

Noble Energy Inc.- Weld County, CO (Grid North)

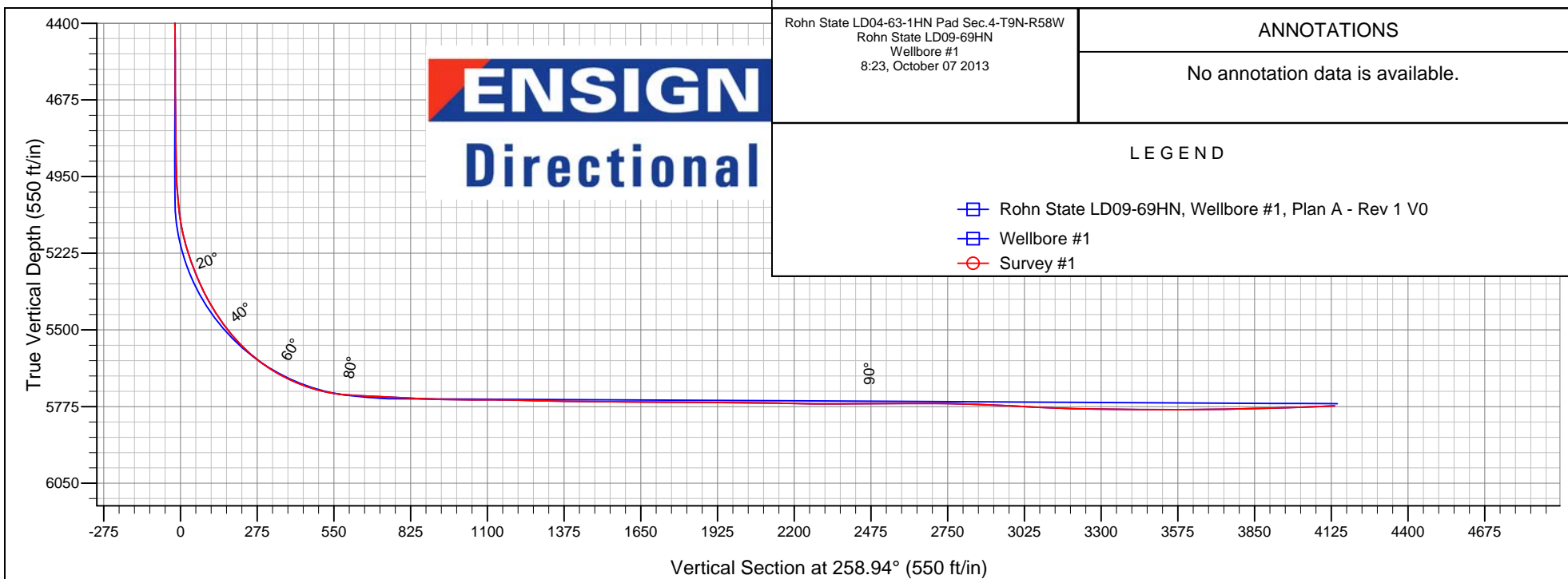
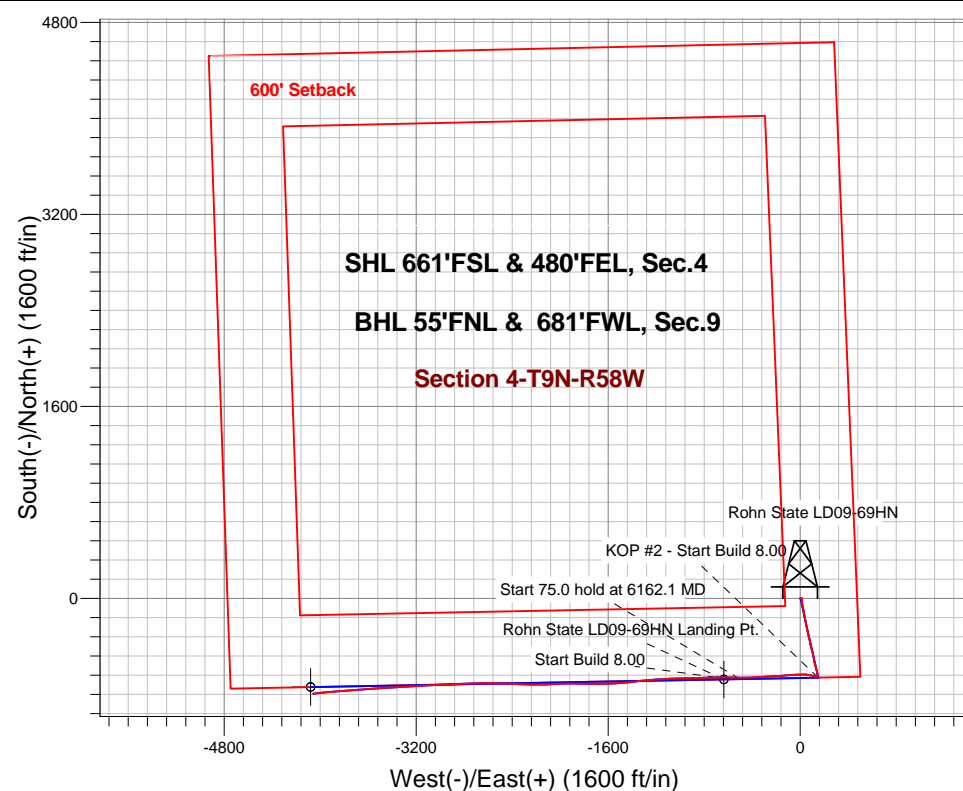
Well Name: **Rohn State LD09-69HN**

