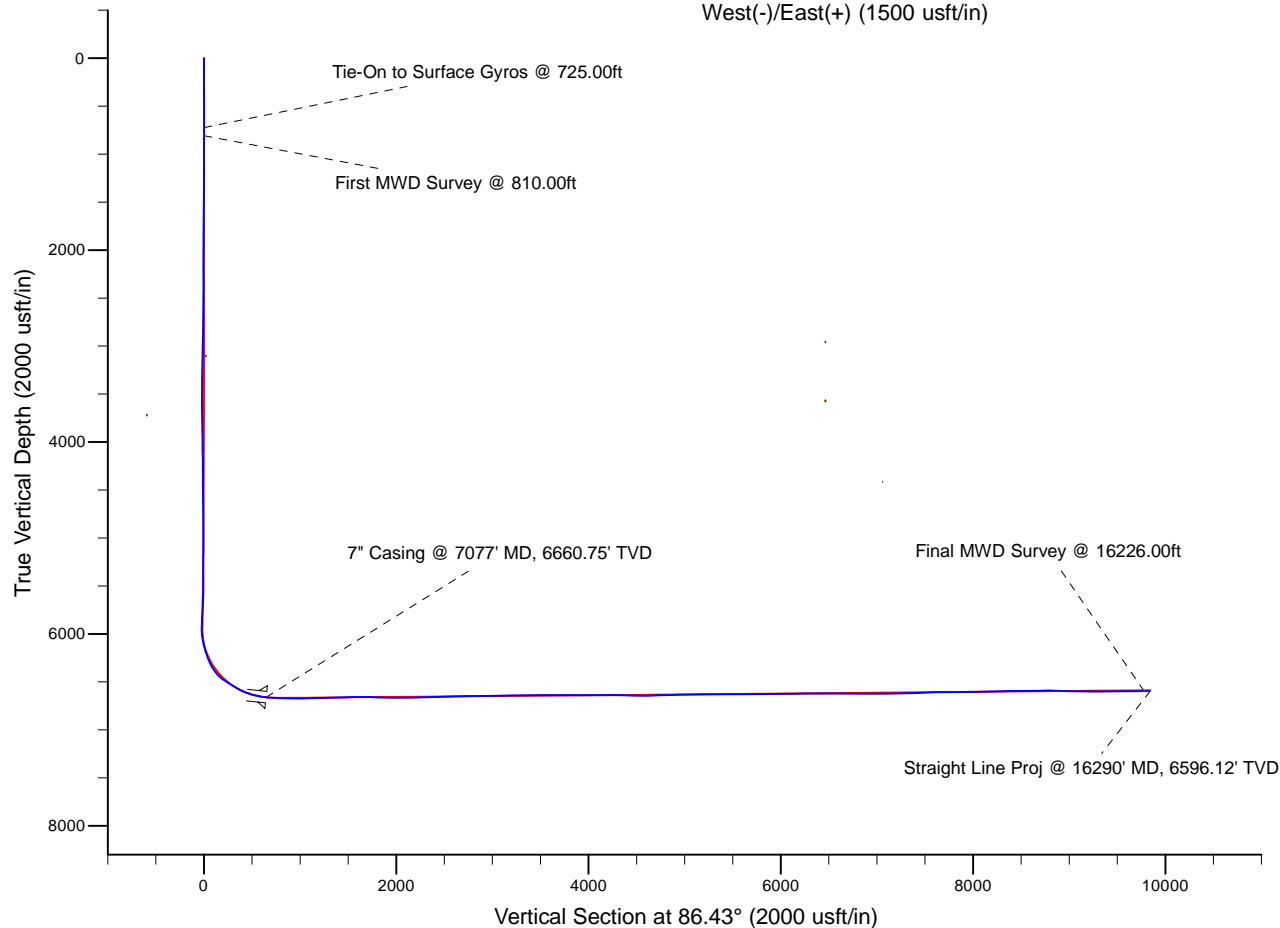
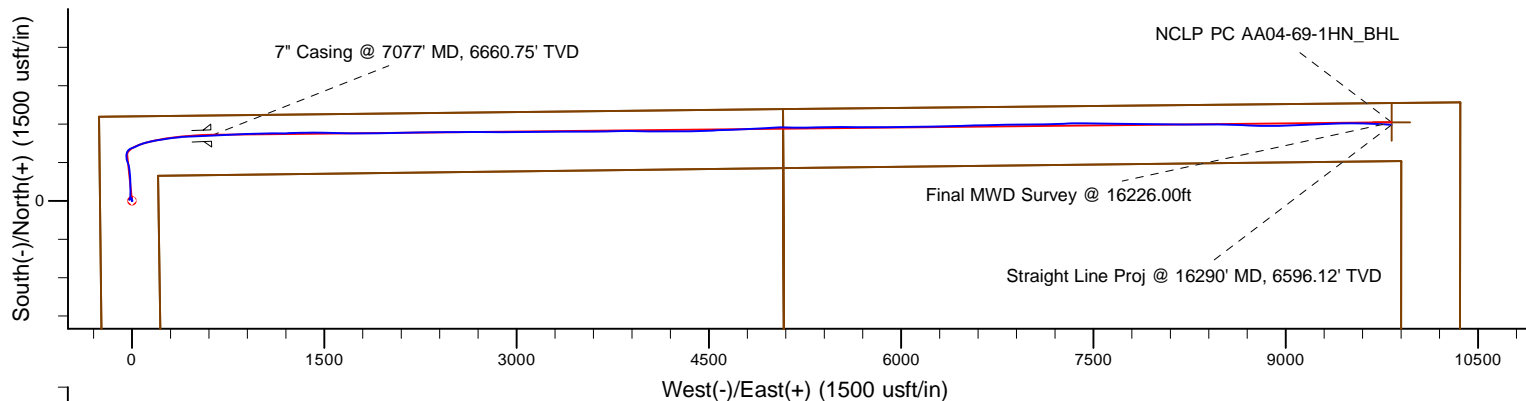


