

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

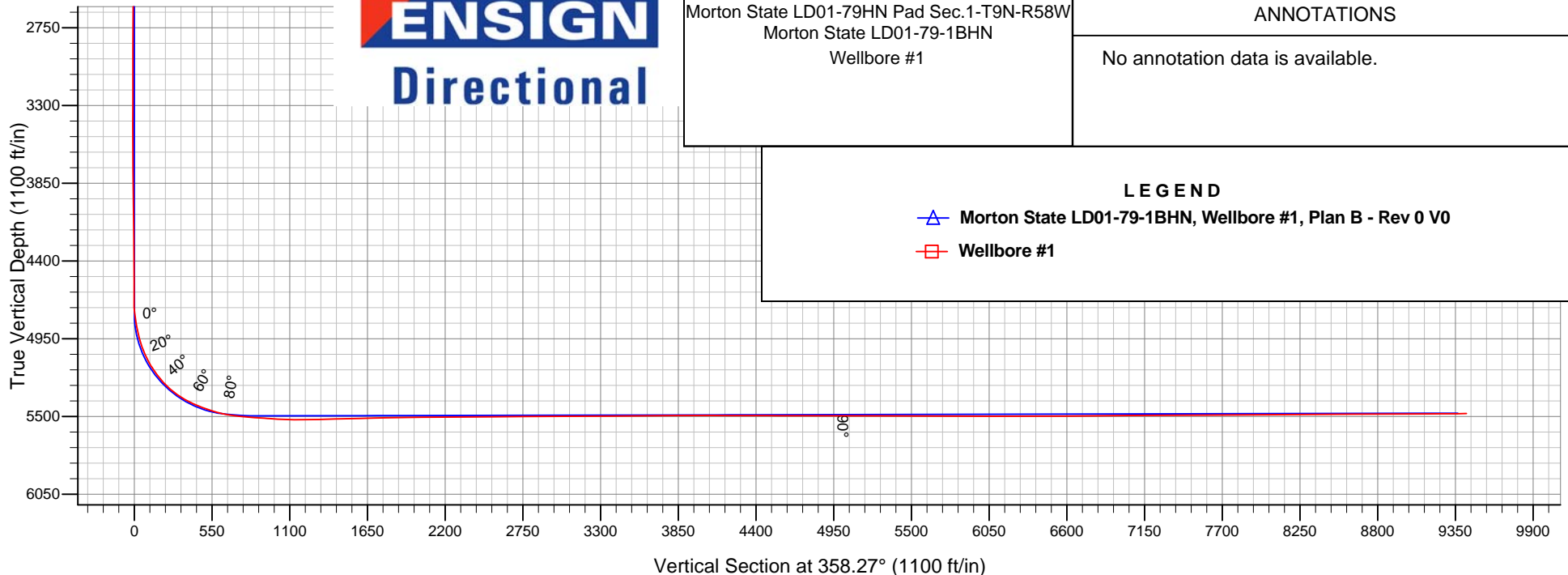
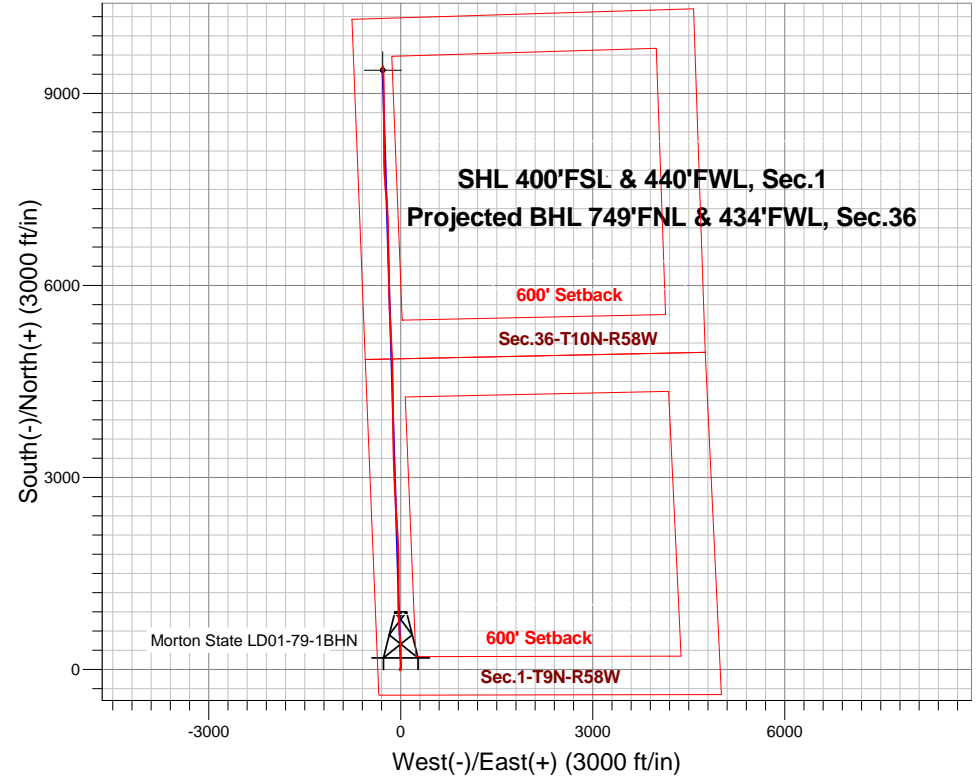
Well Name: **Morton State LD01-79-1BHN**