Surface Location: Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4712.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1529358.53	3453711.69	40.774970	-103.861780	
H&P 273 RKB - 24' WELL @ 4736.0ft (H&P 273 RKB - 24')						

FINAL SURVEY

Projected Bottom Hole Location
9710' MD 5772' TVD 794' S & 4060' W of SHL
92.4 degree Incl @ 264.2 degree AZM





Noble Energy Inc.- Weld County, CO (Grid North)

Sec.4-T9N-R58W

Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W

Rohn State LD09-69HN

Wellbore #1

Design: Wellbore #1

Final Survey

20 February, 2015

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-69HN
Project:	Sec.4-T9N-R58W	TVD Reference:	WELL @ 4736.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4736.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-69HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.4-T9N-R58W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W				
Site Position:		Northing:	1,529,471.41 ft	Latitude:	40.775280
From:	Lat/Long	Easting:	3,453,706.83ft	Longitude:	-103.861790
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.06 °

Well	Rohn State LD09-69HN					
Well Position	+N/-S	0.0 ft	Northing:	1,529,358.53 ft	Latitude:	40.774970
	+E/-W	0.0 ft	Easting:	3,453,711.69 ft	Longitude:	-103.861780
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,712.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/22/2013	8.10	67.42	53,189

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	258.94	

Survey Program	Date	10/8/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
340.0	1,220.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,264.0	9,710.0	Survey #2 (Wellbore #1)	MWD	MWD - Standard	

Survey								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	
340.0	1.00	75.80	340.0	0.7	2.9	-3.0	0.29	
730.0	0.00	18.30	730.0	1.6	6.2	-6.4	0.26	
1,220.0	0.60	93.00	1,220.0	1.4	8.7	-8.8	0.12	
1,264.0	0.50	300.90	1,264.0	1.5	8.8	-8.9	2.43	
1,357.0	1.00	185.80	1,356.9	0.9	8.4	-8.4	1.39	
1,452.0	2.90	165.80	1,451.9	-2.2	8.9	-8.3	2.09	
1,547.0	4.00	155.60	1,546.7	-7.6	10.8	-9.2	1.32	
1,642.0	3.50	169.10	1,641.5	-13.5	12.8	-9.9	1.06	
1,737.0	5.10	174.40	1,736.2	-20.5	13.7	-9.5	1.73	
1,832.0	6.90	174.40	1,830.7	-30.4	14.7	-8.6	1.89	

