



## **Noble Energy Inc.**

Weld County, CO  
Sec. 12, T6N, R64W  
Shoemaker AA07-63HN

Wellbore #1

Survey: MWD Final

## **DDC Survey Report**

02 February, 2012



<b>Company:</b>	Noble Energy Inc.	<b>Local Co-ordinate Reference:</b>	Well Shoemaker AA07-63HN
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4712.0usft (Original Well Elev)
<b>Site:</b>	Sec. 12, T6N, R64W	<b>MD Reference:</b>	WELL @ 4712.0usft (Original Well Elev)
<b>Well:</b>	Shoemaker AA07-63HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 Single User Db

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

Site	Sec. 12, T6N, R64W				
Site Position:		Northing:	1,426,325.46 usft	Latitude:	40° 29' 57.408 N
From:	Lat/Long	Easting:	3,280,671.66 usft	Longitude:	104° 29' 26.664 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.65 °

Well	Shoemaker AA07-63HN					
Well Position	+N/-S	0.0 usft	Northing:	1,426,281.74 usft	Latitude:	40° 29' 56.976 N
	+E/-W	0.0 usft	Easting:	3,280,672.16 usft	Longitude:	104° 29' 26.664 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	4,688.0 usft

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

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	96.73

<b>Survey Program</b>	<b>Date</b> 2/2/2012			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
933.0	11,187.0	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)
<b>Tie In</b>									
832.0	0.00	0.00	832.0	0.0	0.0	0.0	0.00	0.00	0.00
933.0	0.30	181.00	933.0	-0.3	0.0	0.0	0.30	0.30	0.00
1,028.0	0.30	164.40	1,028.0	-0.8	0.1	0.1	0.09	0.00	-17.47
1,122.0	0.30	199.20	1,122.0	-1.2	0.0	0.2	0.19	0.00	37.02
1,216.0	0.50	235.10	1,216.0	-1.7	-0.4	-0.2	0.33	0.21	38.19
1,406.0	0.40	226.80	1,406.0	-2.6	-1.5	-1.2	0.06	-0.05	-4.37
1,500.0	1.30	167.10	1,500.0	-3.9	-1.5	-1.1	1.22	0.96	-63.51
1,563.0	3.30	156.20	1,562.9	-6.2	-0.6	0.1	3.24	3.17	-17.30
1,595.0	4.70	150.40	1,594.8	-8.2	0.4	1.3	4.55	4.38	-18.13
1,658.0	5.70	147.70	1,657.6	-13.1	3.3	4.8	1.63	1.59	-4.29



