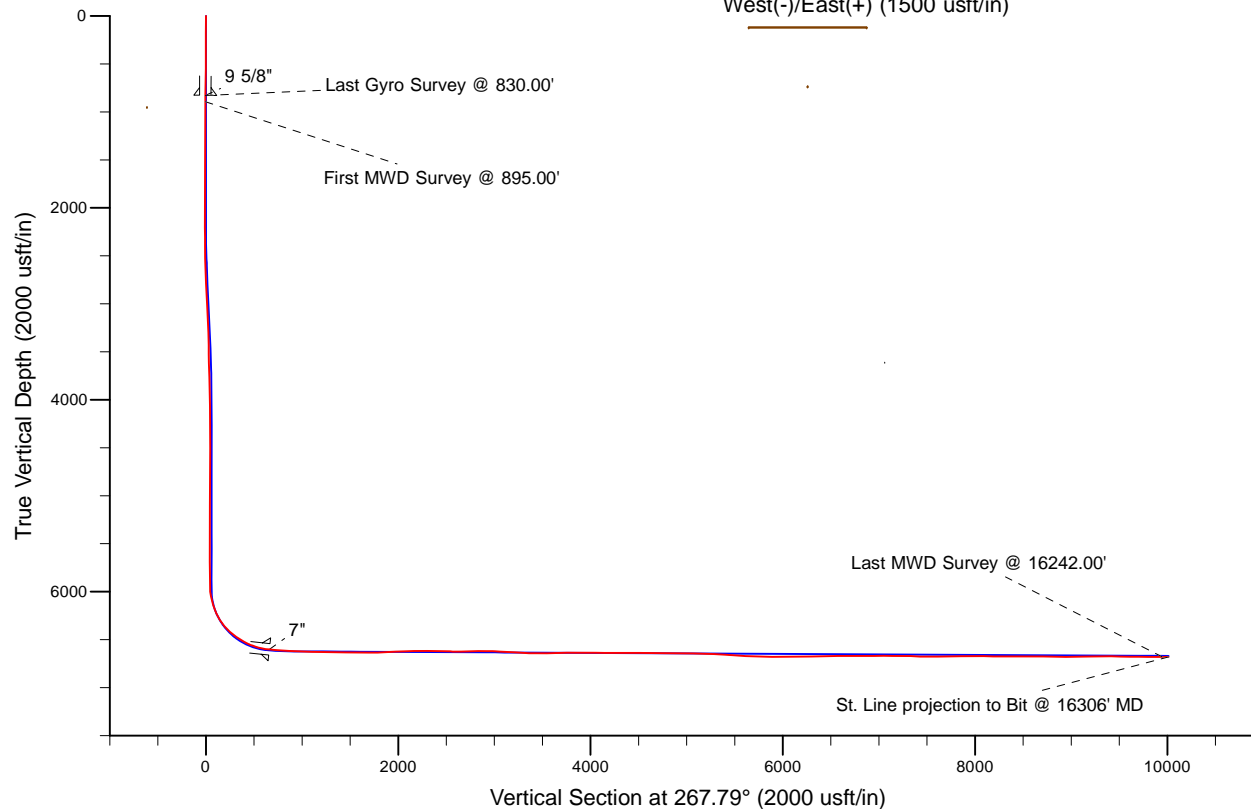
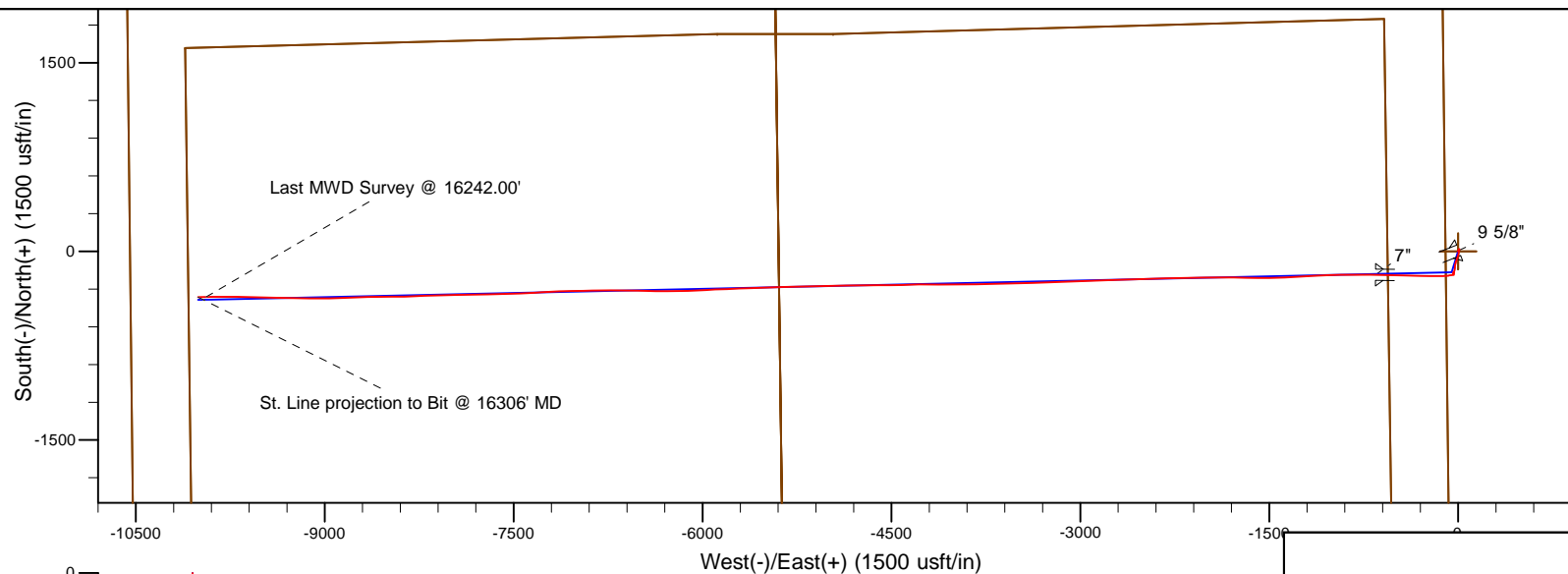


