

CERTIFIED SURVEY SHEET

HALLIBURTON


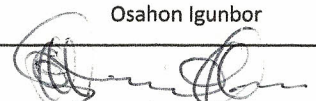
Sperry Drilling

OPERATOR:	Noble Energy		
WELL:	NCLP AA06 62-1AHNC		
FIELD:	Wattenberg-DJ Basin		
GRADED ELEVATION:	4709	ft. above MSL	
RIG FLOOR (KB) HEIGHT:	24		
TVD REFERENCE:	4733	ft. above MSL	
RIG:	H&P 322		
LEGALS:	Sec. 4	Twn. T6N	Rng. R63W
COUNTY:	Weld		
STATE:	Colorado		
CAL. METHOD:	Minimum Curvature		
NORTH REFERENCE:	Grid	Total Correction:	7.659
VERTICAL SEC. DIR.:	267.14	Grid Convergence:	0.6779

SSDS Job Number:	901286147
Start Date of Job:	7/1/2014
End Date of Job:	7/11/2014
Lead Directional Driller:	Marc Keim
	Steven Rhoden
Other SSDS DDs:	
SSDS MWDs:	Robert Ley
	Osahon Igunbor
	Brad West

Hole Section	Surface	Intermediate	Production	1st Sidetrack	2nd Sidetrack	3rd Sidetrack	4th Sidetrack
Hole Size	13 3/4	8.75	6 1/8				
Casing Size	9 5/8	7	NA				
Casing Depth	844	7058	NA				
Survey Type	Gyro	MWD+IFR+MS	MWD+IFR+MS				
Tie-On Depth	0	841	7010				
First Survey Depth	300	917	7140				
Last Survey Depth	841	7010	14439				
Bit Projection	854	7068	14502				

The following Halliburton - Sperry Drilling personnel, do certify the above information to be accurate:

Print Name: Marc Keim	Print Name: Brad West
Sign Name: 	Sign Name:
Print Name: Steven Rhoden	Print Name: Osahon Igunbor
Sign Name:	Sign Name: 

Examples of Survey

Types:

Tie-On to Surface Casing (Assumed Vertical), Tie-On to existing MWD Survey (prior drilled hole)
 Gyro Surveys - Provided by third party vendor
 MWD - Halliburton-Sperry Drilling - Measurement While Drilling Surveys
 MWD+IFR - Measurement While Drilling Surveys + In-Field Referencing services

Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP AA04-13-B PAD)

NCLP AA06-62-1AHNC

901286147

Plan A

05-123-39106

Design: Field Surveys

Sperry Drilling Services

Final Survey Report

15 July, 2014

Surface UWI : 901286147

Well Coordinates: 1,430,534.11 N, 3,291,713.36 E (40° 30' 37.73" N, 104° 27' 03.10" W)

Ground Level: 4,709.00 usft

Local Coordinate Origin:

Centered on Well NCLP AA06-62-1AHNC

Viewing Datum:

RKB=24ft @ 4733.00usft (H&P 322)

TVDs to System:

N

North Reference:

Grid

Unit System:

Dec-Deg - API - US Survey Feet - Custom

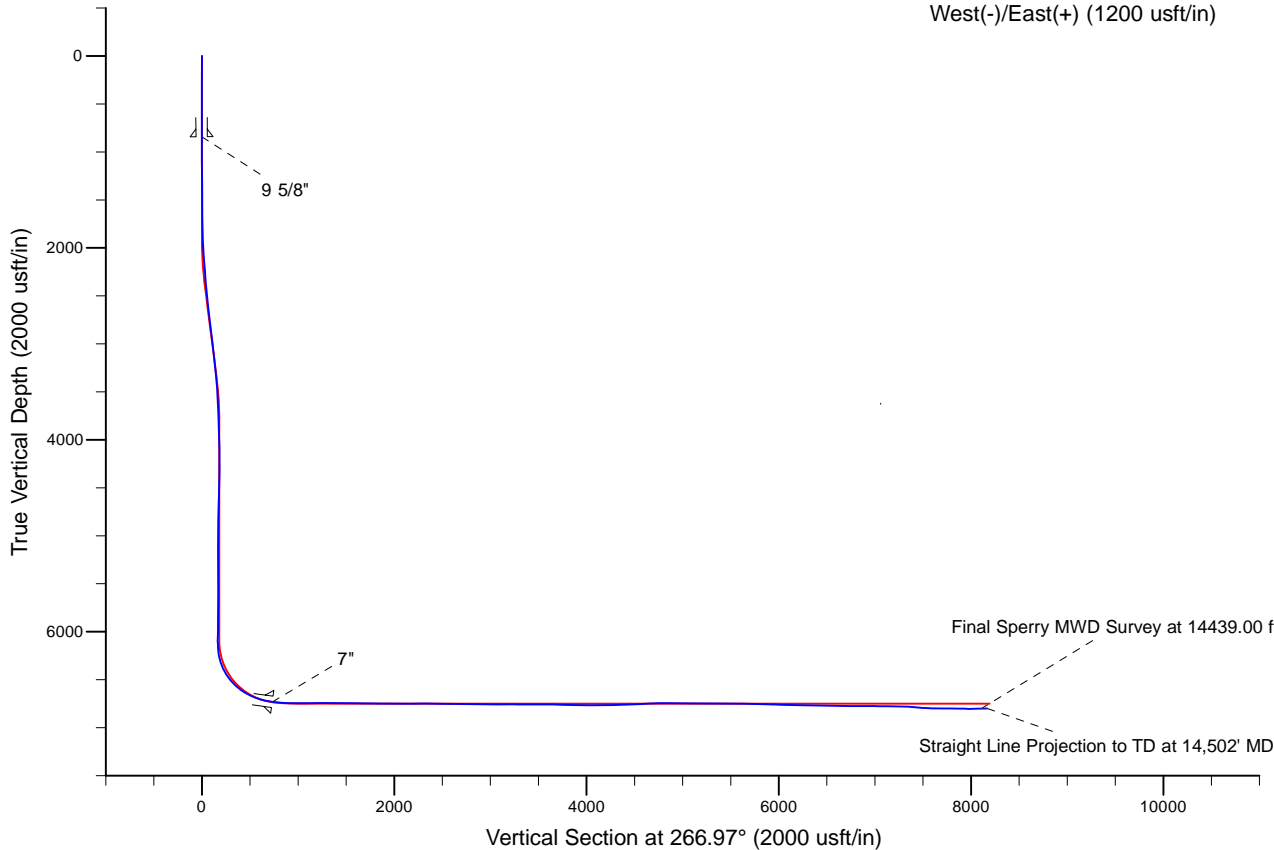
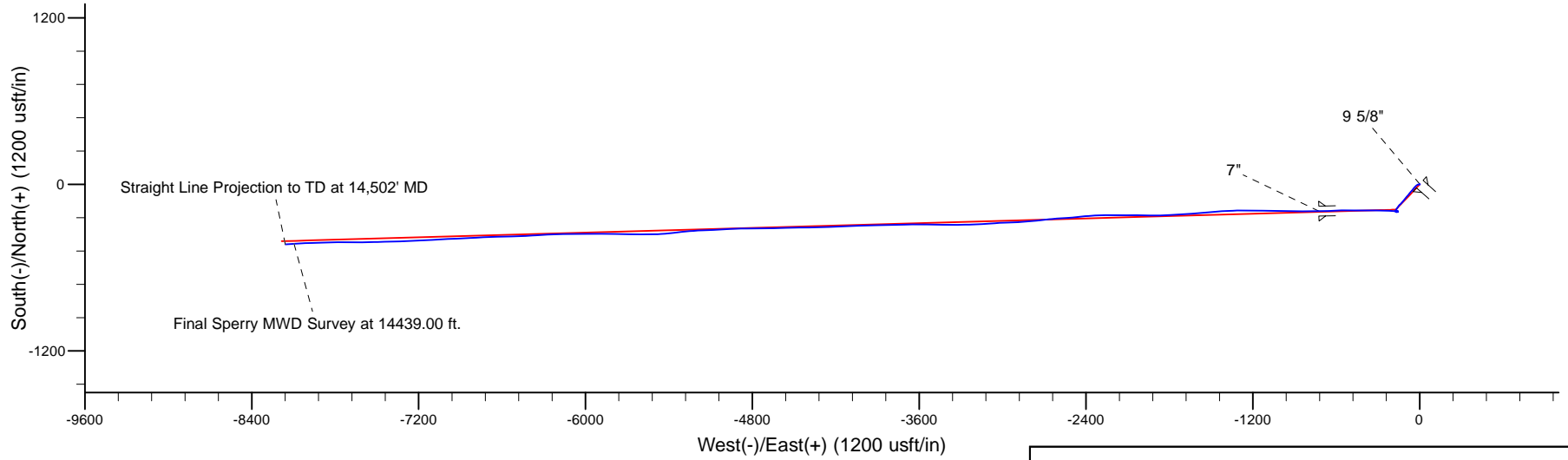
Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 4-T6N-R63W (NCLP AA04-13-B PAD)
 Well: NCLP AA06-62-1AHNC
 Wellbore: Plan A
 Design: Field Surveys

Noble Energy



LEGEND

- +— NCLP AA06-62-1AHNC, Plan A, Rev A0 - PROPOSAL V0
- Field Surveys

Platted SHL: 713' FSL, 100' FWL
 Platted Lat/Long: 40.51048' N, 104.45086' W
 Location: Sec. 4-T6N-R63W

7" Casing: ~540' FSL, ~627' FEL
 Lat/Long: 40.509974 N, 104.453475 W
 State Planes - CO Northern: 1,430,341.13 N, 3,290,988.60 E
 Location: Sec. 4-T6N-R63W

BHL: ~513' FSL, ~2360' FWL
 Lat/Long: 40.509557 N, 104.480217 W
 State Planes - CO Northern: 1,430,102.71 N, 3,283,555.08 E
 Location: Sec. 6-T6N-R63W

WELL DETAILS: NCLP AA06-62-1AHNC	
Ground Level:	4709.00
RKB=24ft @ 4733.00usft (H&P 322)	
Created By:	Tatiana Gomez
Created On:	12:01, July 16 2014

