

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

Well Name: **Rohn State LD04-66HN**

Surface Location: Rohn State LD04-65HN Pad Sec.4-T9N-R58W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

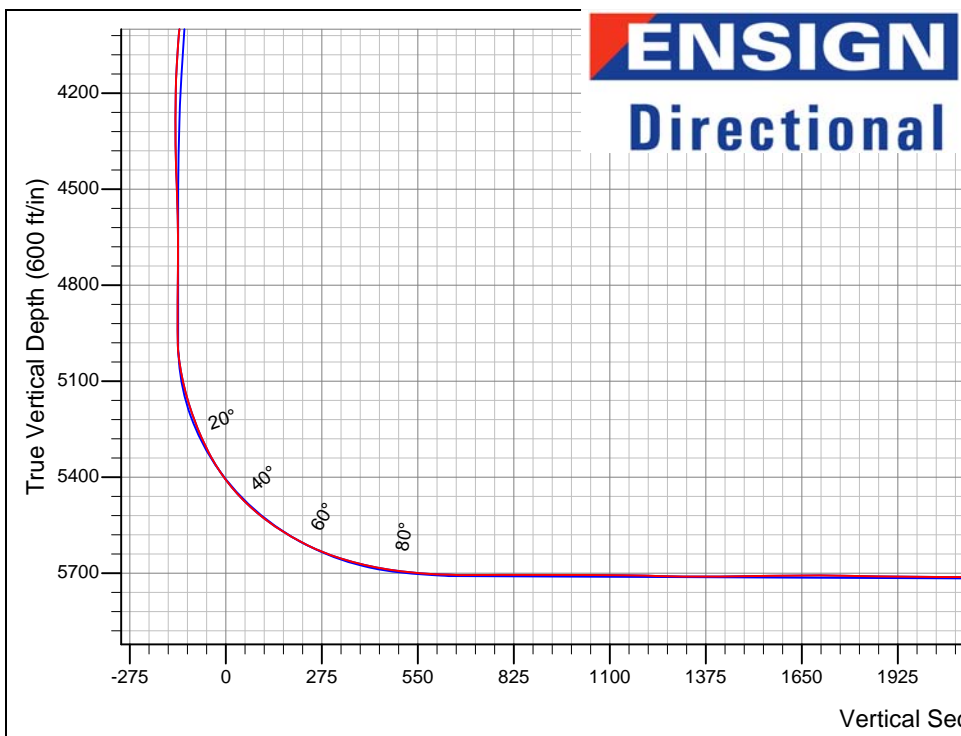
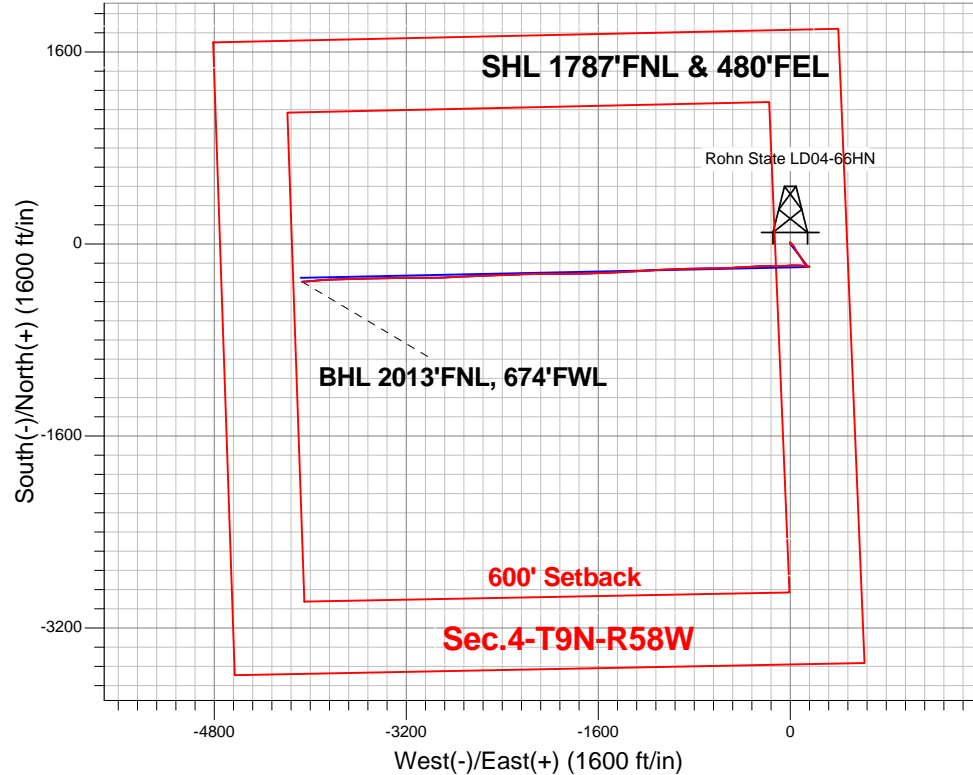
Ground Elevation: 4706.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1532198.63	3453592.73	40.782770	-103.862020	

