

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

Well Name: **Rohn State LD04-64-1HN**

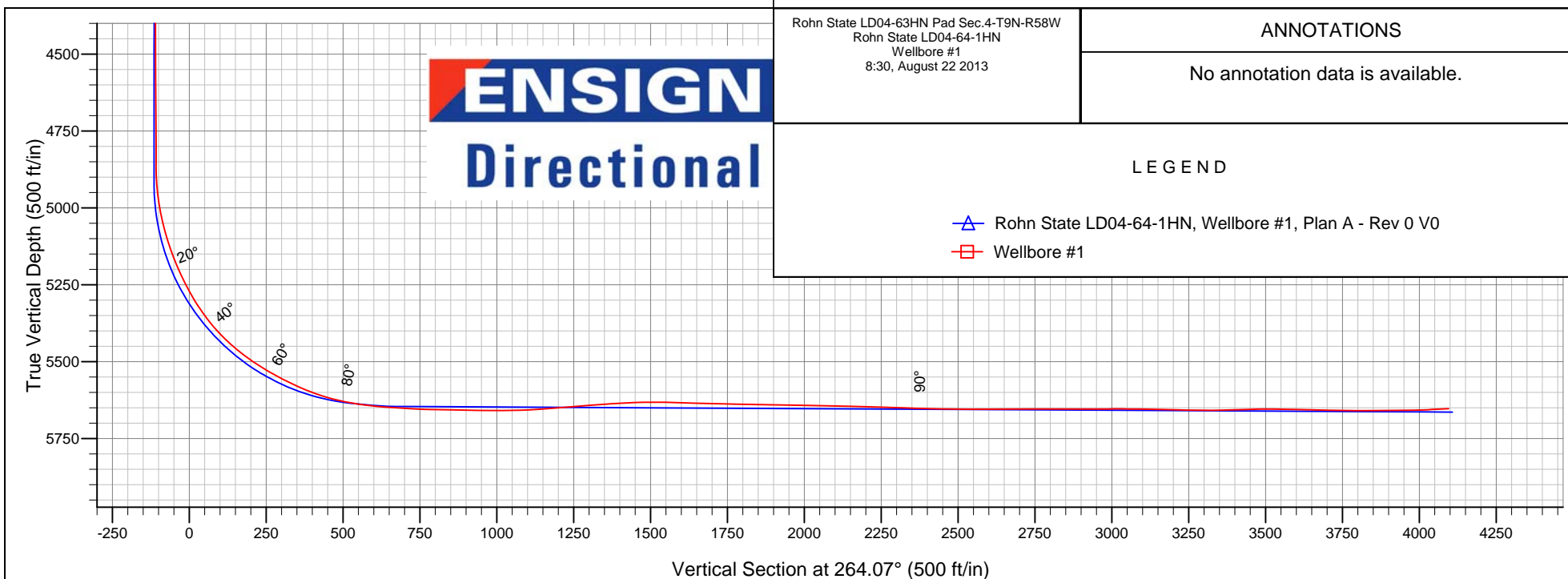
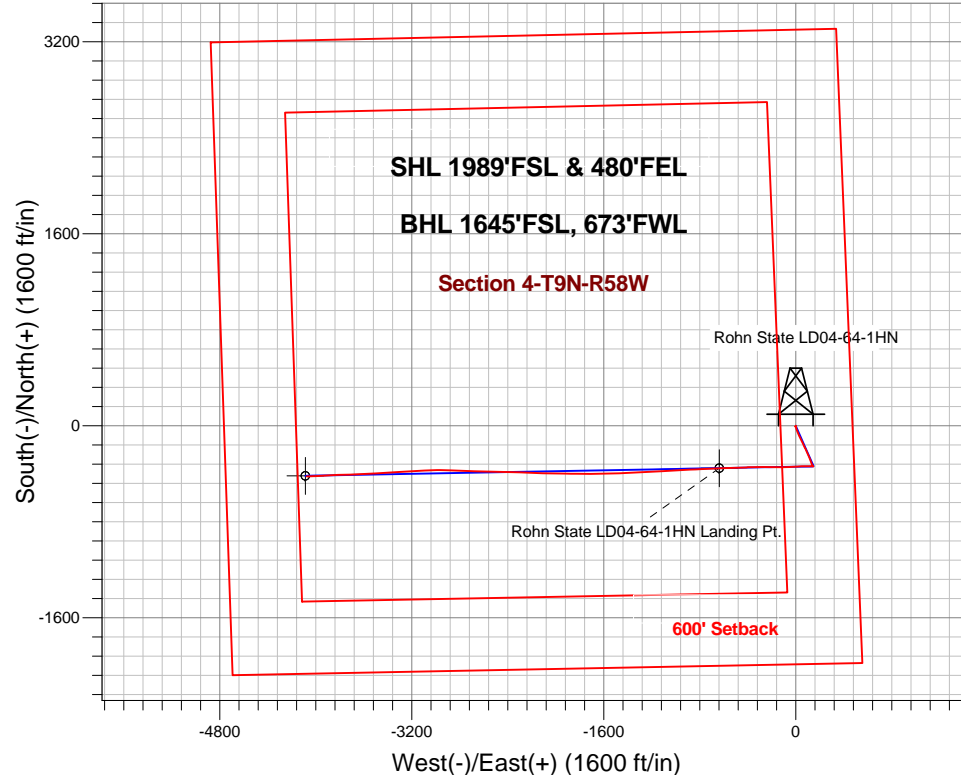
Surface Location: Rohn State LD04-63HN Pad Sec.4-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4708.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1530683.91	3453656.73	40.778610	-103.861890	