Design Report for NCLP AA06-62-1AHNC - Field 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
300.00	0.20	61.67	300.00	0.25	0.46	-0.47	0.07
600.00	0.30	77.27	600.00	0.67	1.69	-1.72	0.04
841.00	0.40	312.57	840.99	1.38	1.68	-1.75	0.26
844.00	0.39	311.66	843.99	1.39	1.67	-1.74	0.33
9 5/8"							
917.00	0.26	275.03	916.99	1.57	1.32	-1.40	0.33
1,103.00	0.59	257.57	1,102.99	1.40	-0.04	-0.04	0.19
1,196.00	0.56	246.10	1,195.98	1.12	-0.92	0.86	0.13
1,289.00	0.59	254.70	1,288.98	0.81	-1.80	1.75	0.10
1,382.00	0.73	259.01	1,381.97	0.57	-2.84	2.81	0.16
1,475.00	0.57	257.43	1,474.97	0.35	-3.88	3.85	0.17
1,569.00	0.46	240.27	1,568.96	0.06	-4.66	4.65	0.20
1,664.00	0.34	260.74	1,663.96	-0.17	-5.27	5.27	0.19
1,759.00	0.58	263.42	1,758.96	-0.27	-6.03	6.03	0.25
1,853.00	1.67	281.89	1,852.94	-0.04	-7.84	7.83	1.21
1,948.00	3.11	252.16	1,947.86	-0.55	-11.65	11.66	1.95
2,043.00	4.39	241.47	2,042.65	-3.07	-17.29	17.43	1.53
2,138.00	4.80	232.01	2,137.35	-7.26	-23.62	23.97	0.91
2,233.00	5.80	222.95	2,231.94	-13.22	-30.02	30.68	1.37
2,327.00	6.48	218.74	2,325.40	-20.83	-36.58	37.63	0.87
2,422.00	7.88	220.43	2,419.66	-29.97	-44.16	45.68	1.49
2,517.00	9.22	218.05	2,513.60	-40.92	-53.07	55.16	1.46
2,611.00	9.34	219.89	2,606.37	-52.70	-62.61	65.30	0.34
2,706.00	9.04	219.98	2,700.15	-64.34	-72.35	75.64	0.32
2,800.00	9.80	220.84	2,792.88	-76.05	-82.32	86.22	0.82
2,895.00	10.05	218.81	2,886.46	-88.62	-92.80	97.35	0.45
2,990.00	9.91	218.70	2,980.02	-101.46	-103.11	108.32	0.15
3,084.00	8.92	220.16	3,072.75	-113.35	-112.87	118.70	1.08
3,179.00	9.49	220.90	3,166.53	-124.89	-122.75	129.17	0.61
3,274.00	8.53	221.67	3,260.36	-136.08	-132.56	139.56	1.02
3,369.00	6.83	227.82	3,354.50	-145.13	-141.43	148.90	1.99
3,464.00	5.06	220.34	3,448.99	-152.12	-148.33	156.15	2.03
3,559.00	4.49	213.96	3,543.66	-158.40	-153.12	161.27	0.82
3,653.00	3.97	217.26	3,637.40	-164.04	-157.14	165.59	0.61
3,748.00	4.81	216.31	3,732.12	-169.87	-161.49	170.24	0.89
3,843.00	5.40	214.36	3,826.75	-176.77	-166.37	175.48	0.65
3,938.00	4.61	209.20	3,921.38	-183.79	-170.76	180.23	0.96
4,033.00	3.18	196.28	4,016.16	-189.65	-173.36	183.13	1.76
4,127.00	1.70	176.54	4,110.08	-193.55	-174.01	183.98	1.79
4,222.00	1.08	109.37	4,205.05	-195.25	-173.08	183.15	1.71
4,317.00	0.69	108.78	4,300.04	-195.73	-171.69	181.79	0.41
4,412.00	1.77	129.43	4,395.02	-196.85	-170.02	180.17	1.21
4,507.00	1.27	132.56	4,489.99	-198.49	-168.11	178.35	0.53
4,602.00	1.76	93.23	4,584.96	-199.29	-165.88	176.17	1.18
4,696.00	0.56	45.65	4,678.94	-199.05	-164.11	174.39	1.53
4,790.00	1.24	81.97	4,772.92	-198.58	-162.77	173.03	0.91
4,885.00	1.62	84.74	4,867.90	-198.32	-160.42	170.66	0.41
4,980.00	1.48	32.50	4,962.86	-197.16	-158.42	168.61	1.44
5,075.00	1.07	29.57	5,057.84	-195.35	-157.32	167.42	0.44

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,169.00	0.79	334.36	5,151.83	-194.00	-157.17	167.19	0.95
5,264.00	0.91	327.44	5,246.82	-192.78	-157.86	167.82	0.17
5,358.00	0.91	309.37	5,340.81	-191.68	-158.84	168.74	0.30
5,453.00	0.72	301.11	5,435.80	-190.89	-159.93	169.79	0.23
5,548.00	0.25	86.66	5,530.80	-190.57	-160.24	170.08	0.99
5,643.00	0.98	116.22	5,625.79	-190.91	-159.30	169.16	0.81
5,738.00	0.49	138.91	5,720.78	-191.58	-158.30	168.20	0.59
5,833.00	1.11	141.20	5,815.77	-192.60	-157.46	167.41	0.65
5,928.00	0.98	151.73	5,910.76	-194.04	-156.50	166.53	0.24
6,023.00	0.58	173.44	6,005.75	-195.23	-156.06	166.15	0.52
6,113.00	0.41	115.27	6,095.75	-195.82	-155.72	165.84	0.56
6,160.00	2.38	291.66	6,142.73	-195.53	-156.47	166.58	5.93
6,208.00	6.00	285.38	6,190.60	-194.50	-159.82	169.87	7.59
6,255.00	9.88	277.77	6,237.14	-193.30	-166.18	176.16	8.54
6,302.00	13.45	273.64	6,283.16	-192.41	-175.64	185.55	7.80
6,349.00	17.74	274.02	6,328.42	-191.56	-188.24	198.09	9.13
6,397.00	22.78	276.10	6,373.44	-190.06	-204.79	214.54	10.61
6,444.00	29.03	273.28	6,415.70	-188.44	-225.24	234.88	13.55
6,492.00	35.51	271.07	6,456.26	-187.51	-250.83	260.39	13.72
6,539.00	38.77	268.97	6,493.72	-187.52	-279.20	288.72	7.44
6,587.00	42.38	268.76	6,530.18	-188.14	-310.41	319.91	7.53
6,634.00	46.74	270.38	6,563.66	-188.37	-343.38	352.85	9.59
6,682.00	51.18	270.74	6,595.17	-188.01	-379.57	388.97	9.27
6,729.00	56.38	271.33	6,622.93	-187.32	-417.47	426.78	11.11
6,777.00	61.73	270.87	6,647.60	-186.53	-458.62	467.83	11.18
6,824.00	65.16	270.23	6,668.61	-186.13	-500.65	509.78	7.40
6,872.00	68.69	268.61	6,687.42	-186.59	-544.80	553.89	7.98
6,919.00	73.53	267.49	6,702.63	-188.11	-589.23	598.34	10.54
6,967.00	75.96	268.35	6,715.26	-189.79	-635.50	644.64	5.35
7,010.00	79.21	267.33	6,724.51	-191.37	-677.46	686.62	7.91
7,058.00	82.08	268.74	6,732.31	-192.99	-724.79	733.97	6.64
7"							
7,140.00	86.98	271.11	6,740.13	-193.09	-806.38	815.45	6.64
7,235.00	88.24	269.81	6,744.09	-192.33	-901.29	910.19	1.90
7,329.00	90.09	270.12	6,745.46	-192.39	-995.28	1,004.05	2.00
7,424.00	90.55	272.20	6,744.93	-190.46	-1,090.25	1,098.79	2.24
7,519.00	91.11	271.51	6,743.55	-187.39	-1,185.19	1,193.43	0.94
7,614.00	89.69	269.19	6,742.89	-186.81	-1,280.18	1,288.26	2.86
7,709.00	89.01	267.07	6,743.97	-189.91	-1,375.12	1,383.22	2.34
7,804.00	88.61	265.28	6,745.94	-196.24	-1,469.88	1,478.19	1.93
7,899.00	89.57	265.22	6,747.45	-204.11	-1,564.54	1,573.13	1.01
7,994.00	89.17	265.28	6,748.50	-211.98	-1,659.21	1,668.09	0.43
8,089.00	89.63	267.41	6,749.49	-218.03	-1,754.00	1,763.07	2.29
8,183.00	89.11	267.00	6,750.52	-222.61	-1,847.89	1,857.06	0.70
8,276.00	90.89	271.37	6,750.52	-223.94	-1,940.85	1,949.97	5.07
8,369.00	91.36	271.05	6,748.70	-221.97	-2,033.81	2,042.69	0.61
8,462.00	89.17	269.52	6,748.27	-221.51	-2,126.80	2,135.53	2.87
8,555.00	89.85	270.83	6,749.06	-221.23	-2,219.79	2,228.38	1.59
8,648.00	89.54	267.70	6,749.56	-222.42	-2,312.77	2,321.29	3.38
8,741.00	88.74	264.23	6,750.95	-228.96	-2,405.52	2,414.25	3.83
8,834.00	88.46	264.84	6,753.23	-237.82	-2,498.07	2,507.14	0.72

