

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

Well Name: **Rohn State LD10-69-1HN**

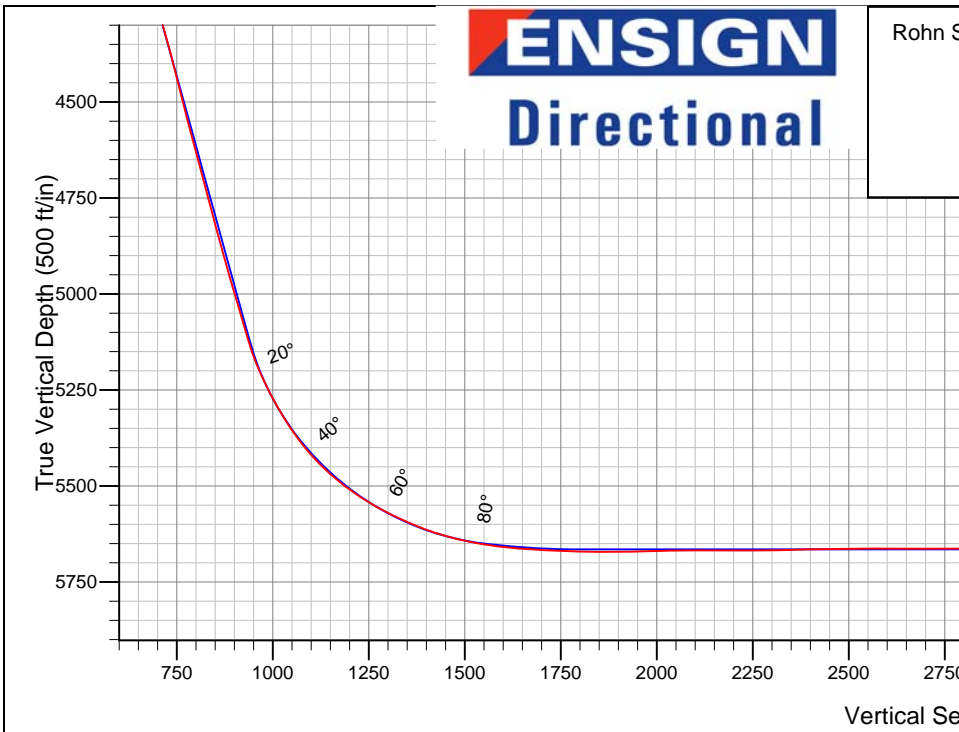
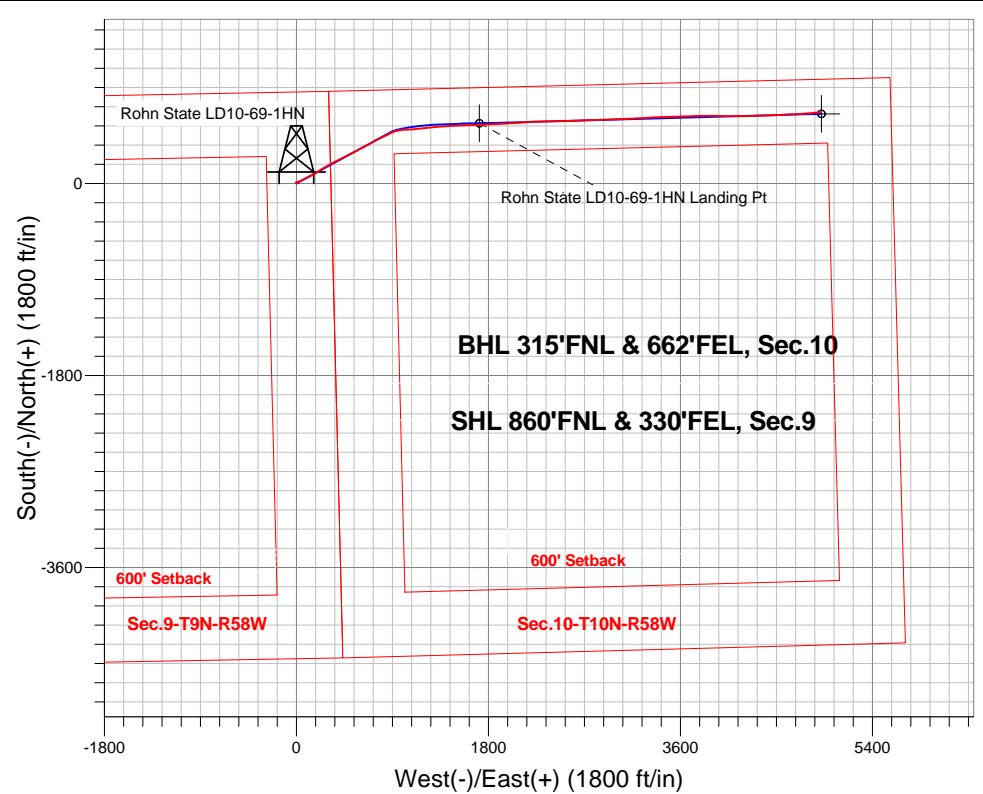
Surface Location: Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4739.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1527842.68	3453911.45	40.770800	-103.861160	

