

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

Well Name: **Rohn State LD09-66HN**

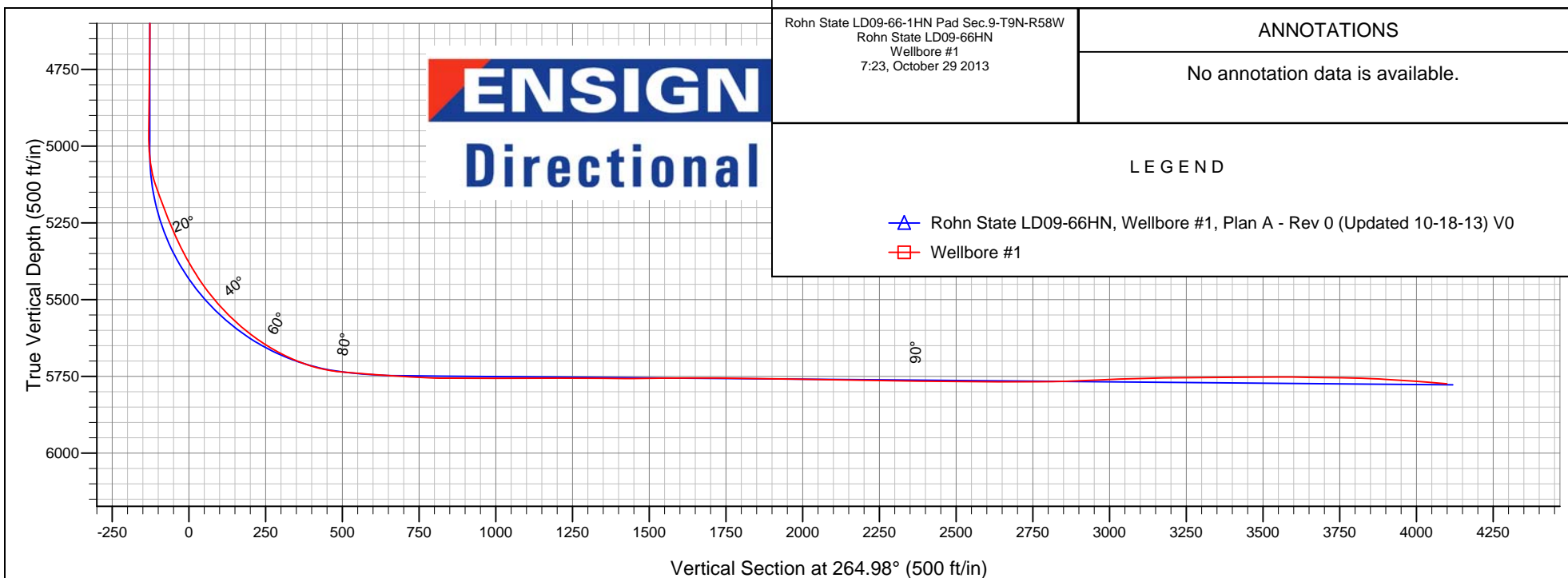
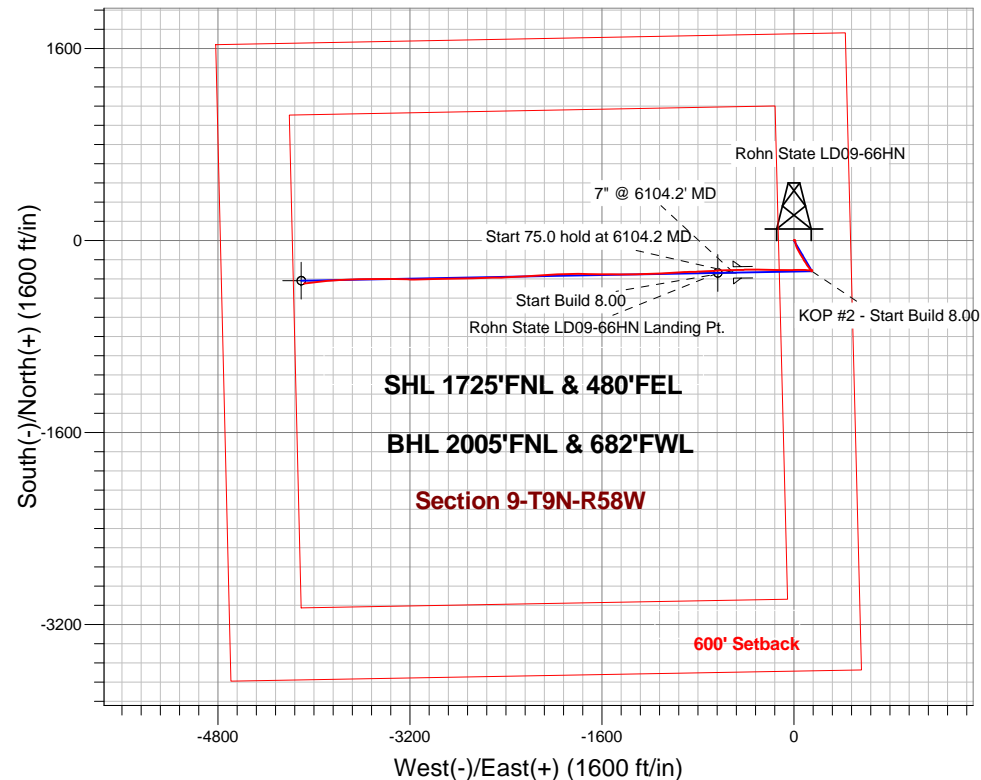
Surface Location: Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4728.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1526973.06	3453783.46	40.768420	-103.861680	