H&P 273 RKB - 24' WELL @ 4730.0ft (H&P 273 RKB - 24')

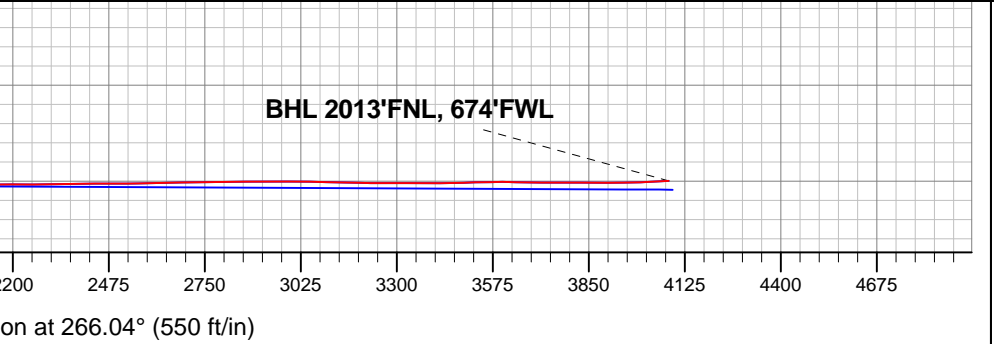
FINAL SURVEY

Projected Bottom Hole Location
 9628'MD 5700'TVD 316'S &
 4067'W of SHL 93.00 degree Incl
 @ 264.90 degree AZM



Rohn State LD04-65HN Pad Sec.4-T9N-R58W Rohn State LD04-66HN Wellbore #1 17:17, July 18 2013	ANNOTATIONS
	No annotation data is available.

LEGEND
<ul style="list-style-type: none"> ○ Rohn State LD04-66HN, Wellbore #1, Plan A - Rev 1 (Updated 7-11-13) V0 □ Wellbore #1 ○ Survey #1





Directional

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

Sec.4-T9N-R58W

Rohn State LD04-65HN Pad Sec.4-T9N-R58W

Rohn State LD04-66HN

Wellbore #1

Survey: Survey #1

Standard Survey Report

18 July, 2013

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD04-66HN
Project:	Sec.4-T9N-R58W	TVD Reference:	WELL @ 4730.0ft (H&P 273 RKB - 24')
Site:	Rohn State LD04-65HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4730.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD04-66HN	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 LD04-65HN Pad Sec.4-T9N-R58W				
Site Position:		Northing:	1,532,122.19ft	Latitude:	40.782560
From:	Lat/Long	Easting:	3,453,596.92ft	Longitude:	-103.862010
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.06 °

