									
2,316.0	15.54	32.58	2,301.6	113.4	77.0	91.4	1.23	-0.24	4.48
2,387.0	15.40	35.80	2,370.0	129.0	87.7	104.0	1.23	-0.20	4.54
2,482.0	16.00	34.70	2,461.5	150.0	102.5	121.5	0.71	0.63	-1.16
2,577.0	15.40	40.00	2,552.9	170.4	118.1	139.6	1.64	-0.63	5.58
2,672.0	14.50	35.40	2,644.7	189.8	133.1	157.1	1.57	-0.95	-4.84
2,767.0	15.10	35.90	2,736.6	209.5	147.2	173.7	0.65	0.63	0.53
2,862.0	16.60	36.50	2,828.0	230.5	162.5	191.7	1.59	1.58	0.63
2,957.0	17.20	33.50	2,918.8	253.1	178.4	210.4	1.11	0.63	-3.16
3,052.0	17.20	34.00	3,009.6	276.4	194.0	229.0	0.16	0.00	0.53
3,147.0	16.70	35.40	3,100.5	299.2	209.7	247.6	0.68	-0.53	1.47
3,242.0	15.60	35.80	3,191.7	320.7	225.1	265.7	1.16	-1.16	0.42
3,337.0	14.30	38.00	3,283.5	340.3	239.8	282.9	1.49	-1.37	2.32
3,432.0	13.60	42.80	3,375.7	357.7	254.6	299.9	1.42	-0.74	5.05
3,527.0	12.90	38.20	3,468.2	374.3	268.8	316.1	1.33	-0.74	-4.84
3,621.0	14.40	34.70	3,559.5	392.1	281.9	331.5	1.82	1.60	-3.72
3,716.0	17.20	33.10	3,650.9	413.6	296.3	348.6	2.98	2.95	-1.68
3,811.0	19.00	33.10	3,741.2	438.3	312.4	367.9	1.89	1.89	0.00
3,906.0	20.40	32.80	3,830.7	465.2	329.8	388.7	1.48	1.47	-0.32
3,970.0	20.00	35.10	3,890.7	483.5	342.2	403.3	1.39	-0.63	3.59
4,001.0	19.30	35.20	3,919.9	492.1	348.2	410.4	2.26	-2.26	0.32
4,097.0	16.90	36.30	4,011.2	516.3	365.6	430.9	2.53	-2.50	1.15
4,192.0	14.50	35.90	4,102.6	537.0	380.7	448.7	2.53	-2.53	-0.42
4,287.0	12.10	37.00	4,195.1	554.6	393.7	463.9	2.54	-2.53	1.16
4,382.0	8.60	36.80	4,288.5	568.3	404.0	475.8	3.68	-3.68	-0.21
4,477.0	6.80	33.70	4,382.6	578.6	411.3	484.5	1.94	-1.89	-3.26
4,572.0	5.20	36.80	4,477.1	586.8	417.0	491.2	1.72	-1.68	3.26
4,666.0	3.80	51.40	4,570.8	592.1	422.0	496.9	1.91	-1.49	15.53
4,762.0	1.70	50.30	4,666.7	595.0	425.6	500.8	2.19	-2.19	-1.15
4,857.0	1.90	69.70	4,761.7	596.5	428.2	503.6	0.67	0.21	20.42
4,952.0	0.60	60.50	4,856.6	597.3	430.1	505.6	1.38	-1.37	-9.68
5,047.0	0.60	62.50	4,951.6	597.7	430.9	506.5	0.02	0.00	2.11
5,332.0	0.60	65.80	5,236.6	599.0	433.6	509.3	0.01	0.00	1.16
5,427.0	0.80	240.00	5,331.6	598.9	433.5	509.2	1.47	0.21	183.37
5,712.0	0.60	197.30	5,616.6	596.5	431.3	506.7	0.19	-0.07	-14.98
5,953.0	0.40	147.00	5,857.6	594.6	431.4	506.5	0.19	-0.08	-20.87
6,030.0	0.50	159.50	5,934.6	594.0	431.7	506.7	0.18	0.13	16.23
6,093.0	4.50	100.60	5,997.5	593.3	434.2	509.1	6.77	6.35	-93.49
6,125.0	7.40	92.00	6,029.3	593.0	437.5	512.4	9.46	9.06	-26.88
6,188.0	12.60	86.00	6,091.4	593.4	448.4	523.2	8.41	8.25	-9.52