Project: Weld County, CO (NAD 83)
Site: Sec. 4-T6N-R63W (NCLP AA04-04/05-B)
Well: NCLP AA06-66-1BHNA
Wellbore: Plan A
Design: Field Surveys

Noble Energy

HALLIBURTON
Sperry Drilling



LEGEND

- △ NCLP AA06-66-1BHNA, Plan A, Rev A0 - PROPOSAL V0
- Field Surveys

Platted SHL: 2310' FNL, 100' FWL
Platted Lat/Long: 40.51666 N, 104.54086 W
Location: Sec. 4-T6N-R63W

~7" Casing: 439' FEL, 2484' FNL
Lat/Long: 40.516171 N, 104.453220 W
State Planes - CO Northern: 1,432,599.33 N, 3,291,032.68 E
Location: Sec. 5-T6N-R63W

~BHL: 535' FWL, 2455' FNL
Lat/Long: 40.515980 N, 104.486859 W
State Planes - CO Northern: 1,432,421.14 N, 3,281,681.46 E
Location: Sec. 6-T6N-R63W

WELL DETAILS: NCLP AA06-66-1BHNA

Ground Level: 4710.00
RKB=24ft @ 4734.00usft (H&P 343)

Created By: Pari Amanlou
Created On: 11:22, July 17 2014

Noble Energy

Weld County, CO (NAD 83)

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

NCLP AA06-66-1BHNA

Plan A

Design: Field Surveys

Sperry Drilling Services

Final Survey Report

17 July, 2014

Well Coordinates: 1,432,785.37 N, 3,291,686.73 E (40° 30' 59.98" N, 104° 27' 03.10" 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 AA06-66-1BHNA