Well	Rohn State LD04-66HN					
Well Position	+N/-S	0.0 ft	Northing:	1,532,198.63 ft	Latitude:	40.782770
	+E/-W	0.0 ft	Easting:	3,453,592.73 ft	Longitude:	-103.862020
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,706.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/11/2013	8.06	67.44	53,227

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	266.04	

Survey Program	Date	7/18/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
1,281.0	9,628.0	Survey #1 (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	
1,281.0	1.00	354.00	1,280.9	11.1	-1.2	0.4	0.08	0.08	0.00	
1,562.0	0.80	170.80	1,561.9	11.6	-1.1	0.3	0.64	-0.07	62.92	
1,752.0	1.30	148.30	1,751.9	8.5	0.2	-0.8	0.34	0.26	-11.84	
1,847.0	1.30	139.40	1,846.9	6.7	1.5	-2.0	0.21	0.00	-9.37	
1,941.0	2.80	123.90	1,940.8	4.7	4.1	-4.4	1.69	1.60	-16.49	
2,036.0	4.00	126.20	2,035.6	1.4	8.7	-8.8	1.27	1.26	2.42	
2,131.0	5.20	133.60	2,130.3	-3.5	14.5	-14.2	1.41	1.26	7.79	
2,226.0	6.50	141.30	2,224.8	-10.7	21.0	-20.2	1.60	1.37	8.11	
2,321.0	5.60	143.10	2,319.3	-18.6	27.1	-25.8	0.97	-0.95	1.89	
2,416.0	7.00	150.40	2,413.7	-27.3	32.8	-30.8	1.70	1.47	7.68	
2,510.0	7.50	151.30	2,507.0	-37.7	38.5	-35.8	0.55	0.53	0.96	