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<b>Site:</b>	Sec. 12, T6N, R64W	<b>MD Reference:</b>	WELL @ 4712.0usft (Original Well Elev)
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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,721.0	5.90	154.60	1,720.3	-18.7	6.4	8.5	1.15	0.32	10.95
1,784.0	7.70	152.30	1,782.8	-25.3	9.7	12.6	2.89	2.86	-3.65
1,847.0	9.90	147.40	1,845.1	-33.6	14.6	18.5	3.69	3.49	-7.78
1,879.0	10.60	148.30	1,876.6	-38.5	17.6	22.0	2.24	2.19	2.81
1,973.0	12.30	153.40	1,968.7	-54.8	26.7	32.9	2.10	1.81	5.43
2,036.0	12.90	153.40	2,030.2	-67.1	32.8	40.5	0.95	0.95	0.00
2,067.0	12.40	150.90	2,060.4	-73.1	36.0	44.3	2.39	-1.61	-8.06
2,135.0	14.20	147.40	2,126.6	-86.5	44.0	53.9	2.90	2.65	-5.15
2,167.0	13.50	149.30	2,157.7	-93.0	48.1	58.6	2.61	-2.19	5.94
2,262.0	12.80	146.50	2,250.2	-111.3	59.5	72.2	1.00	-0.74	-2.95
2,357.0	13.10	147.40	2,342.8	-129.1	71.1	85.8	0.38	0.32	0.95
2,452.0	13.80	149.10	2,435.2	-147.9	82.8	99.5	0.85	0.74	1.79
2,547.0	13.90	150.00	2,527.4	-167.5	94.3	113.3	0.25	0.11	0.95
2,642.0	13.50	148.60	2,619.7	-186.9	105.8	126.9	0.55	-0.42	-1.47
2,737.0	13.80	153.40	2,712.0	-206.5	116.6	140.0	1.23	0.32	5.05
2,832.0	14.10	151.10	2,804.2	-226.7	127.3	153.0	0.66	0.32	-2.42
2,927.0	14.10	146.50	2,896.3	-246.5	139.3	167.2	1.18	0.00	-4.84
3,022.0	12.20	149.10	2,988.9	-264.8	150.8	180.8	2.09	-2.00	2.74
3,117.0	13.60	148.60	3,081.5	-282.9	161.8	193.8	1.48	1.47	-0.53
3,212.0	11.50	145.10	3,174.2	-300.2	173.0	207.0	2.35	-2.21	-3.68
3,307.0	10.30	147.20	3,267.5	-315.1	183.0	218.7	1.33	-1.26	2.21
3,370.0	10.40	149.90	3,329.4	-324.8	188.9	225.7	0.79	0.16	4.29
3,402.0	10.20	148.30	3,360.9	-329.7	191.9	229.2	1.09	-0.63	-5.00
3,433.0	11.10	150.70	3,391.4	-334.7	194.8	232.7	3.24	2.90	7.74
3,465.0	12.30	150.00	3,422.7	-340.3	198.0	236.5	3.78	3.75	-2.19
3,497.0	13.00	149.50	3,453.9	-346.3	201.5	240.7	2.21	2.19	-1.56
3,528.0	12.10	151.40	3,484.2	-352.2	204.8	244.7	3.19	-2.90	6.13
3,560.0	13.70	151.80	3,515.4	-358.5	208.2	248.8	5.01	5.00	1.25
3,591.0	14.90	150.90	3,545.4	-365.2	211.9	253.3	3.94	3.87	-2.90
3,623.0	16.20	147.00	3,576.3	-372.5	216.3	258.5	5.21	4.06	-12.19
3,654.0	16.80	145.80	3,606.0	-379.9	221.2	264.2	2.23	1.94	-3.87
3,686.0	17.00	145.40	3,636.6	-387.5	226.5	270.3	0.72	0.63	-1.25
3,718.0	17.00	146.50	3,667.2	-395.3	231.7	276.4	1.01	0.00	3.44
3,750.0	16.00	144.80	3,697.9	-402.8	236.8	282.4	3.47	-3.13	-5.31
3,781.0	15.60	146.50	3,727.7	-409.8	241.6	288.0	1.97	-1.29	5.48
3,845.0	15.60	144.20	3,789.4	-423.9	251.4	299.3	0.97	0.00	-3.59
3,876.0	15.40	145.10	3,819.2	-430.7	256.2	304.9	1.01	-0.65	2.90
3,972.0	14.30	146.10	3,912.0	-451.0	270.1	321.1	1.18	-1.15	1.04
4,067.0	12.10	144.00	4,004.5	-468.8	282.5	335.5	2.37	-2.32	-2.21
4,162.0	12.60	151.80	4,097.3	-486.0	293.2	348.2	1.83	0.53	8.21
4,257.0	13.20	148.10	4,189.9	-504.3	303.9	360.9	1.07	0.63	-3.89
4,352.0	13.00	151.90	4,282.5	-522.9	314.6	373.7	0.93	-0.21	4.00
4,447.0	13.70	150.70	4,374.9	-542.2	325.2	386.5	0.79	0.74	-1.26

