



Noble Energy Inc.

Weld County, CO

Sec 29, T9N, R59W, 6th PM

Tina LC29-73-1HNA

Wellbore #1

Design: Wellbore #1 **FINAL**

DDC Survey Report

27 June, 2014



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Tina LC29-73-1HNA
Project:	Weld County, CO	TVD Reference:	WELL @ 4895.0usft (H&P #326)
Site:	Sec 29, T9N, R59W, 6th PM	MD Reference:	WELL @ 4895.0usft (H&P #326)
Well:	Tina LC29-73-1HNA	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 29, T9N, R59W, 6th PM				
Site Position:		Northing:	1,506,859.55 usft	Latitude:	40° 42' 53.970 N
From:	Map	Easting:	3,417,411.39 usft	Longitude:	103° 59' 39.130 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.97 °

Well	Tina LC29-73-1HNA					
Well Position	+N/-S	0.0 usft	Northing:	1,506,937.98 usft	Latitude:	40° 42' 54.828 N
	+E/-W	0.0 usft	Easting:	3,416,917.31 usft	Longitude:	103° 59' 45.528 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,865.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/1/2014	8.08	67.33	53,070

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	358.77	

Survey Program		Date	6/27/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
335.0	600.0	Surface Surveys (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
722.0	6,382.0	MWD Surveys - Vert/Build (Wellbore #1)	MWD default	MWD - Standard	
6,456.0	15,463.0	MWD Surveys - Lateral (Wellbore #1)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction	

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
335.0	0.40	208.39	335.0	-1.0	-0.6	-1.0	0.12	0.12	0.00
TIE IN @ 600' MD / 600' TVD END OF SURFACE HOLE / BEGIN INT HOLE									
600.0	0.60	257.59	600.0	-2.1	-2.4	-2.1	0.17	0.08	18.57
722.0	0.35	305.49	722.0	-2.1	-3.3	-2.0	0.37	-0.20	39.26
813.0	0.26	291.52	813.0	-1.8	-3.7	-1.7	0.13	-0.10	-15.35
906.0	0.26	287.56	906.0	-1.7	-4.1	-1.6	0.02	0.00	-4.26
999.0	0.35	304.70	999.0	-1.5	-4.5	-1.4	0.14	0.10	18.43
1,092.0	0.09	349.26	1,092.0	-1.2	-4.8	-1.1	0.31	-0.28	47.91

