

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

Well Name: **Rohn State LD10-65-1HN**

Surface Location: Rohn State LD10-65HN Pad Sec.9-T9N-R58W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

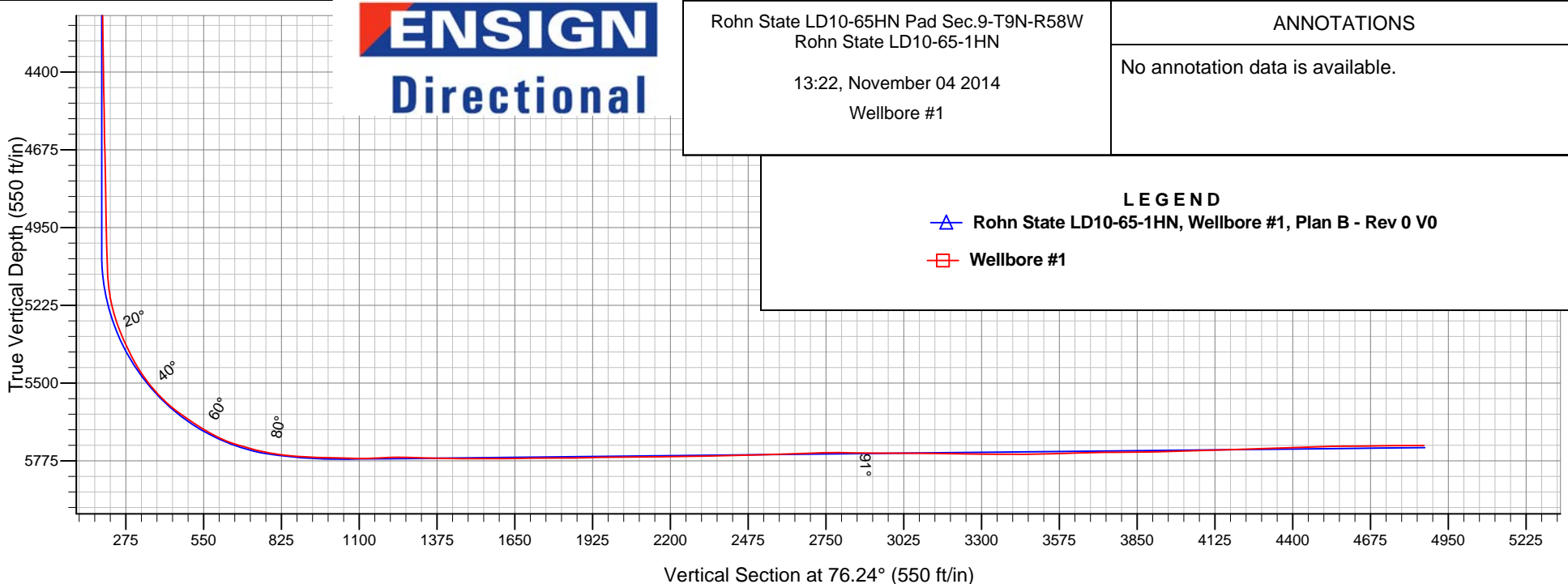
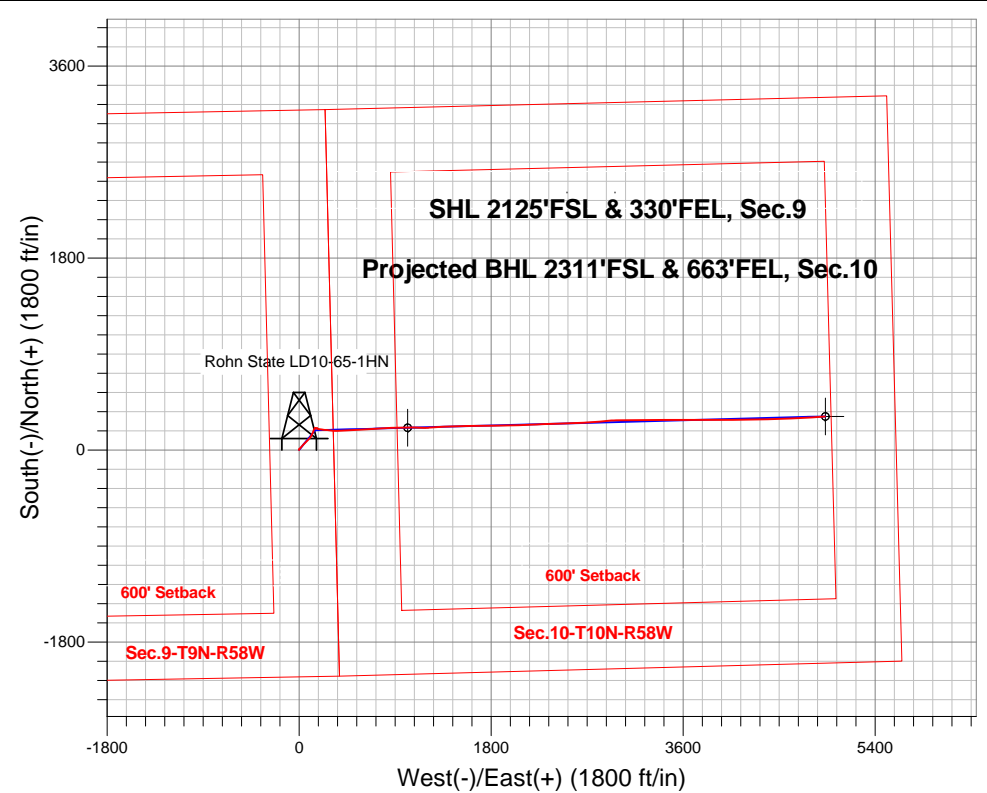
Ground Elevation: 4716.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1525515.25	3453968.33	40.764410	-103.861110	

