

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

Well Name: **Rohn State LD09-67-1HN**

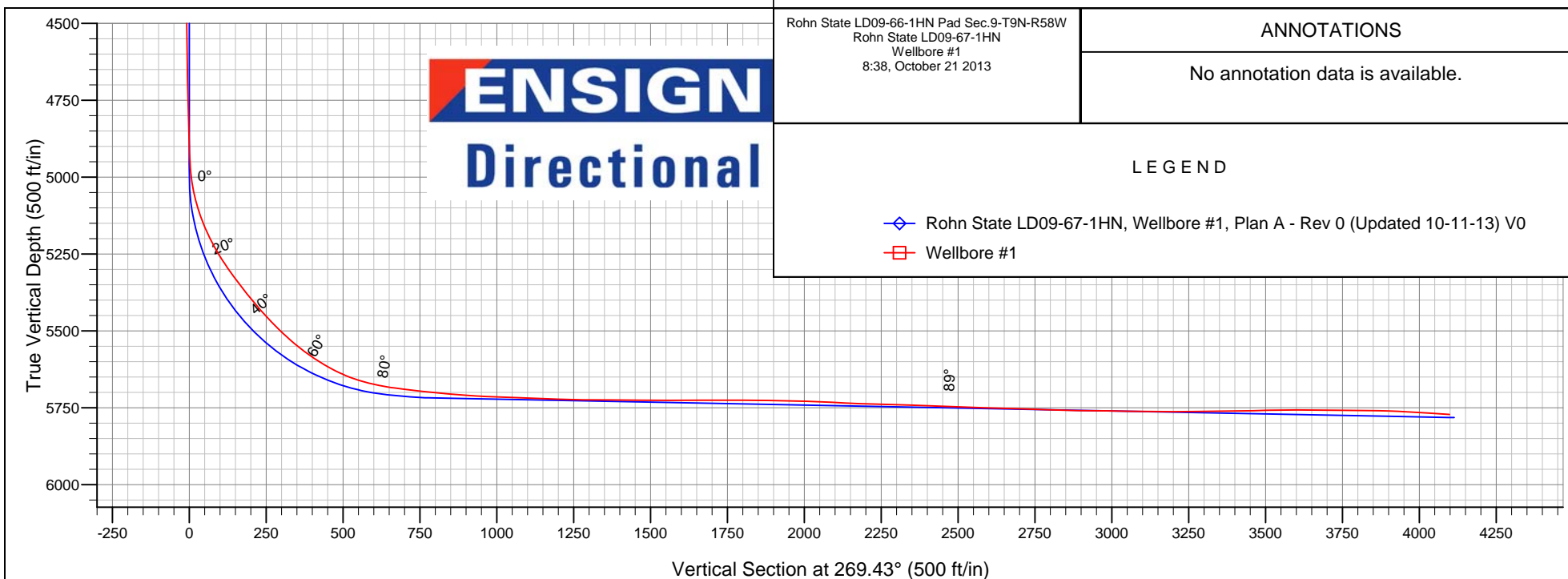
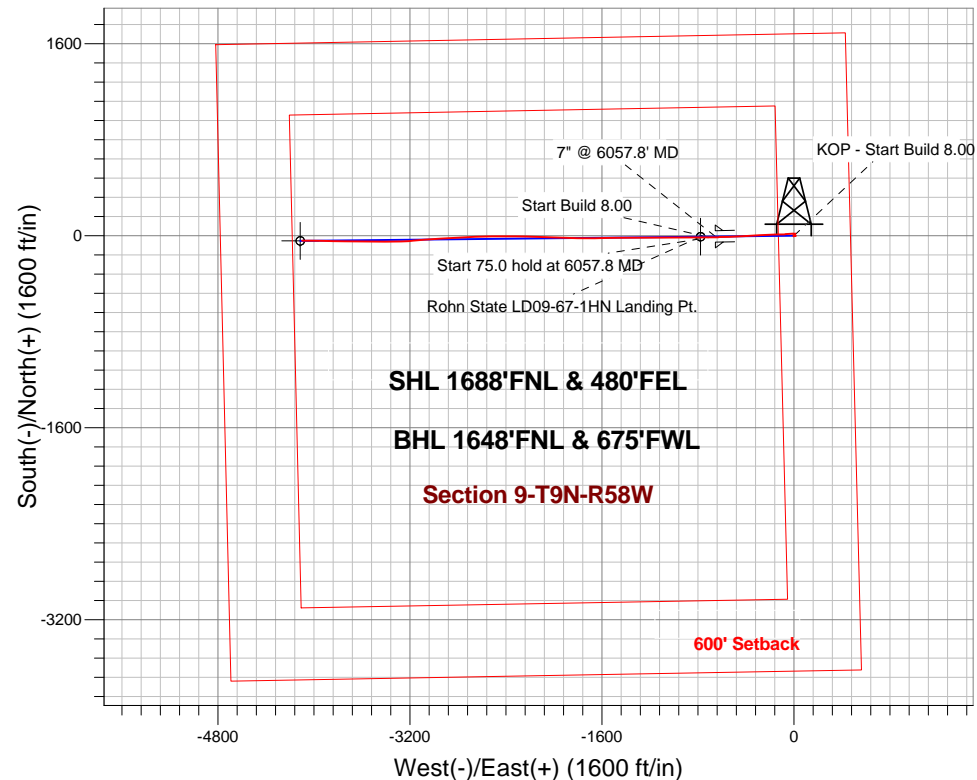
Surface Location: Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4729.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1527013.13	3453782.72	40.768530	-103.861680	