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Project: Weld County, CO
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Well: Tina LC29-73-1HNA
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tina LC29-73-1HNA
TVD Reference: WELL @ 4895.0usft (H&P #326)
MD Reference: WELL @ 4895.0usft (H&P #326)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
1,185.0	0.18	318.59	1,185.0	-1.0	-4.9	-0.9	0.12	0.10	-32.98
1,279.0	0.18	276.75	1,279.0	-0.9	-5.1	-0.8	0.14	0.00	-44.51
1,371.0	0.26	288.35	1,371.0	-0.8	-5.5	-0.7	0.10	0.09	12.61
1,464.0	0.18	278.33	1,464.0	-0.7	-5.8	-0.6	0.10	-0.09	-10.77
1,557.0	0.09	295.21	1,557.0	-0.7	-6.0	-0.6	0.10	-0.10	18.15
1,649.0	0.18	11.50	1,649.0	-0.5	-6.1	-0.4	0.20	0.10	82.92
1,743.0	0.18	318.76	1,743.0	-0.3	-6.1	-0.1	0.17	0.00	-56.11
1,835.0	2.02	199.06	1,835.0	-1.7	-6.8	-1.5	2.30	2.00	-130.11
1,927.0	4.92	186.31	1,926.8	-7.1	-7.7	-7.0	3.24	3.15	-13.86
2,020.0	5.72	176.91	2,019.4	-15.7	-7.9	-15.6	1.27	0.86	-10.11
2,114.0	6.51	180.42	2,112.8	-25.7	-7.7	-25.6	0.93	0.84	3.73
2,207.0	8.71	177.26	2,205.0	-38.0	-7.4	-37.9	2.41	2.37	-3.40
2,302.0	9.85	179.28	2,298.8	-53.4	-7.0	-53.2	1.25	1.20	2.13
2,396.0	10.82	181.39	2,391.3	-70.2	-7.1	-70.1	1.11	1.03	2.24
2,490.0	12.49	179.72	2,483.3	-89.2	-7.2	-89.0	1.81	1.78	-1.78
2,584.0	12.40	178.14	2,575.1	-109.5	-6.9	-109.3	0.37	-0.10	-1.68
2,679.0	12.84	177.70	2,667.8	-130.2	-6.1	-130.0	0.47	0.46	-0.46
2,773.0	10.90	175.41	2,759.8	-149.5	-5.0	-149.4	2.12	-2.06	-2.44
2,868.0	8.00	174.36	2,853.5	-165.0	-3.6	-164.9	3.06	-3.05	-1.11
2,963.0	7.03	162.49	2,947.7	-177.2	-1.2	-177.1	1.92	-1.02	-12.49
3,057.0	4.57	151.07	3,041.2	-185.9	2.3	-185.9	2.88	-2.62	-12.15
3,151.0	3.61	149.57	3,135.0	-191.8	5.7	-191.8	1.03	-1.02	-1.60
3,246.0	2.11	109.58	3,229.8	-194.9	8.8	-195.1	2.54	-1.58	-42.09
3,340.0	1.93	69.94	3,323.8	-195.0	11.9	-195.2	1.47	-0.19	-42.17
3,434.0	1.93	27.23	3,417.7	-193.0	14.1	-193.3	1.50	0.00	-45.44
3,529.0	2.29	26.26	3,512.7	-189.9	15.7	-190.2	0.38	0.38	-1.02
3,623.0	1.67	327.82	3,606.6	-187.0	15.8	-187.3	2.14	-0.66	-62.17
3,717.0	1.93	316.13	3,700.6	-184.7	14.0	-185.0	0.48	0.28	-12.44
3,812.0	1.85	316.04	3,795.5	-182.5	11.8	-182.7	0.08	-0.08	-0.09
3,907.0	1.85	316.65	3,890.5	-180.3	9.7	-180.4	0.02	0.00	0.64
4,001.0	1.76	312.52	3,984.4	-178.2	7.6	-178.3	0.17	-0.10	-4.39
4,096.0	1.58	214.52	4,079.4	-178.3	5.8	-178.4	2.66	-0.19	-103.16
4,190.0	1.32	181.65	4,173.4	-180.4	5.0	-180.5	0.91	-0.28	-34.97
4,284.0	1.06	170.75	4,267.4	-182.4	5.1	-182.4	0.37	-0.28	-11.60
4,379.0	1.14	149.84	4,362.3	-184.0	5.7	-184.1	0.43	0.08	-22.01
4,473.0	1.06	108.62	4,456.3	-185.1	7.0	-185.2	0.83	-0.09	-43.85
4,568.0	1.14	126.02	4,551.3	-186.0	8.6	-186.1	0.36	0.08	18.32
4,662.0	1.23	146.58	4,645.3	-187.4	9.9	-187.5	0.46	0.10	21.87
4,757.0	0.62	176.12	4,740.3	-188.7	10.5	-188.9	0.79	-0.64	31.09
4,852.0	0.88	156.78	4,835.3	-189.9	10.9	-190.1	0.38	0.27	-20.36
4,946.0	0.97	145.71	4,929.3	-191.2	11.6	-191.4	0.21	0.10	-11.78
5,040.0	1.23	152.39	5,023.2	-192.8	12.5	-193.0	0.31	0.28	7.11
5,135.0	1.41	148.69	5,118.2	-194.7	13.6	-194.9	0.21	0.19	-3.89

