

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

Well Name: **Rohn State LD10-68HN**

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

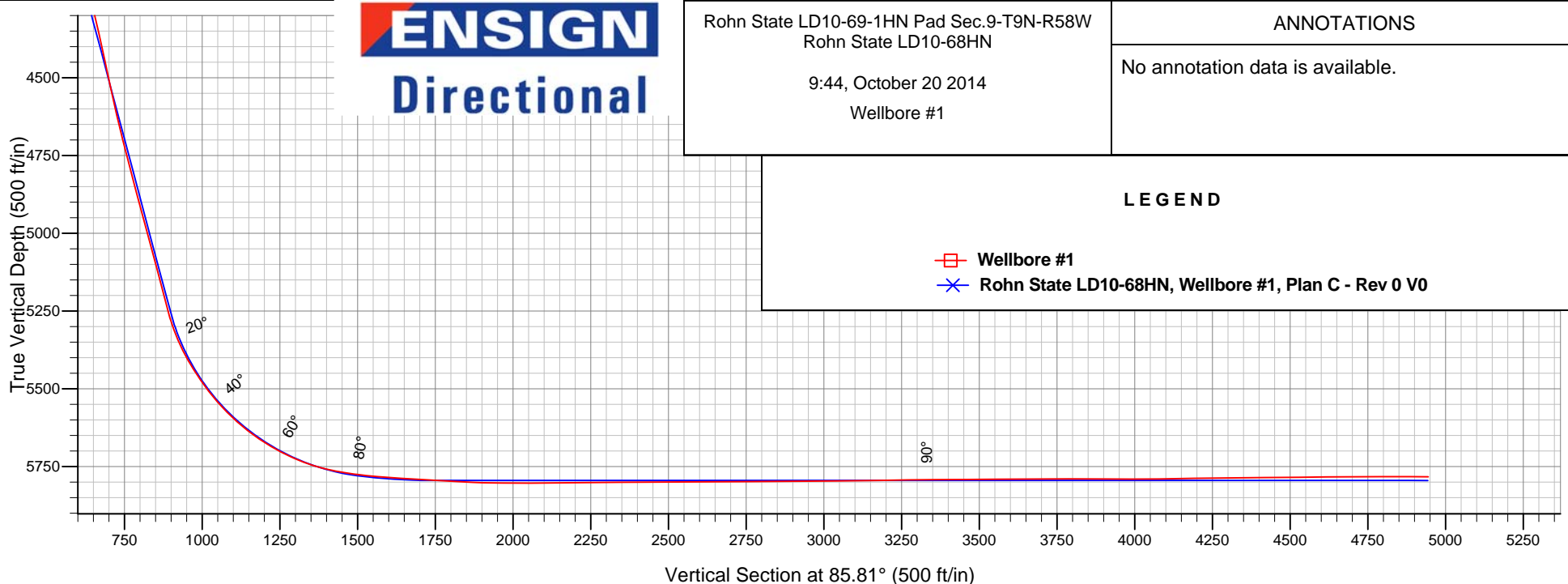
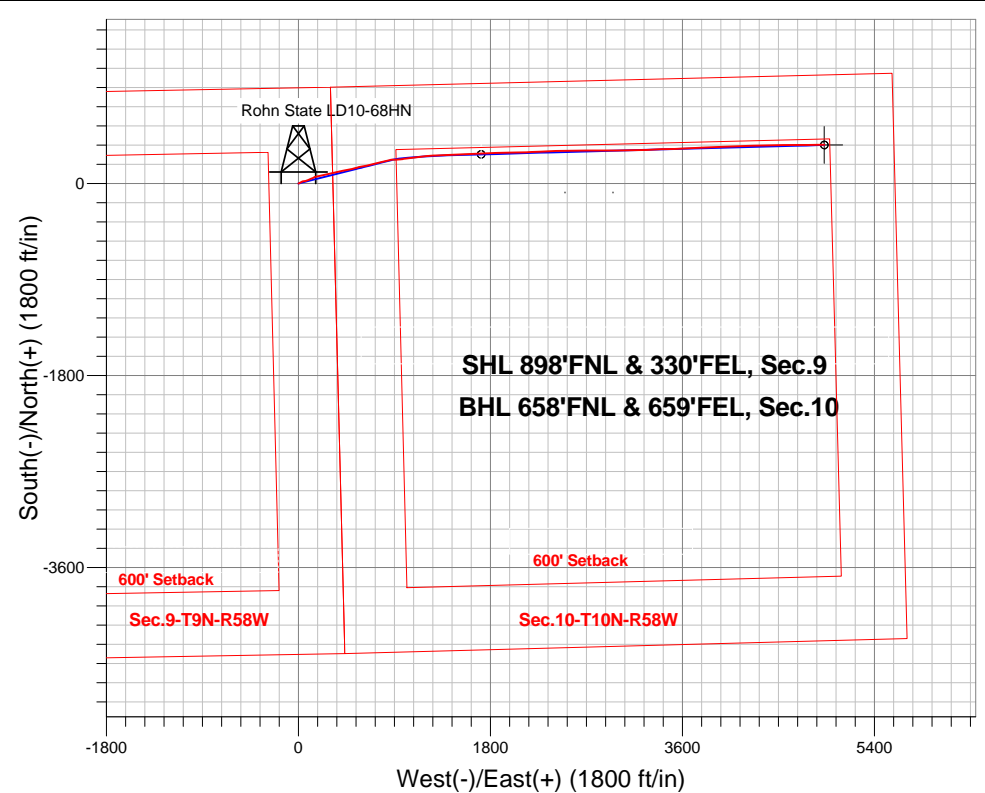
Ground Elevation: 4739.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1527802.61	3453912.19	40.770690	-103.861160	