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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)
4,542.0	14.00	151.40	4,467.1	-562.1	336.2	399.7	0.36	0.32	0.74
4,636.0	12.00	152.70	4,558.7	-580.7	346.1	411.8	2.15	-2.13	1.38
4,732.0	12.30	148.80	4,652.6	-598.4	356.0	423.6	0.91	0.31	-4.06
4,827.0	12.30	147.70	4,745.4	-615.6	366.6	436.2	0.25	0.00	-1.16
4,922.0	11.60	151.10	4,838.3	-632.5	376.6	448.2	1.04	-0.74	3.58
5,017.0	11.60	144.90	4,931.4	-648.7	386.7	460.1	1.31	0.00	-6.53
5,111.0	11.50	147.20	5,023.5	-664.3	397.3	472.4	0.50	-0.11	2.45
5,207.0	8.10	144.40	5,118.1	-677.8	406.4	483.0	3.58	-3.54	-2.92
5,302.0	6.70	155.30	5,212.3	-688.3	412.6	490.4	2.08	-1.47	11.47
5,397.0	4.80	152.10	5,306.8	-696.8	416.8	495.6	2.03	-2.00	-3.37
5,492.0	3.30	146.30	5,401.6	-702.6	420.1	499.6	1.63	-1.58	-6.11
5,587.0	2.80	129.40	5,496.4	-706.4	423.5	503.3	1.08	-0.53	-17.79
5,682.0	1.60	153.90	5,591.4	-709.0	425.8	506.0	1.58	-1.26	25.79
5,777.0	0.30	52.60	5,686.3	-710.1	426.6	506.9	1.77	-1.37	-106.63
5,872.0	0.30	41.00	5,781.3	-709.7	427.0	507.2	0.06	0.00	-12.21
5,954.0	0.20	88.80	5,863.3	-709.6	427.3	507.5	0.27	-0.12	58.29
6,030.0	0.20	60.70	5,939.3	-709.5	427.5	507.7	0.13	0.00	-36.97
6,062.0	1.70	58.40	5,971.3	-709.2	428.0	508.1	4.69	4.69	-7.19
6,094.0	4.80	63.90	6,003.3	-708.4	429.6	509.6	9.73	9.69	17.19
6,125.0	7.80	60.40	6,034.1	-706.8	432.6	512.4	9.75	9.68	-11.29
6,157.0	10.60	63.70	6,065.7	-704.4	437.1	516.6	8.90	8.75	10.31
6,189.0	13.20	65.10	6,097.0	-701.6	443.0	522.2	8.17	8.13	4.38
6,221.0	15.10	68.30	6,128.0	-698.5	450.2	529.0	6.42	5.94	10.00
6,252.0	17.30	72.20	6,157.8	-695.6	458.4	536.7	7.91	7.10	12.58
6,284.0	19.70	74.30	6,188.1	-692.7	468.1	546.0	7.78	7.50	6.56
6,315.0	21.50	78.10	6,217.1	-690.1	478.7	556.3	7.23	5.81	12.26
6,347.0	23.10	82.20	6,246.8	-688.0	490.6	567.9	6.97	5.00	12.81
6,379.0	25.40	84.10	6,275.9	-686.5	503.7	580.7	7.59	7.19	5.94
6,410.0	28.40	85.00	6,303.6	-685.1	517.7	594.4	9.77	9.68	2.90
6,442.0	31.60	85.30	6,331.3	-683.8	533.6	610.1	10.01	10.00	0.94
6,474.0	33.60	85.70	6,358.2	-682.4	550.8	627.0	6.29	6.25	1.25
6,506.0	35.40	86.90	6,384.6	-681.3	568.9	644.8	6.01	5.63	3.75
6,537.0	38.00	88.30	6,409.5	-680.5	587.4	663.1	8.81	8.39	4.52
6,569.0	41.20	89.40	6,434.1	-680.1	607.8	683.3	10.24	10.00	3.44
6,601.0	43.20	89.40	6,457.8	-679.9	629.3	704.6	6.25	6.25	0.00
6,632.0	45.50	89.40	6,480.0	-679.6	650.9	726.1	7.42	7.42	0.00
6,664.0	48.20	89.90	6,501.9	-679.5	674.3	749.3	8.51	8.44	1.56
6,696.0	50.90	91.00	6,522.6	-679.7	698.6	773.5	8.83	8.44	3.44
6,727.0	52.90	91.50	6,541.8	-680.2	723.0	797.7	6.58	6.45	1.61
6,759.0	55.80	91.30	6,560.4	-680.9	749.0	823.6	9.08	9.06	-0.63
6,791.0	58.50	91.70	6,577.8	-681.6	775.9	850.4	8.50	8.44	1.25
6,822.0	60.90	92.00	6,593.4	-682.4	802.6	877.1	7.79	7.74	0.97
6,854.0	62.90	93.90	6,608.5	-683.9	830.8	905.2	8.15	6.25	5.94