Surface Location: Morton State LD01-79HN Pad Sec.1-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4656.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1529383.60	3465179.82	40.774450	-103.820380	
PD 828 RKB - 16' WELL @ 4672.0ft (PD 828 RKB - 16')						

FINAL SURVEY

Projected Bottom Hole Location
14600'MD 5479.25'TVD 9424'N & 276'W of
SHL 90.52 degree Incl @ 358.08 degree AZM





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

SEC.1-T9N-R58W

Morton State LD01-79HN Pad Sec.1-T9N-R58W

Morton State LD01-79-1BHN

Wellbore #1

Design: Wellbore #1

Final Survey

15 December, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Morton State LD01-79-1BHN
Project:	SEC.1-T9N-R58W	TVD Reference:	WELL @ 4672.0ft (PD 828 RKB - 16')
Site:	Morton State LD01-79HN Pad Sec.1-T9N-R58W	MD Reference:	WELL @ 4672.0ft (PD 828 RKB - 16')
Well:	Morton State LD01-79-1BHN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.1-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	Morton State LD01-79HN Pad Sec.1-T9N-R58W				
Site Position:		Northing:	1,529,382.88 ft	Latitude:	40.774450
From:	Lat/Long	Easting:	3,465,141.05 ft	Longitude:	-103.820520
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.09 °

Well	Morton State LD01-79-1BHN					
Well Position	+N/-S	0.0 ft	Northing:	1,529,383.60 ft	Latitude:	40.774450
	+E/-W	0.0 ft	Easting:	3,465,179.82 ft	Longitude:	-103.820380
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,656.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/4/2014	7.90	67.38	53,056

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	358.27	

Survey Program	Date	12/15/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
475.0	1,013.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,285.0	5,807.0	Intermediate/Curve (Wellbore #1)	MWD	MWD - Standard	
5,964.0	14,600.0	Lateral (Wellbore #1)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction	

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	
475.0	0.40	348.80	475.0	1.6	-0.3	1.6	0.08	
1,013.0	0.30	18.60	1,013.0	4.8	-0.2	4.8	0.04	
1,285.0	0.70	211.50	1,285.0	4.1	-0.9	4.1	0.37	
1,473.0	0.50	238.10	1,473.0	2.6	-2.2	2.7	0.18	
1,661.0	0.60	236.50	1,661.0	1.7	-3.7	1.8	0.05	
1,851.0	1.00	217.00	1,850.9	-0.2	-5.5	0.0	0.25	
2,012.0	0.90	186.00	2,011.9	-2.6	-6.5	-2.4	0.32	
2,191.0	1.40	166.80	2,190.9	-6.1	-6.1	-5.9	0.35	
2,370.0	0.10	265.70	2,369.9	-8.2	-5.8	-8.1	0.79	