H&P 273 RKB - 24' WELL @ 4752.0ft (H&P 273 RKB - 24')

FINAL SURVEY

Projected Bottom Hole Location
9670' MD 5774' TVD 359' S & 4084' W of SHL
85.6 degree Incl @ 263.1 degree AZM



Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W
Rohn State LD09-66HN
Wellbore #1
7:23, October 29 2013

ANNOTATIONS

No annotation data is available.

LEGEND

- △ Rohn State LD09-66HN, Wellbore #1, Plan A - Rev 0 (Updated 10-18-13) V0
- Wellbore #1



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

SEC.9-T9N-R58W

Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W

Rohn State LD09-66HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

29 October, 2013

Survey	Wellbore Data									
	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)
Main Section	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	400.0	0.50	10.00	400.0	1.7	0.3	-0.5	0.13	0.13	0.00
	800.0	0.40	110.40	800.0	3.0	1.9	-2.2	0.17	-0.03	25.10
	1,200.0	0.30	138.80	1,200.0	1.7	3.9	-4.0	0.05	-0.03	7.10
	1,282.0	1.40	20.40	1,282.0	2.5	4.4	-4.6	1.91	1.34	-144.39
	1,375.0	0.90	31.60	1,375.0	4.1	5.2	-5.5	0.59	-0.54	12.04
	1,467.0	0.80	18.30	1,466.9	5.4	5.8	-6.2	0.24	-0.11	-14.46
	1,558.0	2.30	141.50	1,557.9	4.5	7.1	-7.5	3.10	1.65	135.38
	1,651.0	3.10	157.00	1,650.8	0.8	9.2	-9.3	1.16	0.86	16.67
	1,744.0	4.50	163.60	1,743.6	-5.1	11.3	-10.8	1.57	1.51	7.10