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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)
5,230.0	1.32	137.09	5,213.2	-196.5	14.9	-196.8	0.31	-0.09	-12.21
5,269.0	1.23	136.74	5,252.2	-197.1	15.5	-197.4	0.23	-0.23	-0.90
5,324.0	0.88	134.81	5,307.2	-197.8	16.2	-198.1	0.64	-0.64	-3.51
5,418.0	8.09	2.88	5,400.9	-191.7	17.1	-192.1	9.26	7.67	-140.35
5,513.0	17.15	357.52	5,493.5	-171.0	16.8	-171.3	9.61	9.54	-5.64
5,608.0	20.75	354.53	5,583.3	-140.3	14.6	-140.5	3.92	3.79	-3.15
5,703.0	26.56	356.82	5,670.3	-102.3	11.8	-102.5	6.19	6.12	2.41
5,797.0	31.30	2.09	5,752.6	-56.9	11.5	-57.1	5.72	5.04	5.61
5,891.0	38.95	1.74	5,829.4	-2.8	13.3	-3.1	8.14	8.14	-0.37
CROSSED 460' HARD LINE @ 5926.2' MD / 5855.9' TVD									
5,926.2	43.17	359.86	5,855.9	20.3	13.6	20.0	12.48	11.98	-5.34
5,986.0	50.39	357.26	5,896.9	63.8	12.5	63.5	12.48	12.08	-4.35
6,080.0	63.58	355.68	5,948.0	142.3	7.6	142.1	14.10	14.03	-1.68
6,174.0	68.68	353.74	5,986.0	227.8	-0.4	227.8	5.74	5.43	-2.06
6,269.0	74.30	353.48	6,016.1	317.3	-10.4	317.5	5.92	5.92	-0.27
6,363.0	78.52	355.32	6,038.2	408.2	-19.3	408.6	4.88	4.49	1.96
7" CASING POINT @ 6382.0' MD / 6041.8' TVD END OF INT HOLE / BEGIN LATERAL									
6,382.0	79.58	355.94	6,041.8	426.8	-20.7	427.2	6.43	5.58	3.26
6,456.0	84.72	356.51	6,051.9	500.0	-25.6	500.4	6.99	6.95	0.77
6,550.0	86.39	359.08	6,059.2	593.6	-29.2	594.1	3.25	1.78	2.73
6,645.0	88.85	0.91	6,063.2	688.5	-29.2	689.0	3.23	2.59	1.93
6,740.0	89.28	1.01	6,064.7	783.5	-27.6	783.9	0.46	0.45	0.11
6,834.0	89.83	1.10	6,065.5	877.5	-25.8	877.8	0.59	0.59	0.10
6,929.0	90.57	0.08	6,065.1	972.5	-24.9	972.8	1.33	0.78	-1.07
7,024.0	91.28	0.09	6,063.6	1,067.4	-24.7	1,067.7	0.75	0.75	0.01
7,119.0	90.73	0.57	6,061.9	1,162.4	-24.2	1,162.7	0.77	-0.58	0.51
7,214.0	89.73	0.18	6,061.5	1,257.4	-23.6	1,257.6	1.13	-1.05	-0.41
7,308.0	89.82	359.19	6,061.9	1,351.4	-24.1	1,351.6	1.06	0.10	-1.05
7,403.0	90.50	357.92	6,061.6	1,446.4	-26.5	1,446.6	1.52	0.72	-1.34
7,498.0	89.62	358.49	6,061.5	1,541.3	-29.4	1,541.6	1.10	-0.93	0.60
7,593.0	90.29	357.86	6,061.6	1,636.3	-32.5	1,636.6	0.97	0.71	-0.66
7,687.0	89.78	358.53	6,061.6	1,730.2	-35.4	1,730.6	0.90	-0.54	0.71
7,782.0	90.34	1.10	6,061.5	1,825.2	-35.7	1,825.6	2.77	0.59	2.71
7,877.0	90.60	0.08	6,060.7	1,920.2	-34.8	1,920.5	1.11	0.27	-1.07
7,972.0	89.89	1.53	6,060.3	2,015.2	-33.4	2,015.5	1.70	-0.75	1.53
8,066.0	89.75	2.25	6,060.6	2,109.2	-30.3	2,109.3	0.78	-0.15	0.77
8,161.0	88.99	2.12	6,061.6	2,204.1	-26.7	2,204.1	0.81	-0.80	-0.14
8,255.0	89.22	1.69	6,063.1	2,298.0	-23.6	2,298.0	0.52	0.24	-0.46
8,349.0	89.16	0.96	6,064.4	2,392.0	-21.4	2,391.9	0.78	-0.06	-0.78
8,444.0	89.12	359.95	6,065.8	2,487.0	-20.7	2,486.8	1.06	-0.04	-1.06
8,539.0	90.48	358.93	6,066.2	2,582.0	-21.6	2,581.8	1.79	1.43	-1.07
8,633.0	89.90	358.04	6,065.9	2,675.9	-24.1	2,675.8	1.13	-0.62	-0.95
8,728.0	89.34	357.37	6,066.5	2,770.8	-27.9	2,770.8	0.92	-0.59	-0.71
8,822.0	91.55	357.53	6,065.8	2,864.7	-32.1	2,864.8	2.36	2.35	0.17

