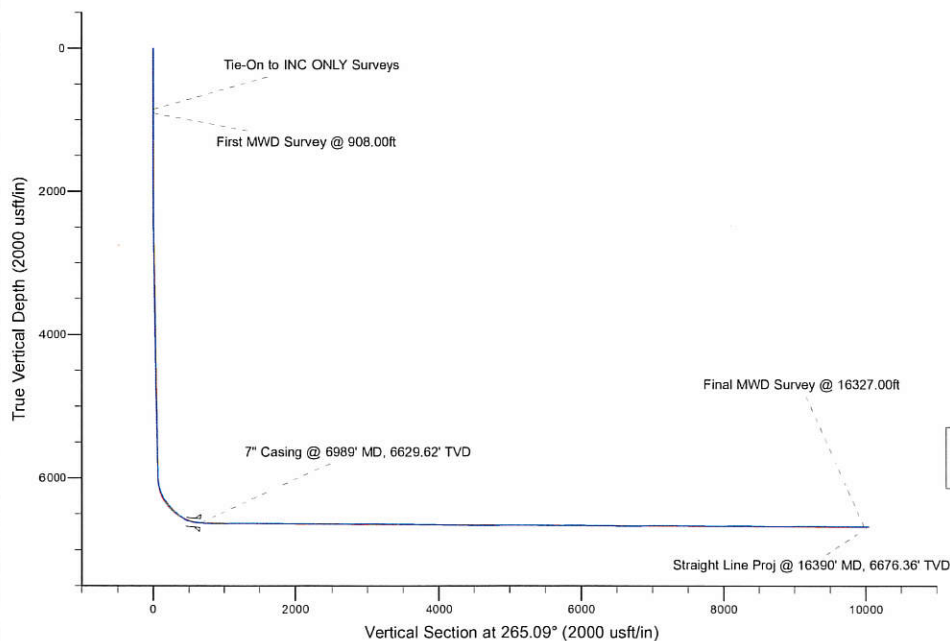
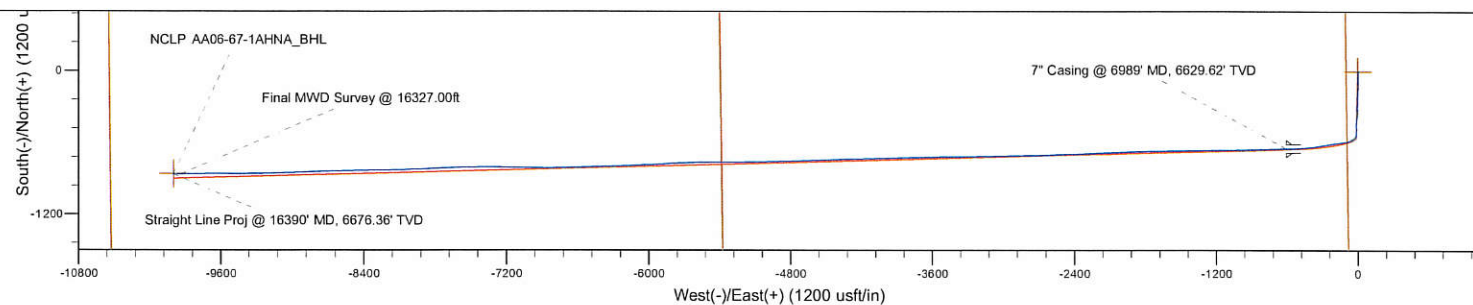


Project: Weld County, CO (NAD 83)  
 Site: Sec. 4-T6N-R63W (NCLP AA04-04/05-B)  
 Well: NCLP AA06-67-1AHNA  
 Wellbore: Plan B  
 Design: Final Surveys

## Noble Energy

**HALLIBURTON**  
 Sperry Drilling



### LEGEND

△ NCLP AA06-67-1AHNA, Plan B, Rev B0 - PROPOSAL V0  
 □ Final Surveys

Platted SHL: 847' FNL, 100' FWL  
 Platted Lat/Long: 40.52068 N, 104.54086 W  
 Location: Sec. 4-T6N-R63W