Project: Weld County, CO (NAD 83)  
 Site: Sec. 4-T6N-R63W (NCLP PC AA04 Pads)  
 Well: NCLP PC AA04-69-1HN  
 Wellbore: Plan B  
 Design: Actual Surveys

# Noble Energy



Platted SHL: 2163' FSL, 250' FWL  
 Platted Lat/Long: 40.51446° N, 104.45032° W  
 Location: Sec. 4-T6N-R63W

7" Casing: ~157.14' FNL, ~874.33' FWL  
 Lat/Long: 40° 31' 21.242 N, 104° 26' 53.070 W  
 State Planes - CO Northern: 1,434,946.45' N, 3,292,435.45' E  
 Location: Sec. 4-T6N-R63W

BHL: ~170.41' FNL, ~535.84' FEL  
 Lat/Long: 40° 31' 20.984 N, 104° 24' 53.840 W  
 State Planes - CO Northern: 1,435,031.24' N, 3,301,642.58' E  
 Location: Sec. 3-T6N-R63W

## LEGEND

- △ NCLP PC AA04-69-1HN, Plan B, Rev B0 - PROPOSAL V0
- Actual Surveys

WELL DETAILS: NCLP PC AA04-69-1HN

Ground Level: 4710.00  
 RKB=30 @ 4740.00usft (H&P 321)

Created By: Fred Hartmann  
 Created On: 01/02/2014

# Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP PC AA04 Pads)

NCLP PC AA04-69-1HN

Design: Actual Surveys

## Sperry Drilling Services

### Final Survey Report

02 January, 2014

Surface UWI : 900859724

Well Coordinates: 1,434,437.34 N, 3,291,817.32 E (40° 31' 16.28" N, 104° 27' 01.15" W)

Ground Level: 4,710.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well NCLP PC AA04-69-1HN

RKB=30 @ 4740.00usft (H&P 321)