RKB=24ft @ 4734.00usft (H&P 343)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Design Report for NCLP AA06-66-1BHNA - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NCLP AA06-66-1BHNA_SHL - NCLP AA06-66-1BHNA_SL - NCLP AA06-66-1BHNA_460										
355.00	1.20	359.06	354.97	3.72	-0.06	-0.08	0.34	0.34	0.00	359.06
550.00	1.20	62.86	549.94	6.69	1.72	-1.98	0.65	0.00	32.72	121.89
830.00	0.40	68.66	829.91	8.38	5.24	-5.56	0.29	-0.29	2.07	177.11
Last Gyro Survey @ 830.00' - 9 5/8"										
895.00	0.88	0.08	894.91	8.96	5.45	-5.80	1.27	0.74	-105.51	-95.48
First MWD Survey @ 895.00'										
987.00	0.98	8.38	986.89	10.45	5.57	-5.97	0.18	0.11	9.02	57.61
1,175.00	1.06	7.62	1,174.86	13.76	6.03	-6.56	0.04	0.04	-0.40	-9.98
1,266.00	1.15	14.75	1,265.85	15.48	6.38	-6.97	0.18	0.10	7.84	60.39
1,360.00	1.29	18.64	1,359.83	17.40	6.96	-7.62	0.17	0.15	4.14	32.56
1,454.00	0.29	63.04	1,453.82	18.51	7.51	-8.22	1.17	-1.06	47.23	169.39
1,548.00	0.11	63.01	1,547.82	18.66	7.80	-8.51	0.19	-0.19	-0.03	-179.98
1,737.00	0.52	162.81	1,736.81	17.92	8.22	-8.90	0.29	0.22	52.80	111.18
1,832.00	0.56	146.08	1,831.81	17.12	8.60	-9.26	0.17	0.04	-17.61	-84.23
1,926.00	0.28	121.27	1,925.81	16.62	9.05	-9.69	0.35	-0.30	-26.39	-158.99
2,020.00	0.33	142.98	2,019.81	16.29	9.41	-10.03	0.13	0.05	23.10	77.71
2,114.00	0.43	141.09	2,113.80	15.79	9.80	-10.40	0.11	0.11	-2.01	-8.09
2,209.00	1.10	185.51	2,208.79	14.61	9.93	-10.49	0.89	0.71	46.76	65.20
2,304.00	2.00	199.00	2,303.76	12.13	9.31	-9.77	1.02	0.95	14.20	28.91
2,398.00	3.36	191.92	2,397.65	7.89	8.20	-8.50	1.49	1.45	-7.53	-17.23
2,492.00	5.09	190.95	2,491.40	1.10	6.84	-6.88	1.84	1.84	-1.03	-2.85
2,587.00	6.96	188.09	2,585.87	-8.74	5.23	-4.89	1.99	1.97	-3.01	-10.54
2,682.00	7.54	190.88	2,680.11	-20.56	3.25	-2.45	0.71	0.61	2.94	32.65
2,777.00	8.40	196.17	2,774.19	-33.34	0.14	1.15	1.19	0.91	5.57	43.10
2,872.00	8.37	199.91	2,868.18	-46.51	-4.15	5.94	0.57	-0.03	3.94	95.00
2,967.00	8.05	198.70	2,962.20	-59.31	-8.64	10.92	0.38	-0.34	-1.27	-152.23
3,062.00	7.54	200.35	3,056.32	-71.46	-12.94	15.68	0.59	-0.54	1.74	157.12
3,156.00	8.72	195.47	3,149.38	-84.11	-16.98	20.21	1.45	1.26	-5.19	-32.75
3,251.00	6.58	197.81	3,243.53	-96.23	-20.57	24.26	2.28	-2.25	2.46	172.88
3,345.00	6.22	193.87	3,336.94	-106.30	-23.44	27.52	0.60	-0.38	-4.19	-131.29
3,440.00	7.06	182.83	3,431.31	-117.13	-24.96	29.46	1.60	0.88	-11.62	-62.22
3,535.00	5.76	177.66	3,525.71	-127.72	-25.05	29.96	1.50	-1.37	-5.44	-158.61
3,629.00	6.23	189.66	3,619.20	-137.47	-25.72	31.00	1.42	0.50	12.77	75.48
3,724.00	5.72	193.54	3,713.69	-147.15	-27.69	33.34	0.68	-0.54	4.08	143.54
3,819.00	5.46	202.07	3,808.24	-155.94	-30.50	36.48	0.92	-0.27	8.98	111.59
3,913.00	4.23	210.50	3,901.90	-163.07	-33.94	40.20	1.51	-1.31	8.97	154.09
4,007.00	1.07	232.17	3,995.79	-166.60	-36.39	42.78	3.47	-3.36	23.05	173.03
4,101.00	0.92	232.67	4,089.77	-167.60	-37.68	44.12	0.16	-0.16	0.53	176.94
4,195.00	0.62	249.41	4,183.77	-168.23	-38.76	45.22	0.40	-0.32	17.81	151.31
4,290.00	0.52	134.08	4,278.76	-168.71	-38.93	45.40	1.02	-0.11	-121.40	-150.84
4,385.00	0.92	120.47	4,373.76	-169.40	-37.96	44.47	0.46	0.42	-14.33	-30.05
4,480.00	1.02	124.83	4,468.74	-170.27	-36.61	43.15	0.13	0.11	4.59	38.62
4,574.00	0.84	180.67	4,562.73	-171.44	-35.93	42.51	0.94	-0.19	59.40	128.27
4,669.00	0.63	183.90	4,657.72	-172.65	-35.98	42.61	0.23	-0.22	3.40	170.45
4,763.00	0.86	184.35	4,751.72	-173.87	-36.07	42.74	0.24	0.24	0.48	1.68
4,858.00	0.26	158.25	4,846.71	-174.78	-36.04	42.75	0.67	-0.63	-27.47	-169.65
4,953.00	0.87	157.15	4,941.71	-175.65	-35.68	42.42	0.64	0.64	-1.16	-1.57
5,048.00	0.86	156.46	5,036.69	-176.97	-35.12	41.91	0.02	-0.01	-0.73	-134.18
5,143.00	0.61	133.20	5,131.69	-177.97	-34.46	41.30	0.40	-0.26	-24.48	-141.20
5,238.00	0.33	193.01	5,226.68	-178.58	-34.15	41.01	0.56	-0.29	62.96	147.28
5,332.00	0.85	177.78	5,320.68	-179.54	-34.19	41.08	0.57	0.55	-16.20	-24.49
5,427.00	1.10	175.91	5,415.67	-181.15	-34.10	41.05	0.27	0.26	-1.97	-8.19
5,522.00	0.93	189.17	5,510.65	-182.82	-34.15	41.18	0.30	-0.18	13.96	132.40
5,616.00	0.96	186.95	5,604.64	-184.36	-34.37	41.45	0.05	0.03	-2.36	-51.78
5,711.00	0.90	237.68	5,699.63	-185.55	-35.10	42.22	0.84	-0.06	53.40	119.25
5,806.00	0.74	192.84	5,794.62	-186.54	-35.86	43.03	0.68	-0.17	-47.20	-125.72