7" Casing: ~1481.06' FNL, ~513.15' FEL  
 Lat/Long: 40.518919 N, 104.453066 W  
 State Planes - CO Northern: 1,433,601.03' N, 3,291,063.79' E  
 Location: Sec. 5-T6N-R63W

BHL: ~1488.8' FNL, ~532.54' FWL  
 Lat/Long: 40.518628 N, 104.486868 W  
 State Planes - CO Northern: 1,433,385.78' N, 3,281,668.06' E  
 Location: Sec. 6-T6N-R63W

Note: The magnetic measurements from the gyro tool were outside the accept range; therefore, only the inclination values have been used to calculate the ca BHL footages.

WELL DETAILS: NCLP AA06-67-1AHNA

Ground Level: 4715.00  
 RKB=30ft @ 4745.00usft (H&P 321)

Created By: Fred Hartmann  
 Created On: 11:02, May 27 2014

# Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP AA04-04/05-B)

NCLP AA06-67-1AHNA

Design: Final Surveys

## Sperry Drilling Services

### Final Survey Report

27 May, 2014

Well Coordinates: 1,434,249.77 N, 3,291,669.40 E (40° 31' 14.45" N, 104° 27' 03.10" W)

Ground Level: 4,715.00 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 AA06-67-1AHNA

RKB=30ft @ 4745.00usft (H&P 321)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

## Design Report for NCLP AA06-67-1AHNA - Final 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
305.00	0.10	0.00	305.00	0.00	0.00	0.00	0.03
454.00	0.60	0.00	454.00	0.00	0.00	0.00	0.34
635.00	0.90	0.00	635.00	0.00	0.00	0.00	0.17
854.00	0.60	0.00	853.99	0.00	0.00	0.00	0.14
Tie-On to INC ONLY Surveys							
908.00	1.63	166.70	907.98	-0.75	0.18	-0.11	4.11
First MWD Survey @ 908.00ft							
999.00	1.26	173.70	998.95	-3.00	0.58	-0.33	0.45
1,092.00	0.13	255.25	1,091.94	-4.04	0.59	-0.25	1.34
1,185.00	0.15	209.07	1,184.94	-4.18	0.43	-0.07	0.12
1,276.00	0.12	146.11	1,275.94	-4.36	0.43	-0.05	0.16
1,368.00	0.21	140.17	1,367.94	-4.57	0.59	-0.20	0.10
1,460.00	0.25	153.92	1,459.94	-4.88	0.79	-0.37	0.07
1,552.00	0.23	144.11	1,551.94	-5.21	0.98	-0.53	0.05