H&P 273 RKB - 24' WELL @ 4732.0ft (H&P 273 RKB - 24')

FINAL SURVEY

Projected Bottom Hole Location
9566' MD 5653' TVD 423' S & 4073' W of SHL
92.8 degree Incl @ 267.2 degree AZM





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

Sec.4-T9N-R58W

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

Rohn State LD04-64-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

22 August, 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)
Main Survey	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	350.0	1.00	179.80	350.0	-3.1	0.0	0.3	0.29	0.29	0.00
	700.0	0.10	180.60	700.0	-6.4	0.0	0.6	0.26	-0.26	0.23
	1,200.0	0.10	260.60	1,200.0	-6.9	-0.4	1.1	0.03	0.00	16.00
	1,282.0	0.80	352.10	1,282.0	-6.4	-0.6	1.2	0.99	0.85	111.59
	1,468.0	0.70	350.00	1,467.9	-4.0	-0.9	1.3	0.06	-0.05	-1.13
	1,563.0	0.90	171.80	1,562.9	-4.1	-0.9	1.4	1.68	0.21	-187.58
	1,658.0	2.30	173.00	1,657.9	-6.8	-0.6	1.3	1.47	1.47	1.26
	1,752.0	3.80	158.90	1,751.8	-11.5	0.8	0.4	1.77	1.60	-15.00
	1,847.0	5.30	153.50	1,846.5	-18.4	3.8	-1.9	1.64	1.58	-5.68
	1,942.0	5.70	162.50	1,941.0	-26.8	7.2	-4.4	1.00	0.42	9.47
	2,037.0	7.30	162.80	2,035.4	-37.1	10.4	-6.5	1.68	1.68	0.32
	2,132.0	7.30	162.80	2,130.4	-37.1	10.4	-6.5	1.68	1.68	0.32
	2,227.0	7.30	162.80	2,225.4	-37.1	10.4	-6.5	1.68	1.68	0.32
	2,322.0	7.30	162.80	2,320.4	-37.1	10.4	-6.5	1.68	1.68	0.32