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Site:	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4736.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-69HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1,926.0	8.60	171.00	1,923.9	-42.9	16.3	-7.8	1.87
2,021.0	11.30	170.30	2,017.4	-59.1	19.0	-7.3	2.84
2,116.0	12.90	170.00	2,110.3	-78.8	22.4	-6.9	1.69
2,211.0	13.40	167.00	2,202.8	-99.9	26.7	-7.1	0.89
2,306.0	14.70	170.00	2,295.0	-122.5	31.3	-7.2	1.57
2,401.0	15.30	170.00	2,386.7	-146.7	35.6	-6.8	0.63
2,496.0	15.70	169.30	2,478.3	-171.7	40.1	-6.5	0.46
2,590.0	14.60	169.30	2,569.0	-195.9	44.7	-6.3	1.17
2,685.0	14.10	169.80	2,661.0	-219.0	49.0	-6.1	0.54
2,780.0	13.50	168.20	2,753.3	-241.2	53.3	-6.0	0.75
2,875.0	13.10	168.10	2,845.8	-262.6	57.8	-6.3	0.42
2,970.0	12.50	166.50	2,938.4	-283.2	62.4	-6.9	0.73
3,065.0	12.00	165.90	3,031.2	-302.7	67.2	-7.9	0.54
3,160.0	13.80	164.90	3,123.8	-323.3	72.6	-9.2	1.91
3,254.0	14.90	167.70	3,214.9	-345.9	78.1	-10.3	1.38
3,349.0	15.20	168.90	3,306.6	-370.1	83.1	-10.5	0.46
3,444.0	16.00	168.10	3,398.1	-395.1	88.2	-10.7	0.87
3,539.0	15.20	165.40	3,489.6	-419.9	94.0	-11.7	1.14
3,634.0	14.00	165.20	3,581.6	-443.1	100.1	-13.2	1.26
3,728.0	13.80	167.90	3,672.8	-465.1	105.3	-14.2	0.72
3,823.0	13.90	168.40	3,765.1	-487.3	110.0	-14.5	0.16
3,918.0	14.00	169.30	3,857.3	-509.8	114.4	-14.5	0.25
4,013.0	14.50	168.10	3,949.3	-532.7	119.0	-14.6	0.61
4,108.0	13.50	165.40	4,041.5	-555.1	124.3	-15.5	1.26
4,203.0	13.30	163.80	4,133.9	-576.3	130.1	-17.1	0.44
4,297.0	11.00	164.00	4,225.8	-595.3	135.6	-18.9	2.45
4,392.0	9.50	166.30	4,319.3	-611.7	139.9	-20.0	1.64
4,487.0	7.00	175.60	4,413.3	-625.0	142.2	-19.7	2.97
4,582.0	5.00	172.10	4,507.8	-634.9	143.3	-18.8	2.14
4,677.0	3.80	171.00	4,602.5	-642.1	144.3	-18.5	1.27
4,772.0	2.40	181.80	4,697.4	-647.2	144.8	-17.9	1.59
4,867.0	1.50	204.40	4,792.3	-650.3	144.2	-16.8	1.23
4,962.0	0.90	206.90	4,887.3	-652.1	143.3	-15.6	0.63
4,980.0	0.80	225.00	4,905.3	-652.4	143.2	-15.4	1.58
5,075.0	4.30	280.20	5,000.2	-652.2	139.2	-11.5	4.10
5,169.0	8.30	282.80	5,093.6	-650.1	129.1	-2.0	4.27
5,264.0	16.40	281.60	5,186.3	-645.8	109.3	16.7	8.53
5,359.0	22.30	281.60	5,275.9	-639.5	78.4	45.7	6.21
5,454.0	27.10	273.70	5,362.2	-634.5	39.1	83.3	6.12
5,549.0	33.10	266.30	5,444.4	-634.8	-8.4	130.0	7.42
5,644.0	40.30	266.50	5,520.5	-638.3	-65.0	186.2	7.58
5,738.0	49.20	265.40	5,587.2	-643.0	-131.0	251.9	9.50
5,833.0	58.40	267.00	5,643.3	-648.1	-207.4	327.8	9.78
5,928.0	66.60	266.30	5,687.1	-653.0	-291.4	411.3	8.66

Company: Noble Energy Inc.- Weld County, CO (Grid North)
Project: Sec.4-T9N-R58W
Site: Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W
Well: Rohn State LD09-69HN
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Rohn State LD09-69HN
TVD Reference: WELL @ 4736.0ft (H&P 273 RKB - 24')
MD Reference: WELL @ 4736.0ft (H&P 273 RKB - 24')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Landmark

