

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

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

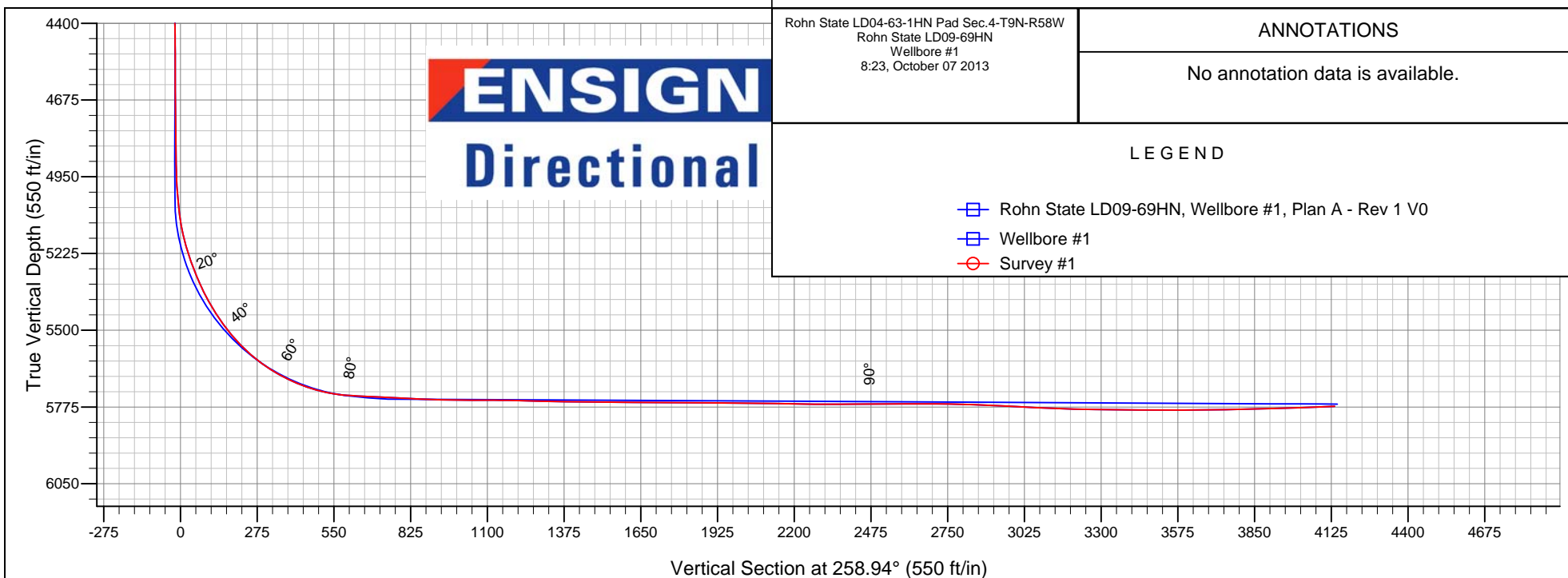
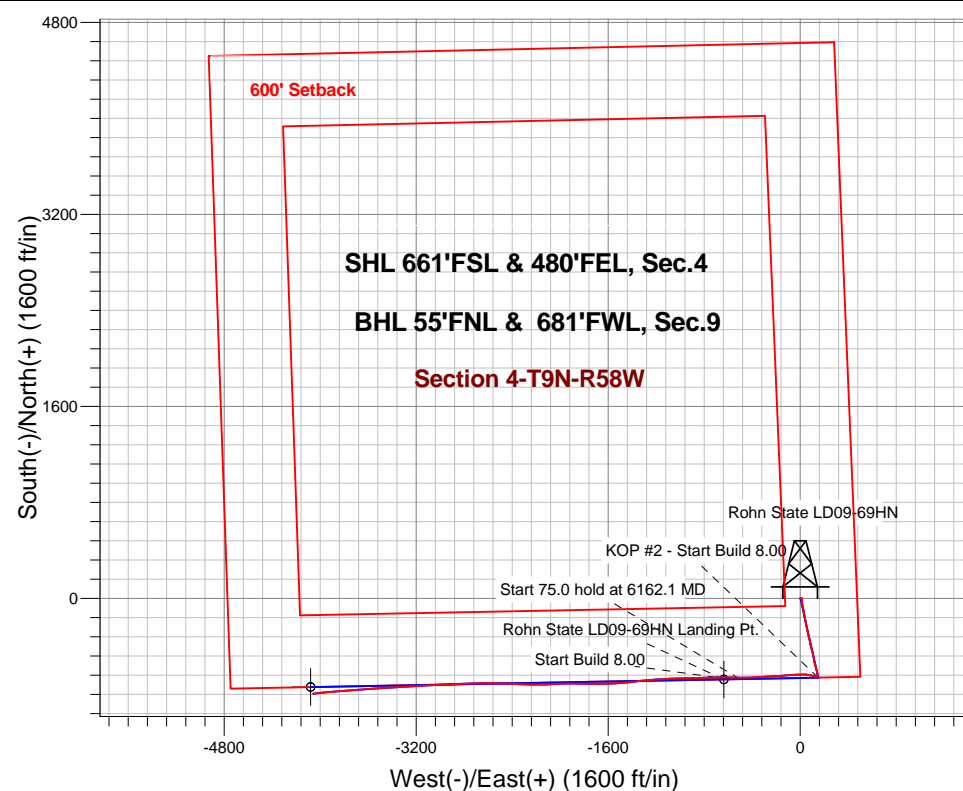
Surface Location: Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4712.0