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

FINAL SURVEY

Projected Bottom Hole Location
9667MD 5783'TVD 364'N & 4931'E of SHL
89.5 degree Incl @ 89.2 degree AZM





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

SEC.9-T9N-R58W

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

Rohn State LD10-68HN

Wellbore #1

Design: Wellbore #1

Final Survey

20 October, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD10-68HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
Site:	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
Well:	Rohn State LD10-68HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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

Well	Rohn State LD10-68HN					
Well Position	+N/-S	0.0 ft	Northing:	1,527,802.61 ft	Latitude:	40.770690
	+E/-W	0.0 ft	Easting:	3,453,912.19 ft	Longitude:	-103.861160
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,739.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/8/2014	7.95	67.37	53,066

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	85.81	

Survey Program	Date	10/20/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
1,180.0	1,180.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,257.0	6,217.0	Survey #2 (Wellbore #1)	MWD	MWD - Standard	
6,307.0	9,667.0	Survey #3 (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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	
1,180.0	0.90	68.40	1,180.0	3.4	8.6	8.8	0.08	
1,257.0	1.20	48.00	1,256.9	4.2	9.8	10.1	0.62	
1,351.0	1.30	58.70	1,350.9	5.4	11.4	11.8	0.27	
1,445.0	1.20	63.30	1,444.9	6.4	13.2	13.6	0.15	
1,539.0	3.30	73.10	1,538.8	7.6	16.7	17.2	2.26	
1,633.0	3.50	54.30	1,632.7	10.1	21.6	22.3	1.20	
1,728.0	4.70	63.90	1,727.4	13.5	27.4	28.4	1.45	
1,823.0	5.50	58.60	1,822.0	17.6	34.8	36.0	0.98	
1,918.0	7.10	80.10	1,916.5	20.9	44.5	45.9	2.97	

