



Noble Energy Inc.

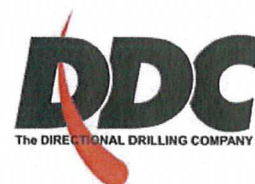
Weld County, CO
Sec 28, T9N, R59W, 6th PM
Ptasnik LC28-76HN

Wellbore #1

Survey: MWD **FINAL**

DDC Survey Report

11 January, 2013



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Ptasnik LC28-76HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4872.0usft (H&P #326)
Site:	Sec 28, T9N, R59W, 6th PM	MD Reference:	WELL @ 4872.0usft (H&P #326)
Well:	Ptasnik LC28-76HN	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 28, T9N, R59W, 6th PM		
Site Position:		Northing:	1,506,743.69 usft
From:	Map	Easting:	3,420,557.77 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	40° 42' 52.295 N
		Longitude:	103° 58' 58.302 W
		Grid Convergence:	0.98 °

Well	Ptasnik LC28-76HN		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	
			usft
		Latitude:	40° 42' 52.295 N
		Longitude:	103° 58' 58.302 W
		Ground Level:	4,842.0 usft

Wellbore	Wellbore #1		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/20/2012	8.27	67.38	53,225

Design	Wellbore #1		
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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	350.37

Survey Program		Date	1/11/2013	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
652.0	10,435.0	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)
641.0	0.00	0.00	641.0	0.0	0.0	0.0	0.00	0.00	0.00
TIE IN @ 641' MD / 641' TVD									
641.1	0.00	317.40	641.1	0.0	0.0	0.0	0.00	0.00	0.00
652.0	0.20	317.40	652.0	0.0	0.0	0.0	1.83	1.83	0.00
936.0	0.20	338.80	936.0	0.8	-0.5	0.9	0.03	0.00	7.54
1,219.0	0.10	114.70	1,219.0	1.2	-0.5	1.3	0.10	-0.04	48.02
1,502.0	0.50	288.30	1,502.0	1.5	-1.4	1.7	0.21	0.14	61.34
1,594.0	3.80	283.60	1,593.9	2.3	-4.8	3.1	3.59	3.59	-5.11
1,688.0	5.70	278.00	1,687.6	3.7	-12.4	5.7	2.08	2.02	-5.96
1,781.0	8.40	271.10	1,779.9	4.5	-23.8	8.4	3.04	2.90	-7.42
1,873.0	12.00	274.80	1,870.4	5.4	-40.0	12.0	3.98	3.91	4.02