1,644.00	0.32	139.37	1,643.94	-5.55	1.26	-0.78	0.10
1,739.00	0.32	148.47	1,738.94	-5.98	1.57	-1.05	0.05
1,833.00	0.58	147.83	1,832.94	-6.61	1.96	-1.39	0.28
1,928.00	0.80	143.43	1,927.93	-7.55	2.61	-1.96	0.24
2,023.00	2.28	179.22	2,022.89	-9.97	3.03	-2.17	1.79
2,117.00	2.60	184.96	2,116.81	-13.96	2.87	-1.67	0.43
2,212.00	4.77	185.86	2,211.61	-20.04	2.28	-0.56	2.28
2,307.00	4.51	176.47	2,306.30	-27.70	2.11	0.27	0.84
2,402.00	5.72	179.15	2,400.92	-36.16	2.41	0.69	1.30
2,497.00	6.65	184.34	2,495.36	-46.38	2.06	1.91	1.14
2,591.00	8.08	180.93	2,588.59	-58.41	1.55	3.46	1.59
2,686.00	7.73	178.67	2,682.68	-71.48	1.59	4.54	0.49
2,781.00	7.18	178.80	2,776.88	-83.80	1.86	5.32	0.58
2,876.00	8.60	178.61	2,870.98	-96.84	2.15	6.15	1.49
2,970.00	9.08	179.21	2,963.86	-111.28	2.43	7.11	0.52
3,065.00	8.57	177.32	3,057.74	-125.84	2.86	7.93	0.62
3,160.00	9.03	183.72	3,151.62	-140.35	2.71	9.32	1.14
3,254.00	8.22	185.52	3,244.56	-154.40	1.58	11.64	0.91
3,349.00	6.82	190.14	3,338.74	-166.72	-0.06	14.34	1.60
3,444.00	7.75	182.25	3,432.97	-178.67	-1.31	16.60	1.44
3,539.00	7.58	185.29	3,527.12	-191.31	-2.14	18.51	0.46
3,633.00	8.14	187.61	3,620.24	-204.08	-3.59	21.05	0.68
3,728.00	8.74	178.78	3,714.22	-217.96	-4.33	22.98	1.50
3,823.00	9.44	176.82	3,808.02	-232.96	-3.74	23.68	0.81
3,918.00	9.82	177.38	3,901.68	-248.83	-2.94	24.24	0.41
4,013.00	8.43	184.80	3,995.48	-263.86	-3.15	25.74	1.91
4,107.00	7.83	184.90	4,088.54	-277.11	-4.27	27.99	0.64
4,202.00	7.15	184.78	4,182.73	-289.45	-5.32	30.09	0.72
4,297.00	5.73	183.68	4,277.12	-300.07	-6.12	31.79	1.50
4,392.00	6.01	176.05	4,371.63	-309.77	-6.08	32.58	0.87
4,487.00	7.61	169.83	4,465.95	-320.92	-4.62	32.09	1.85
4,582.00	8.14	177.09	4,560.06	-333.83	-3.17	31.75	1.19
4,677.00	7.17	176.82	4,654.21	-346.47	-2.50	32.16	1.02
4,771.00	7.10	188.21	4,747.49	-358.08	-3.01	33.66	1.50
4,866.00	8.97	189.06	4,841.55	-371.20	-5.01	36.78	1.97