PD 828 RKB - 16' WELL @ 4755.0ft (PD 828 RKB - 16')

## FINAL SURVEY

Projected Bottom Hole Location  
 9551'MD 5658'TVD 668'N & 4920'E of SHL  
 91.2 degree Incl @ 84.8 degree AZM

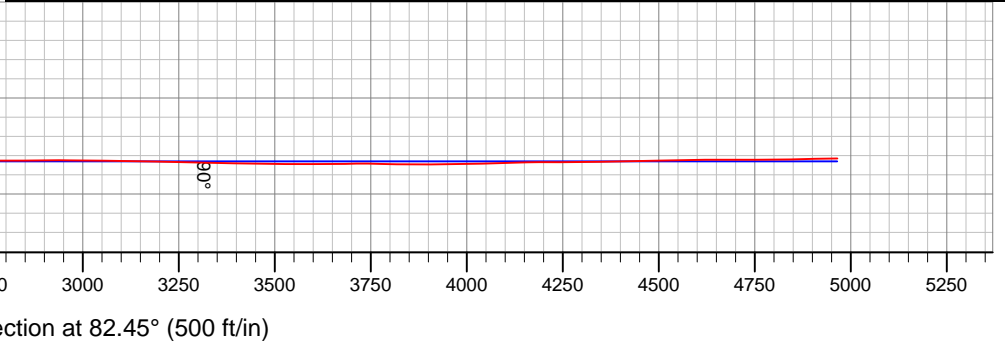


Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W  
 Rohn State LD10-69-1HN  
 11:32, October 27 2014  
 Wellbore #1

**ANNOTATIONS**  
 No annotation data is available.

**LEGEND**

- Rohn State LD10-69-1HN, Wellbore #1, Plan C - Rev 1 V0
- Wellbore #1





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

**SEC.9-T9N-R58W**

**Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W**

**Rohn State LD10-69-1HN**

**Wellbore #1**

**Design: Wellbore #1**

## **Final Survey**

**27 October, 2014**

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD10-69-1HN
<b>Project:</b>	SEC.9-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4755.0ft (PD 828 RKB - 16')
<b>Site:</b>	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	<b>MD Reference:</b>	WELL @ 4755.0ft (PD 828 RKB - 16')
<b>Well:</b>	Rohn State LD10-69-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.9-T9N-R58W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W				
<b>Site Position:</b>		<b>Northing:</b>	1,527,802.62 ft	<b>Latitude:</b>	40.770690
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,453,912.19 ft	<b>Longitude:</b>	-103.861160
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	1.06 °