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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)
6,886.0	64.30	91.50	6,622.7	-685.2	859.4	933.8	8.02	4.38	-7.50
6,917.0	67.00	91.10	6,635.5	-685.9	887.7	961.9	8.79	8.71	-1.29
6,949.0	70.60	90.40	6,647.1	-686.3	917.5	991.6	11.43	11.25	-2.19
6,981.0	73.70	90.10	6,656.9	-686.4	947.9	1,021.9	9.73	9.69	-0.94
7,012.0	76.60	90.10	6,664.8	-686.5	977.9	1,051.6	9.35	9.35	0.00
7,044.0	79.50	90.60	6,671.4	-686.6	1,009.2	1,082.7	9.19	9.06	1.56
7,076.0	82.90	91.30	6,676.3	-687.2	1,040.8	1,114.2	10.84	10.63	2.19
7,115.0	87.10	91.30	6,679.7	-688.1	1,079.7	1,152.9	10.77	10.77	0.00
7,177.0	88.70	93.60	6,682.0	-690.7	1,141.6	1,214.6	4.52	2.58	3.71
7,272.0	88.30	92.70	6,684.5	-695.9	1,236.4	1,309.4	1.04	-0.42	-0.95
7,368.0	88.90	91.50	6,686.8	-699.4	1,332.3	1,405.1	1.40	0.63	-1.25
7,463.0	89.30	88.70	6,688.3	-699.6	1,427.3	1,499.4	2.98	0.42	-2.95
7,558.0	91.40	89.40	6,687.7	-698.0	1,522.2	1,593.6	2.33	2.21	0.74
7,653.0	90.30	88.20	6,686.3	-696.0	1,617.2	1,687.6	1.71	-1.16	-1.26
7,748.0	91.30	88.20	6,685.0	-693.1	1,712.1	1,781.6	1.05	1.05	0.00
7,843.0	90.80	88.30	6,683.3	-690.2	1,807.1	1,875.5	0.54	-0.53	0.11
7,938.0	90.40	88.20	6,682.3	-687.3	1,902.0	1,969.5	0.43	-0.42	-0.11
8,033.0	90.90	89.60	6,681.2	-685.4	1,997.0	2,063.6	1.56	0.53	1.47
8,128.0	90.70	88.50	6,679.9	-683.9	2,092.0	2,157.7	1.18	-0.21	-1.16
8,223.0	89.30	88.50	6,679.9	-681.4	2,187.0	2,251.7	1.47	-1.47	0.00
8,318.0	89.60	88.70	6,680.8	-679.0	2,281.9	2,345.8	0.38	0.32	0.21