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Well:	Ptasnik LC28-76HN	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)
1,965.0	15.10	266.90	1,959.8	5.6	-61.6	15.8	3.92	3.37	-8.59
2,058.0	17.10	263.20	2,049.2	3.3	-87.2	17.8	2.42	2.15	-3.98
2,151.0	15.60	262.50	2,138.4	0.0	-113.2	19.0	1.63	-1.61	-0.75
2,245.0	18.00	265.30	2,228.4	-2.8	-140.2	20.7	2.69	2.55	2.98
2,338.0	16.60	264.10	2,317.2	-5.3	-167.7	22.8	1.55	-1.51	-1.29
2,430.0	15.60	263.90	2,405.6	-8.0	-193.1	24.4	1.09	-1.09	-0.22
2,523.0	16.60	257.60	2,495.0	-12.2	-218.5	24.5	2.16	1.08	-6.77
2,617.0	16.50	258.10	2,585.1	-17.8	-244.7	23.4	0.19	-0.11	0.53
2,711.0	16.40	257.10	2,675.2	-23.5	-270.7	22.1	0.32	-0.11	-1.06
2,805.0	16.40	256.40	2,765.4	-29.6	-296.5	20.4	0.21	0.00	-0.74
2,899.0	16.10	256.00	2,855.6	-35.9	-322.1	18.5	0.34	-0.32	-0.43
2,994.0	17.70	259.00	2,946.5	-41.8	-349.0	17.2	1.92	1.68	3.16
3,089.0	16.40	257.10	3,037.4	-47.6	-376.3	16.0	1.49	-1.37	-2.00
3,184.0	14.50	259.00	3,128.9	-52.9	-401.0	15.0	2.07	-2.00	2.00
3,279.0	16.50	260.60	3,220.5	-57.3	-426.0	14.8	2.15	2.11	1.68
3,373.0	18.80	256.40	3,310.0	-63.1	-453.9	13.8	2.80	2.45	-4.47
3,468.0	19.40	256.40	3,399.8	-70.4	-484.1	11.6	0.63	0.63	0.00
3,563.0	19.90	256.20	3,489.3	-77.9	-515.2	9.4	0.53	0.53	-0.21
3,658.0	17.10	256.50	3,579.4	-85.1	-544.5	7.2	2.95	-2.95	0.32
3,753.0	14.40	252.30	3,670.8	-91.9	-569.3	4.6	3.08	-2.84	-4.42
3,847.0	14.30	251.80	3,761.8	-99.1	-591.5	1.3	0.17	-0.11	-0.53
3,942.0	11.20	256.00	3,854.5	-105.0	-611.6	-1.2	3.40	-3.26	4.42
4,037.0	9.30	253.70	3,948.0	-109.4	-627.9	-2.8	2.05	-2.00	-2.42
4,132.0	7.00	247.90	4,042.0	-113.7	-640.6	-4.9	2.57	-2.42	-6.11
4,227.0	5.50	240.90	4,136.4	-118.1	-650.0	-7.7	1.77	-1.58	-7.37
4,322.0	4.50	234.40	4,231.1	-122.5	-657.0	-10.8	1.21	-1.05	-6.84
4,417.0	1.10	192.50	4,326.0	-125.6	-660.2	-13.3	3.95	-3.58	-44.11
4,512.0	1.60	0.80	4,421.0	-125.1	-660.4	-12.9	2.83	0.53	177.16
4,607.0	1.40	78.60	4,515.9	-123.6	-659.2	-11.5	1.99	-0.21	81.89
4,702.0	1.60	95.30	4,610.9	-123.5	-656.8	-11.8	0.50	0.21	17.58
4,797.0	1.60	62.10	4,705.9	-123.0	-654.3	-11.7	0.96	0.00	-34.95
4,892.0	1.50	45.60	4,800.8	-121.5	-652.2	-10.6	0.48	-0.11	-17.37
4,987.0	1.50	27.00	4,895.8	-119.5	-650.8	-8.9	0.51	0.00	-19.58
5,082.0	1.30	19.00	4,990.8	-117.4	-649.8	-7.0	0.29	-0.21	-8.42
5,176.0	2.00	276.20	5,084.7	-116.2	-651.1	-5.6	2.78	0.74	-109.36
5,271.0	1.60	277.80	5,179.7	-115.8	-654.1	-4.7	0.42	-0.42	1.68
5,333.0	1.20	279.60	5,241.7	-115.6	-655.6	-4.3	0.65	-0.65	2.90
5,364.0	1.10	286.80	5,272.7	-115.5	-656.2	-4.0	0.57	-0.32	23.23
5,459.0	2.30	324.60	5,367.6	-113.6	-658.2	-1.9	1.66	1.26	39.79
5,554.0	11.20	353.60	5,461.9	-102.9	-660.3	9.1	9.74	9.37	30.53
5,649.0	19.70	359.20	5,553.4	-77.7	-661.6	34.1	9.07	8.95	5.89
5,744.0	28.00	359.90	5,640.2	-39.3	-661.8	72.0	8.74	8.74	0.74
5,839.0	38.40	358.80	5,719.6	12.7	-662.5	123.3	10.97	10.95	-1.16

