



Noble Energy Inc.

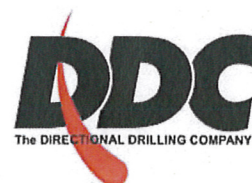
Weld County, CO
Sec. 12, T6N, R64W
Shoemaker PC A12-69HN

Wellbore #1

Survey: MWD Final

DDC Survey Report

05 March, 2012



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Shoemaker PC A12-69HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4744.0usft (H&P #323)
Site:	Sec. 12, T6N, R64W	MD Reference:	WELL @ 4744.0usft (H&P #323)
Well:	Shoemaker PC A12-69HN	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. 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 PC A12-69HN					
Well Position	+N/-S	0.0 usft	Northing:	1,429,156.95 usft	Latitude:	40° 30' 25.599 N
	+E/-W	0.0 usft	Easting:	3,278,770.68 usft	Longitude:	104° 29' 50.856 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,720.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/3/2012	8.64	67.16	53,149

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	86.10	

Survey Program		Date	3/5/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
905.0	11,919.0	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									
867.0	0.00	0.00	867.0	0.0	0.0	0.0	0.00	0.00	0.00
905.0	0.30	196.10	905.0	-0.1	0.0	0.0	0.79	0.79	0.00
1,151.0	0.20	204.90	1,151.0	-1.1	-0.4	-0.5	0.04	-0.04	3.58
1,436.0	0.00	184.60	1,436.0	-1.6	-0.6	-0.7	0.07	-0.07	0.00
1,719.0	0.30	243.00	1,719.0	-1.9	-1.3	-1.4	0.11	0.11	0.00
2,002.0	0.70	227.40	2,002.0	-3.4	-3.2	-3.4	0.15	0.14	-5.51
2,097.0	0.80	236.00	2,097.0	-4.2	-4.2	-4.4	0.16	0.11	9.05
2,195.0	1.40	89.00	2,195.0	-4.5	-3.5	-3.8	2.16	0.61	-150.00
2,290.0	3.40	82.00	2,289.9	-4.1	0.4	0.1	2.12	2.11	-7.37
2,385.0	5.10	63.40	2,384.6	-1.8	7.0	6.8	2.28	1.79	-19.58