RKB - 16' WELL @ 4732.0ft (RKB - 16')

## FINAL SURVEY

Projected Bottom Hole Location  
10243MD 5720'TVD 315'N & 4931'E of SHL  
90.5 degree Incl @ 85.5 degree AZM



Rohn State LD10-65HN Pad Sec.9-T9N-R58W  
Rohn State LD10-65-1HN

13:22, November 04 2014

Wellbore #1

### ANNOTATIONS

No annotation data is available.

### LEGEND

- △ Rohn State LD10-65-1HN, Wellbore #1, Plan B - Rev 0 V0
- Wellbore #1



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

**SEC.9-T9N-R58W**

**Rohn State LD10-65HN Pad Sec.9-T9N-R58W**

**Rohn State LD10-65-1HN**

**Wellbore #1**

**Design: Wellbore #1**

## **Final Survey**

**04 November, 2014**

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD10-65-1HN
<b>Project:</b>	SEC.9-T9N-R58W	<b>TVD Reference:</b>	WELL @ 4732.0ft (RKB - 16')
<b>Site:</b>	Rohn State LD10-65HN Pad Sec.9-T9N-R58W	<b>MD Reference:</b>	WELL @ 4732.0ft (RKB - 16')
<b>Well:</b>	Rohn State LD10-65-1HN	<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

Site	Rohn State LD10-65HN Pad Sec.9-T9N-R58W				
Site Position:		Northing:	1,525,478.83 ft	Latitude:	40.764310
From:	Lat/Long	Easting:	3,453,969.00 ft	Longitude:	-103.861110
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.06 °

Well	Rohn State LD10-65-1HN					
Well Position	+N/-S	0.0 ft	Northing:	1,525,515.25 ft	Latitude:	40.764410
	+E/-W	0.0 ft	Easting:	3,453,968.33 ft	Longitude:	-103.861110
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,716.0 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	10/24/2014	7.94	67.37	53,058