8,413.0	89.50	88.30	6,681.5	-676.6	2,376.9	2,439.8	0.43	-0.11	-0.42
8,508.0	91.20	88.50	6,680.9	-673.9	2,471.8	2,533.8	1.80	1.79	0.21
8,603.0	90.20	88.30	6,679.8	-671.3	2,566.8	2,627.8	1.07	-1.05	-0.21
8,698.0	90.10	87.60	6,679.5	-667.9	2,661.7	2,721.7	0.74	-0.11	-0.74
8,793.0	89.80	86.40	6,679.6	-662.9	2,756.6	2,815.3	1.30	-0.32	-1.26
8,888.0	92.90	87.10	6,677.4	-657.5	2,851.4	2,908.8	3.35	3.26	0.74
8,951.0	94.00	86.70	6,673.6	-654.1	2,914.2	2,970.8	1.86	1.75	-0.63
8,983.0	93.00	87.30	6,671.6	-652.4	2,946.1	3,002.3	3.64	-3.13	1.88
9,014.0	93.30	87.80	6,669.9	-651.1	2,977.0	3,032.8	1.88	0.97	1.61
9,046.0	92.60	88.50	6,668.3	-650.1	3,009.0	3,064.4	3.09	-2.19	2.19
9,078.0	91.80	89.20	6,667.1	-649.4	3,040.9	3,096.1	3.32	-2.50	2.19
9,109.0	91.30	89.90	6,666.2	-649.2	3,071.9	3,126.8	2.77	-1.61	2.26
9,141.0	91.40	89.90	6,665.5	-649.1	3,103.9	3,158.6	0.31	0.31	0.00
9,173.0	91.00	89.90	6,664.8	-649.1	3,135.9	3,190.4	1.25	-1.25	0.00
9,236.0	91.20	90.60	6,663.6	-649.4	3,198.9	3,252.9	1.16	0.32	1.11
9,268.0	91.90	89.90	6,662.7	-649.5	3,230.9	3,284.7	3.09	2.19	-2.19
9,331.0	90.30	90.10	6,661.5	-649.5	3,293.9	3,347.3	2.56	-2.54	0.32
9,362.0	89.30	89.70	6,661.6	-649.4	3,324.9	3,378.1	3.47	-3.23	-1.29
9,394.0	88.60	89.20	6,662.2	-649.1	3,356.9	3,409.8	2.69	-2.19	-1.56
9,426.0	87.30	89.20	6,663.3	-648.7	3,388.8	3,441.5	4.06	-4.06	0.00
9,457.0	87.70	89.20	6,664.7	-648.3	3,419.8	3,472.2	1.29	1.29	0.00
9,521.0	88.60	89.00	6,666.8	-647.2	3,483.8	3,535.6	1.44	1.41	-0.31
9,553.0	89.00	89.00	6,667.4	-646.7	3,515.7	3,567.3	1.25	1.25	0.00