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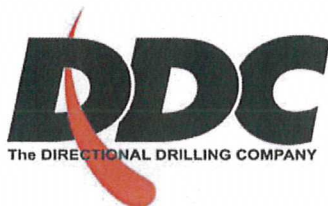
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,934.0	46.20	356.50	5,789.8	76.5	-665.2	186.7	8.37	8.21	-2.42
6,029.0	50.40	356.40	5,853.0	147.3	-669.6	257.2	4.42	4.42	-0.11
6,074.0	50.70	356.40	5,881.6	181.9	-671.8	291.8	0.67	0.67	0.00
6,124.0	53.50	357.30	5,912.3	221.3	-673.9	331.0	5.78	5.60	1.80
6,169.0	58.00	359.20	5,937.6	258.5	-675.1	367.8	10.59	10.00	4.22
6,219.0	61.50	359.90	5,962.8	301.7	-675.4	410.4	7.10	7.00	1.40
6,264.0	61.10	359.00	5,984.4	341.1	-675.8	449.4	1.97	-0.89	-2.00
6,314.0	66.80	357.80	6,006.3	386.0	-677.0	493.9	11.60	11.40	-2.40
CROSSED HARD LINE @ 6350' MD / 6019' TVD									
6,350.0	71.28	357.80	6,019.2	419.6	-678.3	527.2	12.44	12.44	0.00
6,359.0	72.40	357.80	6,022.0	428.2	-678.7	535.7	12.44	12.44	0.00
6,409.0	77.30	358.80	6,035.1	476.4	-680.1	583.5	9.99	9.80	2.00
6,454.0	80.00	359.40	6,043.9	520.5	-680.8	627.1	6.14	6.00	1.33
6,562.0	85.70	358.70	6,057.4	627.6	-682.6	733.0	5.32	5.28	-0.65
6,656.0	90.80	358.70	6,060.2	721.5	-684.7	825.9	5.43	5.43	0.00
6,751.0	90.80	357.60	6,058.9	816.4	-687.8	920.0	1.16	0.00	-1.16
6,846.0	90.60	357.60	6,057.8	911.3	-691.7	1,014.2	0.21	-0.21	0.00
6,941.0	88.90	0.60	6,058.2	1,006.3	-693.2	1,108.1	3.63	-1.79	3.16
7,036.0	87.10	359.50	6,061.5	1,101.3	-693.1	1,201.7	2.22	-1.89	-1.16
7,131.0	87.90	359.70	6,065.6	1,196.2	-693.8	1,295.4	0.87	0.84	0.21
7,226.0	88.60	359.20	6,068.5	1,291.1	-694.7	1,389.2	0.91	0.74	-0.53
7,321.0	89.10	359.00	6,070.4	1,386.1	-696.2	1,483.0	0.57	0.53	-0.21
7,416.0	89.90	358.70	6,071.3	1,481.1	-698.1	1,577.0	0.90	0.84	-0.32
7,511.0	91.00	358.70	6,070.5	1,576.0	-700.3	1,671.0	1.16	1.16	0.00
7,606.0	89.40	357.80	6,070.2	1,671.0	-703.2	1,765.1	1.93	-1.68	-0.95
7,701.0	90.60	357.80	6,070.2	1,765.9	-706.8	1,859.3	1.26	1.26	0.00
7,797.0	91.50	357.30	6,068.4	1,861.8	-710.9	1,954.5	1.07	0.94	-0.52
7,891.0	90.00	358.70	6,067.2	1,955.7	-714.2	2,047.7	2.18	-1.60	1.49
7,986.0	88.80	0.80	6,068.2	2,050.7	-714.6	2,141.4	2.55	-1.26	2.21
8,081.0	88.40	0.40	6,070.5	2,145.7	-713.6	2,234.8	0.60	-0.42	-0.42
8,176.0	89.00	0.40	6,072.7	2,240.7	-713.0	2,328.4	0.63	0.63	0.00
8,271.0	89.80	359.70	6,073.7	2,335.6	-712.9	2,422.0	1.12	0.84	-0.74
8,365.0	90.80	359.70	6,073.2	2,429.6	-713.4	2,514.8	1.06	1.06	0.00
8,460.0	89.90	359.20	6,072.6	2,524.6	-714.3	2,608.6	1.08	-0.95	-0.53
8,555.0	90.70	358.00	6,072.1	2,619.6	-716.6	2,702.6	1.52	0.84	-1.26
8,650.0	88.80	359.00	6,072.5	2,714.6	-719.1	2,796.6	2.26	-2.00	1.05
8,745.0	89.90	359.00	6,073.6	2,809.5	-720.7	2,890.5	1.16	1.16	0.00
8,840.0	90.50	357.80	6,073.3	2,904.5	-723.4	2,984.6	1.41	0.63	-1.26
8,935.0	90.90	358.50	6,072.1	2,999.4	-726.5	3,078.7	0.85	0.42	0.74
9,030.0	89.30	358.80	6,071.9	3,094.4	-728.7	3,172.7	1.71	-1.68	0.32
9,125.0	91.60	359.40	6,071.2	3,189.4	-730.2	3,266.6	2.50	2.42	0.63
9,220.0	89.30	358.10	6,070.4	3,284.4	-732.3	3,360.6	2.78	-2.42	-1.37
9,315.0	87.70	356.70	6,072.9	3,379.2	-736.6	3,454.8	2.24	-1.68	-1.47

