

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

Well Name: **Reliance E23-66-1HN**

Surface Location: Reliance E23-66-1HN Pad Sec.23-T6N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4695.0

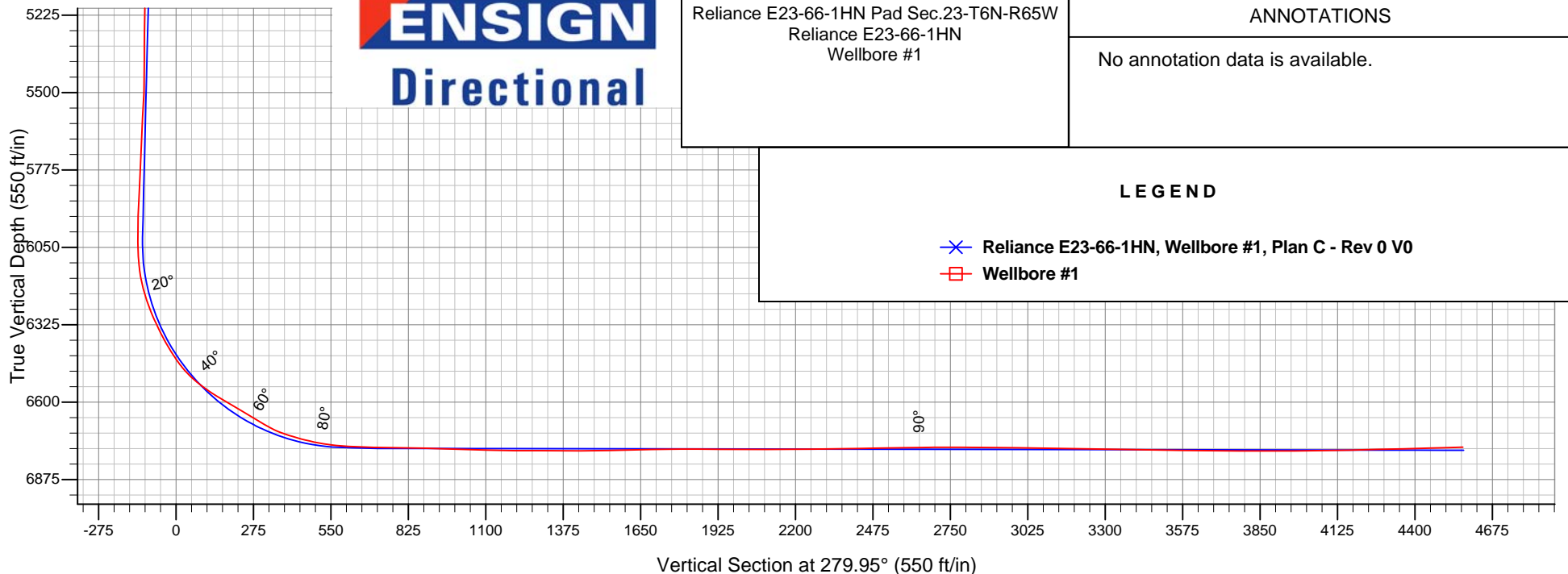
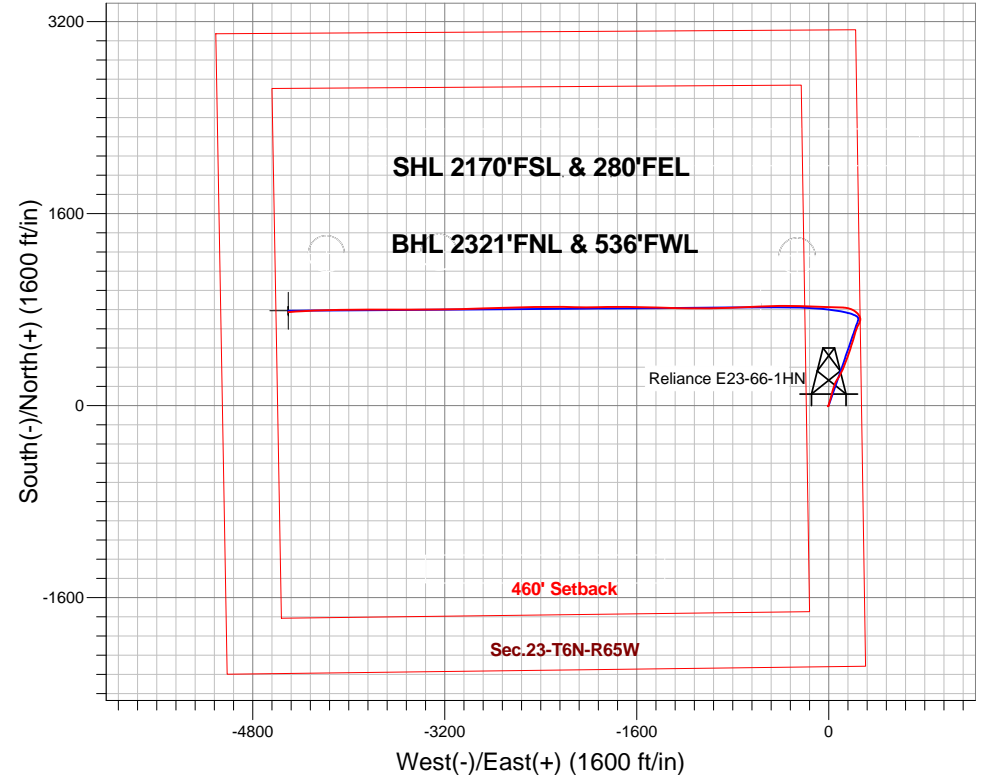
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1415333.04	3244316.73	40.470170	-104.621850	