+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



Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W  
Rohn State LD09-69HN  
Wellbore #1  
8:23, October 07 2013

### ANNOTATIONS

No annotation data is available.

### LEGEND

- Rohn State LD09-69HN, Wellbore #1, Plan A - Rev 1 V0
- Wellbore #1
- Survey #1



# **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**

## **Standard Survey Report**

**08 October, 2013**

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-69HN
<b>Project:</b>	Sec.4-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Site:</b>	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	<b>MD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Well:</b>	Rohn State LD09-69HN	<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>	Landmark

<b>Project</b>	Sec.4-T9N-R58W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	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

<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	8/22/2013	8.10	67.42	53,189

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

<b>Survey Program</b>	<b>Date</b>	10/8/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
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	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
40.0	0.12	75.80	40.0	0.0	0.0	0.0	0.29	0.29	0.00	
80.0	0.24	75.80	80.0	0.0	0.2	-0.2	0.29	0.29	0.00	
120.0	0.35	75.80	120.0	0.1	0.4	-0.4	0.29	0.29	0.00	
160.0	0.47	75.80	160.0	0.2	0.6	-0.7	0.29	0.29	0.00	
200.0	0.59	75.80	200.0	0.3	1.0	-1.0	0.29	0.29	0.00	
240.0	0.71	75.80	240.0	0.4	1.4	-1.5	0.29	0.29	0.00	
280.0	0.82	75.80	280.0	0.5	2.0	-2.0	0.29	0.29	0.00	
320.0	0.94	75.80	320.0	0.6	2.5	-2.6	0.29	0.29	0.00	
360.0	0.95	75.80	360.0	0.8	3.2	-3.3	0.02	0.02	0.00	