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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)
8,916.0	90.22	355.94	6,064.3	2,958.6	-37.4	2,958.7	2.21	-1.41	-1.69
9,011.0	89.60	355.73	6,064.5	3,053.3	-44.3	3,053.6	0.69	-0.65	-0.22
9,105.0	90.16	356.34	6,064.7	3,147.1	-50.8	3,147.5	0.88	0.60	0.65
9,200.0	90.72	2.42	6,063.9	3,242.0	-51.8	3,242.4	6.43	0.59	6.40
9,295.0	90.71	2.80	6,062.7	3,336.9	-47.5	3,337.2	0.40	-0.01	0.40
9,389.0	90.20	1.67	6,062.0	3,430.9	-43.8	3,431.0	1.32	-0.54	-1.20
9,484.0	89.87	2.47	6,061.9	3,525.8	-40.4	3,525.8	0.91	-0.35	0.84
9,579.0	89.21	2.97	6,062.7	3,620.7	-35.9	3,620.6	0.87	-0.69	0.53
9,673.0	90.60	3.09	6,062.8	3,714.5	-30.9	3,714.4	1.48	1.48	0.13
9,767.0	88.55	359.38	6,063.5	3,808.5	-28.9	3,808.2	4.51	-2.18	-3.95
9,862.0	87.71	358.15	6,066.6	3,903.4	-31.0	3,903.2	1.57	-0.88	-1.29
9,956.0	89.58	356.04	6,068.9	3,997.3	-35.7	3,997.1	3.00	1.99	-2.24
10,051.0	90.82	355.08	6,068.5	4,092.0	-43.1	4,092.0	1.65	1.31	-1.01
10,146.0	90.41	354.10	6,067.5	4,186.6	-52.0	4,186.7	1.12	-0.43	-1.03
10,238.0	91.30	354.70	6,066.1	4,278.1	-61.0	4,278.4	1.17	0.97	0.65
10,330.0	93.37	357.42	6,062.4	4,369.8	-67.3	4,370.2	3.71	2.25	2.96
CROSSED 460' HARD LINE @ 10372.8' MD / 6060.2' TVD									
10,372.8	92.57	358.18	6,060.2	4,412.5	-69.0	4,413.0	2.58	-1.88	1.77
10,422.0	91.64	359.05	6,058.4	4,461.7	-70.1	4,462.1	2.58	-1.88	1.77
10,513.0	89.88	359.85	6,057.2	4,552.6	-71.0	4,553.1	2.12	-1.93	0.88
10,606.0	89.71	359.45	6,057.5	4,645.6	-71.6	4,646.1	0.47	-0.18	-0.43