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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)
6,220.0	14.70	81.80	6,122.5	594.2	455.9	530.8	7.25	6.56	-13.13
6,283.0	18.20	88.50	6,182.9	595.6	473.7	548.6	6.31	5.56	10.63
6,314.0	19.00	93.10	6,212.3	595.4	483.6	558.3	5.39	2.58	14.84
6,378.0	24.00	88.30	6,271.8	595.3	507.0	581.5	8.28	7.81	-7.50
6,409.0	27.40	86.20	6,299.7	595.9	520.4	594.9	11.35	10.97	-6.77
Crossed 460' Offset @ 6435' MD / 6323' TVD									
6,435.0	28.86	85.59	6,322.6	596.8	532.6	607.2	5.72	5.62	-2.34
6,473.0	31.00	84.80	6,355.6	598.4	551.5	626.1	5.72	5.63	-2.09
6,505.0	31.50	84.40	6,382.9	599.9	568.1	642.7	1.69	1.56	-1.25
6,536.0	33.00	84.40	6,409.2	601.6	584.5	659.2	4.84	4.84	0.00
6,568.0	36.70	85.20	6,435.4	603.2	602.7	677.5	11.65	11.56	2.50
6,600.0	40.20	85.70	6,460.5	604.8	622.6	697.3	10.98	10.94	1.56
6,631.0	44.00	86.60	6,483.5	606.2	643.3	718.1	12.41	12.26	2.90
6,663.0	46.70	89.00	6,506.0	607.0	666.0	740.7	9.98	8.44	7.50
6,695.0	49.70	90.60	6,527.3	607.1	689.9	764.4	10.09	9.38	5.00
6,726.0	52.80	90.40	6,546.7	606.9	714.1	788.3	10.01	10.00	-0.65
6,758.0	55.30	90.40	6,565.5	606.7	740.0	814.0	7.81	7.81	0.00
6,790.0	58.00	90.80	6,583.1	606.4	766.7	840.4	8.50	8.44	1.25
6,821.0	60.50	92.90	6,598.9	605.6	793.3	866.7	9.95	8.06	6.77
6,853.0	62.80	93.40	6,614.1	604.0	821.4	894.4	7.32	7.19	1.56
6,885.0	65.30	92.70	6,628.1	602.5	850.2	922.6	8.06	7.81	-2.19
6,916.0	69.40	92.00	6,640.0	601.3	878.7	950.8	13.39	13.23	-2.26
6,948.0	71.50	93.40	6,650.7	599.9	908.9	980.5	7.75	6.56	4.38
6,980.0	73.00	93.90	6,660.5	598.0	939.3	1,010.3	4.92	4.69	1.56
7,012.0	75.30	91.70	6,669.2	596.5	970.0	1,040.6	9.77	7.19	-6.88
7,043.0	78.10	91.70	6,676.4	595.6	1,000.2	1,070.4	9.03	9.03	0.00
7,081.0	82.30	89.90	6,682.8	595.0	1,037.6	1,107.4	12.00	11.05	-4.74
7,145.0	87.10	91.00	6,688.7	594.5	1,101.3	1,170.5	7.69	7.50	1.72
7,177.0	88.00	91.10	6,690.1	594.0	1,133.3	1,202.1	2.83	2.81	0.31
7,272.0	87.90	91.30	6,693.5	592.0	1,228.2	1,295.9	0.24	-0.11	0.21
7,367.0	89.10	89.90	6,696.0	591.0	1,323.1	1,389.9	1.94	1.26	-1.47
7,462.0	91.80	90.10	6,695.3	591.0	1,418.1	1,484.0	2.85	2.84	0.21
7,557.0	91.20	88.80	6,692.8	591.9	1,513.1	1,578.3	1.51	-0.63	-1.37
7,652.0	90.30	88.50	6,691.5	594.1	1,608.1	1,672.7	1.00	-0.95	-0.32
7,747.0	90.50	88.20	6,690.9	596.9	1,703.0	1,767.2	0.38	0.21	-0.32
7,842.0	90.80	87.40	6,689.8	600.5	1,797.9	1,861.7	0.90	0.32	-0.84
7,937.0	90.80	87.80	6,688.5	604.5	1,892.8	1,956.3	0.42	0.00	0.42
8,032.0	90.30	87.60	6,687.5	608.3	1,987.8	2,050.9	0.57	-0.53	-0.21
8,127.0	90.20	87.40	6,687.1	612.4	2,082.7	2,145.5	0.24	-0.11	-0.21
8,222.0	91.00	87.80	6,686.1	616.4	2,177.6	2,240.1	0.94	0.84	0.42
8,317.0	90.70	88.70	6,684.7	619.3	2,272.5	2,334.6	1.00	-0.32	0.95
8,413.0	90.30	88.20	6,683.9	621.9	2,368.5	2,430.1	0.67	-0.42	-0.52
8,507.0	90.70	88.80	6,683.1	624.4	2,462.4	2,523.5	0.77	0.43	0.64
8,603.0	90.00	88.20	6,682.5	626.9	2,558.4	2,619.0	0.96	-0.73	-0.63