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-69HN
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<b>Site:</b>	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	<b>MD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Well:</b>	Rohn State LD09-69HN	<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>	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
400.0	0.85	75.80	400.0	1.0	3.8	-3.9	0.26	-0.26	0.00
440.0	0.74	75.80	440.0	1.1	4.4	-4.5	0.26	-0.26	0.00
480.0	0.64	75.80	480.0	1.2	4.8	-5.0	0.26	-0.26	0.00
520.0	0.54	75.80	520.0	1.3	5.2	-5.4	0.26	-0.26	0.00
560.0	0.44	75.80	560.0	1.4	5.5	-5.7	0.26	-0.26	0.00
600.0	0.33	75.80	600.0	1.5	5.8	-6.0	0.26	-0.26	0.00
640.0	0.23	75.80	640.0	1.5	6.0	-6.2	0.26	-0.26	0.00
680.0	0.13	75.80	680.0	1.5	6.1	-6.3	0.26	-0.26	0.00
720.0	0.03	75.80	720.0	1.6	6.2	-6.4	0.26	-0.26	0.00
760.0	0.04	93.00	760.0	1.6	6.2	-6.4	0.04	0.03	43.00
800.0	0.09	93.00	800.0	1.6	6.2	-6.4	0.12	0.12	0.00
840.0	0.13	93.00	840.0	1.6	6.3	-6.5	0.12	0.12	0.00
880.0	0.18	93.00	880.0	1.6	6.4	-6.6	0.12	0.12	0.00
920.0	0.23	93.00	920.0	1.5	6.6	-6.7	0.12	0.12	0.00
960.0	0.28	93.00	960.0	1.5	6.7	-6.9	0.12	0.12	0.00
1,000.0	0.33	93.00	1,000.0	1.5	7.0	-7.1	0.12	0.12	0.00
1,040.0	0.38	93.00	1,040.0	1.5	7.2	-7.4	0.12	0.12	0.00
1,080.0	0.43	93.00	1,080.0	1.5	7.5	-7.6	0.12	0.12	0.00
1,120.0	0.48	93.00	1,120.0	1.5	7.8	-7.9	0.12	0.12	0.00
1,160.0	0.53	93.00	1,160.0	1.5	8.1	-8.3	0.12	0.12	0.00
1,200.0	0.58	93.00	1,200.0	1.4	8.5	-8.7	0.12	0.12	0.00
1,240.0	0.17	52.93	1,240.0	1.4	8.9	-9.0	1.15	-1.03	-100.18
1,280.0	0.37	276.34	1,280.0	1.6	8.7	-8.8	1.27	0.52	-341.46
1,320.0	0.55	204.98	1,320.0	1.4	8.5	-8.6	1.39	0.43	-178.40
1,360.0	1.05	184.10	1,359.9	0.9	8.4	-8.4	1.44	1.27	-52.21
1,400.0	1.84	171.65	1,399.9	-0.1	8.4	-8.3	2.09	1.95	-31.12
1,440.0	2.65	166.73	1,439.9	-1.7	8.7	-8.3	2.09	2.04	-12.30
1,480.0	3.21	162.07	1,479.8	-3.7	9.3	-8.4	1.52	1.40	-11.65
1,520.0	3.68	157.88	1,519.8	-5.9	10.1	-8.8	1.32	1.16	-10.50
1,560.0	3.92	157.23	1,559.7	-8.4	11.2	-9.4	0.62	0.61	-1.60
1,600.0	3.70	162.69	1,599.6	-10.9	12.1	-9.8	1.06	-0.56	13.63
1,640.0	3.51	168.78	1,639.5	-13.3	12.7	-9.9	1.06	-0.47	15.23
1,680.0	4.14	171.71	1,679.4	-15.9	13.2	-9.9	1.64	1.57	7.33
1,720.0	4.81	173.71	1,719.3	-19.0	13.6	-9.7	1.73	1.69	5.00
1,760.0	5.54	174.40	1,759.1	-22.6	13.9	-9.3	1.82	1.81	1.72
1,800.0	6.29	174.40	1,798.9	-26.7	14.3	-8.9	1.89	1.89	0.00
1,840.0	7.04	174.05	1,838.7	-31.4	14.8	-8.5	1.88	1.87	-0.88
1,880.0	7.76	172.48	1,878.3	-36.5	15.4	-8.1	1.87	1.80	-3.92
1,920.0	8.49	171.18	1,917.9	-42.1	16.2	-7.8	1.87	1.81	-3.26
1,960.0	9.57	170.70	1,957.4	-48.2	17.2	-7.6	2.69	2.69	-1.18
2,000.0	10.70	170.42	1,996.8	-55.2	18.3	-7.4	2.84	2.84	-0.70
2,040.0	11.62	170.23	2,036.0	-62.9	19.7	-7.2	2.29	2.29	-0.48
2,080.0	12.29	170.10	2,075.2	-71.0	21.1	-7.1	1.69	1.68	-0.32
2,120.0	12.92	169.87	2,114.2	-79.6	22.6	-6.9	1.57	1.57	-0.59
2,160.0	13.13	168.58	2,153.2	-88.5	24.3	-6.8	0.89	0.52	-3.22
2,200.0	13.34	167.34	2,192.1	-97.4	26.2	-7.0	0.89	0.53	-3.12
2,240.0	13.79	167.97	2,231.0	-106.6	28.2	-7.3	1.19	1.13	1.60
2,280.0	14.34	169.23	2,269.8	-116.1	30.1	-7.3	1.57	1.37	3.14
2,320.0	14.79	170.00	2,308.5	-126.0	31.9	-7.2	1.22	1.12	1.92
2,360.0	15.04	170.00	2,347.2	-136.2	33.7	-7.0	0.63	0.63	0.00
2,400.0	15.29	170.00	2,385.8	-146.5	35.5	-6.8	0.63	0.63	0.00
2,440.0	15.46	169.71	2,424.3	-156.9	37.4	-6.6	0.47	0.43	-0.73
2,480.0	15.63	169.42	2,462.9	-167.5	39.3	-6.5	0.46	0.42	-0.73