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,927.00	91.02	266.86	6,753.65	-244.55	-2,590.81	2,600.11	3.51
9,019.00	88.37	263.34	6,754.14	-252.40	-2,682.45	2,692.03	4.79
9,112.00	88.83	263.94	6,756.41	-262.70	-2,774.85	2,784.85	0.81
9,205.00	89.05	266.52	6,758.13	-270.43	-2,867.50	2,877.78	2.78
9,298.00	91.23	268.47	6,757.90	-274.50	-2,960.40	2,970.77	3.14
9,391.00	90.40	265.78	6,756.58	-279.16	-3,053.27	3,063.75	3.03
9,485.00	89.38	266.87	6,756.76	-285.19	-3,147.07	3,157.74	1.59
9,577.00	89.17	268.00	6,757.93	-289.30	-3,238.97	3,249.73	1.25
9,671.00	90.40	270.35	6,758.28	-290.66	-3,332.95	3,343.65	2.82
9,763.00	89.75	270.24	6,758.16	-290.18	-3,424.95	3,435.49	0.72
9,856.00	90.34	271.01	6,758.09	-289.17	-3,517.94	3,528.30	1.04
9,948.00	89.48	269.64	6,758.23	-288.65	-3,609.94	3,620.14	1.76
10,042.00	87.22	269.19	6,760.94	-289.60	-3,703.89	3,714.01	2.45
10,137.00	88.67	268.96	6,764.34	-291.14	-3,798.81	3,808.89	1.55
10,232.00	90.52	269.02	6,765.01	-292.81	-3,893.79	3,903.82	1.95
10,327.00	89.60	268.04	6,764.91	-295.25	-3,988.76	3,998.78	1.41
10,421.00	89.23	267.59	6,765.87	-298.83	-4,082.68	4,092.77	0.62
10,516.00	89.66	267.38	6,766.79	-303.00	-4,177.59	4,187.76	0.50
10,611.00	91.26	268.46	6,766.03	-306.45	-4,272.52	4,282.74	2.03
10,706.00	93.14	268.81	6,762.39	-308.71	-4,367.42	4,377.62	2.01
10,801.00	93.05	268.96	6,757.26	-310.56	-4,462.26	4,472.43	0.18
10,895.00	92.37	268.49	6,752.81	-312.65	-4,556.13	4,566.28	0.88
10,990.00	92.53	268.96	6,748.75	-314.76	-4,651.02	4,661.15	0.52
11,086.00	92.04	269.24	6,744.92	-316.26	-4,746.93	4,757.01	0.59
11,180.00	88.95	269.49	6,744.11	-317.31	-4,840.91	4,850.91	3.30
11,275.00	89.35	267.53	6,745.52	-319.78	-4,935.86	4,945.86	2.11
11,370.00	89.35	266.54	6,746.60	-324.69	-5,030.73	5,040.85	1.04
11,465.00	89.51	268.09	6,747.54	-329.14	-5,125.62	5,135.85	1.64
11,560.00	89.69	265.86	6,748.21	-334.15	-5,220.48	5,230.84	2.35
11,655.00	89.54	263.48	6,748.85	-342.98	-5,315.06	5,325.75	2.51
11,750.00	89.38	264.57	6,749.74	-352.86	-5,409.53	5,420.62	1.16
11,844.00	89.41	268.22	6,750.73	-358.77	-5,503.33	5,514.59	3.88
11,939.00	89.69	271.10	6,751.48	-359.34	-5,598.31	5,609.48	3.05
12,034.00	89.11	270.31	6,752.47	-358.17	-5,693.30	5,704.27	1.03
12,129.00	87.78	270.46	6,755.05	-357.53	-5,788.26	5,799.06	1.41
12,224.00	89.14	271.01	6,757.61	-356.31	-5,883.21	5,893.82	1.54
12,319.00	86.85	269.30	6,760.93	-356.05	-5,978.15	5,988.61	3.01
12,414.00	88.83	269.90	6,764.51	-356.72	-6,073.07	6,083.43	2.18
12,509.00	89.32	268.56	6,766.04	-357.99	-6,168.05	6,178.35	1.50
12,604.00	89.01	268.10	6,767.43	-360.76	-6,263.00	6,273.31	0.58
12,699.00	88.74	265.13	6,769.29	-366.37	-6,357.80	6,368.28	3.14
12,794.00	89.26	268.31	6,770.95	-371.80	-6,452.62	6,463.25	3.39
12,889.00	89.23	268.71	6,772.20	-374.27	-6,547.58	6,558.21	0.42
12,984.00	89.32	267.73	6,773.41	-377.22	-6,642.52	6,653.18	1.04
13,078.00	88.37	267.79	6,775.30	-380.90	-6,736.43	6,747.15	1.01
13,173.00	89.97	266.76	6,776.68	-385.41	-6,831.31	6,842.13	2.00
13,268.00	90.83	267.67	6,776.01	-390.03	-6,926.19	6,937.13	1.32
13,363.00	88.74	266.62	6,776.37	-394.76	-7,021.07	7,032.12	2.46
13,458.00	89.38	266.82	6,777.93	-400.19	-7,115.90	7,127.10	0.71
13,552.00	89.72	267.32	6,778.67	-405.00	-7,209.77	7,221.10	0.64
13,647.00	86.85	267.79	6,781.51	-409.05	-7,304.64	7,316.04	3.06

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
13,742.00	85.96	269.01	6,787.47	-411.70	-7,399.41	7,410.82	1.59
13,837.00	85.84	267.78	6,794.26	-414.35	-7,494.13	7,505.55	1.30
13,931.00	88.40	269.52	6,798.98	-416.56	-7,587.97	7,599.38	3.29
14,026.00	89.23	270.36	6,800.95	-416.66	-7,682.95	7,694.23	1.24
14,121.00	89.72	269.75	6,801.82	-416.57	-7,777.94	7,789.09	0.82
14,215.00	88.80	268.00	6,803.03	-418.41	-7,871.91	7,883.02	2.10
14,310.00	90.03	268.18	6,804.00	-421.58	-7,966.85	7,978.00	1.31
14,405.00	91.26	267.10	6,802.93	-425.49	-8,061.76	8,072.98	1.72
14,439.00	91.42	266.37	6,802.14	-427.43	-8,095.70	8,106.97	2.20
14,502.00	91.42	266.37	6,800.58	-431.41	-8,158.55	8,169.95	0.00

Straight Line Projection to TD at 14,502' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,502.00	6,800.58	-431.41	-8,158.55	Straight Line Projection to TD at 14,502' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
TD	No Target (Freehand)	266.97	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
300.00	841.00	Surface Gyro	Flexi-Shot
917.00	7,010.00	MWD Surveys-Intermediate	MWD+IFR1+MS_WY
7,140.00	14,439.00	MWD Surveys-Production	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
844.00	843.99	9 5/8"	9-5/8	13-3/4
7,058.00	6,732.31	7"	7	8-3/4

Design Report for NCLP AA06-62-1AHNC - Field Surveys

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 AA06-62-1AHNC - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,430,534.12	3,291,713.36	40.510480	-104.450860
NCLP AA06-62-1AHNC - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,430,534.12	3,291,713.36	40.510480	-104.450860
Point 1				0.00	4,329.20	-10,594.30	1,434,863.17	3,281,119.41	
Point 2				0.00	-1,018.69	-10,536.10	1,429,515.46	3,281,177.61	
Point 3				0.00	-857.35	-5,382.10	1,429,676.79	3,286,331.44	
Point 4				0.00	4,439.42	-5,449.17	1,434,973.39	3,286,264.37	
Point 5				0.00	-857.35	-5,382.10	1,429,676.79	3,286,331.44	
Point 6				0.00	-715.19	-91.66	1,429,818.95	3,291,621.71	
Point 7				0.00	4,559.77	-154.05	1,435,093.74	3,291,559.32	
Point 8				0.00	4,439.42	-5,449.17	1,434,973.39	3,286,264.37	
Point 9				0.00	4,329.20	-10,594.30	1,434,863.17	3,281,119.41	
NCLP AA06-62-1AHNC - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,430,534.12	3,291,713.36	40.510480	-104.450860
Point 1				0.00	3,869.18	-10,134.29	1,434,403.17	3,281,579.41	
Point 2				0.00	-558.67	-10,076.08	1,429,975.46	3,281,637.61	
Point 3				0.00	-397.34	-5,382.10	1,430,136.79	3,286,331.44	
Point 4				0.00	-255.17	-551.67	1,430,278.95	3,291,161.71	
Point 5				0.00	4,099.76	-614.06	1,434,633.74	3,291,099.32	
Point 6				0.00	3,979.41	-5,449.17	1,434,513.39	3,286,264.37	
Point 7				0.00	3,869.18	-10,134.29	1,434,403.17	3,281,579.41	
NCLP AA06-62-1AHNC - actual wellpath misses target center by 61.33usft at 14502.00usft MD (6800.58 TVD, -431.41 N, -8158.55 E) - Point	0.00	0.00	6,750.00	-408.81	-8,184.87	1,430,125.32	3,283,528.76	40.509620	-104.480310

Directional Difficulty Index

Average Dogleg over Survey:	1.86 °/100usft	Maximum Dogleg over Survey:	13.72 °/100usft at 6,492.00 usft
Net Tortosity applicable to Plans:	1.09 °/100usft	Directional Difficulty Index:	6.679

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP AA04-13-B PAD) - NCLP AA06-62-1AHNC - 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 @ 4733.00usft (H&P 322). Northing and Easting are relative to NCLP AA06-62-1AHNC

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: 0.99996710

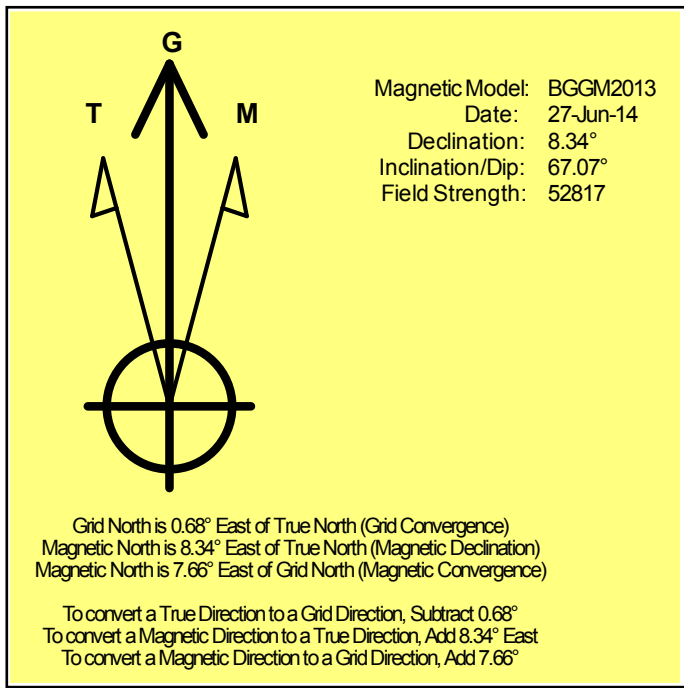
Grid Coordinates of Well: 1,430,534.11 usft N, 3,291,713.36 usft E

Geographical Coordinates of Well: 40° 30' 37.73" N, 104° 27' 03.10" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,502.00usft the Bottom Hole Displacement is 8,169.95usft in the Direction of 266.97° (Grid).