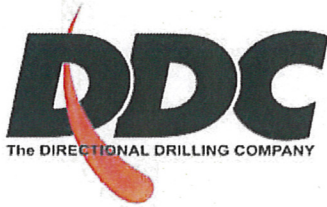
Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Shoemaker AA07-63HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4712.0usft (Original Well Elev)
Site:	Sec. 12, T6N, R64W	MD Reference:	WELL @ 4712.0usft (Original Well Elev)
Well:	Shoemaker AA07-63HN	North Reference:	Grid
Wellbore:	Wellbore #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)
9,647.0	91.50	88.80	6,667.0	-644.9	3,609.7	3,660.4	2.67	2.66	-0.21
9,743.0	89.60	90.10	6,666.1	-644.0	3,705.7	3,755.6	2.40	-1.98	1.35
9,838.0	91.70	90.40	6,665.0	-644.4	3,800.7	3,850.0	2.23	2.21	0.32
9,933.0	90.40	90.40	6,663.3	-645.0	3,895.7	3,944.4	1.37	-1.37	0.00
10,028.0	89.90	89.20	6,663.0	-644.7	3,990.7	4,038.7	1.37	-0.53	-1.26
10,123.0	89.30	88.30	6,663.7	-642.6	4,085.6	4,132.8	1.14	-0.63	-0.95
10,218.0	92.10	89.00	6,662.5	-640.4	4,180.6	4,226.8	3.04	2.95	0.74
10,312.0	90.80	88.00	6,660.2	-637.9	4,274.5	4,319.8	1.74	-1.38	-1.06
10,407.0	89.30	86.70	6,660.1	-633.5	4,369.4	4,413.6	2.09	-1.58	-1.37
10,502.0	91.40	87.30	6,659.5	-628.6	4,464.3	4,507.2	2.30	2.21	0.63
10,565.0	92.20	87.40	6,657.5	-625.7	4,527.2	4,569.3	1.28	1.27	0.16
10,596.0	92.10	87.60	6,656.4	-624.3	4,558.1	4,599.9	0.72	-0.32	0.65
10,628.0	92.20	88.00	6,655.2	-623.1	4,590.1	4,631.5	1.29	0.31	1.25
10,659.0	91.60	87.80	6,654.1	-622.0	4,621.1	4,662.1	2.04	-1.94	-0.65
10,691.0	91.40	87.10	6,653.3	-620.5	4,653.0	4,693.7	2.27	-0.63	-2.19
10,786.0	90.00	88.20	6,652.1	-616.6	4,747.9	4,787.5	1.87	-1.47	1.16
10,881.0	87.80	89.00	6,654.0	-614.3	4,842.9	4,881.5	2.46	-2.32	0.84
10,976.0	88.60	89.20	6,656.9	-612.8	4,937.8	4,975.6	0.87	0.84	0.21
11,071.0	90.80	89.70	6,657.4	-611.9	5,032.8	5,069.8	2.37	2.32	0.53
11,129.0	91.20	89.00	6,656.4	-611.3	5,090.8	5,127.3	1.39	0.69	-1.21
TD @ 11187' MD / 6655' TVD									
11,187.0	91.20	89.00	6,655.2	-610.2	5,148.8	5,184.8	0.00	0.00	0.00