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<b>Well:</b>	Rohn State LD09-69HN	<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>	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,520.0	15.42	169.30	2,501.4	-178.0	41.3	-6.4	0.54	-0.53	-0.29	
2,560.0	14.95	169.30	2,540.0	-188.3	43.3	-6.4	1.17	-1.17	0.00	
2,600.0	14.55	169.35	2,578.7	-198.3	45.2	-6.3	1.01	-1.01	0.13	
2,640.0	14.34	169.56	2,617.4	-208.1	47.0	-6.2	0.54	-0.53	0.52	
2,680.0	14.13	169.77	2,656.2	-217.8	48.8	-6.1	0.54	-0.53	0.53	
2,720.0	13.88	169.23	2,695.0	-227.3	50.5	-6.0	0.70	-0.62	-1.37	
2,760.0	13.63	168.55	2,733.9	-236.7	52.3	-6.0	0.75	-0.63	-1.70	
2,800.0	13.42	168.18	2,772.8	-245.8	54.2	-6.1	0.57	-0.52	-0.92	
2,840.0	13.25	168.14	2,811.7	-254.8	56.1	-6.2	0.42	-0.42	-0.10	
2,880.0	13.07	168.02	2,850.6	-263.7	58.0	-6.4	0.45	-0.45	-0.30	
2,920.0	12.81	167.36	2,889.6	-272.5	59.9	-6.5	0.73	-0.63	-1.65	
2,960.0	12.56	166.68	2,928.6	-281.1	61.9	-6.8	0.73	-0.63	-1.71	
3,000.0	12.34	166.32	2,967.7	-289.4	63.9	-7.2	0.58	-0.55	-0.90	
3,040.0	12.13	166.06	3,006.8	-297.7	65.9	-7.6	0.54	-0.53	-0.63	
3,080.0	12.28	165.72	3,045.9	-305.8	68.0	-8.1	0.42	0.38	-0.85	
3,120.0	13.04	165.29	3,084.9	-314.3	70.2	-8.6	1.91	1.89	-1.09	
3,160.0	13.80	164.90	3,123.8	-323.3	72.6	-9.2	1.91	1.90	-0.97	
3,200.0	14.26	166.14	3,162.6	-332.7	75.0	-9.8	1.38	1.16	3.11	
3,240.0	14.73	167.31	3,201.4	-342.4	77.3	-10.2	1.38	1.18	2.91	
3,280.0	14.98	168.03	3,240.0	-352.5	79.5	-10.4	0.77	0.62	1.81	
3,320.0	15.11	168.54	3,278.7	-362.6	81.6	-10.5	0.46	0.32	1.26	
3,360.0	15.29	168.80	3,317.3	-372.9	83.6	-10.5	0.49	0.46	0.66	
3,400.0	15.63	168.46	3,355.8	-383.3	85.7	-10.6	0.87	0.84	-0.86	
3,440.0	15.97	168.13	3,394.3	-394.0	87.9	-10.7	0.87	0.84	-0.82	
3,480.0	15.69	167.11	3,432.8	-404.7	90.3	-11.0	0.98	-0.68	-2.56	
3,520.0	15.36	165.96	3,471.3	-415.1	92.8	-11.4	1.14	-0.84	-2.87	
3,560.0	14.93	165.36	3,509.9	-425.2	95.4	-12.0	1.13	-1.06	-1.51	
3,600.0	14.43	165.28	3,548.6	-435.0	97.9	-12.7	1.26	-1.26	-0.21	
3,640.0	13.99	165.37	3,587.4	-444.5	100.4	-13.3	1.11	-1.11	0.24	
3,680.0	13.90	166.51	3,626.2	-453.9	102.8	-13.8	0.72	-0.22	2.85	
3,720.0	13.82	167.67	3,665.1	-463.2	104.9	-14.1	0.72	-0.21	2.89	
3,760.0	13.83	168.07	3,703.9	-472.5	106.9	-14.3	0.24	0.04	1.00	
3,800.0	13.88	168.28	3,742.7	-481.9	108.9	-14.4	0.16	0.11	0.53	
3,840.0	13.92	168.56	3,781.6	-491.3	110.8	-14.5	0.20	0.10	0.71	
3,880.0	13.96	168.94	3,820.4	-500.8	112.7	-14.5	0.25	0.10	0.95	
3,920.0	14.01	169.27	3,859.2	-510.3	114.5	-14.5	0.24	0.13	0.83	
3,960.0	14.22	168.76	3,898.0	-519.8	116.4	-14.5	0.61	0.52	-1.29	
4,000.0	14.43	168.26	3,936.7	-529.5	118.3	-14.6	0.61	0.53	-1.25	
4,040.0	14.21	167.37	3,975.5	-539.3	120.4	-14.8	0.77	-0.55	-2.22	
4,080.0	13.79	166.24	4,014.3	-548.7	122.6	-15.1	1.26	-1.05	-2.84	
4,120.0	13.47	165.20	4,053.2	-557.8	125.0	-15.7	1.00	-0.79	-2.59	
4,160.0	13.39	164.53	4,092.1	-566.8	127.4	-16.3	0.44	-0.21	-1.68	
4,200.0	13.31	163.85	4,131.0	-575.7	129.9	-17.1	0.44	-0.21	-1.70	
4,240.0	12.39	163.87	4,170.0	-584.2	132.4	-17.9	2.28	-2.28	0.05	
4,280.0	11.42	163.96	4,209.1	-592.1	134.7	-18.6	2.45	-2.45	0.22	
4,320.0	10.64	164.50	4,248.4	-599.5	136.8	-19.2	1.97	-1.95	1.35	
4,360.0	10.00	165.45	4,287.8	-606.4	138.6	-19.7	1.64	-1.58	2.38	
4,400.0	9.28	166.89	4,327.2	-612.9	140.2	-20.1	1.90	-1.80	3.60	
4,440.0	8.21	170.30	4,366.7	-618.9	141.5	-20.1	2.97	-2.68	8.52	
4,480.0	7.18	174.70	4,406.4	-624.2	142.2	-19.8	2.97	-2.59	11.00	
4,520.0	6.30	174.64	4,446.1	-628.9	142.6	-19.3	2.18	-2.18	-0.16	
4,560.0	5.46	173.14	4,485.9	-632.9	143.0	-19.0	2.14	-2.10	-3.74	