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD04-64-1HN
Project:	Sec.4-T9N-R58W	TVD Reference:	WELL @ 4732.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD04-63HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4732.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD04-64-1HN	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)
2,132.0	8.20	162.10	2,129.5	-49.3	14.3	-9.1	0.95	0.95	-0.74
2,227.0	8.80	159.60	2,223.5	-62.6	18.9	-12.3	0.74	0.63	-2.63
2,322.0	9.50	155.90	2,317.3	-76.5	24.6	-16.6	0.96	0.74	-3.89
2,417.0	9.70	153.50	2,411.0	-90.9	31.4	-21.9	0.47	0.21	-2.53
2,512.0	9.80	152.10	2,504.6	-105.2	38.8	-27.7	0.27	0.11	-1.47
2,607.0	9.80	150.70	2,598.2	-119.4	46.5	-33.9	0.25	0.00	-1.47
2,701.0	10.00	156.30	2,690.8	-133.8	53.7	-39.6	1.05	0.21	5.96
2,796.0	9.10	153.70	2,784.5	-148.1	60.3	-44.7	1.05	-0.95	-2.74
2,891.0	9.00	155.80	2,878.3	-161.6	66.7	-49.7	0.36	-0.11	2.21
2,986.0	8.40	156.60	2,972.2	-174.8	72.5	-54.1	0.64	-0.63	0.84
3,081.0	8.60	149.80	3,066.2	-187.3	78.9	-59.1	1.08	0.21	-7.16
3,175.0	9.20	158.10	3,159.0	-200.3	85.2	-64.0	1.51	0.64	8.83
3,270.0	10.00	156.80	3,252.7	-214.9	91.3	-68.6	0.87	0.84	-1.37
3,365.0	10.50	157.70	3,346.2	-230.5	97.8	-73.5	0.55	0.53	0.95
3,460.0	11.90	155.90	3,439.4	-247.5	105.1	-79.0	1.52	1.47	-1.89
3,555.0	12.00	155.10	3,532.3	-265.4	113.2	-85.2	0.20	0.11	-0.84
3,649.0	9.90	158.60	3,624.6	-281.8	120.3	-90.6	2.34	-2.23	3.72
3,744.0	9.00	161.00	3,718.3	-296.4	125.7	-94.4	1.03	-0.95	2.53
3,839.0	6.90	161.00	3,812.4	-308.8	130.0	-97.4	2.21	-2.21	0.00
3,934.0	5.80	159.10	3,906.8	-318.7	133.6	-99.9	1.18	-1.16	-2.00
4,029.0	5.00	158.10	4,001.4	-327.0	136.8	-102.3	0.85	-0.84	-1.05
4,123.0	3.20	145.80	4,095.2	-333.0	139.8	-104.7	2.12	-1.91	-13.09
4,218.0	2.30	141.70	4,190.0	-336.7	142.5	-107.0	0.97	-0.95	-4.32
4,313.0	1.30	128.50	4,285.0	-338.8	144.5	-108.7	1.13	-1.05	-13.89
4,408.0	0.40	118.00	4,380.0	-339.7	145.7	-109.8	0.96	-0.95	-11.05
4,598.0	0.70	290.20	4,570.0	-339.6	145.1	-109.3	0.58	0.16	90.63
4,818.0	0.40	313.60	4,790.0	-338.6	143.3	-107.6	0.17	-0.14	10.64
4,878.0	0.20	36.10	4,850.0	-338.4	143.2	-107.5	0.71	-0.33	137.50
4,973.0	5.00	262.50	4,944.9	-338.8	139.2	-103.5	5.41	5.05	-140.63
5,067.0	13.30	272.00	5,037.6	-338.9	124.3	-88.7	8.95	8.83	10.11
5,162.0	19.10	271.60	5,128.8	-338.1	97.9	-62.4	6.11	6.11	-0.42
5,257.0	24.40	268.10	5,217.0	-338.3	62.7	-27.4	5.74	5.58	-3.68
5,352.0	31.60	266.90	5,300.8	-340.3	18.2	17.1	7.60	7.58	-1.26
5,447.0	39.50	266.70	5,378.0	-343.4	-36.9	72.2	8.32	8.32	-0.21
5,542.0	48.40	269.10	5,446.4	-345.7	-102.8	137.9	9.53	9.37	2.53
5,637.0	57.10	270.40	5,503.8	-346.0	-178.3	213.1	9.22	9.16	1.37
5,730.0	61.60	270.40	5,551.2	-345.4	-258.3	292.6	4.84	4.84	0.00
5,825.0	67.90	269.10	5,591.7	-345.8	-344.2	378.0	6.75	6.63	-1.37
5,920.0	75.10	267.60	5,621.8	-348.5	-434.2	467.8	7.73	7.58	-1.58
5,963.0	79.10	268.10	5,631.4	-350.0	-476.0	509.6	9.37	9.30	1.16
6,088.0	86.10	268.30	5,647.5	-353.9	-599.9	633.2	5.60	5.60	0.16
6,124.9	86.26	267.75	5,650.0	-355.2	-636.7	670.0	1.55	0.42	-1.49
Rohn State LD04-64-1HN Landing Pt.									
6,182.0	86.50	266.90	5,653.6	-357.8	-693.6	726.8	1.55	0.43	-1.49
6,275.0	89.60	268.10	5,656.8	-361.9	-786.4	819.6	3.57	3.33	1.29
6,368.0	89.00	266.50	5,657.9	-366.3	-879.3	912.4	1.84	-0.65	-1.72
6,463.0	89.50	266.50	5,659.1	-372.1	-974.1	1,007.3	0.53	0.53	0.00
6,557.0	92.90	267.40	5,657.2	-377.1	-1,068.0	1,101.2	3.74	3.62	0.96
6,652.0	94.60	267.40	5,651.0	-381.4	-1,162.6	1,195.8	1.79	1.79	0.00
6,747.0	94.70	266.90	5,643.3	-386.1	-1,257.2	1,290.4	0.54	0.11	-0.53
6,842.0	93.60	266.70	5,636.4	-391.4	-1,351.8	1,385.0	1.18	-1.16	-0.21
6,937.0	91.20	267.40	5,632.4	-396.3	-1,446.6	1,479.8	2.63	-2.53	0.74
7,032.0	88.00	268.40	5,633.1	-399.7	-1,541.5	1,574.6	3.53	-3.37	1.05

