

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

Well Name: **Rohn State LD04-62-1HN**

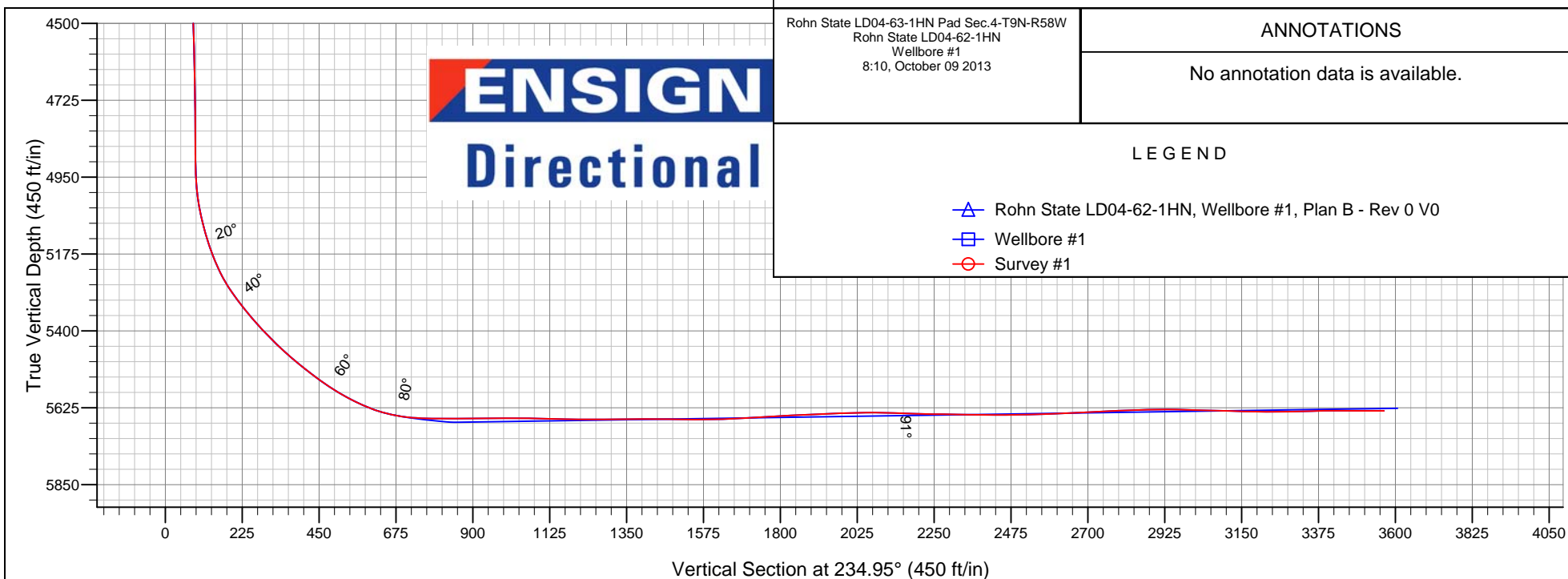
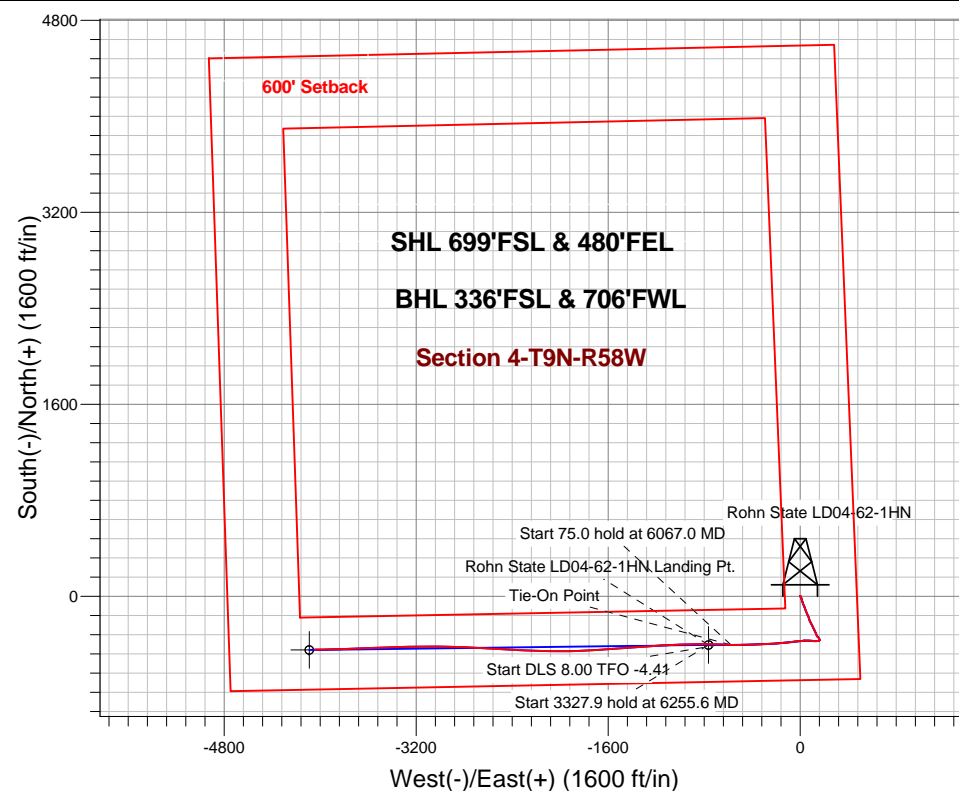
Surface Location: Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4712.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1529394.96	3453711.01	40.775070	-103.861780	