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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)
2,480.0	6.20	58.10	2,479.2	2.8	15.1	15.3	1.28	1.16	-5.58
2,575.0	8.10	55.30	2,573.4	9.3	25.0	25.5	2.03	2.00	-2.95
2,670.0	10.60	51.80	2,667.1	18.5	37.3	38.5	2.70	2.63	-3.68
2,766.0	12.90	51.90	2,761.1	30.6	52.7	54.7	2.40	2.40	0.10
2,861.0	15.80	49.50	2,853.2	45.5	70.9	73.8	3.12	3.05	-2.53
2,956.0	16.80	53.20	2,944.3	62.2	91.7	95.7	1.52	1.05	3.89
3,051.0	16.40	54.80	3,035.4	78.1	113.7	118.7	0.64	-0.42	1.68
3,146.0	16.80	51.40	3,126.4	94.4	135.4	141.5	1.11	0.42	-3.58
3,242.0	14.60	54.80	3,218.8	110.0	156.1	163.2	2.48	-2.29	3.54
3,336.0	12.40	50.30	3,310.2	123.3	173.5	181.5	2.59	-2.34	-4.79
3,431.0	8.70	47.40	3,403.6	134.7	186.7	195.4	3.93	-3.89	-3.05
3,527.0	6.90	53.50	3,498.7	143.0	196.7	205.9	2.06	-1.88	6.35
3,622.0	7.60	54.20	3,593.0	150.1	206.4	216.1	0.74	0.74	0.74
3,717.0	9.70	52.50	3,686.9	158.7	217.8	228.1	2.23	2.21	-1.79
3,812.0	10.10	52.80	3,780.5	168.6	230.8	241.7	0.42	0.42	0.32
3,907.0	9.10	45.60	3,874.1	178.9	242.8	254.4	1.64	-1.05	-7.58
4,002.0	7.30	49.10	3,968.2	188.1	252.7	264.9	1.97	-1.89	3.68
4,096.0	4.00	40.00	4,061.7	194.5	259.3	272.0	3.63	-3.51	-9.68
4,191.0	1.30	37.20	4,156.6	197.9	262.1	275.0	2.84	-2.84	-2.95
4,286.0	1.10	280.60	4,251.6	198.9	261.9	274.8	2.15	-0.21	-122.74
4,382.0	1.10	276.60	4,347.6	199.2	260.1	273.0	0.08	0.00	-4.17
4,476.0	1.10	271.50	4,441.5	199.3	258.3	271.2	0.10	0.00	-5.43
4,571.0	1.40	267.40	4,536.5	199.3	256.2	269.2	0.33	0.32	-4.32
4,667.0	0.90	243.90	4,632.5	198.9	254.3	267.3	0.71	-0.52	-24.48
4,762.0	1.10	236.90	4,727.5	198.1	252.9	265.8	0.25	0.21	-7.37
4,857.0	1.70	249.70	4,822.5	197.1	250.8	263.6	0.71	0.63	13.47
4,952.0	1.90	259.90	4,917.4	196.3	247.9	260.7	0.40	0.21	10.74
5,047.0	0.40	309.10	5,012.4	196.3	246.1	258.9	1.75	-1.58	51.79
5,142.0	0.30	334.90	5,107.4	196.7	245.8	258.6	0.19	-0.11	27.16
5,237.0	0.30	40.90	5,202.4	197.1	245.8	258.7	0.34	0.00	69.47
5,332.0	0.30	75.80	5,297.4	197.4	246.2	259.1	0.19	0.00	36.74
5,428.0	0.30	105.90	5,393.4	197.4	246.7	259.6	0.16	0.00	31.35
5,523.0	1.20	109.10	5,488.4	197.0	247.9	260.7	0.95	0.95	3.37
5,618.0	1.60	101.70	5,583.3	196.4	250.1	262.9	0.46	0.42	-7.79
5,713.0	1.70	94.80	5,678.3	196.0	252.8	265.6	0.23	0.11	-7.26
5,808.0	1.60	101.50	5,773.3	195.6	255.5	268.3	0.23	-0.11	7.05
5,903.0	1.30	103.60	5,868.2	195.1	257.9	270.6	0.32	-0.32	2.21
5,934.0	1.40	104.00	5,899.2	194.9	258.6	271.3	0.32	0.32	1.29
5,999.0	1.20	109.80	5,964.2	194.5	260.0	272.6	0.37	-0.31	8.92
6,031.0	1.40	93.20	5,996.2	194.3	260.7	273.3	1.33	0.63	-51.88
6,062.0	3.00	62.70	6,027.2	194.7	261.8	274.5	6.22	5.16	-98.39
6,094.0	5.90	61.60	6,059.1	195.9	264.0	276.7	9.07	9.06	-3.44
6,126.0	8.60	65.80	6,090.8	197.6	267.6	280.5	8.59	8.44	13.13