Magnetic Convergence at surface is: -7.66° (27 June 2014, , BGGM2013)



Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP AA04-13-B PAD)

NCLP AA06-62-1AHNC

901286147

Plan A

Design: Field Surveys

Sperry Drilling Services

Geodetic Report

15 July, 2014

Well Coordinates: 1,430,534.11 N, 3,291,713.36 E (40° 30' 37.73" N, 104° 27' 03.10" W)

Ground Level: 4,709.00 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 AA06-62-1AHNC

RKB=24ft @ 4733.00usft (H&P 322)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON



Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.510480	-104.450860	1,430,534.11	3,291,713.36
300.00	0.20	61.67	300.00	0.25	0.46	40.510481	-104.450859	1,430,534.36	3,291,713.82
600.00	0.30	77.27	600.00	0.67	1.69	40.510482	-104.450854	1,430,534.78	3,291,715.05
841.00	0.40	312.57	840.99	1.38	1.68	40.510484	-104.450854	1,430,535.49	3,291,715.05
844.00	0.39	311.66	843.99	1.39	1.67	40.510484	-104.450854	1,430,535.50	3,291,715.03
917.00	0.26	275.03	916.99	1.57	1.32	40.510484	-104.450855	1,430,535.68	3,291,714.68
1,103.00	0.59	257.57	1,102.99	1.40	-0.04	40.510484	-104.450860	1,430,535.52	3,291,713.32
1,196.00	0.56	246.10	1,195.98	1.12	-0.92	40.510483	-104.450864	1,430,535.23	3,291,712.44
1,289.00	0.59	254.70	1,288.98	0.81	-1.80	40.510482	-104.450867	1,430,534.92	3,291,711.56
1,382.00	0.73	259.01	1,381.97	0.57	-2.84	40.510482	-104.450870	1,430,534.68	3,291,710.52
1,475.00	0.57	257.43	1,474.97	0.35	-3.88	40.510481	-104.450874	1,430,534.46	3,291,709.49
1,569.00	0.46	240.27	1,568.96	0.06	-4.66	40.510480	-104.450877	1,430,534.18	3,291,708.70
1,664.00	0.34	260.74	1,663.96	-0.17	-5.27	40.510480	-104.450879	1,430,533.94	3,291,708.09
1,759.00	0.58	263.42	1,758.96	-0.27	-6.03	40.510480	-104.450882	1,430,533.84	3,291,707.34
1,853.00	1.67	281.89	1,852.94	-0.04	-7.84	40.510480	-104.450888	1,430,534.07	3,291,705.52
1,948.00	3.11	252.16	1,947.86	-0.55	-11.65	40.510479	-104.450902	1,430,533.56	3,291,701.72
2,043.00	4.39	241.47	2,042.65	-3.07	-17.29	40.510472	-104.450923	1,430,531.04	3,291,696.07
2,138.00	4.80	232.01	2,137.35	-7.26	-23.62	40.510461	-104.450946	1,430,526.85	3,291,689.74
2,233.00	5.80	222.95	2,231.94	-13.22	-30.02	40.510445	-104.450969	1,430,520.89	3,291,683.34
2,327.00	6.48	218.74	2,325.40	-20.83	-36.58	40.510424	-104.450993	1,430,513.28	3,291,676.78
2,422.00	7.88	220.43	2,419.66	-29.97	-44.16	40.510399	-104.451020	1,430,504.14	3,291,669.21
2,517.00	9.22	218.05	2,513.60	-40.92	-53.07	40.510369	-104.451053	1,430,493.19	3,291,660.29
2,611.00	9.34	219.89	2,606.37	-52.70	-62.61	40.510337	-104.451088	1,430,481.41	3,291,650.76
2,706.00	9.04	219.98	2,700.15	-64.34	-72.35	40.510306	-104.451123	1,430,469.78	3,291,641.02
2,800.00	9.80	220.84	2,792.88	-76.05	-82.32	40.510274	-104.451160	1,430,458.07	3,291,631.04
2,895.00	10.05	218.81	2,886.46	-88.62	-92.80	40.510240	-104.451198	1,430,445.49	3,291,620.56
2,990.00	9.91	218.70	2,980.02	-101.46	-103.11	40.510205	-104.451235	1,430,432.65	3,291,610.26
3,084.00	8.92	220.16	3,072.75	-113.35	-112.87	40.510173	-104.451271	1,430,420.77	3,291,600.50
3,179.00	9.49	220.90	3,166.53	-124.89	-122.75	40.510141	-104.451307	1,430,409.22	3,291,590.62
3,274.00	8.53	221.67	3,260.36	-136.08	-132.56	40.510111	-104.451343	1,430,398.04	3,291,580.81
3,369.00	6.83	227.82	3,354.50	-145.13	-141.43	40.510086	-104.451375	1,430,388.98	3,291,571.94
3,464.00	5.06	220.34	3,448.99	-152.12	-148.33	40.510067	-104.451400	1,430,382.00	3,291,565.04
3,559.00	4.49	213.96	3,543.66	-158.40	-153.12	40.510050	-104.451418	1,430,375.72	3,291,560.25
3,653.00	3.97	217.26	3,637.40	-164.04	-157.14	40.510035	-104.451432	1,430,370.08	3,291,556.23
3,748.00	4.81	216.31	3,732.12	-169.87	-161.49	40.510019	-104.451448	1,430,364.25	3,291,551.88
3,843.00	5.40	214.36	3,826.75	-176.77	-166.37	40.510000	-104.451466	1,430,357.35	3,291,546.99
3,938.00	4.61	209.20	3,921.38	-183.79	-170.76	40.509981	-104.451482	1,430,350.33	3,291,542.61
4,033.00	3.18	196.28	4,016.16	-189.65	-173.36	40.509965	-104.451492	1,430,344.47	3,291,540.01
4,127.00	1.70	176.54	4,110.08	-193.55	-174.01	40.509954	-104.451494	1,430,340.57	3,291,539.36
4,222.00	1.08	109.37	4,205.05	-195.25	-173.08	40.509950	-104.451491	1,430,338.87	3,291,540.29
4,317.00	0.69	108.78	4,300.04	-195.73	-171.69	40.509948	-104.451486	1,430,338.39	3,291,541.68
4,412.00	1.77	129.43	4,395.02	-196.85	-170.02	40.509945	-104.451480	1,430,337.27	3,291,543.35

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
4,507.00	1.27	132.56	4,489.99	-198.49	-168.11	40.509941	-104.451473	1,430,335.63	3,291,545.26
4,602.00	1.76	93.23	4,584.96	-199.29	-165.88	40.509938	-104.451465	1,430,334.83	3,291,547.49
4,696.00	0.56	45.65	4,678.94	-199.05	-164.11	40.509939	-104.451459	1,430,335.07	3,291,549.26
4,790.00	1.24	81.97	4,772.92	-198.58	-162.77	40.509940	-104.451454	1,430,335.54	3,291,550.60
4,885.00	1.62	84.74	4,867.90	-198.32	-160.42	40.509941	-104.451446	1,430,335.80	3,291,552.95
4,980.00	1.48	32.50	4,962.86	-197.16	-158.42	40.509944	-104.451438	1,430,336.96	3,291,554.95
5,075.00	1.07	29.57	5,057.84	-195.35	-157.32	40.509949	-104.451434	1,430,338.77	3,291,556.05
5,169.00	0.79	334.36	5,151.83	-194.00	-157.17	40.509953	-104.451434	1,430,340.11	3,291,556.20
5,264.00	0.91	327.44	5,246.82	-192.78	-157.86	40.509956	-104.451436	1,430,341.34	3,291,555.51
5,358.00	0.91	309.37	5,340.81	-191.68	-158.84	40.509959	-104.451440	1,430,342.44	3,291,554.53
5,453.00	0.72	301.11	5,435.80	-190.89	-159.93	40.509961	-104.451443	1,430,343.23	3,291,553.44
5,548.00	0.25	86.66	5,530.80	-190.57	-160.24	40.509962	-104.451445	1,430,343.55	3,291,553.13
5,643.00	0.98	116.22	5,625.79	-190.91	-159.30	40.509961	-104.451441	1,430,343.20	3,291,554.07
5,738.00	0.49	138.91	5,720.78	-191.58	-158.30	40.509959	-104.451438	1,430,342.54	3,291,555.06
5,833.00	1.11	141.20	5,815.77	-192.60	-157.46	40.509957	-104.451435	1,430,341.51	3,291,555.91
5,928.00	0.98	151.73	5,910.76	-194.04	-156.50	40.509953	-104.451431	1,430,340.08	3,291,556.87
6,023.00	0.58	173.44	6,005.75	-195.23	-156.06	40.509949	-104.451430	1,430,338.89	3,291,557.31
6,113.00	0.41	115.27	6,095.75	-195.82	-155.72	40.509948	-104.451429	1,430,338.30	3,291,557.65
6,160.00	2.38	291.66	6,142.73	-195.53	-156.47	40.509948	-104.451431	1,430,338.59	3,291,556.90
6,208.00	6.00	285.38	6,190.60	-194.50	-159.82	40.509951	-104.451443	1,430,339.62	3,291,553.55
6,255.00	9.88	277.77	6,237.14	-193.30	-166.18	40.509955	-104.451466	1,430,340.82	3,291,547.18
6,302.00	13.45	273.64	6,283.16	-192.41	-175.64	40.509958	-104.451500	1,430,341.71	3,291,537.73
6,349.00	17.74	274.02	6,328.42	-191.56	-188.24	40.509960	-104.451545	1,430,342.56	3,291,525.13
6,397.00	22.78	276.10	6,373.44	-190.06	-204.79	40.509965	-104.451605	1,430,344.06	3,291,508.58
6,444.00	29.03	273.28	6,415.70	-188.44	-225.24	40.509970	-104.451678	1,430,345.68	3,291,488.13
6,492.00	35.51	271.07	6,456.26	-187.51	-250.83	40.509974	-104.451770	1,430,346.61	3,291,462.54
6,539.00	38.77	268.97	6,493.72	-187.52	-279.20	40.509974	-104.451872	1,430,346.60	3,291,434.17
6,587.00	42.38	268.76	6,530.18	-188.14	-310.41	40.509974	-104.451985	1,430,345.98	3,291,402.96
6,634.00	46.74	270.38	6,563.66	-188.37	-343.38	40.509974	-104.452103	1,430,345.75	3,291,369.99
6,682.00	51.18	270.74	6,595.17	-188.01	-379.57	40.509976	-104.452233	1,430,346.11	3,291,333.80
6,729.00	56.38	271.33	6,622.93	-187.32	-417.47	40.509979	-104.452369	1,430,346.80	3,291,295.91
6,777.00	61.73	270.87	6,647.60	-186.53	-458.62	40.509983	-104.452517	1,430,347.58	3,291,254.76
6,824.00	65.16	270.23	6,668.61	-186.13	-500.65	40.509985	-104.452669	1,430,347.98	3,291,212.73
6,872.00	68.69	268.61	6,687.42	-186.59	-544.80	40.509986	-104.452827	1,430,347.53	3,291,168.58
6,919.00	73.53	267.49	6,702.63	-188.11	-589.23	40.509983	-104.452987	1,430,346.01	3,291,124.16
6,967.00	75.96	268.35	6,715.26	-189.79	-635.50	40.509980	-104.453154	1,430,344.33	3,291,077.88
7,010.00	79.21	267.33	6,724.51	-191.37	-677.46	40.509977	-104.453305	1,430,342.75	3,291,035.93
7,058.00	82.08	268.74	6,732.31	-192.99	-724.79	40.509974	-104.453475	1,430,341.13	3,290,988.60
7,140.00	86.98	271.11	6,740.13	-193.09	-806.38	40.509976	-104.453768	1,430,341.03	3,290,907.01
7,235.00	88.24	269.81	6,744.09	-192.33	-901.29	40.509981	-104.454109	1,430,341.79	3,290,812.10
7,329.00	90.09	270.12	6,745.46	-192.39	-995.28	40.509984	-104.454447	1,430,341.73	3,290,718.12
7,424.00	90.55	272.20	6,744.93	-190.46	-1,090.25	40.509993	-104.454789	1,430,343.65	3,290,623.15