H&P 273 RKB - 24' WELL @ 4736.0ft (H&P 273 RKB - 24')

FINAL SURVEY

Projected Bottom Hole Location
9541' MD 5633' TVD 441' S & 4046' W of SHL
90.0 degree Incl @ 269.7 degree AZM



Rohn State LD04-63-1HN Pad Sec.4-T9N-R58W
Rohn State LD04-62-1HN
Wellbore #1
8:10, October 09 2013

ANNOTATIONS

No annotation data is available.

LEGEND

- △ Rohn State LD04-62-1HN, Wellbore #1, Plan B - Rev 0 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 LD04-62-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

15 October, 2013

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD04-62-1HN
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 LD04-62-1HN	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 LD04-62-1HN					
Well Position	+N-S	0.0 ft	Northing:	1,529,394.96 ft	Latitude:	40.775070
	+E-W	0.0 ft	Easting:	3,453,711.01 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	234.95	

Survey Program	Date	10/15/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
345.0	1,212.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,283.0	9,541.0	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)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
345.0	0.10	296.00	345.0	0.1	-0.3	0.1	0.03	0.03	0.00	
800.0	0.10	168.00	800.0	-0.1	-0.5	0.5	0.04	0.00	-28.13	
1,212.0	0.50	200.50	1,212.0	-2.1	-1.1	2.1	0.10	0.10	7.89	
1,283.0	1.30	53.20	1,283.0	-1.9	-0.6	1.6	2.45	1.13	-207.47	
1,376.0	1.10	49.50	1,376.0	-0.7	1.0	-0.4	0.23	-0.22	-3.98	
1,471.0	1.00	29.00	1,471.0	0.6	2.1	-2.0	0.41	-0.11	-21.58	
1,566.0	1.30	149.20	1,565.9	0.4	3.0	-2.7	2.10	0.32	126.53	
1,661.0	2.30	155.90	1,660.9	-2.3	4.3	-2.3	1.07	1.05	7.05	
1,755.0	4.00	153.60	1,754.7	-6.9	6.6	-1.4	1.81	1.81	-2.45	