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8,698.0	90.20	88.80	6,682.3	629.4	2,653.4	2,713.5	0.67	0.21	0.63
8,793.0	92.20	89.20	6,680.3	631.0	2,748.3	2,807.8	2.15	2.11	0.42
8,824.0	92.60	89.60	6,679.0	631.4	2,779.3	2,838.5	1.82	1.29	1.29
8,887.0	92.80	89.00	6,676.1	632.1	2,842.2	2,901.0	1.00	0.32	-0.95
8,951.0	91.10	88.20	6,673.9	633.7	2,906.2	2,964.6	2.94	-2.66	-1.25
8,982.0	90.90	88.30	6,673.3	634.6	2,937.2	2,995.4	0.72	-0.65	0.32
9,077.0	89.10	88.70	6,673.3	637.1	3,032.1	3,089.9	1.94	-1.89	0.42
9,172.0	89.00	88.50	6,674.9	639.4	3,127.1	3,184.3	0.24	-0.11	-0.21
9,267.0	90.80	88.00	6,675.1	642.3	3,222.0	3,278.8	1.97	1.89	-0.53
9,362.0	91.40	87.80	6,673.3	645.8	3,316.9	3,373.3	0.67	0.63	-0.21
9,457.0	92.10	88.20	6,670.4	649.1	3,411.8	3,467.8	0.85	0.74	0.42
9,552.0	90.50	87.40	6,668.2	652.8	3,506.7	3,562.4	1.88	-1.68	-0.84
9,647.0	90.90	87.80	6,667.0	656.8	3,601.7	3,657.0	0.60	0.42	0.42
9,742.0	91.40	87.60	6,665.1	660.6	3,696.6	3,751.5	0.57	0.53	-0.21
9,837.0	90.40	89.40	6,663.6	663.1	3,791.5	3,846.0	2.17	-1.05	1.89
9,932.0	90.10	89.00	6,663.2	664.4	3,886.5	3,940.3	0.53	-0.32	-0.42
10,027.0	89.90	89.00	6,663.2	666.0	3,981.5	4,034.7	0.21	-0.21	0.00
10,122.0	90.00	89.20	6,663.3	667.5	4,076.5	4,129.0	0.24	0.11	0.21
10,217.0	91.50	89.70	6,662.1	668.5	4,171.5	4,223.3	1.66	1.58	0.53
10,312.0	92.10	89.70	6,659.1	669.0	4,266.4	4,317.5	0.63	0.63	0.00
10,407.0	91.00	90.80	6,656.5	668.5	4,361.4	4,411.5	1.64	-1.16	1.16
10,502.0	88.80	90.40	6,656.7	667.5	4,456.4	4,505.5	2.35	-2.32	-0.42
10,596.0	89.80	90.40	6,657.8	666.9	4,550.4	4,598.6	1.06	1.06	0.00
10,690.0	89.10	90.40	6,658.7	666.2	4,644.3	4,691.7	0.74	-0.74	0.00
10,785.0	88.90	89.40	6,660.4	666.4	4,739.3	4,785.8	1.07	-0.21	-1.05
10,880.0	88.20	89.70	6,662.8	667.1	4,834.3	4,880.1	0.80	-0.74	0.32
10,975.0	89.70	89.90	6,664.5	667.5	4,929.3	4,974.3	1.59	1.58	0.21
11,070.0	90.00	88.80	6,664.8	668.5	5,024.3	5,068.5	1.20	0.32	-1.16
11,129.0	90.50	88.70	6,664.5	669.8	5,083.3	5,127.2	0.86	0.85	-0.17
TD @ 188' MD / 6663' TVD									
11,188.0	92.00	88.70	6,663.2	671.2	5,142.2	5,185.8	2.54	2.54	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
963.0	963.0	0.0	0.2	First Survey @ 963' MD / 963' TVD
2,316.0	2,301.6	113.4	77.0	Crossed Section Line @ 2316' MD / 2302' TVD
6,435.0	6,322.6	596.8	532.6	Crossed 460' Offset @ 6435' MD / 6323' TVD
11,188.0	6,663.2	671.2	5,142.2	TD @ 188' MD / 6663' TVD