<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	76.24	

<b>Survey Program</b>	<b>Date</b>	11/4/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
457.0	980.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,292.0	6,093.0	Intermediate/Casing (Wellbore #1)	MWD	MWD - Standard	
6,192.0	10,243.0	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	0.00	
457.0	0.40	334.42	457.0	1.4	-0.7	-0.3	0.09	
980.0	0.60	10.92	980.0	5.8	-1.0	0.4	0.07	
1,292.0	0.30	70.60	1,292.0	7.6	0.1	1.9	0.17	
1,358.0	0.30	94.20	1,358.0	7.7	0.5	2.3	0.19	
1,450.0	0.40	38.20	1,450.0	7.9	0.9	2.8	0.37	
1,543.0	1.80	60.20	1,542.9	8.9	2.4	4.4	1.55	
1,635.0	2.90	40.60	1,634.9	11.4	5.1	7.7	1.46	
1,728.0	4.10	47.90	1,727.7	15.4	9.1	12.5	1.37	
1,823.0	6.20	40.30	1,822.3	21.6	15.0	19.7	2.32	

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD10-65-1HN
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<b>Site:</b>	Rohn State LD10-65HN Pad Sec.9-T9N-R58W	<b>MD Reference:</b>	WELL @ 4732.0ft (RKB - 16')
<b>Well:</b>	Rohn State LD10-65-1HN	<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)
1,916.0	5.80	41.70	1,914.8	28.9	21.3	27.6	0.46
2,010.0	7.50	43.40	2,008.2	36.9	28.7	36.7	1.82
2,104.0	8.70	42.40	2,101.2	46.7	37.7	47.7	1.29
2,198.0	8.20	43.40	2,194.2	56.8	47.1	59.3	0.55
2,291.0	8.70	46.10	2,286.2	66.5	56.8	70.9	0.69
2,384.0	8.60	43.80	2,378.1	76.4	66.6	82.9	0.39
2,478.0	8.80	44.10	2,471.1	86.6	76.5	94.9	0.22
2,585.0	8.90	43.10	2,576.8	98.5	87.9	108.8	0.17
2,674.0	8.70	42.80	2,664.7	108.5	97.1	120.1	0.23
2,764.0	7.90	33.20	2,753.8	118.7	105.1	130.3	1.77
2,853.0	7.50	32.40	2,842.0	128.7	111.6	139.0	0.47
2,943.0	6.80	28.10	2,931.3	138.3	117.3	146.8	0.98
3,033.0	6.40	25.90	3,020.7	147.6	122.0	153.5	0.53
3,122.0	6.00	24.50	3,109.2	156.2	126.1	159.6	0.48
3,212.0	5.90	23.60	3,198.7	164.8	129.9	165.3	0.15
3,302.0	5.90	20.00	3,288.2	173.4	133.3	170.7	0.41
3,391.0	5.90	19.70	3,376.7	182.0	136.4	175.8	0.03
3,481.0	4.70	18.30	3,466.4	189.8	139.1	180.3	1.34
3,570.0	4.70	40.60	3,555.1	196.0	142.6	185.2	2.04
3,660.0	3.40	45.60	3,644.8	200.7	146.9	190.5	1.50
3,750.0	1.80	333.70	3,734.8	203.8	148.2	192.4	3.68
3,840.0	0.70	49.80	3,824.7	205.5	148.0	192.6	1.96
3,929.0	0.60	185.70	3,913.7	205.4	148.4	193.0	1.35
4,019.0	0.10	190.30	4,003.7	204.8	148.3	192.8	0.56
4,109.0	0.20	49.10	4,093.7	204.8	148.4	192.9	0.32
4,198.0	0.40	44.80	4,182.7	205.2	148.8	193.3	0.23
4,288.0	0.70	53.30	4,272.7	205.7	149.4	194.1	0.34
4,377.0	1.60	126.30	4,361.7	205.3	150.9	195.4	1.74
4,467.0	1.10	95.70	4,451.7	204.5	152.7	197.0	0.96
4,557.0	1.20	107.50	4,541.7	204.1	154.5	198.6	0.28
4,647.0	1.10	112.60	4,631.7	203.5	156.2	200.1	0.16
4,736.0	1.60	114.80	4,720.6	202.6	158.1	201.8	0.56
4,826.0	1.30	41.60	4,810.6	202.9	159.9	203.6	1.94
4,915.0	1.30	54.60	4,899.6	204.2	161.4	205.3	0.33
5,005.0	1.30	52.80	4,989.6	205.4	163.1	207.2	0.05
5,050.0	1.60	81.00	5,034.5	205.8	164.1	208.3	1.70
5,095.0	2.90	127.40	5,079.5	205.2	165.6	209.7	4.75
5,140.0	5.60	132.70	5,124.4	203.1	168.1	211.6	6.06
5,184.0	9.40	112.30	5,168.0	200.2	173.0	215.7	10.42
5,229.0	13.30	106.70	5,212.1	197.3	181.4	223.1	9.00
5,274.0	17.50	101.10	5,255.5	194.6	193.0	233.7	9.89
5,319.0	21.10	97.50	5,298.0	192.2	207.7	247.4	8.42
5,363.0	24.70	96.10	5,338.5	190.2	224.7	263.5	8.27
5,408.0	27.30	94.20	5,378.9	188.4	244.3	282.1	6.07
5,453.0	29.80	96.90	5,418.5	186.3	265.7	302.4	6.25