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD04-62-1HN
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 LD04-62-1HN	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)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,850.0	4.60	164.80	1,849.5	-13.6	9.0	0.4	1.08	0.63	11.79
1,945.0	5.80	166.90	1,944.1	-21.9	11.1	3.5	1.28	1.26	2.21
2,040.0	8.00	163.40	2,038.4	-32.9	14.1	7.4	2.36	2.32	-3.68
2,135.0	8.60	162.00	2,132.4	-46.0	18.2	11.5	0.67	0.63	-1.47
2,230.0	9.20	156.60	2,226.3	-59.7	23.4	15.2	1.08	0.63	-5.68
2,325.0	8.70	153.80	2,320.1	-73.2	29.6	17.8	0.70	-0.53	-2.95
2,419.0	8.00	162.90	2,413.1	-85.8	34.6	20.9	1.59	-0.74	9.68
2,514.0	10.00	160.80	2,506.9	-99.9	39.3	25.2	2.13	2.11	-2.21
2,609.0	10.60	158.50	2,600.4	-115.8	45.2	29.5	0.77	0.63	-2.42
2,704.0	9.90	158.70	2,693.9	-131.6	51.4	33.5	0.74	-0.74	0.21
2,799.0	10.30	158.30	2,787.4	-147.1	57.5	37.4	0.43	0.42	-0.42
2,894.0	9.60	153.80	2,881.0	-162.1	64.1	40.6	1.10	-0.74	-4.74
2,989.0	8.40	156.40	2,974.8	-175.5	70.4	43.2	1.33	-1.26	2.74
3,083.0	8.70	164.80	3,067.8	-188.7	75.0	47.0	1.37	0.32	8.94
3,178.0	10.00	162.20	3,161.5	-203.5	79.4	51.8	1.44	1.37	-2.74
3,273.0	10.60	152.40	3,255.0	-219.1	86.0	55.4	1.95	0.63	-10.32
3,368.0	10.20	149.50	3,348.4	-234.1	94.3	57.2	0.69	-0.42	-3.05
3,463.0	10.30	154.50	3,441.9	-249.0	102.2	59.3	0.94	0.11	5.26
3,558.0	10.50	154.50	3,535.4	-264.4	109.6	62.1	0.21	0.21	0.00
3,652.0	10.00	154.60	3,627.9	-279.6	116.8	64.9	0.53	-0.53	0.11
3,747.0	9.00	155.50	3,721.5	-293.8	123.4	67.7	1.06	-1.05	0.95
3,842.0	8.40	156.40	3,815.5	-306.9	129.3	70.4	0.65	-0.63	0.95
3,937.0	8.40	154.30	3,909.4	-319.5	135.1	72.9	0.32	0.00	-2.21
4,032.0	9.10	148.30	4,003.3	-332.1	142.0	74.5	1.21	0.74	-6.32
4,126.0	7.80	134.60	4,096.3	-342.9	150.5	73.8	2.54	-1.38	-14.57
4,221.0	5.70	151.10	4,190.7	-351.6	157.4	73.1	2.99	-2.21	17.37
4,316.0	4.70	159.70	4,285.3	-359.4	161.0	74.6	1.33	-1.05	9.05
4,411.0	3.30	194.70	4,380.1	-365.7	161.6	77.7	2.89	-1.47	36.84
4,506.0	2.20	243.60	4,475.0	-369.1	159.3	81.6	2.62	-1.16	51.47
4,601.0	1.60	277.70	4,569.9	-369.8	156.4	84.4	1.32	-0.63	35.89
4,695.0	1.10	265.60	4,663.9	-369.7	154.2	86.1	0.61	-0.53	-12.87
4,790.0	0.40	247.60	4,758.9	-369.9	153.0	87.2	0.77	-0.74	-18.95
4,885.0	0.30	239.20	4,853.9	-370.1	152.4	87.8	0.12	-0.11	-8.84
4,980.0	2.20	259.80	4,948.8	-370.6	150.4	89.7	2.02	2.00	21.68
5,074.0	12.50	264.30	5,041.9	-371.9	138.5	100.2	10.97	10.96	4.79
5,169.0	21.50	273.50	5,132.7	-371.9	110.8	122.8	9.86	9.47	9.68
5,264.0	30.20	272.60	5,218.1	-369.7	69.5	155.4	9.17	9.16	-0.95
5,359.0	40.10	265.20	5,295.7	-371.2	15.0	200.9	11.33	10.42	-7.79
5,453.0	44.20	262.70	5,365.4	-377.9	-47.7	256.1	4.71	4.36	-2.66
5,548.0	49.20	264.50	5,430.6	-385.5	-116.4	316.7	5.44	5.26	1.89
5,643.0	54.60	265.60	5,489.2	-392.0	-190.9	381.4	5.76	5.68	1.16
5,738.0	58.00	267.10	5,541.9	-397.0	-269.7	448.8	3.81	3.58	1.58
5,833.0	64.50	268.20	5,587.5	-400.4	-352.9	518.8	6.92	6.84	1.16
5,928.0	71.00	268.40	5,623.5	-403.0	-440.7	592.2	6.84	6.84	0.21
6,007.0	79.20	269.80	5,643.8	-404.2	-517.0	655.3	10.52	10.38	1.77
6,070.0	86.10	273.90	5,651.8	-402.1	-579.4	705.3	12.71	10.95	6.51
6,163.0	89.00	270.20	5,655.8	-398.8	-672.2	779.3	5.05	3.12	-3.98
6,255.0	90.78	270.40	5,656.0	-398.3	-764.2	854.3	1.95	1.94	0.22
Rohn State LD04-62-1HN Landing Pt.									
6,256.0	90.80	270.40	5,656.0	-398.3	-765.2	855.2	1.95	1.94	0.22
6,351.0	90.30	269.80	5,655.1	-398.1	-860.2	932.9	0.82	-0.53	-0.63
6,446.0	90.20	269.30	5,654.6	-398.9	-955.2	1,011.1	0.54	-0.11	-0.53