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Well:	Morton State LD01-79-1BHN	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)
2,549.0	0.40	242.30	2,548.9	-8.6	-6.5	-8.4	0.17
2,727.0	0.30	172.80	2,726.9	-9.3	-7.0	-9.1	0.23
2,906.0	0.40	223.00	2,905.9	-10.2	-7.4	-10.0	0.17
3,085.0	0.50	291.80	3,084.9	-10.4	-8.5	-10.1	0.29
3,264.0	0.30	230.20	3,263.9	-10.4	-9.6	-10.1	0.25
3,443.0	0.50	135.30	3,442.9	-11.3	-9.4	-11.0	0.34
3,621.0	0.40	296.90	3,620.8	-11.5	-9.4	-11.2	0.50
3,800.0	1.20	18.20	3,799.8	-9.5	-9.4	-9.2	0.67
3,979.0	1.00	344.00	3,978.8	-6.2	-9.2	-5.9	0.38
4,157.0	1.50	272.40	4,156.8	-4.6	-12.0	-4.2	0.85
4,336.0	1.40	303.60	4,335.7	-3.3	-16.2	-2.8	0.44
4,515.0	2.10	92.40	4,514.7	-2.2	-14.7	-1.8	1.89
4,650.0	1.90	88.40	4,649.6	-2.2	-10.0	-1.9	0.18
4,695.0	1.90	73.60	4,694.6	-2.0	-8.5	-1.8	1.09
4,739.0	4.40	20.90	4,738.5	-0.2	-7.2	0.0	8.14
4,784.0	7.70	13.10	4,783.3	4.3	-5.9	4.5	7.54
4,829.0	9.20	8.90	4,827.8	10.8	-4.7	10.9	3.60
4,874.0	11.10	14.10	4,872.1	18.6	-3.1	18.6	4.68
4,919.0	13.40	11.00	4,916.0	27.9	-1.0	27.9	5.31
4,964.0	16.10	9.50	4,959.5	39.2	1.0	39.1	6.06
5,009.0	19.20	7.20	5,002.4	52.7	3.0	52.5	7.06
5,054.0	23.10	4.40	5,044.4	68.8	4.6	68.6	8.95
5,099.0	26.10	0.90	5,085.3	87.5	5.4	87.3	7.41
5,144.0	30.10	358.00	5,125.0	108.7	5.2	108.5	9.39
5,189.0	33.10	356.10	5,163.3	132.2	3.9	132.1	7.02
5,233.0	36.80	355.70	5,199.4	157.4	2.1	157.2	8.43
5,278.0	40.60	356.10	5,234.5	185.4	0.1	185.3	8.46
5,323.0	43.10	358.70	5,268.0	215.4	-1.2	215.4	6.76
5,368.0	46.90	1.30	5,299.8	247.2	-1.2	247.1	9.38
5,413.0	51.80	0.20	5,329.1	281.4	-0.8	281.2	11.05
5,458.0	56.60	357.90	5,355.4	317.8	-1.4	317.7	11.44
5,503.0	60.90	358.20	5,378.8	356.3	-2.7	356.2	9.57
5,548.0	64.60	357.00	5,399.4	396.2	-4.4	396.2	8.56
5,593.0	66.90	354.60	5,417.9	437.1	-7.4	437.2	7.05
5,638.0	68.70	353.70	5,434.9	478.6	-11.7	478.7	4.41
5,683.0	70.40	354.60	5,450.6	520.5	-15.9	520.8	4.22
5,728.0	73.40	355.90	5,464.6	563.2	-19.5	563.5	7.21
5,773.0	76.50	357.60	5,476.3	606.5	-21.9	606.9	7.80
5,807.0	79.70	357.80	5,483.3	639.8	-23.3	640.2	9.43
5,964.0	85.35	356.94	5,503.7	795.2	-30.4	795.8	3.64
Lateral - Schlumberger							
6,023.9	85.84	356.51	5,508.3	854.8	-33.8	855.4	1.08
Morton State LD01-79-1BHN Landing Pt.							
6,054.0	86.08	356.30	5,510.4	884.8	-35.7	885.5	1.08
6,144.0	87.08	0.88	5,515.8	974.6	-37.9	975.3	5.20