N

Grid

API - US Survey Feet - Custom

**HALLIBURTON**

**Design Report for NCLP PC AA04-69-1HN - Actual Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
241.00	0.60	68.53	241.00	0.46	1.17	1.20	0.25
511.00	0.40	172.73	510.99	0.04	2.61	2.61	0.30
725.00	0.20	57.23	724.99	-0.49	3.02	2.98	0.24
<b>Tie-On to Surface Gyros @ 725.00ft</b>							
810.00	0.85	319.22	809.98	0.06	2.73	2.73	1.06
<b>First MWD Survey @ 810.00ft</b>							
902.00	1.20	326.92	901.97	1.39	1.76	1.84	0.41
1,086.00	1.18	352.26	1,085.93	4.88	0.45	0.76	0.28
1,180.00	1.08	4.66	1,179.91	6.72	0.39	0.81	0.28
1,364.00	1.58	353.10	1,363.86	10.97	0.23	0.91	0.31
1,457.00	1.21	322.16	1,456.84	13.02	-0.53	0.29	0.89
1,549.00	1.05	337.57	1,548.82	14.56	-1.44	-0.53	0.37
1,641.00	1.57	336.96	1,640.79	16.50	-2.26	-1.23	0.57
1,732.00	1.55	313.67	1,731.76	18.50	-3.64	-2.48	0.69
1,825.00	0.83	355.18	1,824.74	20.04	-4.60	-3.35	1.16
1,918.00	1.01	1.00	1,917.73	21.53	-4.65	-3.29	0.22
2,013.00	1.31	326.25	2,012.71	23.27	-5.23	-3.77	0.79
2,105.00	0.11	204.22	2,104.70	24.06	-5.85	-4.34	1.49
2,200.00	0.72	141.15	2,199.70	23.51	-5.52	-4.04	0.71
2,389.00	0.84	200.14	2,388.69	21.29	-5.25	-3.91	0.41
2,485.00	1.23	215.77	2,484.67	19.79	-6.09	-4.85	0.50
2,674.00	0.77	265.27	2,673.65	18.04	-8.55	-7.40	0.50
2,769.00	0.68	268.70	2,768.64	17.98	-9.75	-8.61	0.11
2,864.00	0.84	261.65	2,863.63	17.86	-11.00	-9.86	0.19
2,959.00	1.11	256.23	2,958.62	17.54	-12.58	-11.46	0.30
3,148.00	1.10	215.54	3,147.58	15.63	-15.41	-14.41	0.41
3,243.00	1.77	221.33	3,242.55	13.79	-16.91	-16.02	0.72
3,338.00	2.35	207.19	3,337.49	10.95	-18.77	-18.05	0.81
3,433.00	0.96	256.29	3,432.45	9.03	-20.43	-19.83	1.97
3,527.00	0.47	51.08	3,526.45	9.09	-20.90	-20.29	1.49
3,622.00	0.50	82.38	3,621.45	9.39	-20.19	-19.56	0.28
3,717.00	1.10	81.39	3,716.44	9.58	-18.87	-18.24	0.63
3,811.00	1.18	85.23	3,810.42	9.79	-17.02	-16.37	0.12
3,906.00	0.96	74.22	3,905.40	10.09	-15.28	-14.62	0.32
4,001.00	0.56	74.32	4,000.39	10.43	-14.06	-13.39	0.42
4,095.00	2.14	16.67	4,094.37	12.24	-13.12	-12.33	2.02
4,190.00	3.14	358.16	4,189.27	16.54	-12.69	-11.64	1.37
4,285.00	4.07	3.30	4,284.08	22.51	-12.58	-11.15	1.04
4,380.00	5.49	1.91	4,378.74	30.41	-12.24	-10.32	1.50
4,475.00	7.39	357.90	4,473.14	41.06	-12.31	-9.72	2.05
4,569.00	9.67	357.61	4,566.10	54.99	-12.86	-9.41	2.43
4,664.00	11.18	358.29	4,659.52	72.17	-13.47	-8.94	1.59
4,759.00	11.90	3.67	4,752.61	91.15	-13.11	-7.41	1.36
4,853.00	11.74	2.62	4,844.61	110.38	-12.06	-5.15	0.29
4,948.00	11.73	359.08	4,937.63	129.69	-11.77	-3.66	0.76
5,043.00	14.12	355.53	5,030.22	150.90	-12.83	-3.40	2.65
5,138.00	11.62	355.15	5,122.82	171.99	-14.54	-3.79	2.63
5,233.00	9.26	355.82	5,216.24	189.15	-15.91	-4.08	2.49
5,327.00	11.05	352.59	5,308.77	205.62	-17.62	-4.77	2.00