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,600.0	4.77	171.93	4,525.7	-636.4	143.5	-18.7	1.74	-1.72	-3.01
4,640.0	4.27	171.50	4,565.6	-639.6	143.9	-18.6	1.27	-1.26	-1.08
4,680.0	3.75	171.22	4,605.5	-642.3	144.4	-18.5	1.28	-1.28	-0.71
4,720.0	3.15	174.70	4,645.4	-644.7	144.7	-18.3	1.59	-1.50	8.71
4,760.0	2.57	179.79	4,685.4	-646.7	144.8	-18.0	1.59	-1.46	12.73
4,800.0	2.11	186.42	4,725.3	-648.3	144.7	-17.6	1.34	-1.16	16.57
4,840.0	1.72	195.65	4,765.3	-649.6	144.4	-17.1	1.23	-0.96	23.07
4,880.0	1.42	204.62	4,805.3	-650.6	144.0	-16.6	0.98	-0.76	22.41
4,920.0	1.16	205.48	4,845.3	-651.5	143.7	-16.0	0.63	-0.63	2.15
4,960.0	0.91	206.81	4,885.3	-652.1	143.3	-15.6	0.63	-0.63	3.34
5,000.0	1.37	257.91	4,925.3	-652.5	142.8	-15.0	2.66	1.14	127.75
5,040.0	2.89	275.40	4,965.3	-652.5	141.4	-13.6	4.10	3.82	43.71
5,080.0	4.51	280.45	5,005.2	-652.1	138.8	-11.2	4.12	4.05	12.64
5,120.0	6.21	281.86	5,045.0	-651.4	135.2	-7.7	4.27	4.25	3.52
5,160.0	7.92	282.66	5,084.7	-650.3	130.3	-3.2	4.27	4.26	2.01
5,200.0	10.94	282.22	5,124.2	-648.9	124.0	2.7	7.57	7.56	-1.12
5,240.0	14.35	281.78	5,163.2	-647.1	115.5	10.8	8.53	8.53	-1.10
5,280.0	17.39	281.60	5,201.6	-644.9	104.7	20.9	7.60	7.60	-0.44
5,320.0	19.88	281.60	5,239.5	-642.3	92.2	32.7	6.21	6.21	0.00
5,360.0	22.35	281.50	5,276.8	-639.4	78.1	46.0	6.18	6.18	-0.25
5,400.0	24.32	277.83	5,313.6	-636.8	62.4	60.9	6.12	4.93	-9.17
5,440.0	26.37	274.69	5,349.7	-635.0	45.4	77.2	6.12	5.12	-7.85
5,480.0	28.70	271.40	5,385.2	-634.0	27.0	95.1	6.96	5.83	-8.24
5,520.0	31.23	268.28	5,419.9	-634.0	7.0	114.7	7.42	6.32	-7.78
5,560.0	33.93	266.33	5,453.6	-635.2	-14.5	136.0	7.26	6.77	-4.89
5,600.0	36.97	266.42	5,486.2	-636.6	-37.6	159.0	7.58	7.58	0.22
5,640.0	40.00	266.49	5,517.5	-638.2	-62.4	183.7	7.58	7.58	0.19
5,680.0	43.71	266.04	5,547.3	-639.9	-89.1	210.1	9.31	9.28	-1.14
5,720.0	47.49	265.59	5,575.2	-642.0	-117.6	238.5	9.50	9.47	-1.13
5,760.0	51.33	265.81	5,601.3	-644.3	-147.8	268.7	9.59	9.58	0.55
5,800.0	55.20	266.49	5,625.2	-646.5	-179.8	300.5	9.78	9.68	1.70
5,840.0	59.00	266.94	5,646.9	-648.4	-213.3	333.7	9.55	9.51	1.15
5,880.0	62.46	266.64	5,666.5	-650.3	-248.2	368.3	8.66	8.63	-0.76
5,920.0	65.91	266.36	5,683.9	-652.5	-284.1	404.0	8.66	8.63	-0.71
5,960.0	69.70	266.68	5,699.0	-654.8	-321.1	440.7	9.50	9.47	0.82
6,000.0	73.57	267.14	5,711.6	-656.9	-359.0	478.3	9.75	9.68	1.15
6,040.0	77.59	267.71	5,721.6	-658.6	-397.6	516.6	10.14	10.04	1.42
6,080.0	81.80	268.43	5,728.7	-659.9	-437.0	555.4	10.67	10.53	1.80
6,120.0	85.87	269.20	5,733.0	-660.8	-476.7	594.6	10.35	10.17	1.93
6,160.0	87.20	271.25	5,735.4	-660.6	-516.6	633.8	6.09	3.33	5.11
6,200.0	87.34	271.04	5,737.3	-659.8	-556.6	672.8	0.62	0.35	-0.51
6,240.0	87.38	270.65	5,739.1	-659.2	-596.5	711.9	0.97	0.11	-0.97
6,280.0	87.22	270.20	5,741.0	-658.9	-636.5	751.1	1.21	-0.40	-1.14
6,280.8	87.22	270.19	5,741.0	-658.9	-637.3	751.8	1.46	-0.74	-1.26
<b>Rohn State LD09-69HN Landing Pt.</b>									
6,320.0	86.93	269.69	5,743.0	-658.9	-676.4	790.3	1.46	-0.74	-1.26
6,360.0	86.88	269.12	5,745.2	-659.3	-716.4	829.5	1.43	-0.12	-1.43
6,400.0	87.68	268.32	5,747.1	-660.2	-756.3	868.9	2.83	2.00	-2.00
6,440.0	88.48	267.52	5,748.5	-661.6	-796.3	908.4	2.83	2.00	-2.00
6,480.0	88.85	268.09	5,749.4	-663.2	-836.2	947.9	1.70	0.93	1.42
6,520.0	89.15	268.90	5,750.1	-664.3	-876.2	987.4	2.15	0.74	2.02
6,560.0	89.51	269.34	5,750.6	-664.9	-916.2	1,026.7	1.43	0.90	1.12