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6,157.0	11.00	72.30	6,121.4	199.5	272.6	285.5	8.51	7.74	20.97
6,189.0	13.40	77.10	6,152.6	201.2	279.1	292.1	8.14	7.50	15.00
6,220.0	15.20	80.80	6,182.7	202.7	286.6	299.7	6.51	5.81	11.94
6,284.0	19.10	90.10	6,243.8	204.0	305.4	318.5	7.43	6.09	14.53
6,315.0	21.20	92.50	6,272.9	203.8	316.0	329.2	7.28	6.77	7.74
6,347.0	23.00	91.00	6,302.6	203.4	328.1	341.2	5.89	5.63	-4.69
6,378.0	24.80	85.90	6,330.9	203.8	340.6	353.7	8.83	5.81	-16.45
6,410.0	26.30	80.80	6,359.8	205.4	354.3	367.5	8.32	4.69	-15.94
6,451.0	29.60	83.80	6,396.0	207.9	373.4	386.6	8.75	8.05	7.32
6,484.0	31.40	84.40	6,424.4	209.6	390.0	403.4	5.53	5.45	1.82
6,504.0	33.60	85.20	6,441.3	210.6	400.7	414.1	11.21	11.00	4.00
6,536.0	35.90	86.20	6,467.6	212.0	418.9	432.4	7.40	7.19	3.13
6,568.0	38.30	88.20	6,493.1	212.9	438.2	451.6	8.39	7.50	6.25
6,599.0	39.50	88.70	6,517.3	213.4	457.6	471.1	4.00	3.87	1.61
6,631.0	42.60	89.60	6,541.4	213.7	478.7	492.1	9.86	9.69	2.81
6,662.0	44.90	88.80	6,563.8	214.0	500.1	513.5	7.63	7.42	-2.58
6,694.0	47.70	86.40	6,585.9	215.0	523.2	536.6	10.29	8.75	-7.50
6,726.0	50.90	83.80	6,606.7	217.1	547.4	560.9	11.74	10.00	-8.13
6,757.0	53.20	83.80	6,625.8	219.7	571.7	585.3	7.42	7.42	0.00
6,789.0	56.30	83.40	6,644.3	222.7	597.6	611.4	9.74	9.69	-1.25
6,829.0	59.80	84.60	6,665.4	226.2	631.4	645.3	9.11	8.75	3.00
6,855.0	63.10	84.10	6,677.9	228.4	654.1	668.1	12.80	12.69	-1.92
6,884.0	65.70	84.40	6,690.4	231.1	680.1	694.3	9.01	8.97	1.03
6,916.0	69.80	84.40	6,702.5	234.0	709.6	723.9	12.81	12.81	0.00
6,947.0	73.40	85.00	6,712.3	236.7	738.9	753.3	11.76	11.61	1.94
6,979.0	77.20	85.20	6,720.4	239.3	769.7	784.2	11.89	11.88	0.63
7,011.0	80.70	85.50	6,726.5	241.9	801.0	815.6	10.98	10.94	0.94
7,042.0	84.30	85.70	6,730.6	244.2	831.6	846.3	11.63	11.61	0.65
7,074.0	85.90	87.10	6,733.3	246.2	863.5	878.2	6.63	5.00	4.38
7,146.0	89.10	94.80	6,736.5	245.0	935.3	949.8	11.57	4.44	10.69
7,178.0	89.40	94.70	6,736.9	242.4	967.2	981.4	0.99	0.94	-0.31
7,273.0	91.10	92.90	6,736.5	236.1	1,062.0	1,075.6	2.61	1.79	-1.89
7,368.0	90.80	90.60	6,734.9	233.2	1,156.9	1,170.1	2.44	-0.32	-2.42
7,463.0	92.10	88.70	6,732.5	233.7	1,251.9	1,264.9	2.42	1.37	-2.00
7,558.0	91.40	88.70	6,729.6	235.9	1,346.8	1,359.7	0.74	-0.74	0.00
7,653.0	89.90	88.30	6,728.5	238.4	1,441.8	1,454.6	1.63	-1.58	-0.42
7,748.0	89.90	88.20	6,728.7	241.3	1,536.7	1,549.6	0.11	0.00	-0.11
7,843.0	90.60	88.50	6,728.3	244.0	1,631.7	1,644.5	0.80	0.74	0.32
7,938.0	90.20	87.40	6,727.6	247.4	1,726.6	1,739.5	1.23	-0.42	-1.16
8,033.0	90.20	85.50	6,727.3	253.3	1,821.4	1,834.4	2.00	0.00	-2.00
8,128.0	90.70	85.70	6,726.5	260.6	1,916.2	1,929.4	0.57	0.53	0.21
8,223.0	91.70	86.60	6,724.5	267.0	2,010.9	2,024.4	1.42	1.05	0.95
8,318.0	91.70	87.80	6,721.7	271.6	2,105.8	2,119.4	1.26	0.00	1.26