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
832.0	832.0	0.0	0.0	Tie In
11,187.0	6,655.2	-610.2	5,148.8	TD @ 11187' MD / 6655' TVD

Checked By: _____	Approved By: _____	Date: _____
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## Survey Certification Sheet

Noble  
Company

RM-12048  
Job Number

2/3/12  
Date

Sec12, T6N, R64W  
Lease

Shoemaker AA07-63HN  
Well Name

Weld, CO  
County & State

Surveyed from a depth of: 832 feet to 11187 feet MD

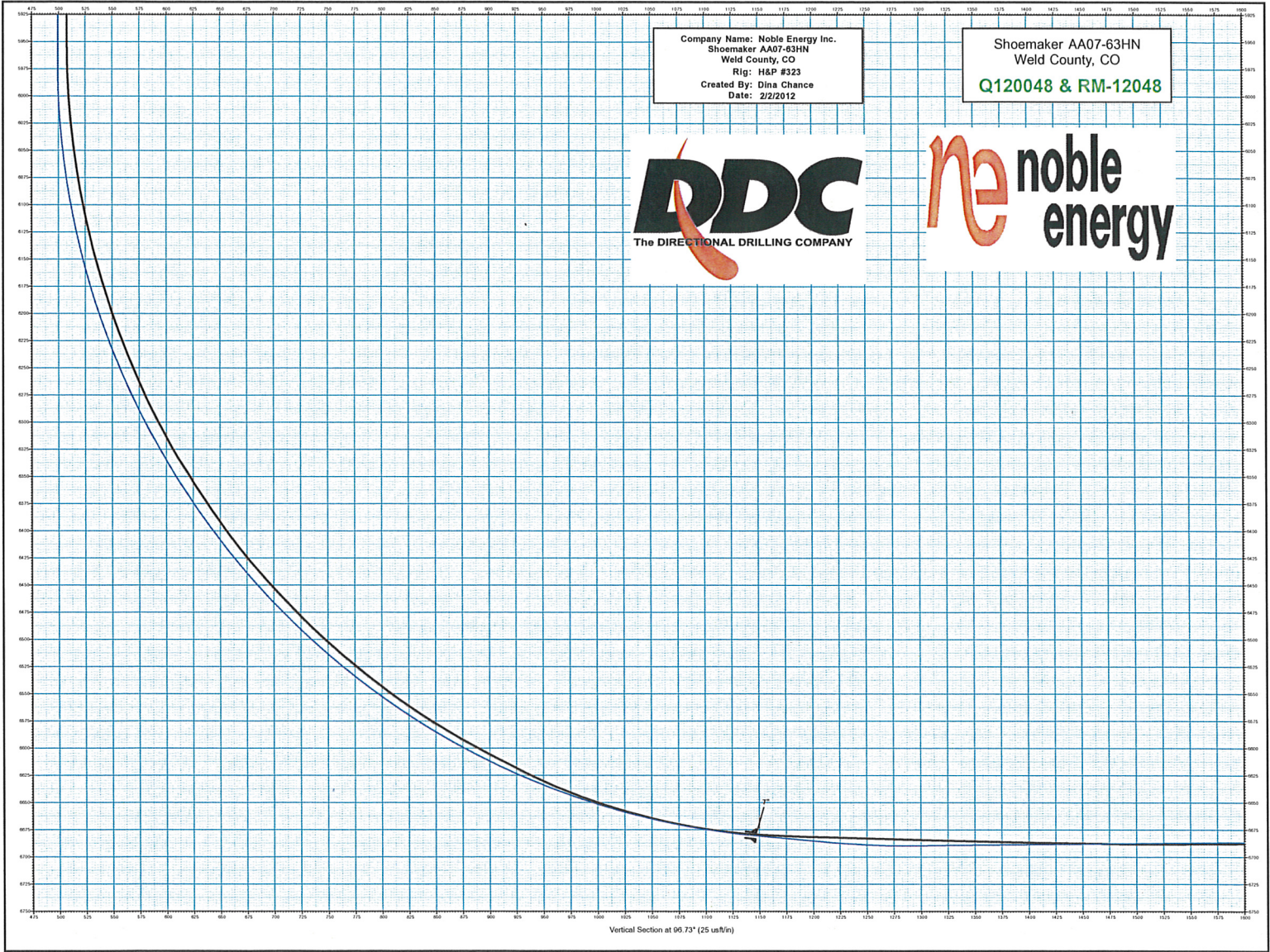
Type of Survey: MWD

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.c  
om, c=US  
Date: 2012.02.06 14:17:12 -06'00'

Larry Wright  
MWD General Manager





Company Name: Noble Energy Inc.  
Shoemaker AA07-63HN  
Weld County, CO  
Rlg: H&P #323  
Created By: Dina Chance  
Date: 2/2/2012