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-69HN
<b>Project:</b>	Sec.4-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Site:</b>	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	<b>MD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Well:</b>	Rohn State LD09-69HN	<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>	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,600.0	89.93	269.43	5,750.8	-665.3	-956.2	1,066.1	1.07	1.05	0.21	
6,640.0	90.21	269.36	5,750.7	-665.7	-996.2	1,105.4	0.71	0.68	-0.17	
6,680.0	89.45	268.22	5,750.8	-666.5	-1,036.2	1,144.8	3.42	-1.90	-2.84	
6,720.0	88.69	267.08	5,751.4	-668.1	-1,076.2	1,184.3	3.42	-1.89	-2.84	
6,760.0	88.47	266.36	5,752.5	-670.5	-1,116.1	1,224.0	1.90	-0.55	-1.82	
6,800.0	88.43	265.77	5,753.6	-673.2	-1,156.0	1,263.6	1.48	-0.11	-1.47	
6,840.0	88.54	265.40	5,754.7	-676.3	-1,195.8	1,303.3	0.97	0.29	-0.92	
6,880.0	88.93	265.40	5,755.5	-679.5	-1,235.7	1,343.1	0.96	0.96	0.00	
6,920.0	89.30	265.37	5,756.2	-682.8	-1,275.6	1,382.8	0.95	0.94	-0.07	
6,960.0	89.47	264.28	5,756.6	-686.4	-1,315.4	1,422.6	2.77	0.42	-2.74	
7,000.0	89.64	263.18	5,756.9	-690.7	-1,355.1	1,462.5	2.77	0.42	-2.74	
7,040.0	89.54	263.37	5,757.1	-695.6	-1,394.9	1,502.4	0.55	-0.26	0.48	
7,080.0	89.28	264.26	5,757.6	-699.9	-1,434.6	1,542.2	2.30	-0.63	2.21	
7,120.0	89.20	265.12	5,758.1	-703.6	-1,474.4	1,582.0	2.16	-0.20	2.15	
7,160.0	89.58	265.92	5,758.6	-706.7	-1,514.3	1,621.7	2.21	0.95	2.00	
7,200.0	89.96	266.72	5,758.7	-709.3	-1,554.2	1,661.4	2.21	0.95	2.00	
7,240.0	89.89	267.82	5,758.7	-711.2	-1,594.2	1,701.0	2.76	-0.19	2.76	
7,280.0	89.76	268.96	5,758.9	-712.3	-1,634.2	1,740.5	2.86	-0.32	2.84	
7,320.0	89.57	269.81	5,759.1	-712.7	-1,674.2	1,779.8	2.19	-0.49	2.13	
7,360.0	89.31	270.41	5,759.5	-712.6	-1,714.2	1,819.0	1.62	-0.64	1.49	
7,400.0	89.16	270.91	5,760.1	-712.1	-1,754.2	1,858.2	1.32	-0.38	1.27	
7,440.0	89.50	271.00	5,760.5	-711.4	-1,794.2	1,897.3	0.87	0.84	0.21	
7,480.0	89.83	271.08	5,760.8	-710.7	-1,834.1	1,936.4	0.87	0.84	0.21	
7,520.0	89.73	270.56	5,760.9	-710.1	-1,874.1	1,975.5	1.33	-0.25	-1.31	