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Site:	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
Well:	Rohn State LD10-68HN	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)
2,015.0	9.50	84.20	2,012.4	22.8	58.4	59.9	2.55
2,105.0	11.70	73.80	2,100.9	26.1	74.5	76.2	3.23
2,195.0	12.80	64.10	2,188.9	33.0	92.3	94.4	2.59
2,285.0	13.80	68.30	2,276.5	41.3	111.2	113.9	1.54
2,375.0	15.30	63.40	2,363.6	50.6	131.8	135.1	2.15
2,464.0	15.30	69.70	2,449.4	59.9	153.3	157.3	1.87
2,554.0	15.10	77.00	2,536.3	66.7	175.9	180.3	2.14
2,644.0	15.80	79.50	2,623.0	71.6	199.3	204.0	1.07
2,734.0	15.30	77.40	2,709.7	76.4	223.0	228.0	0.84
2,824.0	16.30	79.30	2,796.3	81.3	247.0	252.3	1.25
2,914.0	15.30	75.10	2,882.9	86.7	270.9	276.5	1.69
3,004.0	15.30	75.10	2,969.8	92.8	293.8	299.8	0.00
3,093.0	15.40	79.20	3,055.6	98.0	316.8	323.1	1.22
3,183.0	15.30	77.70	3,142.4	102.8	340.1	346.7	0.45
3,273.0	15.30	78.30	3,229.2	107.8	363.3	370.2	0.18
3,363.0	15.30	75.40	3,316.0	113.2	386.5	393.7	0.85
3,453.0	16.10	80.20	3,402.6	118.3	410.2	417.8	1.69
3,542.0	16.60	79.30	3,488.0	122.7	434.9	442.7	0.63
3,632.0	15.80	78.60	3,574.5	127.5	459.5	467.6	0.91
3,722.0	14.90	77.60	3,661.3	132.5	482.9	491.2	1.04
3,812.0	13.40	78.20	3,748.5	137.1	504.4	513.0	1.67
3,901.0	13.70	75.50	3,835.0	141.8	524.7	533.6	0.79
3,991.0	15.00	72.70	3,922.2	147.9	546.1	555.5	1.64
4,081.0	15.20	74.40	4,009.1	154.6	568.6	578.4	0.54
4,171.0	14.80	80.80	4,096.1	159.6	591.3	601.4	1.89
4,261.0	15.50	81.90	4,182.9	163.1	614.6	624.8	0.84
4,351.0	13.80	81.20	4,270.0	166.5	637.1	647.5	1.90
4,440.0	12.80	77.90	4,356.6	170.2	657.2	667.9	1.41
4,530.0	12.20	71.50	4,444.5	175.3	676.0	687.0	1.68
4,620.0	12.20	77.40	4,532.5	180.4	694.3	705.6	1.38
4,710.0	13.20	77.60	4,620.3	184.6	713.6	725.2	1.11
4,800.0	14.80	78.30	4,707.6	189.2	734.9	746.7	1.79
4,890.0	14.80	73.20	4,794.6	194.8	757.1	769.4	1.45
4,980.0	14.50	75.30	4,881.7	201.0	779.0	791.7	0.68
5,070.0	16.00	76.90	4,968.5	206.7	802.0	815.0	1.73
5,159.0	15.60	74.10	5,054.1	212.7	825.5	838.8	0.97
5,249.0	14.80	79.50	5,141.0	218.2	848.4	862.1	1.81
5,294.0	14.20	79.30	5,184.6	220.2	859.5	873.3	1.34
5,339.0	14.50	82.70	5,228.2	222.0	870.5	884.4	1.99
5,384.0	16.70	89.50	5,271.5	222.7	882.6	896.5	6.35
5,429.0	20.40	90.60	5,314.2	222.7	896.9	910.8	8.26
5,473.0	24.20	88.30	5,354.9	222.9	913.6	927.4	8.86
5,518.0	28.50	85.60	5,395.2	224.0	933.5	947.4	9.92
5,563.0	32.00	83.50	5,434.0	226.2	956.1	970.0	8.12
5,608.0	34.90	80.70	5,471.6	229.6	980.6	994.8	7.30