## Design Report for NCLP PC AA04-69-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,422.00	10.93	356.49	5,402.03	223.64	-19.35	-5.37	0.79
5,517.00	9.65	2.47	5,495.50	240.59	-19.55	-4.52	1.75
5,611.00	11.54	348.35	5,587.91	257.67	-21.11	-5.01	3.40
5,706.00	14.80	340.99	5,680.40	278.46	-26.99	-9.58	3.85
5,800.00	14.45	340.96	5,771.36	300.90	-34.72	-15.90	0.37
5,895.00	16.07	350.50	5,863.02	325.07	-40.76	-20.42	3.14
5,933.00	15.63	349.56	5,899.58	335.30	-42.56	-21.57	1.34
5,990.00	15.69	356.57	5,954.46	350.54	-44.41	-22.47	3.32
6,038.00	17.72	13.88	6,000.47	364.12	-43.05	-20.26	11.14
6,085.00	18.74	22.87	6,045.11	378.03	-38.39	-14.75	6.36
6,133.00	18.22	36.82	6,090.66	391.14	-30.90	-6.45	9.25
6,179.00	18.28	51.91	6,134.37	401.36	-20.90	4.16	10.25
6,227.00	17.98	63.42	6,180.00	409.32	-8.35	17.18	7.48
6,274.00	20.37	68.71	6,224.40	415.54	5.76	31.66	6.28
6,322.00	22.61	68.71	6,269.06	421.92	22.15	48.41	4.67
6,369.00	27.13	66.24	6,311.69	429.52	40.38	67.08	9.87
6,417.00	32.77	66.85	6,353.26	439.05	62.36	89.61	11.77
6,464.00	37.10	72.31	6,391.79	448.36	87.58	115.36	11.36
6,512.00	42.49	76.06	6,428.67	456.67	117.13	145.37	12.29
6,559.00	51.26	78.18	6,460.76	464.27	150.55	179.20	18.95
6,607.00	57.75	80.26	6,488.62	471.54	188.92	217.95	13.97
6,653.00	57.84	81.29	6,513.14	477.78	227.34	256.68	1.90
6,701.00	58.32	81.68	6,538.52	483.81	267.63	297.27	1.21
6,748.00	60.24	81.94	6,562.53	489.57	307.62	337.54	4.11
6,796.00	62.64	83.05	6,585.47	495.07	349.41	379.60	5.40
6,843.00	68.04	84.73	6,605.08	499.60	391.87	422.25	11.94
6,891.00	71.96	87.27	6,621.49	502.73	436.85	467.34	9.56
6,937.00	74.16	87.85	6,634.89	504.61	480.81	511.34	4.93
6,985.00	77.97	87.82	6,646.45	506.37	527.36	557.90	7.94
7,033.00	81.29	88.63	6,655.09	507.83	574.55	605.09	7.11
7,077.00	83.92	87.97	6,660.75	509.12	618.16	648.69	6.16
<b>7" Casing @ 7077' MD, 6660.75' TVD</b>							
7,119.00	86.43	87.35	6,664.29	510.83	659.97	690.53	6.16
7,213.00	86.99	86.81	6,669.68	515.61	753.69	784.37	0.83
7,308.00	88.34	86.70	6,673.55	520.98	848.46	879.29	1.43
7,403.00	90.03	88.27	6,674.90	525.15	943.35	974.25	2.43
7,498.00	92.90	90.44	6,672.47	526.22	1,038.30	1,069.08	3.79
7,592.00	90.86	89.71	6,669.39	526.10	1,132.24	1,162.84	2.30
7,687.00	90.89	87.31	6,667.94	528.57	1,227.19	1,257.76	2.53
7,782.00	91.66	88.32	6,665.83	532.19	1,322.10	1,352.70	1.34
7,876.00	92.16	90.35	6,662.69	533.28	1,416.03	1,446.52	2.22
7,971.00	91.11	91.50	6,659.98	531.75	1,510.98	1,541.19	1.64
8,066.00	90.34	91.00	6,658.78	529.67	1,605.95	1,635.84	0.97
8,160.00	88.37	91.52	6,659.84	527.61	1,699.91	1,729.50	2.17
8,255.00	87.78	89.56	6,663.03	526.71	1,794.85	1,824.20	2.15
8,349.00	88.64	88.74	6,665.97	528.11	1,888.79	1,918.04	1.26
8,444.00	89.97	89.43	6,667.12	529.62	1,983.77	2,012.93	1.58
8,539.00	91.20	88.20	6,666.15	531.59	2,078.74	2,107.84	1.83
8,634.00	91.70	89.65	6,663.74	533.37	2,173.69	2,202.72	1.61
8,729.00	91.20	89.23	6,661.34	534.30	2,268.66	2,297.55	0.69
8,824.00	90.68	89.40	6,659.78	535.43	2,363.64	2,392.42	0.58