7,560.0	89.52	269.89	5,761.1	-709.9	-1,914.1	2,014.8	1.76	-0.53	-1.68	
7,600.0	89.38	269.09	5,761.5	-710.3	-1,954.1	2,054.1	2.03	-0.35	-2.00	
7,640.0	89.34	268.12	5,762.0	-711.3	-1,994.1	2,093.5	2.42	-0.11	-2.42	
7,680.0	89.29	267.20	5,762.5	-712.9	-2,034.1	2,133.1	2.30	-0.14	-2.30	
7,720.0	88.99	267.20	5,763.1	-714.9	-2,074.0	2,172.6	0.74	-0.74	0.00	
7,760.0	88.70	267.20	5,763.9	-716.8	-2,114.0	2,212.2	0.74	-0.74	0.00	
7,800.0	88.97	268.51	5,764.7	-718.5	-2,153.9	2,251.7	3.34	0.68	3.27	
7,840.0	89.52	270.44	5,765.3	-718.8	-2,193.9	2,291.1	5.03	1.37	4.84	
7,880.0	90.00	271.81	5,765.4	-717.9	-2,233.9	2,330.1	3.63	1.21	3.42	
7,920.0	90.34	271.86	5,765.3	-716.6	-2,273.9	2,369.1	0.86	0.85	0.11	
7,960.0	90.68	271.90	5,765.0	-715.3	-2,313.9	2,408.1	0.86	0.85	0.11	
8,000.0	90.50	271.58	5,764.5	-714.1	-2,353.8	2,447.1	0.92	-0.46	-0.79	
8,040.0	90.29	271.24	5,764.3	-713.1	-2,393.8	2,486.2	0.99	-0.53	-0.84	
8,080.0	90.25	271.39	5,764.1	-712.3	-2,433.8	2,525.2	0.38	-0.10	0.37	
8,120.0	90.33	271.90	5,763.9	-711.1	-2,473.8	2,564.3	1.28	0.21	1.26	
8,160.0	90.34	272.21	5,763.6	-709.6	-2,513.8	2,603.2	0.78	0.02	0.78	
8,200.0	90.05	271.74	5,763.5	-708.2	-2,553.8	2,642.2	1.37	-0.74	-1.16	
8,240.0	89.75	271.28	5,763.6	-707.2	-2,593.7	2,681.2	1.37	-0.74	-1.16	
8,280.0	89.31	270.18	5,763.9	-706.6	-2,633.7	2,720.4	2.96	-1.09	-2.75	
8,320.0	88.85	268.95	5,764.5	-706.9	-2,673.7	2,759.7	3.30	-1.17	-3.09	
8,360.0	88.44	268.22	5,765.5	-708.0	-2,713.7	2,799.1	2.08	-1.01	-1.82	
8,400.0	88.10	268.05	5,766.7	-709.3	-2,753.7	2,838.6	0.94	-0.84	-0.42	
8,440.0	87.77	267.88	5,768.1	-710.7	-2,793.6	2,878.1	0.93	-0.83	-0.42	
8,480.0	87.48	267.71	5,769.8	-712.3	-2,833.5	2,917.6	0.85	-0.74	-0.42	
8,520.0	87.18	267.55	5,771.7	-713.9	-2,873.5	2,957.0	0.85	-0.74	-0.42	
8,560.0	87.19	267.41	5,773.6	-715.7	-2,913.4	2,996.6	0.35	0.03	-0.34	
8,600.0	87.32	267.28	5,775.6	-717.5	-2,953.3	3,036.1	0.45	0.32	-0.32	
8,640.0	87.44	267.14	5,777.4	-719.5	-2,993.2	3,075.6	0.47	0.32	-0.35	
8,680.0	87.57	266.97	5,779.1	-721.5	-3,033.1	3,115.2	0.53	0.32	-0.42	