Design Report for NCLP AA06-66-1BHNA - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
5,873.00	0.11	243.25	5,861.62	-187.00	-36.02	43.20	1.01	-0.94	75.24	172.79
5,900.00	0.22	246.31	5,888.62	-187.03	-36.09	43.27	0.41	0.41	11.33	6.11
5,949.00	0.28	237.31	5,937.62	-187.13	-36.28	43.46	0.15	0.12	-18.37	-37.76
5,995.00	2.06	259.96	5,983.60	-187.33	-37.18	44.38	3.92	3.87	49.24	26.07
6,043.00	9.16	265.01	6,031.34	-187.82	-41.85	49.05	14.81	14.79	10.52	6.50
6,090.00	14.66	264.43	6,077.31	-188.72	-51.50	58.74	11.70	11.70	-1.23	-1.53
6,185.00	19.68	260.22	6,168.05	-192.61	-79.25	86.61	5.44	5.28	-4.43	-15.93
6,280.00	25.86	269.37	6,255.64	-195.56	-115.78	123.23	7.48	6.51	9.63	34.10
6,374.00	37.25	270.07	6,335.61	-195.75	-164.88	172.31	12.12	12.12	0.74	2.14
6,469.00	47.48	270.11	6,405.70	-195.65	-228.82	236.19	10.77	10.77	0.04	0.17
6,563.00	52.91	270.55	6,465.86	-195.22	-301.00	308.30	5.79	5.78	0.47	3.70
6,658.00	60.71	271.93	6,517.82	-193.46	-380.42	387.59	8.30	8.21	1.45	8.81
6,753.00	68.62	272.08	6,558.44	-190.45	-466.16	473.15	8.33	8.33	0.16	1.01
6,848.00	75.27	271.27	6,587.87	-187.83	-556.39	563.22	7.05	7.00	-0.85	-6.74
6,906.00	83.23	271.01	6,598.68	-186.69	-613.32	620.06	13.73	13.72	-0.45	-1.86
6,947.00	84.12	270.81	6,603.20	-186.05	-654.06	660.75	2.21	2.16	-0.48	-12.50
7"										
7,031.00	85.93	270.41	6,610.49	-185.15	-737.74	744.33	2.21	2.16	-0.48	-12.48
7,126.00	87.16	269.61	6,616.21	-185.14	-832.56	839.08	1.54	1.29	-0.84	-33.02
7,221.00	86.89	268.87	6,621.14	-186.40	-927.42	933.92	0.83	-0.28	-0.78	-110.09
7,316.00	88.00	268.08	6,625.38	-188.92	-1,022.29	1,028.82	1.43	1.17	-0.83	-35.43
7,411.00	87.60	267.10	6,629.02	-192.91	-1,117.14	1,123.74	1.11	-0.42	-1.03	-112.24
7,506.00	89.32	266.63	6,631.58	-198.11	-1,211.96	1,218.69	1.88	1.81	-0.49	-15.28
7,601.00	89.57	266.97	6,632.50	-203.41	-1,306.81	1,313.68	0.44	0.26	0.36	53.67
7,696.00	89.91	267.52	6,632.93	-207.98	-1,401.69	1,408.67	0.68	0.36	0.58	58.28
7,791.00	89.51	269.31	6,633.41	-210.60	-1,496.65	1,503.66	1.93	-0.42	1.88	102.60
7,886.00	88.58	270.22	6,634.99	-210.99	-1,591.64	1,598.59	1.37	-0.98	0.96	135.63
7,980.00	90.40	271.54	6,635.83	-209.55	-1,685.62	1,692.44	2.39	1.94	1.40	35.96
8,075.00	91.60	271.21	6,634.17	-207.27	-1,780.57	1,787.24	1.31	1.26	-0.35	-15.37
8,169.00	93.39	270.15	6,630.08	-206.16	-1,874.47	1,881.03	2.21	1.90	-1.13	-30.59
8,264.00	91.85	269.23	6,625.74	-206.67	-1,969.37	1,975.87	1.89	-1.62	-0.97	-149.15