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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)	
6,540.0	88.70	267.40	5,655.6	-401.6	-1,049.2	1,089.5	2.58	-1.60	-2.02	
6,635.0	89.00	266.70	5,657.5	-406.5	-1,144.0	1,170.0	0.80	0.32	-0.74	
6,730.0	90.00	265.80	5,658.3	-412.7	-1,238.8	1,251.1	1.42	1.05	-0.95	
6,825.0	90.50	266.50	5,657.9	-419.1	-1,333.6	1,332.4	0.91	0.53	0.74	
6,919.0	90.40	266.70	5,657.1	-424.7	-1,427.4	1,412.4	0.24	-0.11	0.21	
7,014.0	88.70	263.90	5,657.9	-432.4	-1,522.1	1,494.4	3.45	-1.79	-2.95	
7,109.0	90.40	266.00	5,658.6	-440.8	-1,616.7	1,576.6	2.84	1.79	2.21	
7,204.0	92.30	267.50	5,656.4	-446.2	-1,711.5	1,657.3	2.55	2.00	1.58	
7,299.0	92.60	267.00	5,652.3	-450.7	-1,806.3	1,737.6	0.61	0.32	-0.53	
7,393.0	93.10	268.10	5,647.7	-454.7	-1,900.1	1,816.6	1.28	0.53	1.17	
7,488.0	91.90	270.40	5,643.5	-456.0	-1,995.0	1,895.0	2.73	-1.26	2.42	
7,583.0	91.60	271.60	5,640.6	-454.3	-2,090.0	1,971.8	1.30	-0.32	1.26	
7,678.0	90.70	271.10	5,638.7	-452.1	-2,184.9	2,048.3	1.08	-0.95	-0.53	
7,773.0	88.50	273.20	5,639.4	-448.5	-2,279.8	2,123.9	3.20	-2.32	2.21	
7,867.0	88.60	272.50	5,641.7	-443.9	-2,373.7	2,198.1	0.75	0.11	-0.74	
7,963.0	89.60	273.50	5,643.3	-438.8	-2,469.5	2,273.6	1.47	1.04	1.04	
8,057.0	89.00	272.60	5,644.4	-433.8	-2,563.4	2,347.6	1.15	-0.64	-0.96	
8,152.0	89.70	272.60	5,645.5	-429.5	-2,658.3	2,422.8	0.74	0.74	0.00	
8,247.0	91.20	273.20	5,644.7	-424.7	-2,753.2	2,497.7	1.70	1.58	0.63	
8,341.0	91.50	272.10	5,642.5	-420.4	-2,847.0	2,572.1	1.21	0.32	-1.17	
8,436.0	92.00	271.10	5,639.6	-417.7	-2,941.9	2,648.2	1.18	0.53	-1.05	
8,531.0	92.20	270.50	5,636.1	-416.4	-3,036.9	2,725.2	0.67	0.21	-0.63	
8,626.0	92.30	269.70	5,632.4	-416.2	-3,131.8	2,802.8	0.85	0.11	-0.84	
8,721.0	91.20	269.00	5,629.5	-417.3	-3,226.7	2,881.1	1.37	-1.16	-0.74	
8,816.0	88.80	268.30	5,629.5	-419.5	-3,321.7	2,960.2	2.63	-2.53	-0.74	
8,911.0	88.50	268.30	5,631.7	-422.4	-3,416.6	3,039.5	0.32	-0.32	0.00	
9,006.0	89.00	268.60	5,633.8	-424.9	-3,511.6	3,118.7	0.61	0.53	0.32	
9,100.0	88.80	267.50	5,635.6	-428.1	-3,605.5	3,197.4	1.19	-0.21	-1.17	
9,195.0	90.70	267.40	5,636.0	-432.4	-3,700.4	3,277.5	2.00	2.00	-0.11	
9,289.0	92.00	266.70	5,633.8	-437.2	-3,794.3	3,357.1	1.57	1.38	-0.74	
9,384.0	89.30	269.80	5,632.7	-440.1	-3,889.2	3,436.5	4.33	-2.84	3.26	
9,471.0	90.00	269.70	5,633.3	-440.5	-3,976.2	3,508.0	0.81	0.80	-0.11	
9,541.0	90.00	269.70	5,633.3	-440.8	-4,046.2	3,565.5	0.00	0.00	0.00	
Rohn State LD04-62-1HN BHL 330'FSL & 660'FWL										

Checked By: _____	Approved By: _____	Date: _____
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