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Well:	Ptasnik LC28-76HN	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)
9,410.0	88.30	356.00	6,076.2	3,474.0	-742.6	3,549.3	0.97	0.63	-0.74
9,505.0	88.60	355.50	6,078.8	3,568.7	-749.7	3,643.8	0.61	0.32	-0.53
9,600.0	90.40	355.30	6,079.6	3,663.4	-757.3	3,738.4	1.91	1.89	-0.21
9,695.0	90.50	357.80	6,078.9	3,758.2	-763.0	3,832.9	2.63	0.11	2.63
9,790.0	89.70	359.70	6,078.7	3,853.2	-765.1	3,926.8	2.17	-0.84	2.00
9,885.0	90.80	359.70	6,078.3	3,948.2	-765.6	4,020.6	1.16	1.16	0.00
9,980.0	90.60	0.80	6,077.2	4,043.1	-765.1	4,114.2	1.18	-0.21	1.16
10,075.0	89.30	1.60	6,077.2	4,138.1	-763.2	4,207.5	1.61	-1.37	0.84
10,169.0	88.50	0.20	6,079.0	4,232.1	-761.7	4,299.9	1.72	-0.85	-1.49
10,264.0	88.60	359.50	6,081.4	4,327.1	-761.9	4,393.5	0.74	0.11	-0.74
10,359.0	88.10	359.40	6,084.2	4,422.0	-762.8	4,487.3	0.54	-0.53	-0.11
TD @ 10434' MD / 6086' TVD									
10,434.0	89.48	359.70	6,085.8	4,497.0	-763.4	4,561.3	1.88	1.84	0.39
10,435.0	89.50	359.70	6,085.8	4,498.0	-763.4	4,562.3	1.88	1.84	0.39

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
641.1	641.1	0.0	0.0	TIE IN @ 641' MD / 641' TVD
6,350.0	6,019.2	419.6	-678.3	CROSSED HARD LINE @ 6350' MD / 6019' TVD
10,434.0	6,085.8	4,497.0	-763.4	TD @ 10434' MD / 6086' TVD

Checked By: _____ Approved By: _____ Date: _____



Survey Certification Sheet

Noble Energy
Company

RM-12977
Job Number

1/11/13
Date

Sec28, T9N, R59W, 6th PM
Lease

Ptasnik LC28-76HN
Well Name

Weld, CO
County & State

Surveyed from a depth of: 641 feet to 10434 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Bob Kubistek