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
7,519.00	91.11	271.51	6,743.55	-187.39	-1,185.19	40.510004	-104.455130	1,430,346.73	3,290,528.21
7,614.00	89.69	269.19	6,742.89	-186.81	-1,280.18	40.510009	-104.455472	1,430,347.31	3,290,433.23
7,709.00	89.01	267.07	6,743.97	-189.91	-1,375.12	40.510003	-104.455813	1,430,344.21	3,290,338.29
7,804.00	88.61	265.28	6,745.94	-196.24	-1,469.88	40.509989	-104.456154	1,430,337.87	3,290,243.53
7,899.00	89.57	265.22	6,747.45	-204.11	-1,564.54	40.509971	-104.456495	1,430,330.01	3,290,148.87
7,994.00	89.17	265.28	6,748.50	-211.98	-1,659.21	40.509952	-104.456836	1,430,322.14	3,290,054.21
8,089.00	89.63	267.41	6,749.49	-218.03	-1,754.00	40.509938	-104.457177	1,430,316.09	3,289,959.42
8,183.00	89.11	267.00	6,750.52	-222.61	-1,847.89	40.509929	-104.457515	1,430,311.50	3,289,865.54
8,276.00	90.89	271.37	6,750.52	-223.94	-1,940.85	40.509928	-104.457849	1,430,310.18	3,289,772.58
8,369.00	91.36	271.05	6,748.70	-221.97	-2,033.81	40.509937	-104.458183	1,430,312.14	3,289,679.62
8,462.00	89.17	269.52	6,748.27	-221.51	-2,126.80	40.509941	-104.458518	1,430,312.61	3,289,586.63
8,555.00	89.85	270.83	6,749.06	-221.23	-2,219.79	40.509945	-104.458852	1,430,312.89	3,289,493.64
8,648.00	89.54	267.70	6,749.56	-222.42	-2,312.77	40.509944	-104.459186	1,430,311.70	3,289,400.67
8,741.00	88.74	264.23	6,750.95	-228.96	-2,405.52	40.509929	-104.459520	1,430,305.16	3,289,307.92
8,834.00	88.46	264.84	6,753.23	-237.82	-2,498.07	40.509908	-104.459853	1,430,296.30	3,289,215.38
8,927.00	91.02	266.86	6,753.65	-244.55	-2,590.81	40.509893	-104.460187	1,430,289.57	3,289,122.64
9,019.00	88.37	263.34	6,754.14	-252.40	-2,682.45	40.509874	-104.460517	1,430,281.72	3,289,031.00
9,112.00	88.83	263.94	6,756.41	-262.70	-2,774.85	40.509849	-104.460850	1,430,271.42	3,288,938.61
9,205.00	89.05	266.52	6,758.13	-270.43	-2,867.50	40.509830	-104.461183	1,430,263.69	3,288,845.95
9,298.00	91.23	268.47	6,757.90	-274.50	-2,960.40	40.509822	-104.461518	1,430,259.62	3,288,753.06
9,391.00	90.40	265.78	6,756.58	-279.16	-3,053.27	40.509813	-104.461852	1,430,254.96	3,288,660.20
9,485.00	89.38	266.87	6,756.76	-285.19	-3,147.07	40.509799	-104.462189	1,430,248.94	3,288,566.39
9,577.00	89.17	268.00	6,757.93	-289.30	-3,238.97	40.509791	-104.462520	1,430,244.82	3,288,474.50
9,671.00	90.40	270.35	6,758.28	-290.66	-3,332.95	40.509790	-104.462858	1,430,243.47	3,288,380.52
9,763.00	89.75	270.24	6,758.16	-290.18	-3,424.95	40.509794	-104.463189	1,430,243.94	3,288,288.53
9,856.00	90.34	271.01	6,758.09	-289.17	-3,517.94	40.509800	-104.463523	1,430,244.95	3,288,195.54
9,948.00	89.48	269.64	6,758.23	-288.65	-3,609.94	40.509804	-104.463854	1,430,245.48	3,288,103.54
10,042.00	87.22	269.19	6,760.94	-289.60	-3,703.89	40.509805	-104.464192	1,430,244.52	3,288,009.60
10,137.00	88.67	268.96	6,764.34	-291.14	-3,798.81	40.509804	-104.464533	1,430,242.98	3,287,914.68
10,232.00	90.52	269.02	6,765.01	-292.81	-3,893.79	40.509802	-104.464875	1,430,241.31	3,287,819.70
10,327.00	89.60	268.04	6,764.91	-295.25	-3,988.76	40.509798	-104.465216	1,430,238.87	3,287,724.74
10,421.00	89.23	267.59	6,765.87	-298.83	-4,082.68	40.509792	-104.465554	1,430,235.29	3,287,630.81
10,516.00	89.66	267.38	6,766.79	-303.00	-4,177.59	40.509783	-104.465896	1,430,231.12	3,287,535.91
10,611.00	91.26	268.46	6,766.03	-306.45	-4,272.52	40.509777	-104.466237	1,430,227.67	3,287,440.99
10,706.00	93.14	268.81	6,762.39	-308.71	-4,367.42	40.509774	-104.466579	1,430,225.41	3,287,346.09
10,801.00	93.05	268.96	6,757.26	-310.56	-4,462.26	40.509771	-104.466920	1,430,223.57	3,287,251.25
10,895.00	92.37	268.49	6,752.81	-312.65	-4,556.13	40.509769	-104.467257	1,430,221.48	3,287,157.38
10,990.00	92.53	268.96	6,748.75	-314.76	-4,651.02	40.509766	-104.467599	1,430,219.36	3,287,062.50
11,086.00	92.04	269.24	6,744.92	-316.26	-4,746.93	40.509765	-104.467944	1,430,217.86	3,286,966.59
11,180.00	88.95	269.49	6,744.11	-317.31	-4,840.91	40.509765	-104.468282	1,430,216.82	3,286,872.61
11,275.00	89.35	267.53	6,745.52	-319.78	-4,935.86	40.509761	-104.468623	1,430,214.35	3,286,777.66
11,370.00	89.35	266.54	6,746.60	-324.69	-5,030.73	40.509751	-104.468964	1,430,209.43	3,286,682.80