<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-69HN
<b>Project:</b>	Sec.4-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Site:</b>	Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W	<b>MD Reference:</b>	WELL @ 4736.0ft (H&P 273 RKB - 24')
<b>Well:</b>	Rohn State LD09-69HN	<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>	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,720.0	87.70	266.80	5,780.8	-723.7	-3,073.0	3,154.8	0.53	0.32	-0.42
8,760.0	88.19	267.09	5,782.2	-725.8	-3,112.9	3,194.4	1.43	1.24	0.71
8,800.0	88.70	267.38	5,783.3	-727.8	-3,152.9	3,233.9	1.46	1.26	0.74
8,840.0	89.10	267.07	5,784.1	-729.6	-3,192.8	3,273.5	1.28	1.01	-0.78
8,880.0	89.44	266.35	5,784.6	-731.9	-3,232.8	3,313.1	1.98	0.84	-1.79
8,920.0	89.67	265.88	5,784.9	-734.7	-3,272.7	3,352.8	1.32	0.57	-1.19
8,960.0	89.51	266.22	5,785.1	-737.4	-3,312.6	3,392.5	0.95	-0.38	0.87
9,000.0	89.36	266.57	5,785.5	-739.9	-3,352.5	3,432.2	0.95	-0.38	0.87
9,040.0	89.49	266.70	5,786.0	-742.3	-3,392.4	3,471.8	0.46	0.32	0.32
9,080.0	89.78	266.70	5,786.2	-744.6	-3,432.3	3,511.4	0.74	0.74	0.00
9,120.0	90.07	266.68	5,786.3	-746.9	-3,472.3	3,551.1	0.72	0.71	-0.06
9,160.0	90.32	266.59	5,786.1	-749.2	-3,512.2	3,590.7	0.67	0.63	-0.21
9,200.0	90.57	266.51	5,785.8	-751.6	-3,552.1	3,630.3	0.67	0.63	-0.21
9,240.0	90.75	266.16	5,785.4	-754.2	-3,592.0	3,670.0	0.98	0.44	-0.87
9,280.0	90.92	265.78	5,784.8	-757.0	-3,631.9	3,709.7	1.04	0.42	-0.95
9,320.0	91.09	265.56	5,784.1	-760.0	-3,671.8	3,749.4	0.70	0.42	-0.56
9,360.0	91.26	265.47	5,783.3	-763.2	-3,711.7	3,789.2	0.47	0.42	-0.21
9,400.0	91.38	265.39	5,782.3	-766.3	-3,751.6	3,828.9	0.37	0.31	-0.19
9,440.0	91.25	265.35	5,781.4	-769.6	-3,791.4	3,868.6	0.33	-0.32	-0.11
9,480.0	91.13	265.31	5,780.6	-772.8	-3,831.3	3,908.4	0.33	-0.32	-0.11
9,520.0	91.46	265.30	5,779.7	-776.1	-3,871.1	3,948.1	0.84	0.84	-0.02
9,560.0	91.93	265.30	5,778.5	-779.4	-3,911.0	3,987.8	1.17	1.17	0.00
9,600.0	92.25	265.00	5,777.0	-782.7	-3,950.8	4,027.6	1.11	0.81	-0.75
9,640.0	92.38	264.29	5,775.4	-786.4	-3,990.6	4,067.3	1.80	0.32	-1.77
9,680.0	92.40	264.20	5,773.7	-790.5	-4,030.4	4,107.1	0.23	0.04	-0.22
Rohn State LD09-69HN BHL 0'FSL & 660'FWL									

Checked By: _____	Approved By: _____	Date: _____
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