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Site:	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
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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)
5,653.0	37.50	82.60	5,507.9	233.4	1,006.9	1,021.3	6.29
5,698.0	41.00	82.80	5,542.7	237.1	1,035.1	1,049.7	7.78
5,743.0	44.90	82.80	5,575.7	240.9	1,065.6	1,080.3	8.67
5,788.0	48.60	84.40	5,606.5	244.5	1,098.1	1,113.1	8.62
5,832.0	52.10	83.30	5,634.6	248.2	1,131.8	1,146.9	8.18
5,877.0	55.60	82.90	5,661.1	252.5	1,167.9	1,183.2	7.81
5,922.0	59.50	83.80	5,685.3	256.9	1,205.6	1,221.1	8.83
5,967.0	63.00	85.90	5,706.9	260.5	1,244.9	1,260.6	8.79
6,012.0	66.90	87.10	5,726.0	262.9	1,285.5	1,301.3	9.00
6,057.0	71.00	88.20	5,742.1	264.7	1,327.5	1,343.3	9.39
6,102.0	75.60	87.80	5,755.0	266.2	1,370.6	1,386.4	10.26
6,146.0	79.20	87.10	5,764.6	268.1	1,413.5	1,429.3	8.33
6,191.0	81.20	86.60	5,772.3	270.5	1,457.7	1,473.6	4.58
6,217.0	83.20	87.60	5,775.8	271.8	1,483.5	1,499.4	8.58
6,307.0	85.80	88.70	5,784.5	274.7	1,573.0	1,588.9	3.13
6,401.0	86.50	87.50	5,790.8	277.8	1,666.7	1,682.6	1.48
6,447.2	86.55	87.35	5,793.6	279.9	1,712.8	1,728.7	0.34
Rohn State LD10-68HN Landing Pt.							
6,495.0	86.60	87.20	5,796.4	282.2	1,760.4	1,776.4	0.34
6,589.0	87.80	87.50	5,801.0	286.5	1,854.2	1,870.2	1.32
6,683.0	89.40	89.00	5,803.3	289.4	1,948.2	1,964.1	2.33
6,776.0	89.90	88.90	5,803.9	291.1	2,041.1	2,057.0	0.55
6,870.0	90.70	88.10	5,803.4	293.5	2,135.1	2,150.8	1.20
6,915.0	90.60	88.30	5,802.9	294.9	2,180.1	2,195.8	0.50
7,005.0	90.90	87.00	5,801.7	298.6	2,270.0	2,285.7	1.48
7,095.0	90.40	87.70	5,800.7	302.8	2,359.9	2,375.7	0.96
7,184.0	90.50	89.30	5,800.0	305.1	2,448.9	2,464.6	1.80
7,274.0	90.50	88.40	5,799.2	306.9	2,538.8	2,554.5	1.00
7,364.0	89.90	89.10	5,798.9	308.9	2,628.8	2,644.4	1.02
7,454.0	90.30	90.30	5,798.7	309.4	2,718.8	2,734.1	1.41
7,543.0	90.20	89.30	5,798.3	309.7	2,807.8	2,822.9	1.13
7,633.0	90.10	89.20	5,798.1	310.9	2,897.8	2,912.8	0.16
7,723.0	90.70	90.40	5,797.5	311.2	2,987.8	3,002.5	1.49
7,812.0	90.90	89.70	5,796.2	311.1	3,076.8	3,091.3	0.82
7,902.0	91.10	89.50	5,794.7	311.7	3,166.8	3,181.1	0.31
7,992.0	90.90	87.50	5,793.1	314.1	3,256.7	3,271.0	2.23
8,082.0	90.20	87.00	5,792.2	318.4	3,346.6	3,360.9	0.96
8,172.0	90.40	89.10	5,791.7	321.5	3,436.5	3,450.9	2.34
8,262.0	90.20	88.30	5,791.3	323.5	3,526.5	3,540.7	0.92
8,351.0	90.20	87.20	5,791.0	327.0	3,615.5	3,629.7	1.24
8,441.0	90.50	87.40	5,790.4	331.2	3,705.4	3,719.6	0.40
8,531.0	90.20	86.40	5,789.9	336.1	3,795.2	3,809.6	1.16
8,620.0	89.50	87.20	5,790.1	341.1	3,884.1	3,898.6	1.19
8,710.0	89.70	88.30	5,790.7	344.6	3,974.0	3,988.6	1.24

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Rohn State LD10-68HN
Project:	SEC.9-T9N-R58W	TVD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
Site:	Rohn State LD10-69-1HN Pad Sec.9-T9N-R58W	MD Reference:	WELL @ 4755.0ft (PD 828 RKB - 16')
Well:	Rohn State LD10-68HN	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)
8,800.0	90.70	88.30	5,790.4	347.3	4,064.0	4,078.5	1.11
8,890.0	91.10	87.40	5,789.0	350.6	4,153.9	4,168.4	1.09
8,980.0	91.00	88.10	5,787.3	354.2	4,243.8	4,258.3	0.79
9,070.0	90.20	89.60	5,786.4	356.0	4,333.8	4,348.2	1.89
9,159.0	90.50	89.30	5,785.9	356.8	4,422.8	4,437.0	0.48
9,249.0	90.90	87.80	5,784.8	359.1	4,512.7	4,526.9	1.72
9,339.0	90.40	89.90	5,783.7	360.9	4,602.7	4,616.8	2.40
9,429.0	90.40	90.20	5,783.1	360.8	4,692.7	4,706.5	0.33
9,518.0	90.20	89.00	5,782.6	361.5	4,781.7	4,795.3	1.37
9,609.0	89.50	89.20	5,782.9	362.9	4,872.7	4,886.2	0.80
9,666.4	89.50	89.20	5,783.4	363.7	4,930.1	4,943.5	0.00
Rohn State LD10-68HN BHL 660'FNL & 660'FEL							
9,667.0	89.50	89.20	5,783.4	363.7	4,930.7	4,944.1	0.00

Checked By: _____	Approved By: _____	Date: _____
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