<b>Well</b>	Rohn State LD10-69-1HN					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,527,842.68 ft	<b>Latitude:</b>	40.770800
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,453,911.45 ft	<b>Longitude:</b>	-103.861160
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,739.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/16/2014	7.94	67.37	53,064

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	82.45	

<b>Survey Program</b>	<b>Date</b>	10/27/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
408.0	1,207.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,255.0	6,102.0	Intermediate/Curve (Wellbore #1)	MWD	MWD - Standard	
6,182.0	9,551.0	Lateral (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>								
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00
408.0	0.20	226.08	408.0	-0.5	-0.5	-0.6	0.05	
819.0	0.90	311.18	819.0	1.1	-3.5	-3.3	0.22	
1,207.0	1.20	353.08	1,206.9	7.2	-6.2	-5.2	0.21	
1,255.0	1.60	18.80	1,254.9	8.3	-6.1	-4.9	1.53	
1,349.0	2.80	55.20	1,348.8	10.9	-3.8	-2.3	1.90	
1,443.0	4.90	77.60	1,442.6	13.0	2.0	3.7	2.71	
1,538.0	6.20	79.80	1,537.2	14.8	11.0	12.9	1.39	
1,632.0	7.90	72.30	1,630.5	17.7	22.2	24.3	2.05	
1,727.0	9.60	70.90	1,724.4	22.3	35.9	38.5	1.80	

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD10-69-1HN
<b>Project:</b>	SEC.9-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4755.0ft (PD 828 RKB - 16')
<b>Site:</b>	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	<b>MD Reference:</b>	WELL @ 4755.0ft (PD 828 RKB - 16')
<b>Well:</b>	Rohn State LD10-69-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Survey								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
1,821.0	10.30	60.30	1,817.0	29.0	50.6	54.0	2.08	
1,916.0	11.50	59.00	1,910.2	38.1	66.1	70.5	1.29	
2,011.0	12.80	62.30	2,003.1	47.8	83.5	89.1	1.55	
2,104.0	14.60	65.10	2,093.5	57.6	103.3	110.0	2.06	
2,194.0	15.90	62.30	2,180.3	68.1	124.5	132.4	1.66	
2,283.0	16.70	64.50	2,265.7	79.2	146.8	156.0	1.14	
2,373.0	16.40	59.90	2,352.0	91.2	169.5	180.0	1.49	