## Design Report for NCLP AA06-67-1AHNA - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,961.00	8.48	189.50	4,935.45	-385.42	-7.33	40.31	0.52
5,056.00	8.32	187.37	5,029.43	-399.15	-9.37	43.52	0.37
5,151.00	8.28	184.26	5,123.44	-412.79	-10.76	46.07	0.47
5,246.00	6.89	187.80	5,217.61	-425.25	-12.04	48.42	1.54
5,340.00	7.71	176.99	5,310.85	-437.14	-12.48	49.87	1.70
5,435.00	7.96	180.17	5,404.96	-450.08	-12.16	50.66	0.53
5,530.00	8.66	179.69	5,498.96	-463.81	-12.14	51.82	0.74
5,625.00	8.66	178.65	5,592.88	-478.11	-11.93	52.84	0.16
5,719.00	9.55	181.42	5,685.70	-492.98	-11.96	54.14	1.06
5,814.00	8.33	179.82	5,779.54	-507.74	-12.14	55.57	1.31
5,927.00	8.04	185.96	5,891.39	-523.79	-12.93	57.74	0.81
5,997.00	7.37	188.55	5,960.76	-533.10	-14.11	59.71	1.08
6,045.00	7.49	191.58	6,008.36	-539.21	-15.19	61.31	0.85
6,092.00	11.64	213.19	6,054.71	-546.18	-18.40	65.11	11.53
6,140.00	15.41	227.55	6,101.38	-554.54	-25.77	73.16	10.46
6,186.00	19.48	234.92	6,145.26	-563.08	-36.56	84.64	10.05
6,234.00	22.19	239.37	6,190.12	-572.30	-50.91	99.73	6.53
6,281.00	25.63	244.46	6,233.09	-581.21	-67.73	117.25	8.53
6,329.00	29.38	254.92	6,275.68	-588.75	-88.48	138.58	12.71
6,376.00	34.69	262.05	6,315.52	-593.61	-112.89	163.31	13.85
6,424.00	38.49	263.11	6,354.05	-597.29	-141.25	191.89	8.03
6,471.00	39.50	264.00	6,390.58	-600.61	-170.64	221.45	2.46
6,519.00	40.83	262.86	6,427.26	-604.16	-201.40	252.39	3.17
6,566.00	45.26	260.40	6,461.61	-608.85	-233.12	284.40	10.08
6,614.00	49.68	260.02	6,494.04	-614.87	-267.97	319.64	9.23
6,661.00	51.62	259.86	6,523.84	-621.22	-303.75	355.83	4.14
6,709.00	55.98	260.40	6,552.19	-627.85	-341.90	394.41	9.13
6,755.00	60.40	262.41	6,576.43	-633.67	-380.54	433.41	10.30
6,803.00	68.33	264.96	6,597.18	-638.40	-423.52	476.64	17.20
6,850.00	76.98	265.02	6,611.18	-642.31	-468.17	521.46	18.40
6,898.00	81.99	266.58	6,619.94	-645.76	-515.22	568.63	10.92
6,945.00	84.22	268.40	6,625.58	-647.80	-561.83	615.24	6.11
6,989.00	85.24	269.09	6,629.62	-648.76	-605.63	658.97	2.79
<b>7" Casing @ 6989' MD, 6629.62' TVD</b>							
7,023.00	86.02	269.63	6,632.22	-649.14	-639.53	692.77	2.79
7,117.00	87.01	267.96	6,637.93	-651.11	-733.33	786.40	2.06
7,212.00	90.86	267.94	6,639.70	-654.51	-828.24	881.25	4.05
7,306.00	91.14	267.88	6,638.05	-657.94	-922.16	975.12	0.30
7,401.00	90.71	269.47	6,636.52	-660.13	-1,017.12	1,069.92	1.73
7,496.00	90.99	269.35	6,635.11	-661.11	-1,112.10	1,164.63	0.32
7,590.00	89.66	269.57	6,634.58	-662.00	-1,206.10	1,258.36	1.43
7,685.00	89.57	269.26	6,635.22	-662.97	-1,301.09	1,353.08	0.34
7,780.00	89.54	269.19	6,635.95	-664.25	-1,396.08	1,447.83	0.08
7,875.00	89.66	269.21	6,636.62	-665.58	-1,491.07	1,542.59	0.13
7,970.00	89.72	268.91	6,637.13	-667.14	-1,586.05	1,637.36	0.32
8,065.00	89.51	268.75	6,637.77	-669.08	-1,681.03	1,732.15	0.28
8,159.00	89.38	268.89	6,638.68	-671.01	-1,775.00	1,825.95	0.20
8,254.00	89.11	268.76	6,639.93	-672.96	-1,869.98	1,920.74	0.32
8,349.00	88.74	268.68	6,641.71	-675.08	-1,964.94	2,015.53	0.40
8,444.00	90.03	267.80	6,642.73	-678.00	-2,059.88	2,110.38	1.64
8,538.00	89.78	266.94	6,642.89	-682.31	-2,153.78	2,204.30	0.95