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-66HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4752.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4752.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-66HN	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)
1,839.0	6.10	177.50	1,838.2	-13.7	12.5	-11.3	2.15	1.68	14.63
1,933.0	7.60	170.50	1,931.5	-24.8	13.8	-11.6	1.82	1.60	-7.45
2,028.0	7.60	169.40	2,025.7	-37.2	16.0	-12.7	0.15	0.00	-1.16
2,123.0	8.00	155.60	2,119.8	-49.4	19.9	-15.5	2.01	0.42	-14.53
2,218.0	7.50	153.30	2,214.0	-60.9	25.4	-19.9	0.62	-0.53	-2.42
2,313.0	6.80	154.50	2,308.2	-71.5	30.6	-24.2	0.75	-0.74	1.26
2,408.0	7.70	152.20	2,402.5	-82.2	36.0	-28.6	1.00	0.95	-2.42
2,503.0	7.50	151.20	2,496.6	-93.3	41.9	-33.6	0.25	-0.21	-1.05
2,597.0	7.50	150.10	2,589.8	-104.0	47.9	-38.6	0.15	0.00	-1.17
2,692.0	7.00	148.90	2,684.1	-114.3	54.0	-43.8	0.55	-0.53	-1.26
2,787.0	6.50	147.10	2,778.4	-123.8	59.9	-48.9	0.57	-0.53	-1.89
2,882.0	5.60	148.70	2,872.9	-132.3	65.3	-53.4	0.96	-0.95	1.68
2,977.0	6.10	143.10	2,967.4	-140.3	70.7	-58.1	0.80	0.53	-5.89
3,072.0	6.20	155.70	3,061.8	-149.0	75.8	-62.5	1.42	0.11	13.26
3,167.0	6.20	152.70	3,156.3	-158.2	80.3	-66.1	0.34	0.00	-3.16
3,262.0	6.20	150.50	3,250.7	-167.2	85.2	-70.2	0.25	0.00	-2.32
3,356.0	6.70	146.10	3,344.1	-176.2	90.7	-75.0	0.75	0.53	-4.68
3,451.0	7.00	146.90	3,438.5	-185.7	97.0	-80.4	0.33	0.32	0.84
3,546.0	7.60	146.10	3,532.7	-195.7	103.7	-86.1	0.64	0.63	-0.84
3,641.0	7.30	145.20	3,626.9	-205.9	110.6	-92.2	0.34	-0.32	-0.95
3,735.0	6.30	150.10	3,720.2	-215.3	116.6	-97.3	1.23	-1.06	5.21
3,830.0	6.20	139.90	3,814.7	-223.7	122.5	-102.4	1.17	-0.11	-10.74
3,925.0	5.50	141.00	3,909.2	-231.2	128.7	-107.9	0.75	-0.74	1.16
4,020.0	6.10	143.30	4,003.7	-238.8	134.5	-113.1	0.68	0.63	2.42
4,115.0	5.40	143.30	4,098.2	-246.4	140.2	-118.1	0.74	-0.74	0.00
4,210.0	4.00	139.40	4,192.9	-252.5	145.1	-122.4	1.51	-1.47	-4.11
4,304.0	1.10	147.50	4,286.8	-255.7	147.7	-124.7	3.10	-3.09	8.62
4,494.0	0.90	14.90	4,476.8	-255.8	149.0	-126.1	0.96	-0.11	-69.79
4,683.0	0.70	43.90	4,665.7	-253.6	150.2	-127.5	0.24	-0.11	15.34
4,873.0	1.10	30.60	4,855.7	-251.2	152.0	-129.4	0.24	0.21	-7.00
4,966.0	1.50	39.00	4,948.7	-249.5	153.2	-130.8	0.48	0.43	9.03
5,061.0	6.20	271.00	5,043.5	-248.4	148.8	-126.5	7.60	4.95	-134.74
5,156.0	19.80	274.20	5,135.9	-247.1	127.5	-105.4	14.33	14.32	3.37
5,251.0	21.50	274.00	5,224.8	-244.7	94.1	-72.3	1.79	1.79	-0.21
5,346.0	25.40	269.30	5,311.9	-243.8	56.4	-34.8	4.55	4.11	-4.95
5,440.0	30.80	267.90	5,394.8	-244.9	12.1	9.3	5.79	5.74	-1.49
5,535.0	36.80	270.20	5,473.7	-245.7	-40.7	62.0	6.46	6.32	2.42
5,630.0	45.50	270.30	5,545.2	-245.4	-103.1	124.2	9.16	9.16	0.11
5,725.0	52.00	270.90	5,607.8	-244.6	-174.5	195.3	6.86	6.84	0.63
5,820.0	59.40	270.70	5,661.3	-243.6	-252.9	273.3	7.79	7.79	-0.21
5,914.0	68.80	270.00	5,702.3	-243.1	-337.4	357.4	10.02	10.00	-0.74
6,009.0	78.70	268.80	5,728.8	-244.0	-428.5	448.2	10.49	10.42	-1.26
6,049.0	84.30	268.20	5,734.8	-245.1	-468.0	487.7	14.08	14.00	-1.50
6,157.0	86.40	268.40	5,743.5	-248.3	-575.6	595.1	1.95	1.94	0.19
6,216.9	86.14	267.37	5,747.4	-250.5	-635.3	654.8	1.77	-0.43	-1.72
Rohn State LD09-66HN Landing Pt.									
6,250.0	86.00	266.80	5,749.7	-252.1	-668.3	687.8	1.77	-0.43	-1.72
6,343.0	87.50	266.80	5,754.9	-257.3	-761.0	780.6	1.61	1.61	0.00
6,437.0	90.90	269.30	5,756.3	-260.5	-854.9	874.4	4.49	3.62	2.66
6,532.0	88.90	265.20	5,756.4	-265.1	-949.8	969.3	4.80	-2.11	-4.32
6,627.0	90.70	267.70	5,756.8	-271.0	-1,044.6	1,064.3	3.24	1.89	2.63
6,722.0	90.40	267.70	5,755.8	-274.8	-1,139.5	1,159.2	0.32	-0.32	0.00