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
11,465.00	89.51	268.09	6,747.54	-329.14	-5,125.62	40.509742	-104.469306	1,430,204.98	3,286,587.91
11,560.00	89.69	265.86	6,748.21	-334.15	-5,220.48	40.509731	-104.469647	1,430,199.97	3,286,493.06
11,655.00	89.54	263.48	6,748.85	-342.98	-5,315.06	40.509710	-104.469988	1,430,191.15	3,286,398.48
11,750.00	89.38	264.57	6,749.74	-352.86	-5,409.53	40.509686	-104.470328	1,430,181.26	3,286,304.01
11,844.00	89.41	268.22	6,750.73	-358.77	-5,503.33	40.509672	-104.470665	1,430,175.35	3,286,210.22
11,939.00	89.69	271.10	6,751.48	-359.34	-5,598.31	40.509674	-104.471007	1,430,174.79	3,286,115.23
12,034.00	89.11	270.31	6,752.47	-358.17	-5,693.30	40.509680	-104.471348	1,430,175.96	3,286,020.25
12,129.00	87.78	270.46	6,755.05	-357.53	-5,788.26	40.509685	-104.471690	1,430,176.59	3,285,925.29
12,224.00	89.14	271.01	6,757.61	-356.31	-5,883.21	40.509691	-104.472031	1,430,177.81	3,285,830.34
12,319.00	86.85	269.30	6,760.93	-356.05	-5,978.15	40.509695	-104.472373	1,430,178.07	3,285,735.41
12,414.00	88.83	269.90	6,764.51	-356.72	-6,073.07	40.509696	-104.472714	1,430,177.41	3,285,640.49
12,509.00	89.32	268.56	6,766.04	-357.99	-6,168.05	40.509696	-104.473056	1,430,176.13	3,285,545.52
12,604.00	89.01	268.10	6,767.43	-360.76	-6,263.00	40.509691	-104.473397	1,430,173.36	3,285,450.57
12,699.00	88.74	265.13	6,769.29	-366.37	-6,357.80	40.509679	-104.473738	1,430,167.76	3,285,355.77
12,794.00	89.26	268.31	6,770.95	-371.80	-6,452.62	40.509667	-104.474080	1,430,162.32	3,285,260.96
12,889.00	89.23	268.71	6,772.20	-374.27	-6,547.58	40.509663	-104.474421	1,430,159.85	3,285,166.00
12,984.00	89.32	267.73	6,773.41	-377.22	-6,642.52	40.509658	-104.474763	1,430,156.90	3,285,071.06
13,078.00	88.37	267.79	6,775.30	-380.90	-6,736.43	40.509651	-104.475101	1,430,153.23	3,284,977.15
13,173.00	89.97	266.76	6,776.68	-385.41	-6,831.31	40.509641	-104.475442	1,430,148.71	3,284,882.28
13,268.00	90.83	267.67	6,776.01	-390.03	-6,926.19	40.509632	-104.475783	1,430,144.10	3,284,787.40
13,363.00	88.74	266.62	6,776.37	-394.76	-7,021.07	40.509622	-104.476125	1,430,139.37	3,284,692.52
13,458.00	89.38	266.82	6,777.93	-400.19	-7,115.90	40.509610	-104.476466	1,430,133.93	3,284,597.70
13,552.00	89.72	267.32	6,778.67	-405.00	-7,209.77	40.509600	-104.476804	1,430,129.13	3,284,503.83
13,647.00	86.85	267.79	6,781.51	-409.05	-7,304.64	40.509592	-104.477145	1,430,125.08	3,284,408.97
13,742.00	85.96	269.01	6,787.47	-411.70	-7,399.41	40.509587	-104.477486	1,430,122.43	3,284,314.20
13,837.00	85.84	267.78	6,794.26	-414.35	-7,494.13	40.509583	-104.477827	1,430,119.77	3,284,219.48
13,931.00	88.40	269.52	6,798.98	-416.56	-7,587.97	40.509580	-104.478164	1,430,117.56	3,284,125.64
14,026.00	89.23	270.36	6,800.95	-416.66	-7,682.95	40.509583	-104.478506	1,430,117.47	3,284,030.67
14,121.00	89.72	269.75	6,801.82	-416.57	-7,777.94	40.509586	-104.478847	1,430,117.56	3,283,935.68
14,215.00	88.80	268.00	6,803.03	-418.41	-7,871.91	40.509584	-104.479185	1,430,115.71	3,283,841.71
14,310.00	90.03	268.18	6,804.00	-421.58	-7,966.85	40.509578	-104.479527	1,430,112.55	3,283,746.77
14,405.00	91.26	267.10	6,802.93	-425.49	-8,061.76	40.509570	-104.479868	1,430,108.63	3,283,651.86
14,439.00	91.42	266.37	6,802.14	-427.43	-8,095.70	40.509566	-104.479990	1,430,106.70	3,283,617.93
14,502.00	91.42	266.37	6,800.58	-431.41	-8,158.55	40.509557	-104.480217	1,430,102.71	3,283,555.08

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,502.00	6,800.58	-431.41	-8,158.55	Straight Line Projection to TD at 14,502' MD

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
TD	No Target (Freehand)	266.97	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
300.00	841.00	Surface Gyro	Flexi-Shot
917.00	7,010.00	MWD Surveys-Intermediate	MWD+IFR1+MS_WY
7,140.00	14,439.00	MWD Surveys-Production	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
844.00	843.99	9 5/8"	9-5/8	13-3/4
7,058.00	6,732.31	7"	7	8-3/4

Design Targets

Shape	Target Name	TVD (')	Northing (')	Easting (')	+N/-S	+E/-W	Created	Updated
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Directional Difficulty Index

Average Dogleg over Survey:	1.86 °/100usft	Maximum Dogleg over Survey:	13.72 °/100usft at 6,492.00 usft
Net Tortousity applicable to Plans:	1.09 °/100usft	Directional Difficulty Index:	6.679

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP AA04-13-B PAD) - NCLP AA06-62-1AHNC - 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 @ 4733.00usft (H&P 322). Northing and Easting are relative to NCLP AA06-62-1AHNC

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: 0.99996710

Grid Coordinates of Well: 1,430,534.11 usft N, 3,291,713.36 usft E

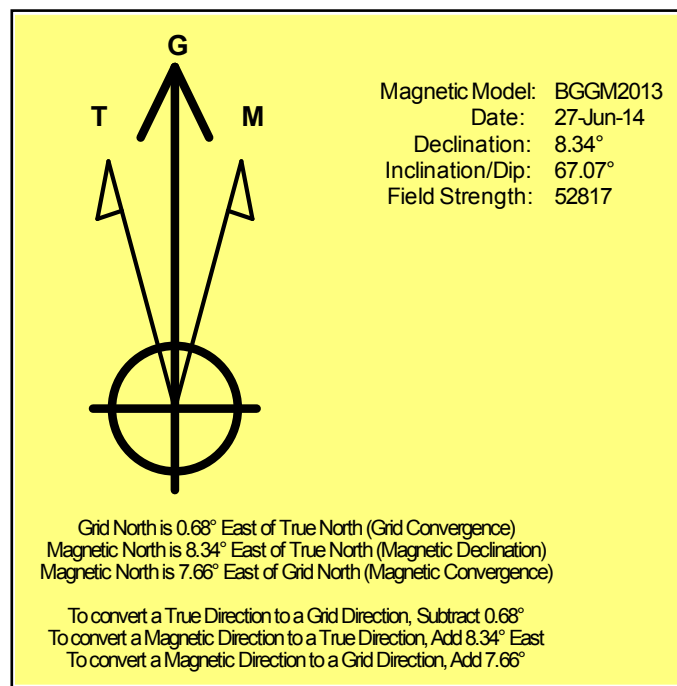
Geographical Coordinates of Well: 40° 30' 37.73" N, 104° 27' 03.10" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,502.00usft

the Bottom Hole Displacement is 8,169.95usft in the Direction of 266.97° (Grid).

Magnetic Convergence at surface is: -7.66° (27 June 2014, , BGGM2013)



Noble Energy

Weld County, CO (NAD 83)

Sec. 4-T6N-R63W (NCLP AA04-13-B PAD)

NCLP AA06-62-1AHNC

901286147

Plan A

Design: Field Surveys

Sperry Drilling Services

Geodetic Report

15 July, 2014

Well Coordinates: 1,430,534.11 N, 3,291,713.36 E (40° 30' 37.73" N, 104° 27' 03.10" W)

Ground Level: 4,709.00 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 AA06-62-1AHNC

RKB=24ft @ 4733.00usft (H&P 322)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON



Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.510480	-104.450860	1,430,534.11	3,291,713.36
300.00	0.20	61.67	300.00	0.25	0.46	40.510481	-104.450859	1,430,534.36	3,291,713.82
600.00	0.30	77.27	600.00	0.67	1.69	40.510482	-104.450854	1,430,534.78	3,291,715.05
841.00	0.40	312.57	840.99	1.38	1.68	40.510484	-104.450854	1,430,535.49	3,291,715.05
844.00	0.39	311.66	843.99	1.39	1.67	40.510484	-104.450854	1,430,535.50	3,291,715.03
917.00	0.26	275.03	916.99	1.57	1.32	40.510484	-104.450855	1,430,535.68	3,291,714.68
1,103.00	0.59	257.57	1,102.99	1.40	-0.04	40.510484	-104.450860	1,430,535.52	3,291,713.32
1,196.00	0.56	246.10	1,195.98	1.12	-0.92	40.510483	-104.450864	1,430,535.23	3,291,712.44
1,289.00	0.59	254.70	1,288.98	0.81	-1.80	40.510482	-104.450867	1,430,534.92	3,291,711.56
1,382.00	0.73	259.01	1,381.97	0.57	-2.84	40.510482	-104.450870	1,430,534.68	3,291,710.52
1,475.00	0.57	257.43	1,474.97	0.35	-3.88	40.510481	-104.450874	1,430,534.46	3,291,709.49
1,569.00	0.46	240.27	1,568.96	0.06	-4.66	40.510480	-104.450877	1,430,534.18	3,291,708.70
1,664.00	0.34	260.74	1,663.96	-0.17	-5.27	40.510480	-104.450879	1,430,533.94	3,291,708.09
1,759.00	0.58	263.42	1,758.96	-0.27	-6.03	40.510480	-104.450882	1,430,533.84	3,291,707.34
1,853.00	1.67	281.89	1,852.94	-0.04	-7.84	40.510480	-104.450888	1,430,534.07	3,291,705.52
1,948.00	3.11	252.16	1,947.86	-0.55	-11.65	40.510479	-104.450902	1,430,533.56	3,291,701.72
2,043.00	4.39	241.47	2,042.65	-3.07	-17.29	40.510472	-104.450923	1,430,531.04	3,291,696.07
2,138.00	4.80	232.01	2,137.35	-7.26	-23.62	40.510461	-104.450946	1,430,526.85	3,291,689.74
2,233.00	5.80	222.95	2,231.94	-13.22	-30.02	40.510445	-104.450969	1,430,520.89	3,291,683.34
2,327.00	6.48	218.74	2,325.40	-20.83	-36.58	40.510424	-104.450993	1,430,513.28	3,291,676.78
2,422.00	7.88	220.43	2,419.66	-29.97	-44.16	40.510399	-104.451020	1,430,504.14	3,291,669.21
2,517.00	9.22	218.05	2,513.60	-40.92	-53.07	40.510369	-104.451053	1,430,493.19	3,291,660.29
2,611.00	9.34	219.89	2,606.37	-52.70	-62.61	40.510337	-104.451088	1,430,481.41	3,291,650.76
2,706.00	9.04	219.98	2,700.15	-64.34	-72.35	40.510306	-104.451123	1,430,469.78	3,291,641.02
2,800.00	9.80	220.84	2,792.88	-76.05	-82.32	40.510274	-104.451160	1,430,458.07	3,291,631.04
2,895.00	10.05	218.81	2,886.46	-88.62	-92.80	40.510240	-104.451198	1,430,445.49	3,291,620.56
2,990.00	9.91	218.70	2,980.02	-101.46	-103.11	40.510205	-104.451235	1,430,432.65	3,291,610.26
3,084.00	8.92	220.16	3,072.75	-113.35	-112.87	40.510173	-104.451271	1,430,420.77	3,291,600.50
3,179.00	9.49	220.90	3,166.53	-124.89	-122.75	40.510141	-104.451307	1,430,409.22	3,291,590.62
3,274.00	8.53	221.67	3,260.36	-136.08	-132.56	40.510111	-104.451343	1,430,398.04	3,291,580.81
3,369.00	6.83	227.82	3,354.50	-145.13	-141.43	40.510086	-104.451375	1,430,388.98	3,291,571.94
3,464.00	5.06	220.34	3,448.99	-152.12	-148.33	40.510067	-104.451400	1,430,382.00	3,291,565.04
3,559.00	4.49	213.96	3,543.66	-158.40	-153.12	40.510050	-104.451418	1,430,375.72	3,291,560.25
3,653.00	3.97	217.26	3,637.40	-164.04	-157.14	40.510035	-104.451432	1,430,370.08	3,291,556.23
3,748.00	4.81	216.31	3,732.12	-169.87	-161.49	40.510019	-104.451448	1,430,364.25	3,291,551.88
3,843.00	5.40	214.36	3,826.75	-176.77	-166.37	40.510000	-104.451466	1,430,357.35	3,291,546.99
3,938.00	4.61	209.20	3,921.38	-183.79	-170.76	40.509981	-104.451482	1,430,350.33	3,291,542.61
4,033.00	3.18	196.28	4,016.16	-189.65	-173.36	40.509965	-104.451492	1,430,344.47	3,291,540.01
4,127.00	1.70	176.54	4,110.08	-193.55	-174.01	40.509954	-104.451494	1,430,340.57	3,291,539.36
4,222.00	1.08	109.37	4,205.05	-195.25	-173.08	40.509950	-104.451491	1,430,338.87	3,291,540.29
4,317.00	0.69	108.78	4,300.04	-195.73	-171.69	40.509948	-104.451486	1,430,338.39	3,291,541.68
4,412.00	1.77	129.43	4,395.02	-196.85	-170.02	40.509945	-104.451480	1,430,337.27	3,291,543.35