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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)
6,233.0	86.83	359.54	5,520.5	1,063.5	-37.6	1,064.1	1.53
6,323.0	89.45	359.40	5,523.4	1,153.4	-38.4	1,154.0	2.92
6,413.0	91.69	0.70	5,522.5	1,243.4	-38.4	1,244.0	2.88
6,503.0	91.48	1.29	5,520.0	1,333.3	-36.8	1,333.8	0.70
6,593.0	91.44	1.75	5,517.7	1,423.3	-34.4	1,423.7	0.51
6,683.0	91.38	359.55	5,515.5	1,513.2	-33.4	1,513.6	2.44
6,773.0	91.27	359.42	5,513.5	1,603.2	-34.2	1,603.5	0.19
6,863.0	91.31	359.39	5,511.4	1,693.2	-35.1	1,693.5	0.06
6,953.0	91.45	359.78	5,509.3	1,783.2	-35.8	1,783.4	0.46
7,043.0	91.03	356.62	5,507.3	1,873.1	-38.6	1,873.4	3.54
7,132.0	90.45	355.91	5,506.2	1,961.9	-44.4	1,962.3	1.03
7,223.0	90.52	357.42	5,505.4	2,052.7	-49.7	2,053.3	1.66
7,312.0	90.52	357.38	5,504.6	2,141.6	-53.7	2,142.3	0.04
7,402.0	90.45	357.04	5,503.8	2,231.5	-58.1	2,232.3	0.39
7,492.0	90.38	356.06	5,503.2	2,321.3	-63.5	2,322.2	1.09
7,672.0	90.45	357.01	5,501.9	2,501.0	-74.4	2,502.1	0.53
7,852.0	90.31	356.55	5,500.7	2,680.7	-84.5	2,682.1	0.27
7,942.0	90.31	357.28	5,500.2	2,770.6	-89.4	2,772.0	0.81
8,121.0	90.31	356.37	5,499.2	2,949.3	-99.3	2,951.0	0.51
8,301.0	90.24	358.86	5,498.4	3,129.1	-106.8	3,130.9	1.38
8,391.0	90.38	358.98	5,497.9	3,219.1	-108.5	3,220.9	0.20
8,570.0	90.45	358.80	5,496.6	3,398.1	-111.9	3,399.9	0.11
8,660.0	90.41	358.76	5,495.9	3,488.1	-113.8	3,489.9	0.06
8,750.0	90.34	359.05	5,495.3	3,578.0	-115.6	3,579.9	0.33
8,840.0	90.48	358.74	5,494.7	3,668.0	-117.3	3,669.9	0.38
8,930.0	90.38	358.83	5,494.0	3,758.0	-119.2	3,759.9	0.15
9,020.0	90.34	359.44	5,493.4	3,848.0	-120.6	3,849.9	0.68
9,199.0	90.03	359.53	5,492.8	4,027.0	-122.2	4,028.8	0.18
9,289.0	89.69	358.80	5,493.1	4,117.0	-123.5	4,118.8	0.89
9,379.0	89.86	359.09	5,493.4	4,207.0	-125.1	4,208.8	0.37
9,468.0	89.86	358.75	5,493.6	4,295.9	-126.8	4,297.8	0.38
9,558.0	89.90	359.46	5,493.8	4,385.9	-128.2	4,387.8	0.79
9,648.0	89.86	359.75	5,494.0	4,475.9	-128.8	4,477.8	0.33
9,738.0	89.90	359.64	5,494.2	4,565.9	-129.3	4,567.7	0.13
9,907.0	90.14	359.49	5,494.1	4,734.9	-130.6	4,736.7	0.17
10,032.0	89.79	357.85	5,494.2	4,859.9	-133.5	4,861.7	1.34
10,125.0	89.66	355.41	5,494.7	4,952.7	-139.0	4,954.6	2.63
10,218.0	89.97	356.95	5,495.0	5,045.5	-145.2	5,047.6	1.69
10,313.0	89.90	356.99	5,495.1	5,140.4	-150.2	5,142.6	0.08
10,407.0	89.83	356.95	5,495.3	5,234.2	-155.2	5,236.5	0.09
10,501.0	89.79	356.84	5,495.6	5,328.1	-160.3	5,330.5	0.12
10,595.0	89.66	356.40	5,496.1	5,421.9	-165.8	5,424.5	0.49
10,688.0	90.00	357.80	5,496.3	5,514.8	-170.5	5,517.4	1.55
10,782.0	89.93	358.62	5,496.4	5,608.8	-173.4	5,611.4	0.88