10,699.0	89.80	358.42	6,057.9	4,738.6	-73.3	4,739.1	1.11	0.10	-1.11
10,792.0	89.87	357.61	6,058.2	4,831.6	-76.5	4,832.1	0.87	0.08	-0.87
CROSSED LEASE LINE @ 10832.9' MD / 6058.3' TVD									
10,832.9	89.80	356.90	6,058.3	4,872.4	-78.5	4,873.0	1.75	-0.16	-1.74
10,885.0	89.72	355.99	6,058.5	4,924.4	-81.7	4,925.0	1.75	-0.16	-1.74
10,979.0	90.38	355.29	6,058.4	5,018.1	-88.9	5,018.9	1.02	0.70	-0.74
11,071.0	90.02	357.46	6,058.1	5,110.0	-94.7	5,110.8	2.39	-0.39	2.36
11,163.0	90.73	357.33	6,057.5	5,201.9	-98.9	5,202.8	0.78	0.77	-0.14
11,257.0	89.45	359.35	6,057.3	5,295.8	-101.6	5,296.8	2.54	-1.36	2.15
CROSSED 460' HARD LINE @ 11293.2' MD / 6057.8' TVD									
11,293.2	89.21	359.97	6,057.8	5,332.0	-101.8	5,333.0	1.84	-0.67	1.72
11,349.0	88.83	0.93	6,058.7	5,387.8	-101.4	5,388.7	1.84	-0.67	1.72
11,442.0	89.26	359.97	6,060.3	5,480.8	-100.6	5,481.7	1.13	0.46	-1.03
11,535.0	88.82	359.74	6,061.8	5,573.8	-100.9	5,574.6	0.53	-0.47	-0.25
11,627.0	90.30	359.84	6,062.5	5,665.8	-101.2	5,666.6	1.61	1.61	0.11
11,719.0	90.83	359.06	6,061.6	5,757.7	-102.1	5,758.6	1.02	0.58	-0.85
11,814.0	88.97	359.50	6,061.8	5,852.7	-103.3	5,853.6	2.01	-1.96	0.46
11,907.0	89.71	358.77	6,062.9	5,945.7	-104.7	5,946.6	1.12	0.80	-0.78
12,001.0	90.09	358.34	6,063.0	6,039.7	-107.1	6,040.6	0.61	0.40	-0.46
12,096.0	90.44	357.79	6,062.6	6,134.6	-110.3	6,135.6	0.69	0.37	-0.58
12,191.0	90.94	357.34	6,061.5	6,229.5	-114.3	6,230.6	0.71	0.53	-0.47
12,285.0	90.50	357.97	6,060.3	6,323.4	-118.2	6,324.5	0.82	-0.47	0.67
12,380.0	87.50	0.24	6,061.9	6,418.4	-119.6	6,419.5	3.96	-3.16	2.39