2,462.0	16.40	57.90	2,437.4	104.2	191.0	203.0	0.63	
2,552.0	16.20	55.50	2,523.8	118.0	212.1	225.8	0.78	
2,642.0	16.20	59.30	2,610.2	131.5	233.3	248.5	1.18	
2,732.0	15.80	57.40	2,696.7	144.6	254.4	271.2	0.73	
2,822.0	16.70	61.70	2,783.1	157.3	276.1	294.4	1.67	
2,911.0	15.20	59.80	2,868.7	169.2	297.4	317.1	1.78	
3,001.0	16.30	59.40	2,955.3	181.6	318.5	339.6	1.23	
3,090.0	16.10	63.80	3,040.8	193.4	340.3	362.8	1.40	
3,180.0	18.20	65.60	3,126.8	204.7	364.3	388.1	2.41	
3,270.0	18.10	63.20	3,212.3	216.8	389.6	414.7	0.84	
3,359.0	18.20	61.90	3,296.9	229.6	414.2	440.8	0.47	
3,449.0	17.50	63.80	3,382.5	242.2	438.7	466.8	1.01	
3,539.0	16.60	63.50	3,468.6	253.9	462.4	491.8	1.00	
3,629.0	16.90	61.80	3,554.7	265.8	485.4	516.2	0.64	
3,719.0	15.30	63.10	3,641.2	277.4	507.5	539.6	1.82	
3,808.0	14.50	62.70	3,727.2	287.8	527.9	561.2	0.91	
3,898.0	15.20	62.40	3,814.2	298.4	548.4	582.9	0.78	
3,988.0	16.70	61.10	3,900.7	310.1	570.2	606.0	1.71	
4,077.0	15.90	61.60	3,986.2	322.1	592.1	629.3	0.91	
4,167.0	16.50	59.50	4,072.6	334.5	613.9	652.6	0.93	
4,257.0	15.90	64.40	4,159.0	346.3	636.1	676.1	1.66	
4,347.0	15.60	63.50	4,245.6	357.0	658.0	699.2	0.43	
4,437.0	16.40	63.60	4,332.2	368.1	680.2	722.7	0.89	
4,526.0	14.60	62.80	4,417.9	378.8	701.5	745.2	2.04	
4,616.0	15.20	63.30	4,504.9	389.3	722.1	767.0	0.68	
4,706.0	16.30	58.50	4,591.5	401.2	743.4	789.7	1.89	
4,796.0	16.20	59.90	4,677.9	414.1	765.0	812.8	0.45	
4,886.0	15.90	60.90	4,764.4	426.4	786.7	835.9	0.45	
4,976.0	15.60	65.50	4,851.0	437.4	808.5	858.9	1.43	
5,065.0	16.50	69.30	4,936.6	446.8	831.2	882.7	1.55	
5,155.0	17.10	63.30	5,022.7	457.3	854.9	907.6	2.04	
5,200.0	17.80	61.60	5,065.7	463.5	866.9	920.3	1.92	
5,245.0	17.00	59.90	5,108.6	470.1	878.7	932.8	2.11	
5,289.0	19.60	65.50	5,150.4	476.4	890.9	945.8	7.13	
5,334.0	23.40	69.60	5,192.2	482.6	906.2	961.8	9.08	
5,379.0	26.60	73.20	5,233.0	488.6	924.2	980.4	7.87	
5,424.0	28.00	76.20	5,273.0	494.1	944.1	1,000.9	4.36	
5,469.0	30.70	80.00	5,312.2	498.6	965.7	1,022.9	7.29	