8,359.00	92.19	267.95	6,622.39	-209.01	-2,064.28	2,070.80	1.39	0.36	-1.35	-75.09
8,453.00	91.08	268.57	6,619.71	-211.86	-2,158.19	2,164.76	1.35	-1.18	0.66	150.81
8,547.00	89.91	269.64	6,618.89	-213.33	-2,252.18	2,258.72	1.69	-1.24	1.14	137.55
8,642.00	90.22	269.28	6,618.79	-214.22	-2,347.17	2,353.68	0.50	0.33	-0.38	-49.27
8,736.00	88.03	268.25	6,620.22	-216.25	-2,441.13	2,447.65	2.57	-2.33	-1.10	-154.82
8,831.00	87.75	266.85	6,623.72	-220.31	-2,535.98	2,542.58	1.50	-0.29	-1.47	-101.34
8,925.00	90.49	268.62	6,625.16	-224.02	-2,629.88	2,636.56	3.47	2.91	1.88	32.88
9,020.00	91.94	267.75	6,623.15	-227.03	-2,724.81	2,731.53	1.78	1.53	-0.92	-30.95
9,114.00	90.22	268.66	6,621.38	-229.97	-2,818.74	2,825.51	2.07	-1.83	0.97	152.11
9,209.00	90.37	267.51	6,620.89	-233.14	-2,913.68	2,920.51	1.22	0.16	-1.21	-82.57
9,303.00	87.81	267.65	6,622.38	-237.11	-3,007.58	3,014.49	2.73	-2.72	0.15	176.87
9,397.00	86.73	267.21	6,626.86	-241.32	-3,101.38	3,108.38	1.24	-1.15	-0.47	-157.87
9,492.00	86.39	268.29	6,632.56	-245.05	-3,196.13	3,203.20	1.19	-0.36	1.14	107.54
9,587.00	86.02	268.51	6,638.85	-247.69	-3,290.89	3,297.99	0.45	-0.39	0.23	149.33
9,681.00	88.64	269.03	6,643.23	-249.71	-3,384.76	3,391.86	2.84	2.79	0.55	11.23
9,776.00	90.43	268.74	6,644.00	-251.56	-3,479.73	3,486.84	1.91	1.88	-0.31	-9.20
9,871.00	91.32	267.87	6,642.55	-254.37	-3,574.68	3,581.82	1.31	0.94	-0.92	-44.34
9,965.00	92.34	268.27	6,639.54	-257.53	-3,668.57	3,675.77	1.17	1.09	0.43	21.40
10,060.00	90.25	267.78	6,637.40	-260.80	-3,763.49	3,770.74	2.26	-2.20	-0.52	-166.80
10,155.00	90.62	268.46	6,636.68	-263.92	-3,858.43	3,865.74	0.81	0.39	0.72	61.45
10,249.00	89.32	271.39	6,636.72	-264.04	-3,952.42	3,959.66	3.41	-1.38	3.12	113.92
10,343.00	89.29	271.31	6,637.86	-261.83	-4,046.39	4,053.47	0.09	-0.03	-0.09	-110.56
10,435.00	89.32	269.93	6,638.98	-260.83	-4,138.37	4,145.35	1.50	0.03	-1.50	-88.76
10,527.00	89.78	268.96	6,639.70	-261.72	-4,230.36	4,237.31	1.17	0.50	-1.05	-64.63
10,620.00	90.00	267.80	6,639.88	-264.35	-4,323.32	4,330.30	1.27	0.24	-1.25	-79.26
10,713.00	90.25	268.74	6,639.68	-267.16	-4,416.28	4,423.30	1.05	0.27	1.01	75.11
10,806.00	89.69	270.48	6,639.73	-267.79	-4,509.27	4,516.25	1.97	-0.60	1.87	107.84
10,898.00	89.08	269.08	6,640.72	-268.15	-4,601.27	4,608.18	1.66	-0.66	-1.52	-113.55
10,991.00	89.69	268.49	6,641.71	-270.12	-4,694.24	4,701.16	0.91	0.66	-0.63	-44.05