H&P 273 RKB - 24' WELL @ 4753.0ft (H&P 273 RKB - 24')

FINAL SURVEY

Projected Bottom Hole Location
9448' MD 5772' TVD 41' S & 4098' W of SHL
96.4 degree Incl @ 270.9 degree AZM



Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W
Rohn State LD09-67-1HN
Wellbore #1
8:38, October 21 2013

ANNOTATIONS

No annotation data is available.

LEGEND

- ◇— Rohn State LD09-67-1HN, Wellbore #1, Plan A - Rev 0 (Updated 10-11-13) 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 LD09-67-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

21 October, 2013

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
	334.0	0.60	198.50	334.0	-1.7	-0.6	0.6	0.18	0.18	0.00
	810.0	0.20	238.00	810.0	-4.5	-2.1	2.1	0.10	-0.08	8.30
	1,210.0	0.20	72.80	1,210.0	-4.6	-2.0	2.0	0.10	0.00	-41.30
	1,283.0	0.50	26.50	1,283.0	-4.3	-1.7	1.8	0.53	0.41	-63.42
	1,375.0	0.70	21.60	1,375.0	-3.4	-1.3	1.4	0.22	0.22	-5.33
	1,468.0	0.90	40.20	1,468.0	-2.3	-0.6	0.7	0.35	0.22	20.00
	1,559.0	0.90	41.60	1,559.0	-1.3	0.3	-0.3	0.02	0.00	1.54
	1,652.0	1.00	54.00	1,651.9	-0.2	1.4	-1.4	0.25	0.11	13.33
	1,934.0	1.30	107.40	1,933.9	0.3	6.5	-6.5	0.38	0.11	18.94