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8,413.0	90.30	87.40	6,720.1	275.6	2,200.7	2,214.3	1.53	-1.47	-0.42
8,509.0	91.00	87.30	6,719.0	280.0	2,296.5	2,310.3	0.74	0.73	-0.10
8,604.0	90.80	88.50	6,717.5	283.5	2,391.5	2,405.2	1.28	-0.21	1.26
8,699.0	90.30	87.30	6,716.6	287.0	2,486.4	2,500.2	1.37	-0.53	-1.26
8,794.0	90.90	89.40	6,715.6	289.7	2,581.4	2,595.1	2.30	0.63	2.21
8,889.0	91.40	89.40	6,713.7	290.7	2,676.3	2,689.9	0.53	0.53	0.00
8,984.0	91.40	89.90	6,711.3	291.3	2,771.3	2,784.7	0.53	0.00	0.53
9,079.0	90.00	89.60	6,710.2	291.7	2,866.3	2,879.5	1.51	-1.47	-0.32
9,174.0	90.80	89.70	6,709.5	292.3	2,961.3	2,974.3	0.85	0.84	0.11
9,269.0	90.80	90.30	6,708.2	292.3	3,056.3	3,069.1	0.63	0.00	0.63
9,364.0	89.00	90.10	6,708.4	292.0	3,151.3	3,163.8	1.91	-1.89	-0.21
9,460.0	89.30	90.60	6,709.8	291.4	3,247.3	3,259.6	0.61	0.31	0.52
9,554.0	89.80	91.80	6,710.5	289.4	3,341.2	3,353.2	1.38	0.53	1.28
9,649.0	89.30	91.30	6,711.3	286.8	3,436.2	3,447.7	0.74	-0.53	-0.53
9,745.0	89.30	88.70	6,712.4	286.8	3,532.2	3,543.5	2.71	0.00	-2.71
9,840.0	90.90	88.00	6,712.3	289.6	3,627.1	3,638.4	1.84	1.68	-0.74
9,935.0	91.30	88.00	6,710.4	292.9	3,722.1	3,733.4	0.42	0.42	0.00
10,030.0	91.80	88.00	6,707.9	296.2	3,817.0	3,828.3	0.53	0.53	0.00
10,125.0	90.40	87.10	6,706.1	300.3	3,911.9	3,923.2	1.75	-1.47	-0.95
10,220.0	91.20	87.30	6,704.7	304.9	4,006.7	4,018.2	0.87	0.84	0.21
10,315.0	90.80	87.10	6,703.1	309.5	4,101.6	4,113.2	0.47	-0.42	-0.21
10,410.0	91.70	87.80	6,701.0	313.8	4,196.5	4,208.1	1.20	0.95	0.74
10,505.0	89.80	88.30	6,699.8	317.0	4,291.4	4,303.0	2.07	-2.00	0.53
10,600.0	90.00	88.80	6,699.9	319.4	4,386.4	4,398.0	0.57	0.21	0.53
10,695.0	89.60	89.00	6,700.3	321.2	4,481.4	4,492.8	0.47	-0.42	0.21
10,790.0	90.40	87.60	6,700.3	324.0	4,576.3	4,587.8	1.70	0.84	-1.47
10,885.0	92.10	87.10	6,698.2	328.4	4,671.2	4,682.7	1.87	1.79	-0.53
10,917.0	92.20	87.40	6,697.0	330.0	4,703.1	4,714.7	0.99	0.31	0.94
10,980.0	92.00	86.60	6,694.7	333.3	4,766.0	4,777.6	1.31	-0.32	-1.27
11,075.0	92.90	86.60	6,690.6	338.9	4,860.8	4,872.5	0.95	0.95	0.00
11,138.0	91.50	85.70	6,688.2	343.1	4,923.6	4,935.5	2.64	-2.22	-1.43
11,170.0	91.20	86.20	6,687.4	345.4	4,955.5	4,967.5	1.82	-0.94	1.56
11,265.0	91.20	86.40	6,685.4	351.5	5,050.3	5,062.5	0.21	0.00	0.21
11,360.0	91.50	87.30	6,683.2	356.7	5,145.1	5,157.4	1.00	0.32	0.95
11,455.0	90.10	88.30	6,681.9	360.4	5,240.0	5,252.4	1.81	-1.47	1.05
11,550.0	89.70	88.30	6,682.1	363.2	5,335.0	5,347.3	0.42	-0.42	0.00
11,645.0	89.30	88.00	6,682.9	366.3	5,429.9	5,442.2	0.53	-0.42	-0.32
11,740.0	88.70	88.20	6,684.5	369.4	5,524.8	5,537.2	0.67	-0.63	0.21
11,835.0	88.60	88.30	6,686.8	372.3	5,619.8	5,632.1	0.15	-0.11	0.11
11,866.0	88.60	88.30	6,687.5	373.2	5,650.7	5,663.0	0.00	0.00	0.00
TD @ 11919' MD / 6689' TVD									
11,919.0	88.60	88.30	6,688.8	374.8	5,703.7	5,716.0	0.00	0.00	0.00