Design Report for NCLP AA06-66-1BHNA - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
11,083.00	89.78	269.43	6,642.14	-271.79	-4,786.22	4,793.14	1.03	0.10	1.02	84.53
11,175.00	90.34	269.17	6,642.04	-272.91	-4,878.21	4,885.11	0.67	0.61	-0.28	-24.90
11,268.00	88.95	269.67	6,642.62	-273.85	-4,971.21	4,978.07	1.59	-1.49	0.54	160.22
11,361.00	88.89	268.94	6,644.37	-274.98	-5,064.18	5,071.02	0.79	-0.06	-0.78	-94.71
11,455.00	88.80	268.93	6,646.27	-276.73	-5,158.15	5,164.98	0.10	-0.10	-0.01	-173.66
11,546.00	86.89	267.52	6,649.69	-279.54	-5,249.03	5,255.91	2.61	-2.10	-1.55	-143.61
11,641.00	87.29	268.17	6,654.51	-283.11	-5,343.84	5,350.78	0.80	0.42	0.68	58.38
11,734.00	85.59	267.46	6,660.29	-286.65	-5,436.59	5,443.60	1.98	-1.83	-0.76	-157.39
11,828.00	86.82	269.23	6,666.51	-289.36	-5,530.34	5,537.38	2.29	1.31	1.88	55.21
11,920.00	87.63	268.04	6,670.96	-291.55	-5,622.20	5,629.26	1.56	0.88	-1.29	-55.76
12,011.00	87.87	267.24	6,674.53	-295.29	-5,713.06	5,720.19	0.92	0.26	-0.88	-73.30
12,103.00	88.43	268.05	6,677.50	-299.07	-5,804.93	5,812.14	1.07	0.61	0.88	55.34
12,198.00	88.30	267.25	6,680.22	-302.96	-5,899.81	5,907.10	0.85	-0.14	-0.84	-99.24
12,293.00	89.66	265.92	6,681.91	-308.62	-5,994.62	6,002.06	2.00	1.43	-1.40	-44.37
12,388.00	90.95	268.60	6,681.40	-313.16	-6,089.50	6,097.05	3.13	1.36	2.82	64.29
12,482.00	92.10	268.68	6,678.90	-315.39	-6,183.44	6,191.00	1.23	1.22	0.09	3.98
12,577.00	92.16	269.52	6,675.37	-316.88	-6,278.36	6,285.91	0.89	0.06	0.88	85.90
12,671.00	90.80	271.32	6,672.94	-316.19	-6,372.32	6,379.77	2.40	-1.45	1.91	127.06
12,766.00	90.25	271.94	6,672.07	-313.49	-6,467.28	6,474.56	0.87	-0.58	0.65	131.57
12,866.00	90.99	270.61	6,670.99	-311.27	-6,567.24	6,574.36	1.52	0.74	-1.33	-60.90
12,961.00	90.03	270.20	6,670.14	-310.60	-6,662.24	6,669.26	1.10	-1.01	-0.43	-156.87
13,056.00	89.75	269.72	6,670.32	-310.66	-6,757.24	6,764.19	0.58	-0.29	-0.51	-120.26
13,151.00	89.94	269.36	6,670.58	-311.42	-6,852.23	6,859.14	0.43	0.20	-0.38	-62.18
13,246.00	90.71	268.87	6,670.04	-312.89	-6,947.22	6,954.12	0.96	0.81	-0.52	-32.47
13,341.00	89.41	268.43	6,669.94	-315.13	-7,042.19	7,049.10	1.44	-1.37	-0.46	-161.30
13,436.00	89.94	267.59	6,670.48	-318.43	-7,137.13	7,144.10	1.05	0.56	-0.88	-57.75
13,530.00	88.83	267.09	6,671.49	-322.79	-7,231.02	7,238.09	1.30	-1.18	-0.53	-155.75