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<b>Well:</b>	Rohn State LD10-65-1HN	<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)
5,498.0	34.20	96.50	5,456.6	183.6	289.4	324.7	9.79
5,543.0	38.50	94.20	5,492.9	181.1	315.9	349.9	10.02
5,588.0	42.10	91.30	5,527.2	179.7	345.0	377.8	9.02
5,632.0	46.50	89.10	5,558.7	179.6	375.7	407.7	10.59
5,677.0	52.00	87.40	5,588.0	180.7	409.8	441.0	12.55
5,722.0	55.20	86.60	5,614.7	182.6	446.0	476.6	7.25
5,767.0	56.50	86.10	5,640.0	185.0	483.1	513.2	3.03
5,812.0	59.40	86.50	5,663.9	187.4	521.2	550.8	6.49
5,857.0	62.50	86.90	5,685.7	189.7	560.4	589.5	6.93
5,901.0	68.20	86.30	5,704.0	192.1	600.3	628.8	13.01
5,946.0	73.60	85.90	5,718.8	195.0	642.8	670.7	12.03
5,991.0	74.80	86.10	5,731.0	198.0	685.9	713.4	2.70
6,036.0	77.60	87.00	5,741.8	200.6	729.6	756.3	6.52
6,081.0	81.10	87.40	5,750.1	202.8	773.7	799.8	7.83
6,093.0	82.10	87.50	5,751.8	203.3	785.6	811.4	8.37
6,192.0	87.00	87.90	5,761.2	207.3	884.0	908.0	4.97
6,237.0	88.60	88.20	5,762.9	208.8	929.0	952.0	3.62
6,282.0	88.80	89.90	5,764.0	209.5	974.0	995.8	3.80
6,326.0	88.70	90.00	5,764.9	209.6	1,017.9	1,038.6	0.32
6,326.2	88.70	90.00	5,764.9	209.6	1,018.1	1,038.7	0.00
Rohn State LD10-65-1HN Landing Pt.							
6,371.0	88.10	89.80	5,766.2	209.6	1,062.9	1,082.3	1.41
6,465.0	93.50	91.10	5,764.9	208.9	1,156.9	1,173.4	5.91
6,558.0	89.10	87.00	5,762.8	210.5	1,249.8	1,264.0	6.47
6,653.0	87.90	86.60	5,765.3	215.8	1,344.6	1,357.3	1.33
6,746.0	89.80	86.90	5,767.1	221.0	1,437.4	1,448.8	2.07
6,837.0	89.90	87.80	5,767.4	225.2	1,528.3	1,538.1	1.00
6,931.0	90.90	90.40	5,766.7	226.7	1,622.3	1,629.7	2.96
7,024.0	90.60	90.10	5,765.5	226.3	1,715.3	1,719.9	0.46
7,118.0	89.90	89.50	5,765.1	226.6	1,809.3	1,811.3	0.98
7,211.0	91.50	88.50	5,763.9	228.3	1,902.3	1,902.0	2.03
7,304.0	90.50	87.70	5,762.3	231.3	1,995.2	1,993.0	1.38
7,399.0	90.90	88.40	5,761.2	234.6	2,090.2	2,086.0	0.85
7,491.0	90.60	88.10	5,759.9	237.4	2,182.1	2,176.0	0.46
7,585.0	90.40	86.90	5,759.1	241.5	2,276.0	2,268.1	1.29
7,678.0	90.90	88.40	5,758.1	245.3	2,368.9	2,359.3	1.70
7,772.0	91.60	89.20	5,756.0	247.3	2,462.9	2,451.0	1.13
7,866.0	92.00	87.70	5,753.1	249.8	2,556.8	2,542.9	1.65
7,960.0	92.00	87.10	5,749.8	254.1	2,650.6	2,635.0	0.64
8,051.0	91.60	86.10	5,746.9	259.5	2,741.4	2,724.5	1.18
8,145.0	89.40	84.00	5,746.1	267.6	2,835.1	2,817.4	3.24
8,239.0	89.00	86.10	5,747.4	275.7	2,928.7	2,910.2	2.27
8,328.0	90.20	89.40	5,748.0	279.2	3,017.6	2,997.4	3.95
8,418.0	89.30	90.60	5,748.4	279.2	3,107.6	3,084.9	1.67