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
4,507.00	1.27	132.56	4,489.99	-198.49	-168.11	40.509941	-104.451473	1,430,335.63	3,291,545.26
4,602.00	1.76	93.23	4,584.96	-199.29	-165.88	40.509938	-104.451465	1,430,334.83	3,291,547.49
4,696.00	0.56	45.65	4,678.94	-199.05	-164.11	40.509939	-104.451459	1,430,335.07	3,291,549.26
4,790.00	1.24	81.97	4,772.92	-198.58	-162.77	40.509940	-104.451454	1,430,335.54	3,291,550.60
4,885.00	1.62	84.74	4,867.90	-198.32	-160.42	40.509941	-104.451446	1,430,335.80	3,291,552.95
4,980.00	1.48	32.50	4,962.86	-197.16	-158.42	40.509944	-104.451438	1,430,336.96	3,291,554.95
5,075.00	1.07	29.57	5,057.84	-195.35	-157.32	40.509949	-104.451434	1,430,338.77	3,291,556.05
5,169.00	0.79	334.36	5,151.83	-194.00	-157.17	40.509953	-104.451434	1,430,340.11	3,291,556.20
5,264.00	0.91	327.44	5,246.82	-192.78	-157.86	40.509956	-104.451436	1,430,341.34	3,291,555.51
5,358.00	0.91	309.37	5,340.81	-191.68	-158.84	40.509959	-104.451440	1,430,342.44	3,291,554.53
5,453.00	0.72	301.11	5,435.80	-190.89	-159.93	40.509961	-104.451443	1,430,343.23	3,291,553.44
5,548.00	0.25	86.66	5,530.80	-190.57	-160.24	40.509962	-104.451445	1,430,343.55	3,291,553.13
5,643.00	0.98	116.22	5,625.79	-190.91	-159.30	40.509961	-104.451441	1,430,343.20	3,291,554.07
5,738.00	0.49	138.91	5,720.78	-191.58	-158.30	40.509959	-104.451438	1,430,342.54	3,291,555.06
5,833.00	1.11	141.20	5,815.77	-192.60	-157.46	40.509957	-104.451435	1,430,341.51	3,291,555.91
5,928.00	0.98	151.73	5,910.76	-194.04	-156.50	40.509953	-104.451431	1,430,340.08	3,291,556.87
6,023.00	0.58	173.44	6,005.75	-195.23	-156.06	40.509949	-104.451430	1,430,338.89	3,291,557.31
6,113.00	0.41	115.27	6,095.75	-195.82	-155.72	40.509948	-104.451429	1,430,338.30	3,291,557.65
6,160.00	2.38	291.66	6,142.73	-195.53	-156.47	40.509948	-104.451431	1,430,338.59	3,291,556.90
6,208.00	6.00	285.38	6,190.60	-194.50	-159.82	40.509951	-104.451443	1,430,339.62	3,291,553.55
6,255.00	9.88	277.77	6,237.14	-193.30	-166.18	40.509955	-104.451466	1,430,340.82	3,291,547.18
6,302.00	13.45	273.64	6,283.16	-192.41	-175.64	40.509958	-104.451500	1,430,341.71	3,291,537.73
6,349.00	17.74	274.02	6,328.42	-191.56	-188.24	40.509960	-104.451545	1,430,342.56	3,291,525.13
6,397.00	22.78	276.10	6,373.44	-190.06	-204.79	40.509965	-104.451605	1,430,344.06	3,291,508.58
6,444.00	29.03	273.28	6,415.70	-188.44	-225.24	40.509970	-104.451678	1,430,345.68	3,291,488.13
6,492.00	35.51	271.07	6,456.26	-187.51	-250.83	40.509974	-104.451770	1,430,346.61	3,291,462.54
6,539.00	38.77	268.97	6,493.72	-187.52	-279.20	40.509974	-104.451872	1,430,346.60	3,291,434.17
6,587.00	42.38	268.76	6,530.18	-188.14	-310.41	40.509974	-104.451985	1,430,345.98	3,291,402.96
6,634.00	46.74	270.38	6,563.66	-188.37	-343.38	40.509974	-104.452103	1,430,345.75	3,291,369.99
6,682.00	51.18	270.74	6,595.17	-188.01	-379.57	40.509976	-104.452233	1,430,346.11	3,291,333.80
6,729.00	56.38	271.33	6,622.93	-187.32	-417.47	40.509979	-104.452369	1,430,346.80	3,291,295.91
6,777.00	61.73	270.87	6,647.60	-186.53	-458.62	40.509983	-104.452517	1,430,347.58	3,291,254.76
6,824.00	65.16	270.23	6,668.61	-186.13	-500.65	40.509985	-104.452669	1,430,347.98	3,291,212.73
6,872.00	68.69	268.61	6,687.42	-186.59	-544.80	40.509986	-104.452827	1,430,347.53	3,291,168.58
6,919.00	73.53	267.49	6,702.63	-188.11	-589.23	40.509983	-104.452987	1,430,346.01	3,291,124.16
6,967.00	75.96	268.35	6,715.26	-189.79	-635.50	40.509980	-104.453154	1,430,344.33	3,291,077.88
7,010.00	79.21	267.33	6,724.51	-191.37	-677.46	40.509977	-104.453305	1,430,342.75	3,291,035.93
7,058.00	82.08	268.74	6,732.31	-192.99	-724.79	40.509974	-104.453475	1,430,341.13	3,290,988.60
7,140.00	86.98	271.11	6,740.13	-193.09	-806.38	40.509976	-104.453768	1,430,341.03	3,290,907.01
7,235.00	88.24	269.81	6,744.09	-192.33	-901.29	40.509981	-104.454109	1,430,341.79	3,290,812.10
7,329.00	90.09	270.12	6,745.46	-192.39	-995.28	40.509984	-104.454447	1,430,341.73	3,290,718.12
7,424.00	90.55	272.20	6,744.93	-190.46	-1,090.25	40.509993	-104.454789	1,430,343.65	3,290,623.15