Company: Noble Energy Inc.
Project: Weld County, CO
Site: Sec. 12, T6N, R64W
Well: Shoemaker PC A12-69HN
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Shoemaker PC A12-69HN
TVD Reference: WELL @ 4744.0usft (H&P #323)
MD Reference: WELL @ 4744.0usft (H&P #323)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
867.0	867.0	0.0	0.0	Tie In
11,919.0	6,688.8	374.8	5,703.7	TD @ 11919' MD / 6689' TVD

Checked By: _____ Approved By: _____ Date: _____



Survey Certification Sheet

Noble Energy
Company

RM-12127
Job Number

3/5/12
Date

Sec 12, T6N, R64W
Lease

Shoemaker PC A12-69HN
Well Name

Weld, CO
County & State

Surveyed from a depth of: 867 feet to 11919 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Boyd Wolff

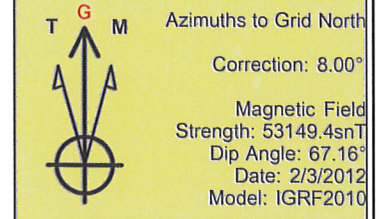
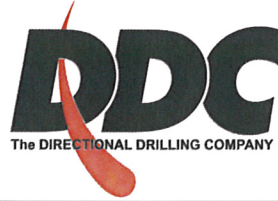
The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore 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: 2012.03.06 16:17:56 -0600

Larry Wright
MWD General Manager

Company Name: Noble Energy Inc.
Shoemaker PC A12-69HN
Weld County, CO
Rig: H&P #323
Created By: Dina Chance
Date: 3/5/2012