## Design Report for NCLP AA06-67-1AHNA - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,633.00	90.12	266.65	6,642.97	-687.62	-2,248.63	2,299.26	0.47
8,728.00	91.05	267.57	6,642.00	-692.41	-2,343.51	2,394.19	1.38
8,823.00	90.46	268.61	6,640.75	-695.58	-2,438.44	2,489.05	1.26
8,918.00	88.95	267.05	6,641.24	-699.18	-2,533.37	2,583.94	2.29
9,013.00	89.94	267.89	6,642.16	-703.37	-2,628.27	2,678.85	1.37
9,107.00	90.15	269.48	6,642.09	-705.53	-2,722.24	2,772.66	1.71
9,202.00	90.09	268.97	6,641.89	-706.81	-2,817.23	2,867.41	0.54
9,297.00	90.18	268.39	6,641.66	-709.00	-2,912.21	2,962.23	0.62
9,392.00	91.05	269.11	6,640.64	-711.07	-3,007.18	3,057.02	1.19
9,487.00	90.34	268.50	6,639.49	-713.05	-3,102.15	3,151.82	0.99
9,582.00	89.14	269.47	6,639.92	-714.74	-3,197.13	3,246.59	1.62
9,676.00	88.64	269.38	6,641.74	-715.68	-3,291.11	3,340.31	0.54
9,771.00	88.30	269.20	6,644.28	-716.86	-3,386.06	3,435.02	0.40
9,866.00	87.84	268.82	6,647.48	-718.50	-3,481.00	3,529.74	0.63
9,961.00	90.25	269.54	6,649.06	-719.86	-3,575.97	3,624.48	2.65
10,055.00	90.06	269.26	6,648.81	-720.84	-3,669.96	3,718.21	0.36
10,150.00	88.95	268.20	6,649.63	-722.94	-3,764.93	3,813.01	1.62
10,245.00	88.74	268.21	6,651.54	-725.92	-3,859.86	3,907.85	0.22
10,340.00	89.54	268.91	6,652.97	-728.31	-3,954.82	4,002.66	1.12
10,432.00	89.17	268.67	6,654.01	-730.25	-4,046.80	4,094.47	0.48
10,524.00	89.29	268.39	6,655.24	-732.61	-4,138.76	4,186.29	0.33
10,616.00	89.45	268.41	6,656.25	-735.18	-4,230.72	4,278.13	0.18
10,709.00	89.38	268.38	6,657.20	-737.78	-4,323.67	4,370.97	0.08
10,800.00	88.77	268.32	6,658.67	-740.40	-4,414.62	4,461.81	0.67
10,894.00	90.34	268.30	6,659.40	-743.17	-4,508.58	4,555.66	1.67
10,985.00	90.28	268.24	6,658.91	-745.92	-4,599.53	4,646.52	0.09
11,077.00	90.40	267.92	6,658.36	-749.00	-4,691.48	4,738.39	0.37
11,168.00	90.59	267.81	6,657.58	-752.39	-4,782.41	4,829.28	0.24
11,260.00	90.77	267.36	6,656.49	-756.27	-4,874.33	4,921.19	0.53
11,352.00	89.51	269.21	6,656.26	-759.02	-4,966.28	5,013.04	2.43
11,446.00	89.69	269.36	6,656.92	-760.20	-5,060.27	5,106.78	0.25
11,537.00	90.34	269.31	6,656.89	-761.25	-5,151.26	5,197.53	0.72
11,629.00	90.52	269.03	6,656.20	-762.59	-5,243.25	5,289.29	0.36
11,720.00	89.45	270.31	6,656.23	-763.11	-5,334.25	5,380.00	1.83
11,813.00	89.81	270.50	6,656.83	-762.45	-5,427.24	5,472.60	0.44
11,905.00	88.71	269.00	6,658.02	-762.85	-5,519.23	5,564.28	2.02
11,998.00	87.93	268.31	6,660.74	-765.04	-5,612.16	5,657.06	1.12
12,091.00	90.06	267.55	6,662.37	-768.39	-5,705.08	5,749.93	2.43
12,184.00	90.37	267.11	6,662.03	-772.73	-5,797.98	5,842.85	0.58
12,278.00	90.37	266.39	6,661.42	-778.06	-5,891.82	5,936.81	0.77
12,373.00	90.71	266.94	6,660.52	-783.58	-5,986.66	6,031.77	0.68
12,468.00	89.85	268.02	6,660.06	-787.76	-6,081.56	6,126.68	1.45
12,562.00	88.24	267.94	6,661.63	-791.07	-6,175.49	6,220.55	1.71
12,657.00	88.34	268.43	6,664.46	-794.08	-6,270.40	6,315.37	0.53
12,752.00	88.15	268.00	6,667.37	-797.04	-6,365.31	6,410.18	0.49
12,847.00	89.69	268.10	6,669.16	-800.27	-6,460.23	6,505.03	1.62
12,942.00	89.48	267.88	6,669.85	-803.60	-6,555.17	6,599.91	0.32
13,036.00	91.17	268.67	6,669.31	-806.43	-6,649.12	6,693.76	1.98
13,136.00	91.14	268.43	6,667.30	-808.96	-6,749.07	6,793.56	0.24
13,231.00	92.04	269.81	6,664.66	-810.42	-6,844.02	6,888.28	1.73
13,325.00	91.08	271.10	6,662.10	-809.67	-6,937.98	6,981.83	1.71