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Site:	Rohn State LD04-65HN Pad Sec.4-T9N-R58W	MD Reference:	WELL @ 4730.0ft (H&P 273 RKB - 24')
Well:	Rohn State LD04-66HN	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)
2,605.0	7.60	151.20	2,601.2	-48.6	44.5	-41.1	0.11	0.11	-0.11
2,700.0	7.30	149.60	2,695.4	-59.4	50.6	-46.4	0.38	-0.32	-1.68
2,795.0	6.20	148.20	2,789.7	-68.9	56.4	-51.5	1.17	-1.16	-1.47
2,890.0	6.00	144.60	2,884.2	-77.3	62.0	-56.5	0.45	-0.21	-3.79
2,984.0	5.20	139.00	2,977.7	-84.5	67.6	-61.6	1.03	-0.85	-5.96
3,079.0	6.20	147.30	3,072.2	-92.1	73.2	-66.7	1.36	1.05	8.74
3,174.0	7.70	147.30	3,166.5	-101.8	79.4	-72.2	1.58	1.58	0.00
3,269.0	8.00	148.70	3,260.6	-112.8	86.3	-78.3	0.37	0.32	1.47
3,364.0	8.40	148.20	3,354.7	-124.3	93.4	-84.5	0.43	0.42	-0.53
3,459.0	9.50	148.30	3,448.5	-136.9	101.1	-91.4	1.16	1.16	0.11
3,554.0	9.40	141.00	3,542.2	-149.6	110.1	-99.5	1.27	-0.11	-7.68
3,649.0	8.20	147.10	3,636.1	-161.3	118.7	-107.3	1.60	-1.26	6.42
3,743.0	7.90	148.20	3,729.2	-172.4	125.8	-113.5	0.36	-0.32	1.17
3,838.0	6.30	135.20	3,823.5	-181.7	132.9	-120.0	2.38	-1.68	-13.68
3,933.0	5.30	121.10	3,918.0	-187.7	140.3	-127.0	1.82	-1.05	-14.84
4,028.0	4.60	97.40	4,012.6	-190.4	147.8	-134.3	2.26	-0.74	-24.95
4,123.0	2.70	86.50	4,107.4	-190.8	153.8	-140.3	2.12	-2.00	-11.47
4,218.0	1.30	63.10	4,202.4	-190.1	157.0	-143.5	1.68	-1.47	-24.63
4,312.0	0.10	343.60	4,296.4	-189.6	158.0	-144.5	1.37	-1.28	-84.57
4,407.0	1.10	252.80	4,391.4	-189.8	157.1	-143.6	1.16	1.05	-95.58
4,502.0	2.20	243.10	4,486.3	-190.9	154.6	-141.0	1.19	1.16	-10.21
4,597.0	1.80	234.50	4,581.3	-192.6	151.7	-138.1	0.53	-0.42	-9.05
4,691.0	0.40	45.20	4,675.3	-193.2	150.8	-137.1	2.34	-1.49	181.60
4,786.0	0.30	27.40	4,770.3	-192.7	151.1	-137.4	0.15	-0.11	-18.74
4,881.0	0.30	92.10	4,865.2	-192.5	151.5	-137.8	0.34	0.00	68.11
4,972.0	0.20	94.00	4,956.2	-192.5	151.9	-138.2	0.11	-0.11	2.09
5,067.0	8.50	282.50	5,050.9	-191.0	145.2	-131.6	9.16	8.74	-180.53
5,162.0	15.00	283.90	5,143.9	-186.5	126.4	-113.2	6.85	6.84	1.47
5,257.0	19.90	276.30	5,234.5	-181.8	98.3	-85.5	5.68	5.16	-8.00
5,352.0	25.50	271.40	5,322.1	-179.5	61.8	-49.2	6.22	5.89	-5.16
5,446.0	33.50	267.70	5,403.8	-180.1	15.6	-3.1	8.72	8.51	-3.94
5,541.0	43.40	267.90	5,478.2	-182.3	-43.4	55.9	10.42	10.42	0.21
5,636.0	51.80	270.00	5,542.2	-183.5	-113.5	125.9	8.99	8.84	2.21
5,731.0	59.00	268.90	5,596.1	-184.3	-191.6	203.9	7.64	7.58	-1.16
5,825.0	67.50	267.20	5,638.3	-187.2	-275.4	287.7	9.19	9.04	-1.81
5,920.0	74.60	266.10	5,669.2	-192.5	-365.0	377.5	7.55	7.47	-1.16
6,015.0	80.50	267.00	5,689.6	-198.1	-457.6	470.2	6.28	6.21	0.95
6,031.0	82.00	267.20	5,692.1	-198.9	-473.4	486.0	9.46	9.38	1.25
6,184.0	88.20	269.60	5,705.1	-203.1	-625.7	638.2	4.34	4.05	1.57
6,195.4	88.51	269.51	5,705.5	-203.2	-637.1	649.6	2.79	2.69	-0.75
Rohn State LD04-66HN Landing Pt.									
6,277.0	90.70	268.90	5,706.0	-204.3	-718.7	731.1	2.79	2.69	-0.75
6,370.0	90.00	268.70	5,705.5	-206.3	-811.7	824.0	0.78	-0.75	-0.22
6,465.0	89.70	267.20	5,705.7	-209.7	-906.6	918.9	1.61	-0.32	-1.58
6,560.0	90.00	267.90	5,706.0	-213.7	-1,001.5	1,013.9	0.80	0.32	0.74
6,654.0	89.60	268.40	5,706.3	-216.8	-1,095.5	1,107.8	0.68	-0.43	0.53
6,749.0	88.40	266.60	5,708.0	-220.9	-1,190.3	1,202.8	2.28	-1.26	-1.89
6,844.0	89.10	266.60	5,710.0	-226.5	-1,285.1	1,297.7	0.74	0.74	0.00
6,939.0	89.90	266.60	5,710.9	-232.2	-1,380.0	1,392.7	0.84	0.84	0.00
7,034.0	91.40	265.90	5,709.8	-238.4	-1,474.8	1,487.7	1.74	1.58	-0.74
7,129.0	90.60	267.50	5,708.1	-243.8	-1,569.6	1,582.7	1.88	-0.84	1.68
7,223.0	90.20	269.10	5,707.5	-246.6	-1,663.5	1,676.6	1.75	-0.43	1.70
7,318.0	88.50	269.80	5,708.5	-247.5	-1,758.5	1,771.4	1.94	-1.79	0.74