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD04-64-1HN
Project:	Sec.4-T9N-R58W	TVD Reference:	WELL @ 4732.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD04-63HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4732.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD04-64-1HN	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)
7,127.0	88.60	269.70	5,635.9	-401.3	-1,636.5	1,669.2	1.51	0.63	1.37
7,222.0	88.60	270.60	5,638.2	-401.1	-1,731.4	1,763.6	0.95	0.00	0.95
7,317.0	88.90	270.00	5,640.3	-400.6	-1,826.4	1,858.0	0.71	0.32	-0.63
7,412.0	89.60	271.10	5,641.5	-399.7	-1,921.4	1,952.4	1.37	0.74	1.16
7,507.0	88.80	271.10	5,642.9	-397.8	-2,016.4	2,046.7	0.84	-0.84	0.00
7,601.0	88.50	271.80	5,645.1	-395.5	-2,110.3	2,139.9	0.81	-0.32	0.74
7,696.0	88.10	271.60	5,647.9	-392.6	-2,205.2	2,234.0	0.47	-0.42	-0.21
7,791.0	88.20	272.30	5,651.0	-389.4	-2,300.1	2,328.0	0.74	0.11	0.74
7,886.0	88.90	271.80	5,653.4	-386.0	-2,395.0	2,422.1	0.91	0.74	-0.53
7,981.0	89.60	271.30	5,654.6	-383.4	-2,490.0	2,516.3	0.91	0.74	-0.53
8,075.0	89.80	270.70	5,655.1	-381.8	-2,584.0	2,609.6	0.67	0.21	-0.64
8,170.0	90.70	271.80	5,654.7	-379.7	-2,678.9	2,703.8	1.50	0.95	1.16
8,265.0	90.30	273.00	5,653.8	-375.7	-2,773.9	2,797.8	1.33	-0.42	1.26
8,360.0	89.40	271.30	5,654.1	-372.2	-2,868.8	2,891.9	2.02	-0.95	-1.79
8,454.0	90.60	270.60	5,654.1	-370.6	-2,962.8	2,985.2	1.48	1.28	-0.74
8,549.0	89.10	267.40	5,654.3	-372.3	-3,057.7	3,079.8	3.72	-1.58	-3.37
8,644.0	88.70	267.20	5,656.2	-376.8	-3,152.6	3,174.7	0.47	-0.42	-0.21
8,739.0	88.90	266.30	5,658.2	-382.1	-3,247.4	3,269.5	0.97	0.21	-0.95
8,834.0	91.50	266.30	5,657.8	-388.3	-3,342.2	3,364.5	2.74	2.74	0.00
8,929.0	91.90	266.90	5,655.0	-393.9	-3,437.0	3,459.3	0.76	0.42	0.63
9,023.0	88.50	266.90	5,654.7	-399.0	-3,530.9	3,553.2	3.62	-3.62	0.00
9,118.0	88.70	267.60	5,657.0	-403.5	-3,625.7	3,648.0	0.77	0.21	0.74
9,213.0	89.30	268.10	5,658.7	-407.1	-3,720.7	3,742.8	0.82	0.63	0.53
9,308.0	90.00	267.90	5,659.2	-410.4	-3,815.6	3,837.6	0.77	0.74	-0.21
9,403.0	90.50	266.90	5,658.8	-414.7	-3,910.5	3,932.4	1.18	0.53	-1.05
9,498.0	92.30	267.20	5,656.5	-419.6	-4,005.3	4,027.3	1.92	1.89	0.32
9,511.0	92.80	267.20	5,655.9	-420.3	-4,018.3	4,040.2	3.85	3.85	0.00
9,566.0	92.80	267.20	5,653.2	-422.9	-4,073.2	4,095.1	0.00	0.00	0.00
Rohn State LD04-64-1HN BHL 1650'FSL, 660'FWL									

Checked By: _____ Approved By: _____ Date: _____