## Design Report for NCLP AA06-67-1AHNA - Final Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
13,420.00	91.02	270.49	6,660.36	-808.35	-7,032.95	7,076.34	0.65
13,515.00	90.09	271.51	6,659.44	-806.70	-7,127.93	7,170.83	1.45
13,609.00	89.14	270.38	6,660.07	-805.15	-7,221.92	7,264.34	1.57
13,704.00	88.92	270.40	6,661.68	-804.50	-7,316.90	7,358.92	0.23
13,799.00	88.92	270.24	6,663.47	-803.97	-7,411.88	7,453.50	0.17
13,893.00	88.18	269.26	6,665.85	-804.38	-7,505.85	7,547.16	1.31
13,988.00	88.15	267.90	6,668.89	-806.73	-7,600.77	7,641.93	1.43
14,083.00	90.18	267.47	6,670.28	-810.57	-7,695.68	7,736.82	2.18
14,178.00	90.74	267.45	6,669.52	-814.78	-7,790.58	7,831.73	0.59
14,273.00	90.68	267.13	6,668.34	-819.27	-7,885.47	7,926.66	0.34
14,367.00	90.15	268.21	6,667.66	-823.09	-7,979.38	8,020.56	1.28
14,462.00	90.25	267.99	6,667.33	-826.24	-8,074.33	8,115.43	0.25
14,557.00	89.08	269.61	6,667.88	-828.23	-8,169.30	8,210.22	2.10
14,652.00	88.92	269.58	6,669.54	-828.90	-8,264.29	8,304.91	0.17
14,746.00	88.67	269.36	6,671.52	-829.77	-8,358.26	8,398.62	0.35
14,841.00	89.41	268.42	6,673.11	-831.61	-8,453.23	8,493.39	1.26
14,936.00	89.51	268.22	6,674.00	-834.40	-8,548.18	8,588.24	0.24
15,031.00	90.15	268.22	6,674.29	-837.35	-8,643.14	8,683.09	0.67
15,126.00	90.19	267.86	6,674.00	-840.60	-8,738.08	8,777.97	0.38
15,221.00	90.25	267.57	6,673.64	-844.38	-8,833.00	8,872.87	0.31
15,316.00	90.80	267.63	6,672.77	-848.36	-8,927.92	8,967.77	0.58
15,410.00	89.91	268.54	6,672.19	-851.50	-9,021.86	9,061.64	1.35
15,505.00	90.12	268.44	6,672.16	-854.01	-9,116.83	9,156.47	0.24
15,600.00	90.34	267.77	6,671.78	-857.15	-9,211.77	9,251.34	0.74
15,695.00	90.37	268.93	6,671.19	-859.88	-9,306.73	9,346.18	1.22
15,789.00	89.35	270.64	6,671.42	-860.24	-9,400.73	9,439.86	2.12
15,884.00	89.17	270.27	6,672.65	-859.48	-9,495.71	9,534.43	0.43
15,979.00	89.04	269.91	6,674.13	-859.33	-9,590.70	9,629.06	0.40
16,074.00	89.29	269.50	6,675.52	-859.82	-9,685.69	9,723.74	0.51
16,168.00	89.91	269.53	6,676.17	-860.62	-9,779.68	9,817.46	0.66
16,263.00	89.81	269.04	6,676.40	-861.80	-9,874.68	9,912.20	0.53
16,327.00	90.09	268.99	6,676.46	-862.90	-9,938.67	9,976.05	0.44
Final MWD Survey @ 16327.00ft							
16,390.00	90.09	268.99	6,676.36	-864.01	-10,001.66	10,038.91	0.00
Straight Line Proj @ 16390' MD, 6676.36' TVD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
854.00	853.99	0.00	0.00	Tie-On to INC ONLY Surveys
908.00	907.98	-0.75	0.18	First MWD Survey @ 908.00ft
16,327.00	6,676.46	-862.90	-9,938.67	Final MWD Survey @ 16327.00ft
16,390.00	6,676.36	-864.01	-10,001.66	Straight Line Proj @ 16390' MD, 6676.36' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
Target	NCLP AA06-67-1AHNA_BHL	265.09	Slot	0.00	0.00	0.00