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Survey									
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7,413.0	89.20	270.20	5,710.4	-247.5	-1,853.5	1,866.2	0.85	0.74	0.42
7,508.0	89.40	269.50	5,711.6	-247.8	-1,948.5	1,961.0	0.77	0.21	-0.74
7,603.0	90.00	268.70	5,712.1	-249.3	-2,043.5	2,055.8	1.05	0.63	-0.84
7,697.0	91.20	268.90	5,711.1	-251.3	-2,137.5	2,149.7	1.29	1.28	0.21
7,792.0	89.70	268.20	5,710.4	-253.7	-2,232.4	2,244.6	1.74	-1.58	-0.74
7,887.0	91.40	266.80	5,709.5	-257.8	-2,327.3	2,339.6	2.32	1.79	-1.47
7,982.0	90.40	269.10	5,708.0	-261.2	-2,422.2	2,434.5	2.64	-1.05	2.42
8,077.0	90.00	268.60	5,707.6	-263.1	-2,517.2	2,529.4	0.67	-0.42	-0.53
8,172.0	91.90	266.50	5,706.1	-267.2	-2,612.1	2,624.3	2.98	2.00	-2.21
8,267.0	91.20	267.90	5,703.5	-271.8	-2,707.0	2,719.3	1.65	-0.74	1.47
8,362.0	90.00	267.00	5,702.5	-276.0	-2,801.9	2,814.2	1.58	-1.26	-0.95
8,456.0	90.40	268.00	5,702.2	-280.1	-2,895.8	2,908.2	1.15	0.43	1.06
8,551.0	90.00	269.80	5,701.8	-282.0	-2,990.7	3,003.1	1.94	-0.42	1.89
8,646.0	88.40	269.10	5,703.2	-282.9	-3,085.7	3,097.9	1.84	-1.68	-0.74
8,741.0	88.60	269.80	5,705.7	-283.8	-3,180.7	3,192.7	0.77	0.21	0.74
8,836.0	90.80	269.30	5,706.2	-284.5	-3,275.7	3,287.5	2.37	2.32	-0.53
8,931.0	89.00	269.50	5,706.3	-285.5	-3,370.7	3,382.3	1.91	-1.89	0.21
9,026.0	92.20	268.20	5,705.3	-287.4	-3,465.6	3,477.2	3.64	3.37	-1.37
9,120.0	90.70	268.90	5,702.9	-289.8	-3,559.6	3,571.1	1.76	-1.60	0.74
9,215.0	88.20	268.60	5,703.9	-291.9	-3,654.5	3,666.0	2.65	-2.63	-0.32
9,310.0	90.50	268.20	5,704.9	-294.5	-3,749.5	3,760.9	2.46	2.42	-0.42
9,405.0	89.30	266.80	5,705.1	-298.7	-3,844.4	3,855.8	1.94	-1.26	-1.47
9,499.0	90.90	265.60	5,704.9	-304.9	-3,938.2	3,949.8	2.13	1.70	-1.28
9,573.0	93.00	264.90	5,702.4	-311.0	-4,011.9	4,023.8	2.99	2.84	-0.95
9,628.0	93.00	264.90	5,699.5	-315.9	-4,066.6	4,078.7	0.00	0.00	0.00
Rohn State LD04-66HN BHL 1980'FNL, 660'FWL									

Checked By: _____	Approved By: _____	Date: _____
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