13,625.00	88.21	265.88	6,673.94	-328.61	-7,325.81	7,333.03	1.43	-0.65	-1.27	-117.15
13,719.00	89.17	267.56	6,676.09	-333.99	-7,419.63	7,426.99	2.06	1.02	1.79	60.27
13,814.00	89.69	268.45	6,677.04	-337.30	-7,514.56	7,521.98	1.08	0.55	0.94	59.71
13,909.00	90.55	269.11	6,676.84	-339.32	-7,609.54	7,616.96	1.14	0.91	0.69	37.50
14,004.00	90.68	267.95	6,675.82	-341.76	-7,704.50	7,711.95	1.23	0.14	-1.22	-83.60
14,099.00	90.74	269.72	6,674.64	-343.69	-7,799.47	7,806.92	1.86	0.06	1.86	88.05
14,194.00	90.89	268.85	6,673.29	-344.87	-7,894.45	7,901.88	0.93	0.16	-0.92	-80.21
14,289.00	89.48	269.23	6,672.99	-346.46	-7,989.44	7,996.85	1.54	-1.48	0.40	164.92
14,384.00	89.66	267.58	6,673.70	-349.11	-8,084.39	8,091.84	1.75	0.19	-1.74	-83.78
14,479.00	89.69	267.86	6,674.24	-352.89	-8,179.32	8,186.84	0.30	0.03	0.29	83.89
14,574.00	89.57	267.39	6,674.85	-356.82	-8,274.23	8,281.84	0.51	-0.13	-0.49	-104.32
14,669.00	89.88	269.68	6,675.31	-359.25	-8,369.19	8,376.82	2.43	0.33	2.41	82.30
14,764.00	90.86	269.23	6,674.69	-360.16	-8,464.19	8,471.78	1.14	1.03	-0.47	-24.66
14,859.00	89.75	269.63	6,674.19	-361.10	-8,559.18	8,566.74	1.24	-1.17	0.42	160.18
14,953.00	89.08	268.44	6,675.15	-362.68	-8,653.16	8,660.71	1.45	-0.71	-1.27	-119.39
15,048.00	88.74	267.52	6,676.95	-366.03	-8,748.08	8,755.69	1.03	-0.36	-0.97	-110.29
15,143.00	89.05	268.46	6,678.79	-369.36	-8,843.00	8,850.67	1.04	0.33	0.99	71.75
15,238.00	89.29	267.68	6,680.16	-372.56	-8,937.94	8,945.66	0.86	0.25	-0.82	-72.90
15,333.00	91.36	270.96	6,679.62	-373.69	-9,032.91	9,040.60	4.08	2.18	3.45	57.74
15,427.00	91.97	269.73	6,676.89	-373.12	-9,126.87	9,134.47	1.46	0.65	-1.31	-63.60
15,522.00	90.28	271.24	6,675.03	-372.32	-9,221.84	9,229.34	2.39	-1.78	1.59	138.21
15,617.00	90.86	270.52	6,674.08	-370.86	-9,316.82	9,324.19	0.97	0.61	-0.76	-51.14
15,712.00	88.86	272.08	6,674.31	-368.71	-9,411.79	9,419.01	2.67	-2.11	1.64	142.04
15,807.00	88.64	271.90	6,676.39	-365.41	-9,506.71	9,513.73	0.30	-0.23	-0.19	-140.72
15,902.00	89.05	271.25	6,678.30	-362.80	-9,601.66	9,608.50	0.81	0.43	-0.68	-57.76
15,997.00	89.35	270.67	6,679.63	-361.21	-9,696.63	9,703.35	0.69	0.32	-0.61	-62.65
16,092.00	89.57	269.92	6,680.52	-360.72	-9,791.63	9,798.25	0.82	0.23	-0.79	-73.65
16,186.00	89.75	268.91	6,681.08	-361.68	-9,885.62	9,892.21	1.09	0.19	-1.07	-79.90
16,242.00	89.91	268.73	6,681.25	-362.83	-9,941.61	9,948.20	0.43	0.29	-0.32	-48.37