H&P 326 RKB - 30' WELL @ 4725.0ft (H&P 326 RKB - 30')

FINAL SURVEY

Projected Bottom Hole Location
11285'MD 6760'TVD 779'N & 4503'W of SHL
91.6 degree Incl @ 265.6 degree AZM

API# 05-123-37606





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

Sec.23-T6N-R65W

Reliance E23-66-1HN Pad Sec.23-T6N-R65W

Reliance E23-66-1HN

Wellbore #1

Design: Wellbore #1

Final Survey

30 March, 2015

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
Feit E23-5							
15.7	0.03	241.12	15.7	0.0	0.0	0.0	0.16
Feit E23-6 - Li'l Darlin' 8-23							
373.0	0.60	241.12	373.0	-0.9	-1.7	1.5	0.16
809.0	0.70	247.42	809.0	-3.1	-6.2	5.5	0.03
824.0	0.90	222.60	824.0	-3.2	-6.3	5.7	2.64
917.0	0.80	232.00	917.0	-4.1	-7.3	6.5	0.18
1,009.0	1.70	76.50	1,008.9	-4.2	-6.5	5.7	2.66
1,113.0	3.00	30.40	1,112.9	-1.5	-3.6	3.3	2.11

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Reliance E23-66-1HN
Project:	Sec.23-T6N-R65W	TVD Reference:	WELL @ 4725.0ft (H&P 326 RKB - 30')
Site:	Reliance E23-66-1HN Pad Sec.23-T6N-R65W	MD Reference:	WELL @ 4725.0ft (H&P 326 RKB - 30')
Well:	Reliance E23-66-1HN	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)	
1,206.0	4.40	14.30	1,205.7	4.1	-1.5	2.2	1.86	
1,298.0	5.30	24.90	1,297.3	11.3	1.1	0.8	1.38	
1,391.0	7.10	12.80	1,389.8	20.8	4.2	-0.6	2.38	
1,483.0	8.70	20.80	1,480.9	32.9	7.9	-2.1	2.11	
1,669.0	9.60	14.20	1,664.6	61.1	16.7	-5.9	0.74	
1,762.0	9.00	10.40	1,756.3	75.7	20.0	-6.6	0.92	
1,855.0	9.90	18.30	1,848.1	90.5	23.8	-7.8	1.70	
1,948.0	9.70	15.70	1,939.7	105.6	28.4	-9.7	0.52	
2,040.0	9.20	11.30	2,030.5	120.3	32.0	-10.7	0.95	
2,132.0	10.10	20.30	2,121.2	135.1	36.2	-12.3	1.91	
2,224.0	9.80	19.60	2,211.8	150.0	41.6	-15.1	0.35	
2,316.0	9.00	16.00	2,302.6	164.3	46.2	-17.1	1.08	
2,410.0	8.50	15.70	2,395.5	178.1	50.1	-18.6	0.53	
2,502.0	8.30	29.80	2,486.5	190.4	55.3	-21.6	2.24	
2,596.0	8.00	28.30	2,579.5	202.0	61.8	-25.9	0.39	
2,688.0	9.40	33.50	2,670.5	213.9	68.9	-30.9	1.74	
2,782.0	9.20	32.40	2,763.2	226.7	77.2	-36.9	0.28	
2,877.0	9.10	31.00	2,857.0	239.5	85.1	-42.5	0.26	
2,972.0	8.00	30.10	2,951.0	251.7	92.3	-47.4	1.17	
3,066.0	9.40	25.70	3,043.9	264.3	98.9	-51.8	1.65	
3,160.0	8.60	26.10	3,136.7	277.5	105.3	-55.8	0.85	
3,255.0	7.20	22.90	3,230.8	289.4	110.8	-59.1	1.54	
3,349.0	8.60	23.70	3,323.9	301.2	115.9	-62.1	1.49	
3,444.0	9.50	22.40	3,417.8	315.0	121.8	-65.5	0.97	
3,538.0	8.20	21.50	3,510.6	328.4	127.2	-68.5	1.39	
3,633.0	9.10	23.10	3,604.5	341.6	132.6	-71.6	0.98	
3,727.0	9.60	22.20	3,697.3	355.7	138.5	-74.9	0.55	
3,822.0	9.80	21.70	3,790.9	370.5	144.5	-78.3	0.23	
3,916.0	10.00	20.10	3,883.5	385.6	150.2	-81.3	0.36	
4,010.0	9.80	18.60	3,976.1	400.9	155.6	-84.0	0.35	
4,105.0	8.70	16.60	4,069.9	415.4	160.2	-86.0	1.21	
4,200.0	8.60	21.00	4,163.8	428.9	164.8	-88.2	0.70	
4,294.0	8.40	18.30	4,256.8	442.0	169.5	-90.6	0.47	
4,389.0	9.00	22.30	4,350.7	455.5	174.5	-93.2	0.90	
4,483.0	8.10	17.50	4,443.7	468.6	179.3	-95.6	1.22	
4,578.0	9.00	15.90	4,537.6	482.1	183.3	-97.2	0.98	
4,672.0	8.00	15.00	4,630.6	495.5	187.0	-98.6	1.07	
4,767.0	9.00	20.60	4,724.5	508.9	191.3	-100.5	1.37	
4,862.0	9.80	16.90	4,818.2	523.6	196.3	-102.9	1.05	
4,956.0	8.10	12.10	4,911.1	537.7	200.0	-104.1	1.97	
5,051.0	9.50	22.30	5,005.0	551.5	204.4	-106.0	2.20	
5,145.0	10.20	18.60	5,097.6	566.6	210.0	-108.9	1.00	
5,240.0	8.70	17.00	5,191.3	581.4	214.8	-111.1	1.60	
5,334.0	9.50	12.80	5,284.1	595.8	218.6	-112.3	1.11	