Checked By: _____ Approved By: _____ Date: _____



Survey Certification Sheet

Noble Energy
Company

RM-12073
Job Number

2/13/12
Date

Sec 12, T6N, R64W
Lease

Shoemaker A07-65HN
Well Name

Weld, CO
County & State

Surveyed from a depth of: 872 feet to 11188 feet MD

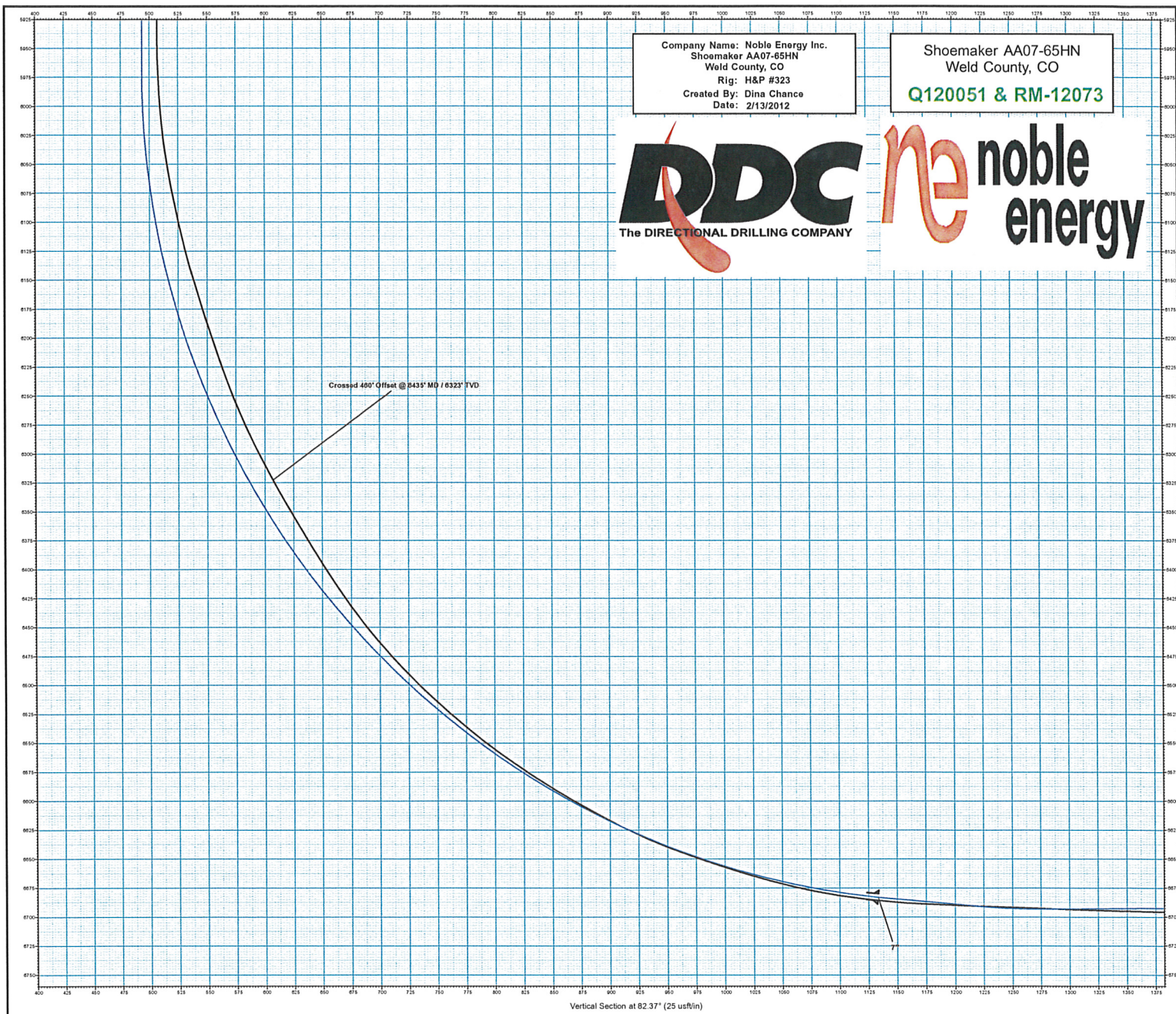
Type of Survey: MWD

Directional Supervisor/Surveyor: Boyd Wolff

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.

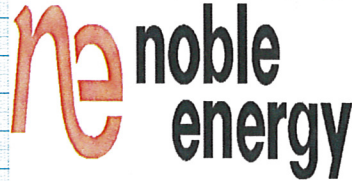
Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The
Directional Drilling Company,
ou=GM of Guidance Services,
email=larryw@directionaldrillers.
com, c=US
Date: 2012.02.14 11:03:55 -06'00'

Larry Wright
MWD General Manager



Company Name: Noble Energy Inc.
Shoemaker AA07-65HN
Weld County, CO
Rig: H&P #323
Created By: Dina Chance
Date: 2/13/2012

Shoemaker AA07-65HN
Weld County, CO
Q120051 & RM-12073



Shoemaker AA07-65HN
Weld County, CO
Q120051 & RM-12073