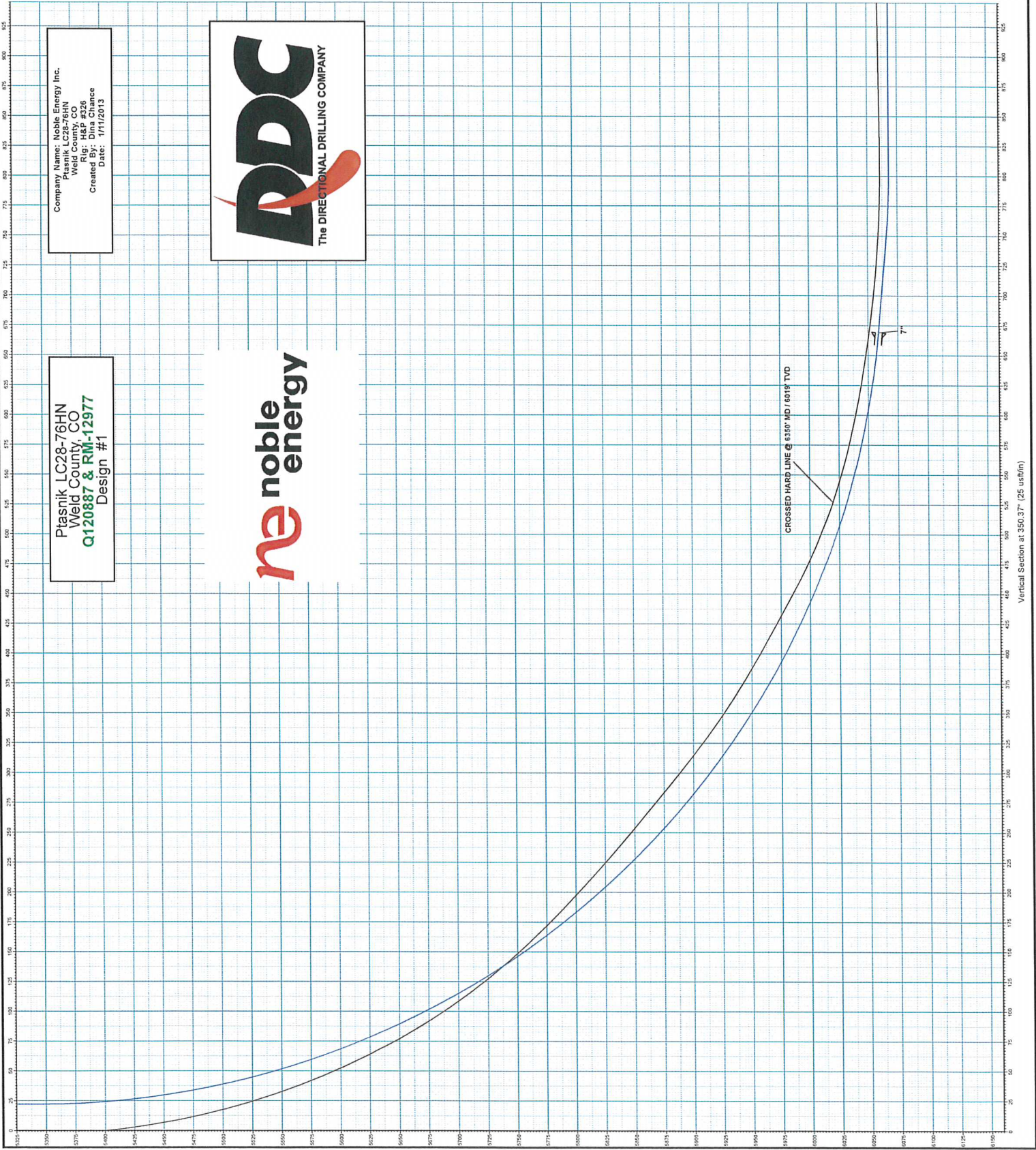
The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore 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@directionaldriller
s.com, c=US
Date: 2013.01.14 12:55:42
-06'00'

Larry Wright
MWD General Manager

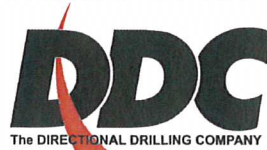
Ptasnik LC28-76HN
Weld County, CO
Q120887 & RM-12977
Design #1

Company Name: Noble Energy Inc.
Ptasnik LC28-76HN
Weld County, CO
Created By: Dina Chance
Date: 1/11/2013



Company Name: Noble Energy Inc.
 Ptasnik LC28-76HN
 Weld County, CO
 Rig: H&P #326
 Created By: Dina Chance
 Date: 1/11/2013

Ptasnik LC28-76HN
 Weld County, CO
 Q120887 & RM-12977
 Design #1

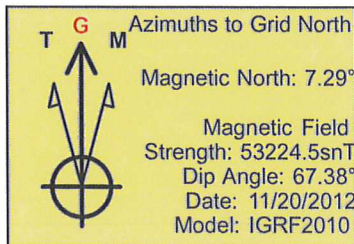


PROJECT DETAILS: Weld County, CO

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: Ptasnik LC28-76HN

Ground Level: 4842.0
 Northing Easting Latitude Longitude
 0.0 0.0 1506743.69 3420557.77 40° 42' 52.295 N 103° 58' 58.302 W