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Site:	Reliance E23-66-1HN Pad Sec.23-T6N-R65W	MD Reference:	WELL @ 4725.0ft (H&P 326 RKB - 30')
Well:	Reliance E23-66-1HN	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)
5,429.0	8.10	9.20	5,378.0	610.0	221.4	-112.7	1.58
5,524.0	8.60	19.00	5,472.0	623.3	224.8	-113.7	1.59
5,619.0	10.60	27.30	5,565.7	637.8	231.1	-117.4	2.56
5,713.0	10.20	24.30	5,658.1	653.1	238.5	-122.0	0.72
5,807.0	8.90	25.10	5,750.8	667.3	245.0	-126.0	1.39
5,902.0	9.60	28.80	5,844.6	680.9	251.9	-130.5	0.97
5,997.0	10.00	19.40	5,938.2	695.6	258.5	-134.4	1.73
6,091.0	10.50	8.40	6,030.7	711.7	262.4	-135.5	2.15
6,186.0	15.70	346.70	6,123.3	732.8	260.7	-130.2	7.45
6,280.0	22.00	322.70	6,212.3	759.3	247.1	-112.2	10.50
6,375.0	26.00	307.00	6,299.2	786.0	219.7	-80.5	7.90
6,469.0	28.80	289.00	6,382.8	805.8	181.7	-39.8	9.26
6,563.0	36.40	276.00	6,462.0	816.1	132.4	10.6	10.96
6,658.0	51.50	271.10	6,530.2	819.8	66.9	75.8	16.28
6,752.0	59.70	271.60	6,583.3	821.7	-10.6	152.4	8.73
6,847.0	59.40	272.10	6,631.4	824.3	-92.5	233.5	0.55
6,941.0	59.30	271.80	6,679.3	827.1	-173.3	313.6	0.29
7,036.0	72.90	271.80	6,717.7	829.8	-259.9	399.4	14.32
7,131.0	77.90	270.20	6,741.7	831.4	-351.8	490.1	5.51
7,193.0	83.50	268.60	6,751.7	830.7	-412.9	550.3	9.38
7,291.0	88.20	268.30	6,758.8	828.1	-510.6	646.0	4.81
7,348.7	88.56	268.06	6,760.4	826.2	-568.3	702.5	0.76
Reliance E23-66-1HN Landing Pt.							
7,386.0	88.80	267.90	6,761.3	824.9	-605.5	739.0	0.76
7,480.0	89.00	267.80	6,763.1	821.4	-699.5	830.9	0.24
7,575.0	88.50	267.60	6,765.1	817.6	-794.4	923.7	0.57
7,669.0	88.30	267.70	6,767.8	813.7	-888.2	1,015.5	0.24
7,763.0	88.40	269.30	6,770.5	811.3	-982.2	1,107.6	1.70
7,858.0	89.80	270.50	6,772.0	811.1	-1,077.2	1,201.1	1.94
7,951.0	89.80	270.60	6,772.3	812.0	-1,170.1	1,292.9	0.11
8,045.0	89.50	270.80	6,772.9	813.2	-1,264.1	1,385.6	0.38
8,140.0	90.90	271.80	6,772.5	815.3	-1,359.1	1,479.5	1.81
8,235.0	91.10	271.80	6,770.9	818.3	-1,454.0	1,573.6	0.21
8,329.0	91.10	271.10	6,769.1	820.7	-1,548.0	1,666.5	0.74
8,424.0	91.00	271.10	6,767.3	822.5	-1,643.0	1,760.4	0.11
8,518.0	89.80	269.40	6,766.7	822.9	-1,737.0	1,853.0	2.21
8,613.0	89.50	269.10	6,767.3	821.7	-1,831.9	1,946.4	0.45
8,708.0	89.70	269.50	6,767.9	820.5	-1,926.9	2,039.7	0.47
8,803.0	89.90	270.10	6,768.3	820.2	-2,021.9	2,133.2	0.67
8,897.0	90.60	270.50	6,767.8	820.7	-2,115.9	2,225.9	0.86
8,991.0	91.20	271.10	6,766.4	822.0	-2,209.9	2,318.7	0.90
9,086.0	90.80	269.70	6,764.7	822.6	-2,304.9	2,412.4	1.53
9,180.0	90.60	269.30	6,763.6	821.8	-2,398.9	2,504.8	0.48
9,275.0	91.40	269.70	6,761.9	821.0	-2,493.9	2,598.2	0.94