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

**Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,514.0	34.30	85.10	5,350.2	501.7	989.6	1,047.0	10.05
5,559.0	37.80	88.50	5,386.6	503.1	1,016.1	1,073.4	8.96
5,604.0	42.10	85.60	5,421.1	504.6	1,044.9	1,102.2	10.41
5,648.0	45.80	86.00	5,452.7	506.9	1,075.4	1,132.7	8.43
5,693.0	49.60	85.50	5,483.0	509.3	1,108.6	1,165.9	8.48
5,738.0	54.10	84.10	5,510.8	512.6	1,143.8	1,201.2	10.29
5,783.0	58.70	82.80	5,535.7	516.8	1,181.0	1,238.7	10.50
5,828.0	61.50	83.50	5,558.1	521.5	1,219.7	1,277.7	6.37
5,873.0	63.50	84.20	5,578.9	525.8	1,259.4	1,317.6	4.65
5,918.0	66.90	85.60	5,597.8	529.4	1,300.1	1,358.4	8.07
5,963.0	70.20	86.10	5,614.2	532.4	1,341.9	1,400.2	7.41
6,008.0	74.00	84.90	5,628.1	535.8	1,384.6	1,443.0	8.82
6,053.0	76.70	85.70	5,639.4	539.3	1,427.9	1,486.4	6.24
6,102.0	79.60	88.10	5,649.5	541.9	1,475.8	1,534.2	7.62
6,182.0	84.60	88.50	5,660.5	544.3	1,555.0	1,613.1	6.27
6,275.0	87.20	88.40	5,667.1	546.8	1,647.7	1,705.3	2.80
6,343.0	88.14	87.03	5,669.9	549.5	1,715.6	1,772.9	2.45
<b>Rohn State LD10-69-1HN Landing Pt</b>							
6,369.0	88.50	86.50	5,670.7	551.0	1,741.6	1,798.9	2.45
6,464.0	90.20	86.30	5,671.8	556.9	1,836.4	1,893.6	1.80
6,557.0	92.00	88.60	5,670.0	561.1	1,929.2	1,986.2	3.14
6,651.0	90.00	86.00	5,668.3	565.5	2,023.1	2,079.9	3.49
6,745.0	90.10	85.50	5,668.2	572.5	2,116.8	2,173.7	0.54
6,838.0	90.20	86.40	5,668.0	579.0	2,209.6	2,266.6	0.97
6,915.0	91.90	89.50	5,666.6	581.8	2,286.5	2,343.2	4.59
7,005.0	90.50	89.80	5,664.7	582.3	2,376.5	2,432.4	1.59
7,094.0	91.00	89.00	5,663.5	583.3	2,465.5	2,520.8	1.06
7,184.0	89.50	87.70	5,663.1	585.9	2,555.5	2,610.3	2.21
7,274.0	89.70	87.30	5,663.8	589.8	2,645.4	2,699.9	0.50
7,364.0	90.20	87.10	5,663.9	594.2	2,735.3	2,789.6	0.60
7,454.0	91.00	90.10	5,662.9	596.4	2,825.2	2,879.1	3.45
7,543.0	89.30	87.70	5,662.7	598.1	2,914.2	2,967.5	3.30
7,633.0	89.10	87.30	5,663.9	602.0	3,004.1	3,057.2	0.50
7,723.0	89.10	87.30	5,665.3	606.3	3,094.0	3,146.8	0.00
7,812.0	88.90	87.30	5,666.9	610.4	3,182.9	3,235.5	0.22
7,902.0	88.60	86.60	5,668.9	615.2	3,272.7	3,325.2	0.85
7,992.0	88.90	87.30	5,670.8	620.0	3,362.6	3,414.9	0.85
8,082.0	89.60	88.10	5,672.0	623.6	3,452.5	3,504.5	1.18
8,172.0	90.10	88.20	5,672.2	626.5	3,542.4	3,594.1	0.57
8,262.0	90.80	88.40	5,671.5	629.2	3,632.4	3,683.6	0.81
8,352.0	88.70	87.90	5,671.9	632.1	3,722.3	3,773.1	2.40
8,442.0	89.60	89.10	5,673.3	634.5	3,812.3	3,862.6	1.67
8,532.0	90.90	91.30	5,672.9	634.2	3,902.3	3,951.8	2.84
8,621.0	91.40	90.60	5,671.1	632.7	3,991.3	4,039.8	0.97

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<b>Site:</b>	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	<b>MD Reference:</b>	WELL @ 4755.0ft (PD 828 RKB - 16')
<b>Well:</b>	Rohn State LD10-69-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Survey								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
8,711.0	91.80	90.60	5,668.6	631.7	4,081.2	4,128.9	0.44	
8,801.0	89.90	89.20	5,667.2	631.9	4,171.2	4,218.1	2.62	
8,891.0	90.50	88.90	5,666.9	633.4	4,261.2	4,307.5	0.75	
8,981.0	91.00	88.20	5,665.7	635.7	4,351.2	4,397.0	0.96	
9,071.0	91.70	88.20	5,663.6	638.5	4,441.1	4,486.5	0.78	
9,161.0	90.90	86.80	5,661.6	642.4	4,531.0	4,576.1	1.79	
9,251.0	89.70	87.40	5,661.1	647.0	4,620.9	4,665.8	1.49	
9,340.0	90.30	86.50	5,661.1	651.7	4,709.7	4,754.5	1.22	
9,430.0	91.10	85.80	5,660.0	657.7	4,799.5	4,844.3	1.18	
9,493.0	91.20	84.80	5,658.7	662.9	4,862.3	4,907.2	1.59	
9,551.0	91.20	84.80	5,657.5	668.2	4,920.0	4,965.2	0.00	
Rohn State LD10-69-1HN BHL 330'FNL & 660'FEL								

Checked By: _____	Approved By: _____	Date: _____
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