Last MWD Survey @ 16242.00'

16,306.00 89.91 268.73 6,681.35 -364.25 -10,005.59 10,012.19 0.00 0.00 0.00 0.00

St. Line projection to Bit @ 16306' MD - NCLP AA06-66-1BHNA_BHL

Design Report for NCLP AA06-66-1BHNA - Field Surveys

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
830.00	829.91	8.38	5.24	Last Gyro Survey @ 830.00'
895.00	894.91	8.96	5.45	First MWD Survey @ 895.00'
16,242.00	6,681.25	-362.83	-9,941.61	Last MWD Survey @ 16242.00'
16,306.00	6,681.35	-364.25	-10,005.59	St. Line projection to Bit @ 16306' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
Target	NCLP AA06-66-1BHNA_BHL	267.79	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
355.00	830.00	Surface Gyro Surveys	Flexi-Shot
895.00	6,906.00	MWD Surveys-Intermediate	MWD+IFR1+MS_WY
7,031.00	16,242.00	MWD Surveys- Production	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
830.00	829.91	9 5/8"	9-5/8	13-3/4
6,947.00	6,603.20	7"	7	8-3/4

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
NCLP AA06-66-1BHNA_460	0.00	0.00	0.00	Polygon
NCLP AA06-66-1BHNA_SHL	0.00	0.00	0.00	Point
NCLP AA06-66-1BHNA_SL	0.00	0.00	0.00	Polygon
NCLP AA06-66-1BHNA_BHL	6,670.43	-385.96	-10,005.69	Point

Directional Difficulty Index

Average Dogleg over Survey:	1.59 °/100usft	Maximum Dogleg over Survey:	14.81 °/100usft at 6,043.00 usft
Net Tortousity applicable to Plans:	0.94 °/100usft	Directional Difficulty Index:	6.810

Design Report for NCLP AA06-66-1BHNA - Field Surveys

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP AA04-04/05-B) - NCLP AA06-66-1BHNA - Plan A

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

Vertical Depths are relative to RKB=24ft @ 4734.00usft (H&P 343). Northing and Easting are relative to NCLP AA06-66-1BHNA

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 -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996759

Grid Coordinates of Well: 1,432,785.37 usft N, 3,291,686.73 usft E

Geographical Coordinates of Well: 40° 30' 59.98" N, 104° 27' 03.10" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,306.00usft
the Bottom Hole Displacement is 10,012.22usft in the Direction of 267.92° (Grid).

Magnetic Convergence at surface is: -7.66° (9 July 2014, , BGGM2013)