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-66HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4752.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4752.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-66HN	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)
6,816.0	89.90	267.90	5,755.6	-278.4	-1,233.5	1,253.1	0.57	-0.53	0.21
6,911.0	88.70	268.10	5,756.8	-281.7	-1,328.4	1,347.9	1.28	-1.26	0.21
7,006.0	90.80	270.70	5,757.2	-282.7	-1,423.4	1,442.6	3.52	2.21	2.74
7,101.0	90.60	270.70	5,756.0	-281.5	-1,518.4	1,537.2	0.21	-0.21	0.00
7,196.0	89.90	270.30	5,755.6	-280.7	-1,613.3	1,631.7	0.85	-0.74	-0.42
7,291.0	89.80	270.50	5,755.8	-280.0	-1,708.3	1,726.3	0.24	-0.11	0.21
7,386.0	89.30	270.00	5,756.6	-279.6	-1,803.3	1,820.9	0.74	-0.53	-0.53
7,481.0	89.40	269.50	5,757.7	-280.0	-1,898.3	1,915.6	0.54	0.11	-0.53
7,576.0	88.70	267.50	5,759.2	-282.5	-1,993.3	2,010.4	2.23	-0.74	-2.11
7,671.0	88.50	265.90	5,761.6	-288.0	-2,088.1	2,105.3	1.70	-0.21	-1.68
7,766.0	89.50	266.30	5,763.2	-294.5	-2,182.9	2,200.2	1.13	1.05	0.42
7,861.0	89.00	265.80	5,764.5	-301.0	-2,277.6	2,295.2	0.74	-0.53	-0.53
7,956.0	88.90	267.70	5,766.2	-306.4	-2,372.4	2,390.2	2.00	-0.11	2.00
8,050.0	90.30	270.30	5,766.9	-308.0	-2,466.4	2,483.9	3.14	1.49	2.77
8,145.0	89.20	267.00	5,767.3	-310.3	-2,561.4	2,578.7	3.66	-1.16	-3.47
8,240.0	90.00	268.60	5,767.9	-313.9	-2,656.3	2,673.6	1.88	0.84	1.68
8,335.0	90.20	268.10	5,767.8	-316.6	-2,751.3	2,768.4	0.57	0.21	-0.53
8,430.0	91.90	269.10	5,766.0	-319.0	-2,846.2	2,863.2	2.08	1.79	1.05
8,525.0	92.40	269.80	5,762.5	-319.9	-2,941.1	2,957.9	0.91	0.53	0.74
8,619.0	92.10	268.40	5,758.8	-321.4	-3,035.1	3,051.5	1.52	-0.32	-1.49
8,714.0	91.40	268.90	5,755.9	-323.6	-3,130.0	3,146.3	0.91	-0.74	0.53
8,809.0	90.50	271.60	5,754.3	-323.2	-3,225.0	3,240.9	3.00	-0.95	2.84
8,904.0	90.00	270.70	5,753.9	-321.3	-3,319.9	3,335.3	1.08	-0.53	-0.95
8,998.0	90.50	270.20	5,753.5	-320.5	-3,413.9	3,428.9	0.75	0.53	-0.53
9,093.0	90.80	270.00	5,752.4	-320.4	-3,508.9	3,523.5	0.38	0.32	-0.21
9,188.0	88.70	267.70	5,752.8	-322.3	-3,603.9	3,618.3	3.28	-2.21	-2.42
9,283.0	89.80	268.10	5,754.1	-325.8	-3,698.8	3,713.1	1.23	1.16	0.42
9,378.0	88.10	267.40	5,755.8	-329.5	-3,793.7	3,808.0	1.94	-1.79	-0.74
9,472.0	86.60	264.00	5,760.2	-336.5	-3,887.3	3,901.9	3.95	-1.60	-3.62
9,567.0	86.00	263.80	5,766.3	-346.6	-3,981.6	3,996.7	0.67	-0.63	-0.21
9,600.0	85.60	263.10	5,768.7	-350.3	-4,014.3	4,029.6	2.44	-1.21	-2.12
9,670.0	85.60	263.10	5,774.1	-358.7	-4,083.6	4,099.3	0.00	0.00	0.00
Rohn State LD09-66HN BHL 1980'FNL, 660'FWL									

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------