## Design Report for NCLP PC AA04-69-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,918.00	92.25	89.66	6,657.38	536.20	2,457.60	2,486.25	1.69
9,013.00	92.28	89.03	6,653.62	537.29	2,552.52	2,581.05	0.66
9,108.00	91.82	89.96	6,650.23	538.13	2,647.45	2,675.85	1.09
9,203.00	90.43	91.08	6,648.36	537.26	2,742.43	2,770.59	1.88
9,298.00	89.66	89.71	6,648.29	536.61	2,837.42	2,865.36	1.65
9,392.00	91.76	89.92	6,647.12	536.91	2,931.41	2,959.18	2.25
9,487.00	91.45	89.82	6,644.46	537.13	3,026.37	3,053.97	0.34
9,582.00	90.74	89.12	6,642.64	538.01	3,121.35	3,148.82	1.05
9,677.00	90.65	89.23	6,641.49	539.37	3,216.33	3,243.70	0.15
9,771.00	90.68	89.52	6,640.40	540.40	3,310.32	3,337.57	0.31
9,866.00	90.55	89.94	6,639.38	540.85	3,405.31	3,432.41	0.46
9,961.00	90.74	90.36	6,638.31	540.60	3,500.31	3,527.20	0.49
10,056.00	89.29	89.06	6,638.29	541.08	3,595.30	3,622.04	2.05
10,151.00	88.70	89.08	6,639.95	542.62	3,690.27	3,716.92	0.62
10,246.00	90.74	88.33	6,640.42	544.77	3,785.24	3,811.84	2.29
10,337.00	90.83	90.26	6,639.17	545.89	3,876.22	3,902.71	2.12
10,429.00	90.22	91.75	6,638.33	544.27	3,968.20	3,994.41	1.75
10,520.00	89.85	90.93	6,638.27	542.15	4,059.18	4,085.08	0.99
10,612.00	90.06	88.45	6,638.34	542.64	4,151.17	4,176.92	2.71
10,704.00	89.11	88.82	6,639.01	544.84	4,243.14	4,268.85	1.11
10,796.00	88.86	92.62	6,640.64	543.68	4,335.10	4,360.56	4.14
10,888.00	88.55	86.63	6,642.72	544.28	4,427.03	4,452.35	6.52
10,979.00	88.80	87.02	6,644.83	549.32	4,517.87	4,543.32	0.51
11,071.00	91.66	88.54	6,644.46	552.88	4,609.79	4,635.29	3.52
11,163.00	91.57	87.84	6,641.86	555.79	4,701.70	4,727.21	0.77
11,255.00	92.09	86.88	6,638.93	560.02	4,793.56	4,819.14	1.19
11,349.00	91.98	86.61	6,635.59	565.36	4,887.35	4,913.08	0.31
11,441.00	89.35	86.44	6,634.52	570.93	4,979.16	5,005.07	2.86
11,533.00	92.92	90.06	6,632.70	573.74	5,071.07	5,096.97	5.53
11,626.00	91.60	90.90	6,629.03	572.96	5,163.99	5,189.67	1.68
11,718.00	88.49	89.20	6,628.96	572.88	5,255.98	5,281.47	3.85
11,810.00	89.75	88.47	6,630.37	574.75	5,347.95	5,373.37	1.58
11,901.00	90.25	89.44	6,630.37	576.41	5,438.93	5,464.28	1.20
11,994.00	89.88	90.27	6,630.27	576.65	5,531.93	5,557.12	0.98
12,087.00	91.14	90.62	6,629.44	575.93	5,624.92	5,649.88	1.41
12,182.00	89.85	90.20	6,628.62	575.25	5,719.91	5,744.65	1.43
12,274.00	91.23	89.85	6,627.75	575.21	5,811.90	5,836.46	1.55
12,369.00	90.28	89.82	6,626.50	575.48	5,906.89	5,931.28	1.00
12,464.00	90.74	89.02	6,625.65	576.44	6,001.88	6,026.15	0.97
12,558.00	89.54	88.58	6,625.42	578.41	6,095.86	6,120.06	1.36
12,653.00	90.92	88.93	6,625.04	580.47	6,190.84	6,214.98	1.50
12,748.00	91.82	88.70	6,622.77	582.44	6,285.79	6,309.87	0.98
12,843.00	89.91	89.44	6,621.34	583.98	6,380.76	6,404.75	2.16
12,938.00	90.00	88.21	6,621.41	585.93	6,475.74	6,499.67	1.30
13,033.00	88.49	88.48	6,622.66	588.67	6,570.69	6,594.60	1.61
13,127.00	89.35	88.10	6,624.43	591.48	6,664.63	6,688.54	1.00
13,227.00	89.85	88.47	6,625.13	594.47	6,764.58	6,788.48	0.62
13,322.00	91.48	89.73	6,624.03	595.96	6,859.56	6,883.37	2.17
13,417.00	89.69	89.63	6,623.06	596.49	6,954.55	6,978.20	1.89
13,512.00	91.05	89.19	6,622.45	597.47	7,049.54	7,073.07	1.50
13,607.00	90.99	89.29	6,620.76	598.73	7,144.51	7,167.94	0.12