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<b>Well:</b>	Rohn State LD10-65-1HN	<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)
8,507.0	89.30	89.90	5,749.5	278.8	3,196.6	3,171.2	0.79
8,597.0	89.50	89.40	5,750.5	279.3	3,286.6	3,258.7	0.60
8,687.0	89.00	88.90	5,751.6	280.7	3,376.6	3,346.5	0.79
8,776.0	90.90	90.00	5,751.7	281.5	3,465.6	3,433.1	2.47
8,866.0	90.60	90.10	5,750.5	281.4	3,555.6	3,520.5	0.35
8,956.0	91.70	91.20	5,748.7	280.4	3,645.5	3,607.7	1.73
9,045.0	91.90	89.20	5,745.9	280.1	3,734.5	3,694.0	2.26
9,135.0	89.80	88.70	5,744.6	281.8	3,824.5	3,781.8	2.40
9,224.0	90.50	89.80	5,744.4	282.9	3,913.4	3,868.5	1.46
9,314.0	91.80	91.20	5,742.6	282.1	4,003.4	3,955.7	2.12
9,404.0	92.00	90.00	5,739.6	281.2	4,093.4	4,042.8	1.35
9,493.0	92.00	88.90	5,736.5	282.1	4,182.3	4,129.4	1.24
9,583.0	91.70	88.60	5,733.6	284.0	4,272.2	4,217.2	0.47
9,672.0	91.00	88.30	5,731.5	286.4	4,361.2	4,304.2	0.86
9,762.0	91.80	88.10	5,729.3	289.2	4,451.1	4,392.2	0.92
9,852.0	92.70	88.50	5,725.7	291.9	4,541.0	4,480.2	1.09
9,941.0	90.30	87.70	5,723.4	294.9	4,629.9	4,567.2	2.84
10,031.0	90.80	86.70	5,722.5	299.3	4,719.8	4,655.6	1.24
10,120.0	90.50	85.80	5,721.5	305.1	4,808.6	4,743.2	1.07
10,181.0	90.50	85.50	5,721.0	309.7	4,869.4	4,803.4	0.49
10,243.0	90.50	85.50	5,720.5	314.6	4,931.2	4,864.6	0.00
Rohn State LD10-65-1HN BHL 2310'FSL & 660'FEL							

Checked By: _____	Approved By: _____	Date: _____
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