## Design Report for NCLP AA06-67-1AHNA - Final Surveys

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
305.00	854.00	Surface Gyros	Inclinometer
908.00	6,945.00	MWD Surveys - Intermediate	MWD+IFR1+MS_WY
7,023.00	16,390.00	MWD Surveys - Production	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,989.00	6,629.62	7" Casing @ 6989' MD, 6629.62' 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 AA06-67-1AHN/ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,434,249.77	3,291,669.40	40.520680	-104.450860
Point 1				0.00	613.41	-10,550.33	1,434,863.16	3,281,119.41	
Point 2				0.00	-4,734.47	-10,492.13	1,429,515.45	3,281,177.61	
Point 3				0.00	-4,573.14	-5,338.13	1,429,676.78	3,286,331.44	
Point 4				0.00	723.63	-5,405.20	1,434,973.38	3,286,264.37	
Point 5				0.00	-4,573.14	-5,338.13	1,429,676.78	3,286,331.44	
Point 6				0.00	-4,430.97	-47.69	1,429,818.94	3,291,621.71	
Point 7				0.00	843.99	-110.08	1,435,093.73	3,291,559.32	
Point 8				0.00	723.63	-5,405.20	1,434,973.38	3,286,264.37	
Point 9				0.00	613.41	-10,550.33	1,434,863.16	3,281,119.41	
NCLP AA06-67-1AHN/ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,434,249.77	3,291,669.40	40.520680	-104.450860
Point 1				0.00	153.39	-10,090.31	1,434,403.15	3,281,579.41	
Point 2				0.00	-4,274.46	-10,032.11	1,429,975.45	3,281,637.61	
Point 3				0.00	-4,113.12	-5,798.15	1,430,136.78	3,285,871.44	
Point 4				0.00	-4,113.12	-4,878.12	1,430,136.78	3,286,791.44	
Point 5				0.00	-3,970.96	-507.71	1,430,278.94	3,291,161.71	
Point 6				0.00	383.97	-570.10	1,434,633.73	3,291,099.32	
Point 7				0.00	263.62	-4,945.19	1,434,513.38	3,286,724.37	
Point 8				0.00	263.62	-5,865.22	1,434,513.38	3,285,804.37	
Point 9				0.00	153.39	-10,090.31	1,434,403.15	3,281,579.41	
NCLP AA06-67-1AHN/ - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,434,249.77	3,291,669.40	40.520680	-104.450860
NCLP AA06-67-1AHN/ - actual wellpath misses target center by 6.84usft at 16387.93usft MD (6676.36 TVD, -863.98 N, -9999.59 E) - Point	0.00	0.00	6,681.55	-859.52	-9,999.68	1,433,390.27	3,281,670.04	40.518640	-104.486860
NCLP AA06-67-1AHN/ - actual wellpath misses target center by 36.37usft at 16388.65usft MD (6676.36 TVD, -863.99 N, -10000.30 E) - Point	0.00	0.00	6,681.57	-899.98	-9,999.68	1,433,349.82	3,281,670.04	40.518529	-104.486862

Directional Difficulty Index

Average Dogleg over Survey:	1.37 °/100usft	Maximum Dogleg over Survey:	18.40 °/100usft at 6,850.00 usft
Net Tortousity applicable to Plans:	0.77 °/100usft	Directional Difficulty Index:	6.765

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**Design Report for NCLP AA06-67-1AHNA - Final Surveys**

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*Audit Info*



**North Reference Sheet for Sec. 4-T6N-R63W (NCLP AA04-04/05-B) - NCLP  
AA06-67-1AHNA**

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

Vertical Depths are relative to RKB=30ft @ 4745.00usft (H&P 321). Northing and Easting are relative to NCLP AA06-67-1AHNA

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 -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996792

Grid Coordinates of Well: 1,434,249.77 usft N, 3,291,669.40 usft E

Geographical Coordinates of Well: 40° 31' 14.45" N, 104° 27' 03.10" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,390.00usft  
the Bottom Hole Displacement is 10,038.91usft in the Direction of 265.06° (Grid).

Magnetic Convergence at surface is: -7.67° (14 May 2014, , BGGM2013)