## Design Report for NCLP PC AA04-69-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
13,702.00	89.63	87.12	6,620.24	601.71	7,239.46	7,262.89	2.70
13,797.00	91.94	88.54	6,618.94	605.30	7,334.37	7,357.84	2.85
13,891.00	92.99	90.24	6,614.90	606.30	7,428.27	7,451.62	2.12
13,986.00	92.25	90.96	6,610.55	605.31	7,523.17	7,546.27	1.09
14,081.00	91.88	91.87	6,607.13	602.96	7,618.08	7,640.85	1.03
14,176.00	90.37	90.89	6,605.27	600.68	7,713.03	7,735.47	1.89
14,271.00	88.73	90.16	6,606.01	599.81	7,808.02	7,830.22	1.89
14,366.00	90.22	89.58	6,606.88	600.02	7,903.01	7,925.04	1.68
14,461.00	89.94	90.04	6,606.75	600.34	7,998.01	8,019.88	0.57
14,556.00	93.27	91.30	6,604.09	599.23	8,092.95	8,114.56	3.75
14,651.00	92.19	91.68	6,599.56	596.76	8,187.81	8,209.08	1.21
14,745.00	90.80	90.22	6,597.11	595.20	8,281.76	8,302.75	2.14
14,840.00	90.62	89.50	6,595.94	595.43	8,376.75	8,397.58	0.78
14,935.00	91.32	89.67	6,594.33	596.12	8,471.73	8,492.42	0.76
15,030.00	88.89	90.49	6,594.15	595.99	8,566.72	8,587.22	2.70
15,125.00	91.94	93.59	6,593.46	592.61	8,661.64	8,681.73	4.58
15,220.00	90.18	92.46	6,591.71	587.60	8,756.48	8,776.08	2.20
15,315.00	88.33	89.76	6,592.94	585.76	8,851.45	8,870.75	3.44
15,410.00	87.19	89.52	6,596.66	586.35	8,946.37	8,965.52	1.23
15,504.00	88.31	87.29	6,600.35	588.97	9,040.25	9,059.39	2.65
15,599.00	90.22	87.78	6,601.57	593.05	9,135.15	9,154.36	2.08
15,694.00	89.69	87.02	6,601.64	597.36	9,230.05	9,249.34	0.98
15,789.00	89.72	87.69	6,602.13	601.75	9,324.95	9,344.33	0.71
15,884.00	91.14	89.11	6,601.42	604.40	9,419.91	9,439.26	2.11
15,978.00	90.71	89.51	6,599.90	605.53	9,513.89	9,533.13	0.62
16,073.00	90.99	91.93	6,598.49	604.34	9,608.86	9,627.85	2.56
16,168.00	90.49	91.98	6,597.26	601.10	9,703.80	9,722.40	0.53
16,226.00	90.55	93.81	6,596.74	598.17	9,761.72	9,780.02	3.16
<b>Final MWD Survey @ 16226.00ft</b>							
16,290.00	90.55	93.81	6,596.12	593.92	9,825.58	9,843.49	0.00
<b>Straight Line Proj @ 16290' MD, 6596.12' TVD</b>							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
725.00	724.99	-0.49	3.02	Tie-On to Surface Gyros @ 725.00ft
810.00	809.98	0.06	2.73	First MWD Survey @ 810.00ft
16,226.00	6,596.74	598.17	9,761.72	Final MWD Survey @ 16226.00ft
16,290.00	6,596.12	593.92	9,825.58	Straight Line Proj @ 16290' MD, 6596.12' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	NCLP PC AA04-69-1HN_BHL	86.43	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
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## Design Report for NCLP PC AA04-69-1HN - Actual Surveys