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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)
10,877.0	90.17	359.05	5,496.3	5,703.7	-175.4	5,706.4	0.52
10,971.0	89.59	358.34	5,496.5	5,797.7	-177.5	5,800.4	0.98
11,065.0	89.52	359.21	5,497.2	5,891.7	-179.5	5,894.4	0.93
11,141.0	89.48	358.40	5,497.9	5,967.7	-181.1	5,970.4	1.07
11,231.0	89.41	358.89	5,498.8	6,057.6	-183.2	6,060.4	0.55
11,321.0	90.38	359.34	5,498.9	6,147.6	-184.6	6,150.4	1.19
11,411.0	90.31	358.48	5,498.4	6,237.6	-186.3	6,240.4	0.96
11,501.0	90.55	359.14	5,497.7	6,327.6	-188.2	6,330.4	0.78
11,591.0	90.28	358.28	5,497.1	6,417.6	-190.2	6,420.4	1.00
11,681.0	90.24	358.23	5,496.7	6,507.5	-193.0	6,510.4	0.07
11,771.0	90.55	358.97	5,496.0	6,597.5	-195.2	6,600.4	0.89
11,860.0	90.14	359.17	5,495.5	6,686.5	-196.6	6,689.4	0.51
11,950.0	90.34	358.23	5,495.1	6,776.5	-198.7	6,779.4	1.07
12,040.0	90.34	359.04	5,494.6	6,866.4	-200.8	6,869.4	0.90
12,129.0	90.69	359.68	5,493.8	6,955.4	-201.8	6,958.3	0.82
12,219.0	90.48	358.16	5,492.9	7,045.4	-203.5	7,048.3	1.70
12,309.0	90.28	357.44	5,492.3	7,135.3	-206.9	7,138.3	0.83
12,398.0	90.07	356.11	5,492.0	7,224.2	-212.0	7,227.3	1.51
12,488.0	90.55	355.14	5,491.5	7,313.9	-218.8	7,317.2	1.20
12,578.0	90.24	354.30	5,490.9	7,403.5	-227.1	7,407.0	0.99
12,667.0	90.41	355.08	5,490.4	7,492.1	-235.3	7,495.8	0.90
12,756.0	90.38	355.04	5,489.8	7,580.8	-243.0	7,584.7	0.06
12,846.0	90.17	356.56	5,489.3	7,670.6	-249.6	7,674.6	1.70
12,936.0	90.41	357.07	5,488.9	7,760.4	-254.6	7,764.6	0.63
13,025.0	90.48	357.32	5,488.2	7,849.3	-258.9	7,853.6	0.29
13,114.0	90.10	359.02	5,487.7	7,938.3	-261.8	7,942.6	1.96
13,203.0	90.48	0.13	5,487.3	8,027.3	-262.4	8,031.5	1.32
13,293.0	90.31	0.13	5,486.7	8,117.3	-262.2	8,121.5	0.19
13,382.0	90.14	359.88	5,486.3	8,206.3	-262.2	8,210.4	0.34
13,472.0	90.48	0.20	5,485.8	8,296.3	-262.2	8,300.4	0.52
13,561.0	90.31	359.92	5,485.2	8,385.3	-262.1	8,389.3	0.37
13,651.0	90.31	0.34	5,484.7	8,475.3	-261.9	8,479.3	0.47
13,740.0	90.07	358.72	5,484.4	8,564.2	-262.6	8,568.3	1.84
13,830.0	90.48	359.31	5,484.0	8,654.2	-264.2	8,658.3	0.80
13,919.0	90.34	359.89	5,483.4	8,743.2	-264.8	8,747.2	0.67
14,009.0	90.28	359.72	5,482.9	8,833.2	-265.1	8,837.2	0.20
14,085.0	90.28	0.14	5,482.5	8,909.2	-265.2	8,913.2	0.55
14,145.0	90.17	359.86	5,482.3	8,969.2	-265.2	8,973.1	0.50
14,237.0	90.38	359.79	5,481.8	9,061.2	-265.5	9,065.1	0.24
14,330.0	90.28	358.59	5,481.3	9,154.2	-266.8	9,158.1	1.29
14,424.0	90.38	357.73	5,480.8	9,248.2	-269.8	9,252.1	0.92
14,517.0	90.55	357.78	5,480.0	9,341.1	-273.4	9,345.1	0.19
14,533.0	90.52	358.08	5,479.9	9,357.1	-274.0	9,361.1	1.88
Morton State LD01-79-1BHN BHL 810'FNL & 440'FWL							

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Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
14,600.0	90.52	358.08	5,479.2	9,424.0	-276.3	9,428.1	0.00

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,964.0	5,503.7	795.2	-30.4	Lateral - Schlumberger

Checked By: _____ Approved By: _____ Date: _____