Company: Noble Energy Inc.
Project: Weld County, CO
Site: Sec 29, T9N, R59W, 6th PM
Well: Tina LC29-73-1HNA
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tina LC29-73-1HNA
TVD Reference: WELL @ 4895.0usft (H&P #326)
MD Reference: WELL @ 4895.0usft (H&P #326)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
12,474.0	88.55	0.04	6,065.2	6,512.3	-119.4	6,513.4	1.14	1.12	-0.21
12,569.0	88.10	359.89	6,067.9	6,607.3	-119.5	6,608.4	0.50	-0.47	-0.16
12,664.0	90.63	1.16	6,069.0	6,702.3	-118.6	6,703.3	2.98	2.66	1.34
12,758.0	90.90	0.82	6,067.7	6,796.3	-117.0	6,797.2	0.46	0.29	-0.36
12,853.0	91.14	1.61	6,066.1	6,891.2	-115.0	6,892.1	0.87	0.25	0.83
12,947.0	90.94	1.29	6,064.3	6,985.2	-112.6	6,986.0	0.40	-0.21	-0.34
13,042.0	90.90	0.33	6,062.8	7,080.2	-111.2	7,080.9	1.01	-0.04	-1.01
13,137.0	89.05	357.53	6,062.9	7,175.1	-113.0	7,175.9	3.53	-1.95	-2.95
13,231.0	88.57	355.90	6,064.8	7,269.0	-118.4	7,269.8	1.81	-0.51	-1.73
13,326.0	90.14	355.70	6,065.9	7,363.7	-125.4	7,364.7	1.67	1.65	-0.21
13,420.0	90.24	356.64	6,065.6	7,457.5	-131.6	7,458.6	1.01	0.11	1.00
13,514.0	91.17	356.61	6,064.4	7,551.3	-137.2	7,552.5	0.99	0.99	-0.03
13,609.0	90.99	356.61	6,062.6	7,646.1	-142.8	7,647.4	0.19	-0.19	0.00
13,704.0	89.90	356.77	6,061.9	7,741.0	-148.3	7,742.4	1.16	-1.15	0.17
13,799.0	91.87	358.11	6,060.4	7,835.8	-152.5	7,837.3	2.51	2.07	1.41
13,894.0	89.81	358.88	6,059.0	7,930.8	-155.0	7,932.3	2.31	-2.17	0.81
13,989.0	89.42	357.79	6,059.7	8,025.8	-157.8	8,027.3	1.22	-0.41	-1.15
14,083.0	90.26	357.59	6,059.9	8,119.7	-161.6	8,121.3	0.92	0.89	-0.21
14,178.0	89.28	358.29	6,060.3	8,214.6	-165.0	8,216.3	1.27	-1.03	0.74
14,273.0	90.72	358.29	6,060.3	8,309.6	-167.8	8,311.3	1.52	1.52	0.00
14,368.0	90.89	358.90	6,059.0	8,404.5	-170.1	8,406.2	0.67	0.18	0.64
14,463.0	90.32	0.31	6,058.0	8,499.5	-170.8	8,501.2	1.60	-0.60	1.48
14,558.0	89.58	0.01	6,058.1	8,594.5	-170.5	8,596.2	0.84	-0.78	-0.32
14,653.0	90.34	1.63	6,058.1	8,689.5	-169.2	8,691.1	1.88	0.80	1.71
14,747.0	89.73	1.01	6,058.1	8,783.5	-167.0	8,785.0	0.93	-0.65	-0.66
14,842.0	90.43	0.35	6,057.9	8,878.5	-165.9	8,880.0	1.01	0.74	-0.69
14,937.0	90.05	1.27	6,057.5	8,973.5	-164.5	8,974.9	1.05	-0.40	0.97
15,032.0	90.59	0.57	6,057.0	9,068.4	-163.0	9,069.9	0.93	0.57	-0.74
15,126.0	91.32	0.01	6,055.4	9,162.4	-162.5	9,163.8	0.98	0.78	-0.60
15,222.0	92.32	359.79	6,052.4	9,258.4	-162.7	9,259.7	1.07	1.04	-0.23
15,317.0	90.55	359.17	6,050.0	9,353.3	-163.6	9,354.7	1.97	-1.86	-0.65
15,393.0	90.88	358.90	6,049.1	9,429.3	-164.8	9,430.7	0.56	0.43	-0.36
TD @ 15463.0' MD / 6048.0' TVD									
15,463.0	90.88	358.90	6,048.0	9,499.3	-166.2	9,500.7	0.00	0.00	0.00