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
241.00	725.00	Surface Gyros	Flexi-Shot
810.00	7,033.00	MWD Surveys - Vert/Build	MWD+IFR1+MS_WY
7,119.00	16,226.00	MWD Surveys - Lateral	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
7,077.00	6,660.75	7" Casing @ 7077' MD, 6660.75' TVD	7	8-3/4

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
NCLP PC AA04-69-1H - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,434,437.35	3,291,817.32	40° 31' 16.284 N	104° 27' 1.152 W
Sec. 4-T6N-R63W_46l - actual wellpath misses target center by 4014.78usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	-4,014.50	47.52	1,430,422.97	3,291,864.84	40° 30' 36.612 N	104° 27' 1.152 W
Point 1				0.00	4,210.91	154.49	1,434,633.74	3,292,019.32	
Point 2				0.00	-144.02	216.88	1,430,278.95	3,292,081.71	
Point 3				0.00	-33.48	5,050.45	1,430,389.49	3,296,915.13	
Point 4				0.00	70.50	9,850.70	1,430,493.47	3,301,715.22	
Point 5				0.00	4,324.23	9,854.02	1,434,747.06	3,301,718.54	
Point 6				0.00	4,270.97	5,032.02	1,434,693.80	3,296,896.70	
Point 7				0.00	4,210.91	154.49	1,434,633.74	3,292,019.32	
Sec. 4-T6N-R63W_SL - actual wellpath misses target center by 4014.78usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	-4,014.50	47.52	1,430,422.97	3,291,864.84	40° 30' 36.612 N	104° 27' 1.152 W
Point 1				0.00	4,670.92	-305.53	1,435,093.74	3,291,559.32	
Point 2				0.00	-604.04	-243.14	1,429,818.95	3,291,621.71	
Point 3				0.00	-493.50	5,050.45	1,429,929.49	3,296,915.13	
Point 4				0.00	4,730.99	5,032.02	1,435,153.81	3,296,896.70	
Point 5				0.00	-493.50	5,050.45	1,429,929.49	3,296,915.13	
Point 6				0.00	-389.51	10,310.71	1,430,033.47	3,302,175.22	
Point 7				0.00	4,784.25	10,314.03	1,435,207.07	3,302,178.54	
Point 8				0.00	4,730.99	5,032.02	1,435,153.81	3,296,896.70	
Point 9				0.00	4,670.92	-305.53	1,435,093.74	3,291,559.32	
NCLP PC AA04-69-1H - actual wellpath misses target center by 21.18usft at 16290.00usft MD (6596.12 TVD, 593.92 N, 9825.58 E) - Point	0.00	0.00	6,588.96	613.81	9,826.84	1,435,051.13	3,301,643.84	40° 31' 21.180 N	104° 24' 53.820 W
NCLP PC AA04-69-1H - actual wellpath misses target center by 6.08usft at 7112.31usft MD (6663.85 TVD, 510.53 N, 653.30 E) - Point	0.00	0.00	6,664.39	516.57	653.00	1,434,953.90	3,292,470.30	40° 31' 21.312 N	104° 26' 52.618 W

Directional Difficulty Index

Average Dogleg over Survey:	1.90 °/100usft	Maximum Dogleg over Survey:	18.95 °/100usft at 6,559.00 usft
Net Tortousity applicable to Plans:	1.26 °/100usft	Directional Difficulty Index:	6.893

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP PC AA04 Pads) - NCLP PC  
AA04-69-1HN

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB=30 @ 4740.00usft (H&P 321). Northing and Easting are relative to NCLP PC AA04-69-1HN

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996796

Grid Coordinates of Well: 1,434,437.34 usft N, 3,291,817.32 usft E

Geographical Coordinates of Well: 40° 31' 16.28" N, 104° 27' 01.15" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,290.00usft  
the Bottom Hole Displacement is 9,843.51usft in the Direction of 86.54° (Grid).

Magnetic Convergence at surface is: -7.73° (15 November 2013, , BGGM2013)