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
7,519.00	91.11	271.51	6,743.55	-187.39	-1,185.19	40.510004	-104.455130	1,430,346.73	3,290,528.21
7,614.00	89.69	269.19	6,742.89	-186.81	-1,280.18	40.510009	-104.455472	1,430,347.31	3,290,433.23
7,709.00	89.01	267.07	6,743.97	-189.91	-1,375.12	40.510003	-104.455813	1,430,344.21	3,290,338.29
7,804.00	88.61	265.28	6,745.94	-196.24	-1,469.88	40.509989	-104.456154	1,430,337.87	3,290,243.53
7,899.00	89.57	265.22	6,747.45	-204.11	-1,564.54	40.509971	-104.456495	1,430,330.01	3,290,148.87
7,994.00	89.17	265.28	6,748.50	-211.98	-1,659.21	40.509952	-104.456836	1,430,322.14	3,290,054.21
8,089.00	89.63	267.41	6,749.49	-218.03	-1,754.00	40.509938	-104.457177	1,430,316.09	3,289,959.42
8,183.00	89.11	267.00	6,750.52	-222.61	-1,847.89	40.509929	-104.457515	1,430,311.50	3,289,865.54
8,276.00	90.89	271.37	6,750.52	-223.94	-1,940.85	40.509928	-104.457849	1,430,310.18	3,289,772.58
8,369.00	91.36	271.05	6,748.70	-221.97	-2,033.81	40.509937	-104.458183	1,430,312.14	3,289,679.62
8,462.00	89.17	269.52	6,748.27	-221.51	-2,126.80	40.509941	-104.458518	1,430,312.61	3,289,586.63
8,555.00	89.85	270.83	6,749.06	-221.23	-2,219.79	40.509945	-104.458852	1,430,312.89	3,289,493.64
8,648.00	89.54	267.70	6,749.56	-222.42	-2,312.77	40.509944	-104.459186	1,430,311.70	3,289,400.67
8,741.00	88.74	264.23	6,750.95	-228.96	-2,405.52	40.509929	-104.459520	1,430,305.16	3,289,307.92
8,834.00	88.46	264.84	6,753.23	-237.82	-2,498.07	40.509908	-104.459853	1,430,296.30	3,289,215.38
8,927.00	91.02	266.86	6,753.65	-244.55	-2,590.81	40.509893	-104.460187	1,430,289.57	3,289,122.64
9,019.00	88.37	263.34	6,754.14	-252.40	-2,682.45	40.509874	-104.460517	1,430,281.72	3,289,031.00
9,112.00	88.83	263.94	6,756.41	-262.70	-2,774.85	40.509849	-104.460850	1,430,271.42	3,288,938.61
9,205.00	89.05	266.52	6,758.13	-270.43	-2,867.50	40.509830	-104.461183	1,430,263.69	3,288,845.95
9,298.00	91.23	268.47	6,757.90	-274.50	-2,960.40	40.509822	-104.461518	1,430,259.62	3,288,753.06
9,391.00	90.40	265.78	6,756.58	-279.16	-3,053.27	40.509813	-104.461852	1,430,254.96	3,288,660.20
9,485.00	89.38	266.87	6,756.76	-285.19	-3,147.07	40.509799	-104.462189	1,430,248.94	3,288,566.39
9,577.00	89.17	268.00	6,757.93	-289.30	-3,238.97	40.509791	-104.462520	1,430,244.82	3,288,474.50
9,671.00	90.40	270.35	6,758.28	-290.66	-3,332.95	40.509790	-104.462858	1,430,243.47	3,288,380.52
9,763.00	89.75	270.24	6,758.16	-290.18	-3,424.95	40.509794	-104.463189	1,430,243.94	3,288,288.53
9,856.00	90.34	271.01	6,758.09	-289.17	-3,517.94	40.509800	-104.463523	1,430,244.95	3,288,195.54
9,948.00	89.48	269.64	6,758.23	-288.65	-3,609.94	40.509804	-104.463854	1,430,245.48	3,288,103.54
10,042.00	87.22	269.19	6,760.94	-289.60	-3,703.89	40.509805	-104.464192	1,430,244.52	3,288,009.60
10,137.00	88.67	268.96	6,764.34	-291.14	-3,798.81	40.509804	-104.464533	1,430,242.98	3,287,914.68
10,232.00	90.52	269.02	6,765.01	-292.81	-3,893.79	40.509802	-104.464875	1,430,241.31	3,287,819.70
10,327.00	89.60	268.04	6,764.91	-295.25	-3,988.76	40.509798	-104.465216	1,430,238.87	3,287,724.74
10,421.00	89.23	267.59	6,765.87	-298.83	-4,082.68	40.509792	-104.465554	1,430,235.29	3,287,630.81
10,516.00	89.66	267.38	6,766.79	-303.00	-4,177.59	40.509783	-104.465896	1,430,231.12	3,287,535.91
10,611.00	91.26	268.46	6,766.03	-306.45	-4,272.52	40.509777	-104.466237	1,430,227.67	3,287,440.99
10,706.00	93.14	268.81	6,762.39	-308.71	-4,367.42	40.509774	-104.466579	1,430,225.41	3,287,346.09
10,801.00	93.05	268.96	6,757.26	-310.56	-4,462.26	40.509771	-104.466920	1,430,223.57	3,287,251.25
10,895.00	92.37	268.49	6,752.81	-312.65	-4,556.13	40.509769	-104.467257	1,430,221.48	3,287,157.38
10,990.00	92.53	268.96	6,748.75	-314.76	-4,651.02	40.509766	-104.467599	1,430,219.36	3,287,062.50
11,086.00	92.04	269.24	6,744.92	-316.26	-4,746.93	40.509765	-104.467944	1,430,217.86	3,286,966.59
11,180.00	88.95	269.49	6,744.11	-317.31	-4,840.91	40.509765	-104.468282	1,430,216.82	3,286,872.61
11,275.00	89.35	267.53	6,745.52	-319.78	-4,935.86	40.509761	-104.468623	1,430,214.35	3,286,777.66
11,370.00	89.35	266.54	6,746.60	-324.69	-5,030.73	40.509751	-104.468964	1,430,209.43	3,286,682.80

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
11,465.00	89.51	268.09	6,747.54	-329.14	-5,125.62	40.509742	-104.469306	1,430,204.98	3,286,587.91
11,560.00	89.69	265.86	6,748.21	-334.15	-5,220.48	40.509731	-104.469647	1,430,199.97	3,286,493.06
11,655.00	89.54	263.48	6,748.85	-342.98	-5,315.06	40.509710	-104.469988	1,430,191.15	3,286,398.48
11,750.00	89.38	264.57	6,749.74	-352.86	-5,409.53	40.509686	-104.470328	1,430,181.26	3,286,304.01
11,844.00	89.41	268.22	6,750.73	-358.77	-5,503.33	40.509672	-104.470665	1,430,175.35	3,286,210.22
11,939.00	89.69	271.10	6,751.48	-359.34	-5,598.31	40.509674	-104.471007	1,430,174.79	3,286,115.23
12,034.00	89.11	270.31	6,752.47	-358.17	-5,693.30	40.509680	-104.471348	1,430,175.96	3,286,020.25
12,129.00	87.78	270.46	6,755.05	-357.53	-5,788.26	40.509685	-104.471690	1,430,176.59	3,285,925.29
12,224.00	89.14	271.01	6,757.61	-356.31	-5,883.21	40.509691	-104.472031	1,430,177.81	3,285,830.34
12,319.00	86.85	269.30	6,760.93	-356.05	-5,978.15	40.509695	-104.472373	1,430,178.07	3,285,735.41
12,414.00	88.83	269.90	6,764.51	-356.72	-6,073.07	40.509696	-104.472714	1,430,177.41	3,285,640.49
12,509.00	89.32	268.56	6,766.04	-357.99	-6,168.05	40.509696	-104.473056	1,430,176.13	3,285,545.52
12,604.00	89.01	268.10	6,767.43	-360.76	-6,263.00	40.509691	-104.473397	1,430,173.36	3,285,450.57
12,699.00	88.74	265.13	6,769.29	-366.37	-6,357.80	40.509679	-104.473738	1,430,167.76	3,285,355.77
12,794.00	89.26	268.31	6,770.95	-371.80	-6,452.62	40.509667	-104.474080	1,430,162.32	3,285,260.96
12,889.00	89.23	268.71	6,772.20	-374.27	-6,547.58	40.509663	-104.474421	1,430,159.85	3,285,166.00
12,984.00	89.32	267.73	6,773.41	-377.22	-6,642.52	40.509658	-104.474763	1,430,156.90	3,285,071.06
13,078.00	88.37	267.79	6,775.30	-380.90	-6,736.43	40.509651	-104.475101	1,430,153.23	3,284,977.15
13,173.00	89.97	266.76	6,776.68	-385.41	-6,831.31	40.509641	-104.475442	1,430,148.71	3,284,882.28
13,268.00	90.83	267.67	6,776.01	-390.03	-6,926.19	40.509632	-104.475783	1,430,144.10	3,284,787.40
13,363.00	88.74	266.62	6,776.37	-394.76	-7,021.07	40.509622	-104.476125	1,430,139.37	3,284,692.52
13,458.00	89.38	266.82	6,777.93	-400.19	-7,115.90	40.509610	-104.476466	1,430,133.93	3,284,597.70
13,552.00	89.72	267.32	6,778.67	-405.00	-7,209.77	40.509600	-104.476804	1,430,129.13	3,284,503.83
13,647.00	86.85	267.79	6,781.51	-409.05	-7,304.64	40.509592	-104.477145	1,430,125.08	3,284,408.97
13,742.00	85.96	269.01	6,787.47	-411.70	-7,399.41	40.509587	-104.477486	1,430,122.43	3,284,314.20
13,837.00	85.84	267.78	6,794.26	-414.35	-7,494.13	40.509583	-104.477827	1,430,119.77	3,284,219.48
13,931.00	88.40	269.52	6,798.98	-416.56	-7,587.97	40.509580	-104.478164	1,430,117.56	3,284,125.64
14,026.00	89.23	270.36	6,800.95	-416.66	-7,682.95	40.509583	-104.478506	1,430,117.47	3,284,030.67
14,121.00	89.72	269.75	6,801.82	-416.57	-7,777.94	40.509586	-104.478847	1,430,117.56	3,283,935.68
14,215.00	88.80	268.00	6,803.03	-418.41	-7,871.91	40.509584	-104.479185	1,430,115.71	3,283,841.71
14,310.00	90.03	268.18	6,804.00	-421.58	-7,966.85	40.509578	-104.479527	1,430,112.55	3,283,746.77
14,405.00	91.26	267.10	6,802.93	-425.49	-8,061.76	40.509570	-104.479868	1,430,108.63	3,283,651.86
14,439.00	91.42	266.37	6,802.14	-427.43	-8,095.70	40.509566	-104.479990	1,430,106.70	3,283,617.93
14,502.00	91.42	266.37	6,800.58	-431.41	-8,158.55	40.509557	-104.480217	1,430,102.71	3,283,555.08

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
14,502.00	6,800.58	-431.41	-8,158.55	Straight Line Projection to TD at 14,502' MD

Design Report for NCLP AA06-62-1AHNC - Field Surveys

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
TD	No Target (Freehand)	266.97	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
300.00	841.00	Surface Gyro	Flexi-Shot
917.00	7,010.00	MWD Surveys-Intermediate	MWD+IFR1+MS_WY
7,140.00	14,439.00	MWD Surveys-Production	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
844.00	843.99	9 5/8"	9-5/8	13-3/4
7,058.00	6,732.31	7"	7	8-3/4

Design Targets

Shape	Target Name	TVD (')	Northing (')	Easting (')	+N/-S	+E/-W	Created	Updated
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Directional Difficulty Index

Average Dogleg over Survey:	1.86 °/100usft	Maximum Dogleg over Survey:	13.72 °/100usft at 6,492.00 usft
Net Tortosity applicable to Plans:	1.09 °/100usft	Directional Difficulty Index:	6.679

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Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (NCLP AA04-13-B PAD) - NCLP AA06-62-1AHNC - 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 @ 4733.00usft (H&P 322). Northing and Easting are relative to NCLP AA06-62-1AHNC

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: 0.99996710

Grid Coordinates of Well: 1,430,534.11 usft N, 3,291,713.36 usft E

Geographical Coordinates of Well: 40° 30' 37.73" N, 104° 27' 03.10" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,502.00usft

the Bottom Hole Displacement is 8,169.95usft in the Direction of 266.97° (Grid).

Magnetic Convergence at surface is: -7.66° (27 June 2014, , BGGM2013)