Azimuths to Grid North

Magnetic North: 7.29°

Magnetic Field

Strength: 53224.5snT

Dip Angle: 67.38°

Date: 11/20/2012

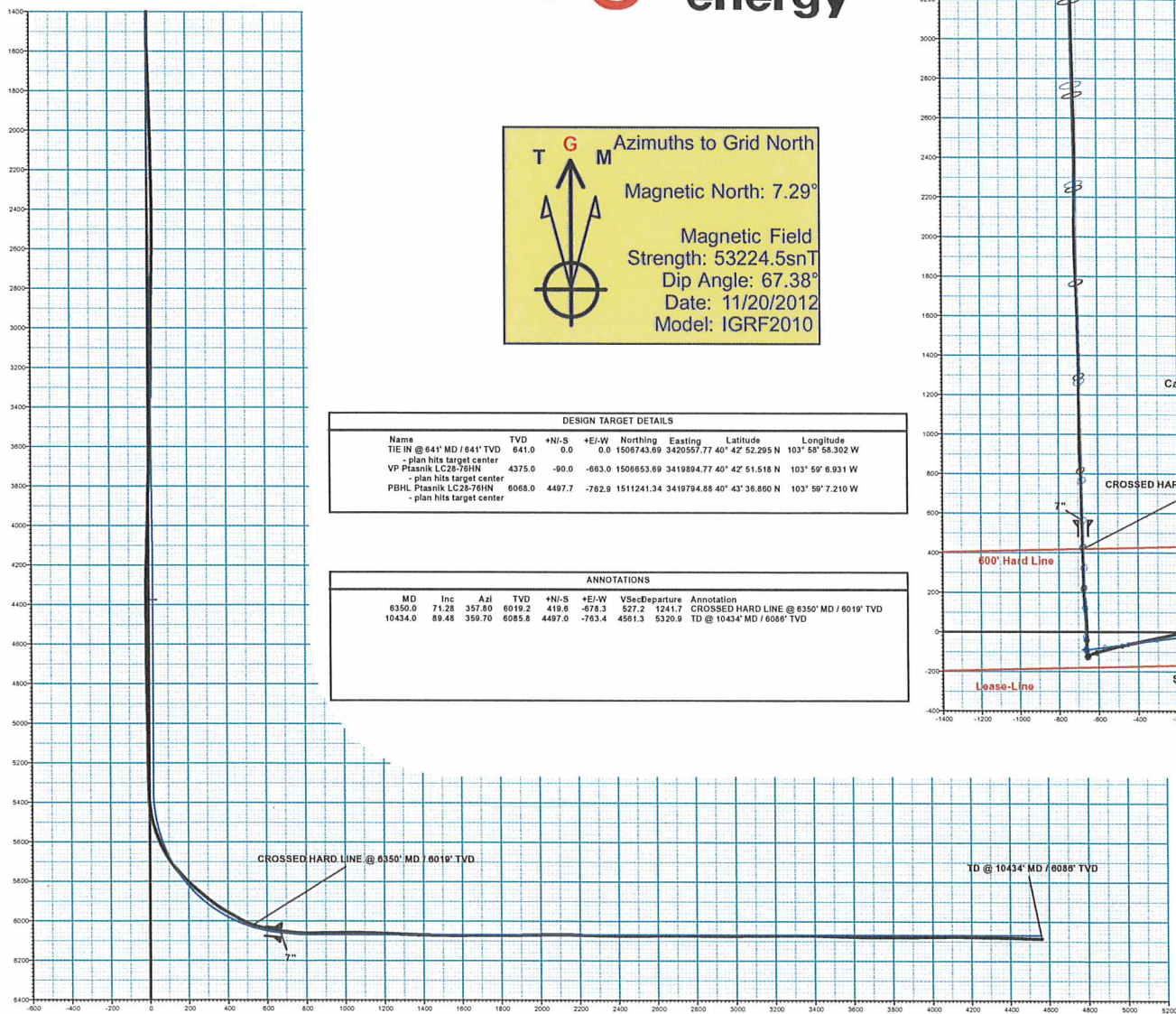
Model: IGRF2010

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
TIE IN @ 641' MD / 641' TVD	641.0	0.0	0.0	1506743.69	3420557.77	40° 42' 52.295 N	103° 58' 58.302 W
- plan hits target center							
VP Ptasnik LC28-76HN	4375.0	-90.0	-663.0	1506653.69	3419894.77	40° 42' 51.518 N	103° 59' 6.931 W
- plan hits target center							
PBHL Ptasnik LC28-76HN	6068.0	4497.7	-762.9	1511241.34	3419794.88	40° 43' 36.860 N	103° 59' 7.210 W
- plan hits target center							

ANNOTATIONS

MD	Inc	Azi	TVD	+N-S	+E-W	VsctDeparture	Annotation
6350.0	71.28	357.80	6019.2	419.8	-678.3	527.2 1241.7	CROSSED HARD LINE @ 6350' MD / 6019' TVD
10434.0	89.48	359.70	6085.8	4497.0	-763.4	4561.3 5320.9	TD @ 10434' MD / 6086' TVD



Vertical Section at 350.37° (200 usft/in)