Shoemaker PC A12-69HN
Weld County, CO
Q120086 & RM-12127

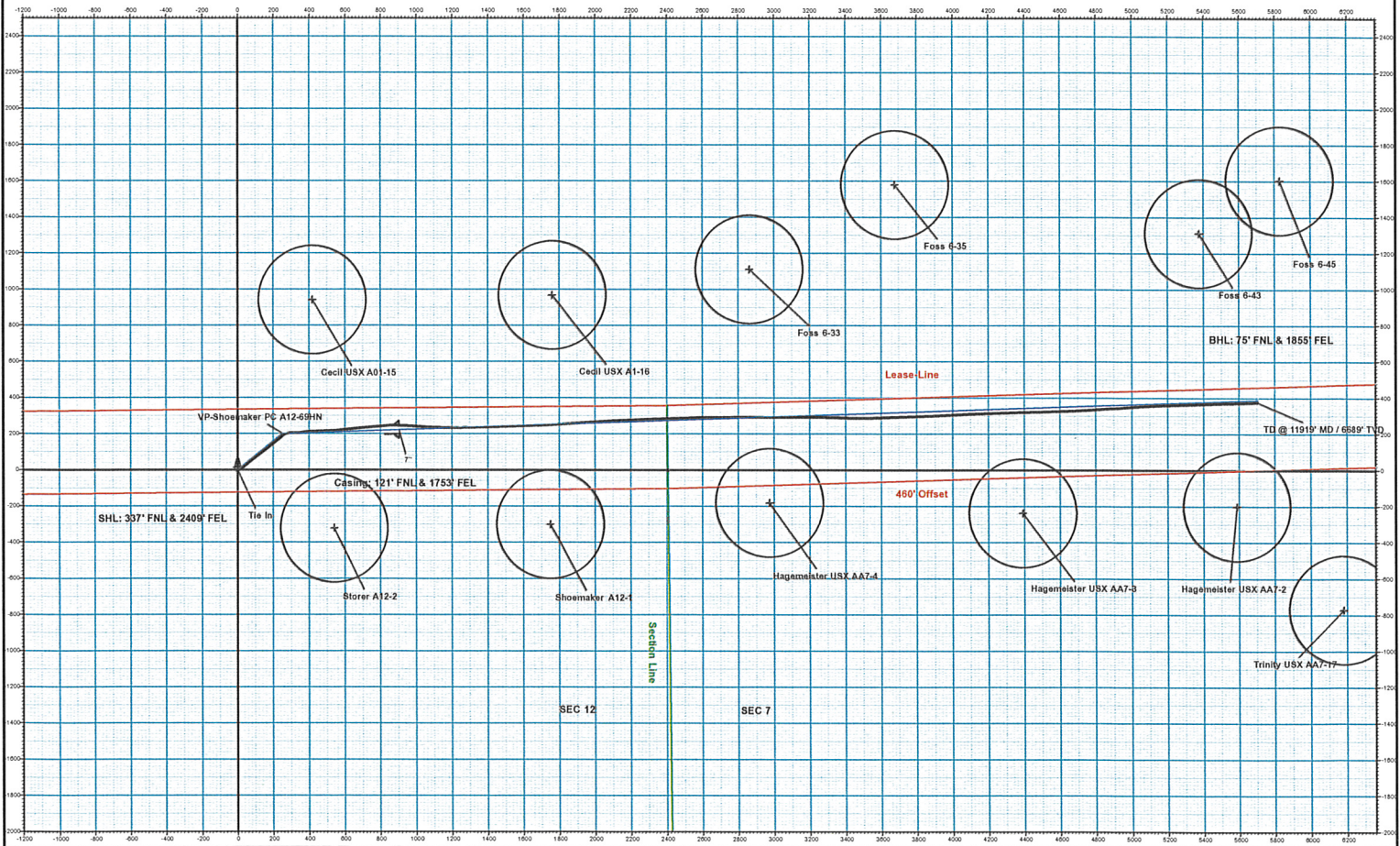


PROJECT DETAILS: Weld County, CO

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

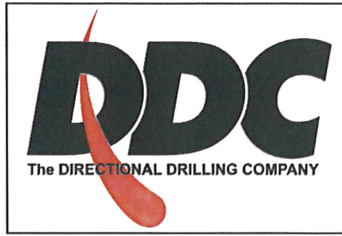
WELL DETAILS: Shoemaker PC A12-69HN

+N/-S	+E/-W	Ground Level	Easting	Northing	Latitude	Longitude
0.0	0.0	4720.0	1429156.95	3278770.67	40° 30' 25.599 N	104° 29' 50.856 W



Company Name: Noble Energy Inc.
Shoemaker PC A12-69HN
Weld County, CO
Rig: H&P #323
Created By: Dina Chance
Date: 3/5/2012

Shoemaker PC A12-69HN
Weld County, CO
Q120086 & RM-12127



Azimuths to Grid North

Correction: 8.00°

Magnetic Field
Strength: 53149.4snT
Dip Angle: 67.16°
Date: 2/3/2012
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 PC A12-69HN

Ground Level: 4720.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 1429156.95 3278770.67 40° 30' 25.599 N 104° 29' 50.856 W