Shoemaker AA07-63HN  
Weld County, CO  
Q120048 & RM-12048



Azimuths to Grid North

Correction: 8.00°

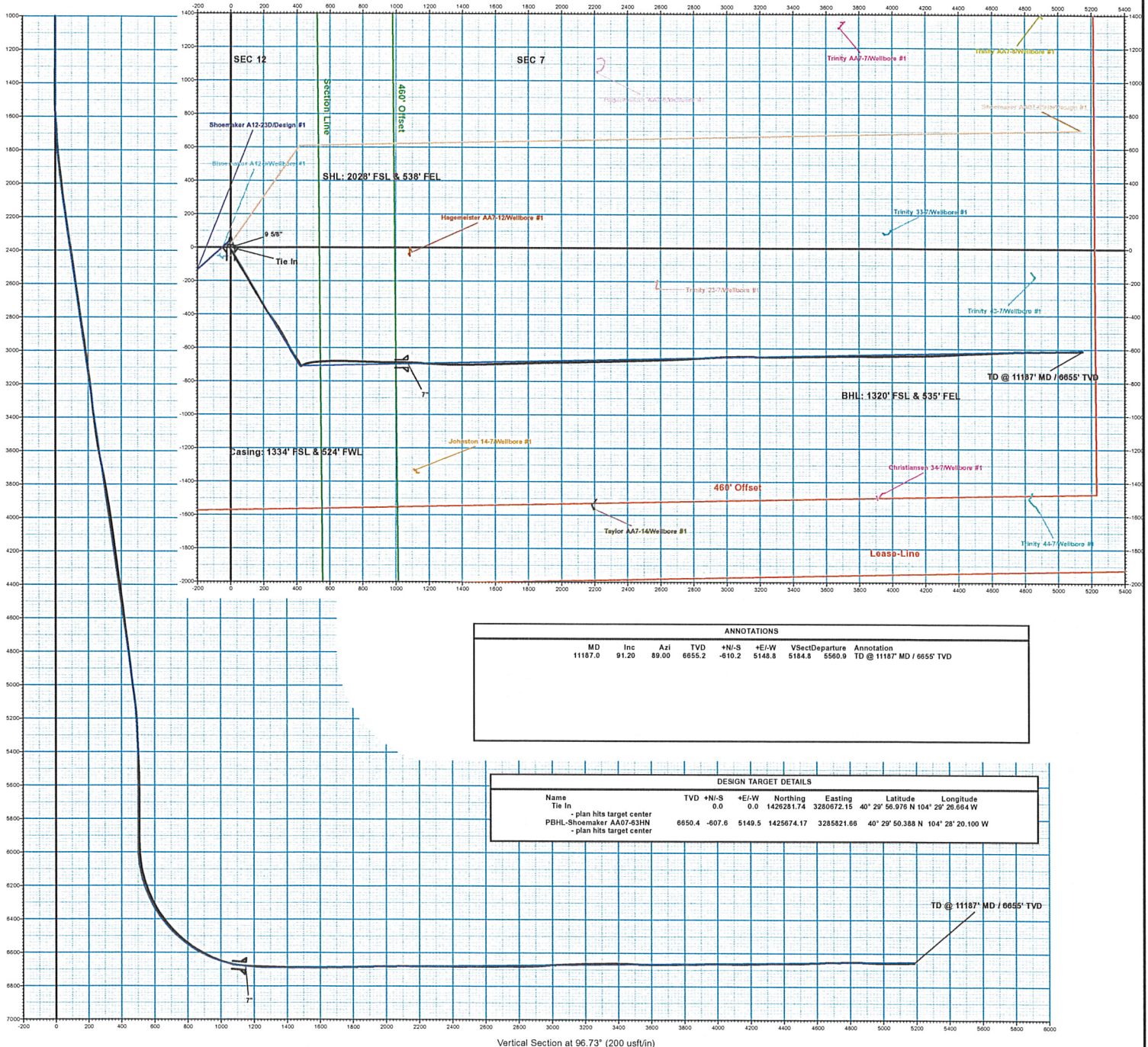
Magnetic Field  
Strength: 53157.2snT  
Dip Angle: 67.16°  
Date: 12/27/2011  
Model: IGRF2010

**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:** Shoemaker AA07-63HN

Ground Level: 4688.0  
+N/-S 0.0 +E/-W 0.0  
Northing 1429281.74 Easting 3280672.15  
Latitude 40° 29' 56.976 N Longitude 104° 29' 26.664 W



**ANNOTATIONS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
11187.0	91.20	89.00	6655.2	-610.2	5149.5	5184.5	5560.9	TD @ 11187' MD / 6655' TVD

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Tie In		0.0	0.0	1429281.74	3280672.15	40° 29' 56.976 N	104° 29' 26.664 W
- plan hits target center							
PBHL-Shoemaker AA07-63HN	6650.4	-607.6	5149.5	1425674.17	3285821.66	40° 29' 50.388 N	104° 28' 20.100 W
- plan hits target center							

Vertical Section at 96.73° (200 usft/in)