Company: Noble Energy Inc.
Project: Weld County, CO
Site: Sec 29, T9N, R59W, 6th PM
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Local Co-ordinate Reference: Well Tina LC29-73-1HNA
TVD Reference: WELL @ 4895.0usft (H&P #326)
MD Reference: WELL @ 4895.0usft (H&P #326)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Design Annotations

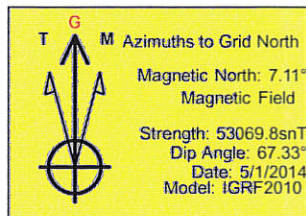
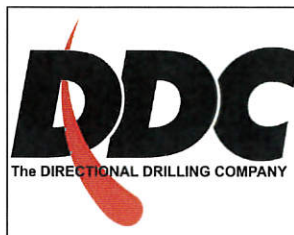
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
600.0	600.0	-2.1	-2.4	TIE IN @ 600' MD / 600' TVD END OF SURFACE HOLE / BEGIN INT HOLE
5,926.2	5,855.9	20.3	13.6	CROSSED 460' HARD LINE @ 5926.2' MD / 5855.9' TVD
6,382.0	6,041.8	426.8	-20.7	7" CASING POINT @ 6382.0' MD / 6041.8' TVD END OF INT HOLE / BEGIN L
10,372.8	6,060.2	4,412.5	-69.0	CROSSED 460' HARD LINE @ 10372.8' MD / 6060.2' TVD
10,832.9	6,058.3	4,872.4	-78.5	CROSSED LEASE LINE @ 10832.9' MD / 6058.3' TVD
11,293.2	6,057.8	5,332.0	-101.8	CROSSED 460' HARD LINE @ 11293.2' MD / 6057.8' TVD
15,463.0	6,048.0	9,499.3	-166.2	TD @ 15463.0' MD / 6048.0' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: Noble Energy Inc.
Tina LC29-73-1HNA
Weld County, CO
Rig: HAP #326
Created By: Kris Ray
Date: 09/25/2014

Tina LC29-73-1HNA
Weld County, CO
Q140459 & RM-140545
Design #1

noble energy



PROJECT DETAILS: Weld County, CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1960
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

WELL DETAILS: Tina LC29-73-1HNA

Ground Level: 4055.8
+N/S +E/W Northing Easting Latitude Longitude
0.0 0.0 1566937.98 3411617.32 40° 42' 54.828 N 103° 00' 45.528 W

ANNOTATIONS

MD	Inc	Act	TVD	+N/S	+E/W	Vsect	Departure	Annotation
600.0	0.00	257.59	600.0	-2.1	-2.4	-2.1	3.5	TIE IN @ 600' MD / 600' TVD END OF SURFACE HOLE / BEGIN INT HOLE
5000.2	41.17	358.80	5000.0	-20.3	13.5	20.0	485.5	CROSSED 400' HARD LINE @ 5000.2' MD / 5055.9' TVD
6302.0	79.55	355.94	6041.9	425.8	-20.7	427.2	887.1	2" CASING POINT @ 6302.0' MD / 6041.9' TVD END OF INT HOLE / BEGIN LATERAL
10371.8	92.87	358.18	6060.2	4812.5	-65.8	4813.0	4815.4	CROSSED 400' HARD LINE @ 10371.8' MD / 6060.2' TVD
10402.9	89.80	355.90	6058.3	4812.4	-78.5	4813.0	5336.4	CROSSED LEASE LINE @ 10402.9' MD / 6058.3' TVD
11263.2	86.21	359.97	6067.9	5332.0	-101.8	5333.0	5786.7	CROSSED 400' HARD LINE @ 11263.2' MD / 6067.9' TVD
15463.0	90.88	358.90	6048.0	9499.3	-165.7	9509.7	9986.0	TD @ 15463.0' MD / 6048.0' TVD

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
PBH Tina LC29-73-1HNA - plan the target center	6063.0	9499.8	-208.3	1516437.54	3416709.65	40° 41' 28.716 N	103° 01' 45.140 W