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Site:	Reliance E23-66-1HN Pad Sec.23-T6N-R65W	MD Reference:	WELL @ 4725.0ft (H&P 326 RKB - 30')
Well:	Reliance E23-66-1HN	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)
9,369.0	90.30	268.70	6,760.5	819.7	-2,587.8	2,690.5	1.58
9,464.0	89.50	268.00	6,760.7	816.9	-2,682.8	2,783.6	1.12
9,558.0	89.50	268.10	6,761.5	813.7	-2,776.7	2,875.6	0.11
9,653.0	89.40	268.30	6,762.4	810.8	-2,871.7	2,968.6	0.24
9,748.0	89.20	268.40	6,763.6	808.0	-2,966.6	3,061.6	0.24
9,842.0	89.10	268.80	6,765.0	805.7	-3,060.6	3,153.8	0.44
9,936.0	89.40	269.00	6,766.2	803.9	-3,154.6	3,246.0	0.38
10,031.0	89.20	269.20	6,767.4	802.4	-3,249.6	3,339.3	0.30
10,125.0	89.10	269.30	6,768.7	801.2	-3,343.5	3,431.7	0.15
10,220.0	89.00	269.70	6,770.3	800.4	-3,438.5	3,525.1	0.43
10,314.0	89.10	270.00	6,771.9	800.1	-3,532.5	3,617.6	0.34
10,409.0	89.20	269.90	6,773.3	800.0	-3,627.5	3,711.2	0.15
10,504.0	89.60	269.90	6,774.3	799.9	-3,722.5	3,804.7	0.42
10,598.0	90.10	269.80	6,774.5	799.6	-3,816.5	3,897.3	0.54
10,692.0	90.90	269.80	6,773.7	799.3	-3,910.5	3,989.8	0.85
10,787.0	91.80	269.90	6,771.5	799.1	-4,005.5	4,083.3	0.95
10,881.0	91.00	268.90	6,769.2	798.1	-4,099.4	4,175.7	1.36
10,976.0	90.80	268.00	6,767.7	795.5	-4,194.4	4,268.7	0.97
11,071.0	91.30	267.60	6,765.9	791.9	-4,289.3	4,361.6	0.67
11,165.0	91.60	267.30	6,763.6	787.7	-4,383.2	4,453.3	0.45
11,223.0	91.60	265.60	6,761.9	784.1	-4,441.0	4,509.7	2.93
11,285.0	91.60	265.60	6,760.2	779.3	-4,502.8	4,569.8	0.00
Reliance E23-66-1HN BHL 2310'FNL & 535'FWL							

Checked By: _____ Approved By: _____ Date: _____