Survey							
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,023.0	75.80	267.40	5,717.7	-657.9	-381.1	500.2	9.75
6,118.0	85.80	269.10	5,732.8	-660.7	-474.7	592.6	10.67
6,163.0	87.30	271.40	5,735.6	-660.6	-519.6	636.7	6.09
6,256.0	87.40	270.50	5,739.9	-659.0	-612.5	727.6	0.97
6,280.8	87.22	270.19	5,741.0	-658.9	-637.3	751.9	1.46
Rohn State LD09-69HN Landing Pt.							
6,351.0	86.70	269.30	5,744.7	-659.2	-707.4	820.7	1.46
6,446.0	88.60	267.40	5,748.6	-661.9	-802.3	914.3	2.83
6,540.0	89.30	269.30	5,750.4	-664.6	-896.2	1,007.0	2.15
6,635.0	90.30	269.50	5,750.7	-665.6	-991.2	1,100.5	1.07
6,730.0	88.50	266.80	5,751.7	-668.7	-1,086.1	1,194.2	3.42
6,825.0	88.40	265.40	5,754.3	-675.1	-1,180.9	1,288.4	1.48
6,919.0	89.30	265.40	5,756.1	-682.7	-1,274.6	1,381.8	0.96
7,014.0	89.70	262.80	5,757.0	-692.4	-1,369.0	1,476.4	2.77
7,109.0	89.10	264.90	5,758.0	-702.6	-1,463.5	1,571.1	2.30
7,204.0	90.00	266.80	5,758.7	-709.5	-1,558.2	1,665.4	2.21
7,299.0	89.70	269.50	5,759.0	-712.6	-1,653.2	1,759.1	2.86
7,393.0	89.10	270.90	5,759.9	-712.2	-1,747.2	1,851.3	1.62
7,488.0	89.90	271.10	5,760.8	-710.6	-1,842.1	1,944.2	0.87
7,583.0	89.40	269.50	5,761.4	-710.1	-1,937.1	2,037.4	1.76
7,678.0	89.30	267.20	5,762.4	-712.8	-2,032.1	2,131.1	2.42
7,773.0	88.60	267.20	5,764.2	-717.4	-2,127.0	2,225.1	0.74
7,868.0	89.90	271.80	5,765.4	-718.3	-2,221.9	2,318.4	5.03
7,962.0	90.70	271.90	5,764.9	-715.2	-2,315.9	2,410.1	0.86
8,057.0	90.20	271.10	5,764.2	-712.8	-2,410.8	2,502.8	0.99
8,152.0	90.40	272.30	5,763.7	-709.9	-2,505.8	2,595.4	1.28
8,247.0	89.70	271.20	5,763.6	-707.0	-2,600.7	2,688.1	1.37
8,341.0	88.60	268.30	5,765.0	-707.4	-2,694.7	2,780.4	3.30
8,436.0	87.80	267.90	5,768.0	-710.6	-2,789.6	2,874.1	0.94
8,531.0	87.10	267.50	5,772.2	-714.4	-2,884.4	2,967.9	0.85
8,626.0	87.40	267.20	5,776.8	-718.8	-2,979.2	3,061.8	0.45
8,721.0	87.70	266.80	5,780.8	-723.8	-3,074.0	3,155.8	0.53
8,816.0	88.90	267.50	5,783.6	-728.5	-3,168.9	3,249.7	1.46
8,911.0	89.70	265.80	5,784.8	-734.0	-3,263.7	3,343.9	1.98
9,015.0	89.30	266.70	5,785.7	-740.8	-3,367.4	3,447.0	0.95
9,109.0	90.00	266.70	5,786.3	-746.2	-3,461.3	3,540.2	0.74
9,204.0	90.60	266.50	5,785.8	-751.9	-3,556.1	3,634.3	0.67
9,299.0	91.00	265.60	5,784.5	-758.4	-3,650.9	3,728.6	1.04
9,394.0	91.40	265.40	5,782.5	-765.9	-3,745.6	3,822.9	0.47
9,489.0	91.10	265.30	5,780.4	-773.6	-3,840.2	3,917.3	0.33
9,583.0	92.20	265.30	5,777.7	-781.3	-3,933.9	4,010.7	1.17
9,645.0	92.40	264.20	5,775.2	-786.9	-3,995.6	4,072.3	1.80
9,710.0	92.40	264.20	5,772.5	-793.5	-4,060.2	4,137.0	0.00
Rohn State LD09-69HN BHL 0'FSL & 660'FWL							

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-69HN
Project:	Sec.4-T9N-R58W	TVD Reference:	WELL @ 4736.0ft (H&P 273 RKB - 24')
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Well:	Rohn State LD09-69HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Checked By: _____	Approved By: _____	Date: _____
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