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-67-1HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4753.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4753.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-67-1HN	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)
2,219.0	1.70	95.80	2,218.8	-1.1	13.8	-13.8	0.18	0.14	-4.07
2,409.0	0.50	291.10	2,408.8	-1.1	15.8	-15.8	1.15	-0.63	-86.68
2,598.0	0.90	280.50	2,597.8	-0.6	13.6	-13.6	0.22	0.21	-5.61
2,788.0	0.90	297.40	2,787.7	0.4	10.8	-10.8	0.14	0.00	8.89
2,978.0	1.10	346.60	2,977.7	2.9	9.0	-9.1	0.45	0.11	25.89
3,168.0	1.40	2.10	3,167.7	7.0	8.7	-8.8	0.24	0.16	8.16
3,357.0	1.60	2.80	3,356.6	11.9	8.9	-9.0	0.11	0.11	0.37
3,547.0	0.90	56.40	3,546.6	15.4	10.3	-10.4	0.68	-0.37	28.21
3,736.0	0.90	63.30	3,735.5	16.9	12.8	-13.0	0.06	0.00	3.65
3,926.0	0.50	319.60	3,925.5	18.2	13.6	-13.8	0.59	-0.21	-54.58
4,116.0	1.10	249.20	4,115.5	18.2	11.4	-11.6	0.55	0.32	-37.05
4,305.0	0.40	225.70	4,304.5	17.0	9.2	-9.4	0.40	-0.37	-12.43
4,495.0	0.60	220.60	4,494.5	15.8	8.1	-8.3	0.11	0.11	-2.68
4,684.0	1.10	287.00	4,683.5	15.6	5.7	-5.9	0.54	0.26	35.13
4,874.0	2.00	276.10	4,873.4	16.5	0.7	-0.8	0.50	0.47	-5.74
4,970.0	3.70	275.40	4,969.3	17.0	-4.1	3.9	1.77	1.77	-0.73
5,065.0	13.30	268.60	5,063.1	17.0	-18.1	17.9	10.14	10.11	-7.16
5,160.0	22.30	264.00	5,153.5	14.8	-47.0	46.8	9.58	9.47	-4.84
5,254.0	29.90	266.10	5,237.8	11.4	-88.2	88.0	8.14	8.09	2.23
5,349.0	36.50	269.10	5,317.3	9.3	-140.1	140.0	7.16	6.95	3.16
5,444.0	38.90	269.50	5,392.5	8.6	-198.2	198.1	2.54	2.53	0.42
5,539.0	43.40	266.80	5,464.0	6.5	-260.6	260.6	5.09	4.74	-2.84
5,634.0	48.70	266.30	5,529.9	2.4	-328.9	328.8	5.59	5.58	-0.53
5,728.0	55.80	266.30	5,587.4	-2.4	-403.0	403.0	7.55	7.55	0.00
5,823.0	64.30	267.20	5,634.8	-7.0	-485.1	485.1	8.98	8.95	0.95
5,918.0	75.30	268.20	5,667.5	-10.6	-574.1	574.1	11.62	11.58	1.05
6,013.0	82.50	269.80	5,685.8	-12.2	-667.2	667.3	7.76	7.58	1.68
6,125.8	84.07	269.56	5,699.0	-12.8	-779.2	779.3	1.40	1.39	-0.21
Rohn State LD09-67-1HN Landing Pt.									
6,157.0	84.50	269.50	5,702.1	-13.1	-810.3	810.4	1.40	1.39	-0.21
6,250.0	85.90	269.60	5,709.9	-13.8	-902.9	903.0	1.51	1.51	0.11
6,343.0	88.00	269.60	5,714.8	-14.4	-995.8	995.9	2.26	2.26	0.00
6,438.0	88.00	269.50	5,718.2	-15.2	-1,090.7	1,090.8	0.11	0.00	-0.11
6,533.0	87.60	269.10	5,721.8	-16.3	-1,185.7	1,185.8	0.60	-0.42	-0.42
6,627.0	89.30	269.50	5,724.4	-17.5	-1,279.6	1,279.7	1.86	1.81	0.43
6,722.0	90.00	270.30	5,724.9	-17.7	-1,374.6	1,374.7	1.12	0.74	0.84
6,817.0	89.30	269.50	5,725.5	-17.8	-1,469.6	1,469.7	1.12	-0.74	-0.84
6,912.0	90.10	269.50	5,726.0	-18.7	-1,564.6	1,564.7	0.84	0.84	0.00
7,007.0	90.00	269.10	5,725.9	-19.8	-1,659.6	1,659.7	0.43	-0.11	-0.42
7,102.0	90.30	270.20	5,725.7	-20.4	-1,754.6	1,754.7	1.20	0.32	1.16
7,197.0	88.80	271.00	5,726.4	-19.4	-1,849.6	1,849.7	1.79	-1.58	0.84
7,292.0	89.40	271.90	5,727.9	-17.0	-1,944.5	1,944.6	1.14	0.63	0.95
7,386.0	87.70	272.60	5,730.3	-13.3	-2,038.4	2,038.5	1.96	-1.81	0.74
7,481.0	87.20	272.30	5,734.5	-9.3	-2,133.2	2,133.2	0.61	-0.53	-0.32
7,576.0	88.40	270.90	5,738.2	-6.6	-2,228.1	2,228.1	1.94	1.26	-1.47
7,671.0	88.40	270.70	5,740.8	-5.3	-2,323.1	2,323.0	0.21	0.00	-0.21
7,766.0	87.60	270.20	5,744.1	-4.5	-2,418.0	2,417.9	0.99	-0.84	-0.53
7,861.0	88.20	268.90	5,747.6	-5.3	-2,513.0	2,512.9	1.51	0.63	-1.37
7,956.0	88.00	268.20	5,750.8	-7.7	-2,607.9	2,607.8	0.77	-0.21	-0.74
8,051.0	88.40	267.20	5,753.8	-11.5	-2,702.7	2,702.7	1.13	0.42	-1.05
8,145.0	87.80	266.80	5,756.9	-16.4	-2,796.6	2,796.6	0.77	-0.64	-0.43
8,240.0	89.30	267.40	5,759.3	-21.2	-2,891.4	2,891.5	1.70	1.58	0.63

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD09-67-1HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4753.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD09-66-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4753.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD09-67-1HN	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)	
8,335.0	89.30	266.30	5,760.4	-26.4	-2,986.3	2,986.4	1.16	0.00	-1.16	
8,430.0	89.10	264.70	5,761.8	-33.9	-3,081.0	3,081.1	1.70	-0.21	-1.68	
8,525.0	89.70	265.40	5,762.8	-42.1	-3,175.6	3,175.9	0.97	0.63	0.74	
8,620.0	90.80	267.90	5,762.3	-47.6	-3,270.4	3,270.7	2.87	1.16	2.63	
8,714.0	90.70	270.20	5,761.1	-49.2	-3,364.4	3,364.7	2.45	-0.11	2.45	
8,809.0	90.90	270.20	5,759.8	-48.9	-3,459.4	3,459.7	0.21	0.21	0.00	
8,904.0	91.30	270.50	5,758.0	-48.3	-3,554.4	3,554.7	0.53	0.42	0.32	
8,999.0	89.30	270.50	5,757.5	-47.4	-3,649.4	3,649.6	2.11	-2.11	0.00	
9,093.0	89.40	270.70	5,758.5	-46.5	-3,743.3	3,743.6	0.24	0.11	0.21	
9,188.0	89.70	270.90	5,759.3	-45.1	-3,838.3	3,838.6	0.38	0.32	0.21	
9,283.0	87.10	270.90	5,761.9	-43.6	-3,933.3	3,933.5	2.74	-2.74	0.00	
9,378.0	86.40	270.90	5,767.3	-42.2	-4,028.1	4,028.3	0.74	-0.74	0.00	
9,448.0	86.40	270.90	5,771.7	-41.1	-4,098.0	4,098.2	0.00	0.00	0.00	
Rohn State LD09-67-1HN BHL 1650'FNL, 660'FWL										

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