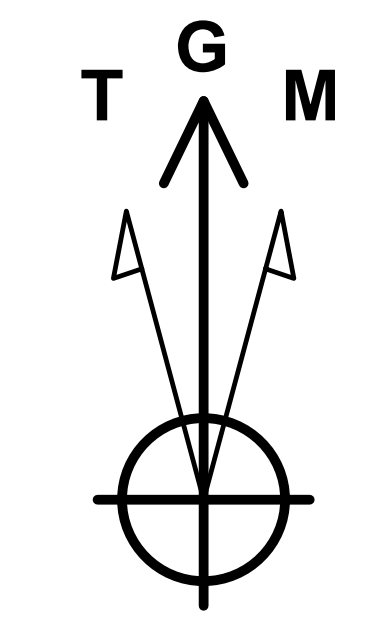


WELL DETAILS
Ground Level: 5471.00
+N/-S 0.00 +E/-W 0.00 Northing 1158182.37 Easting 3219303.92 Latitude 39.7649299 Longitude -104.7198800

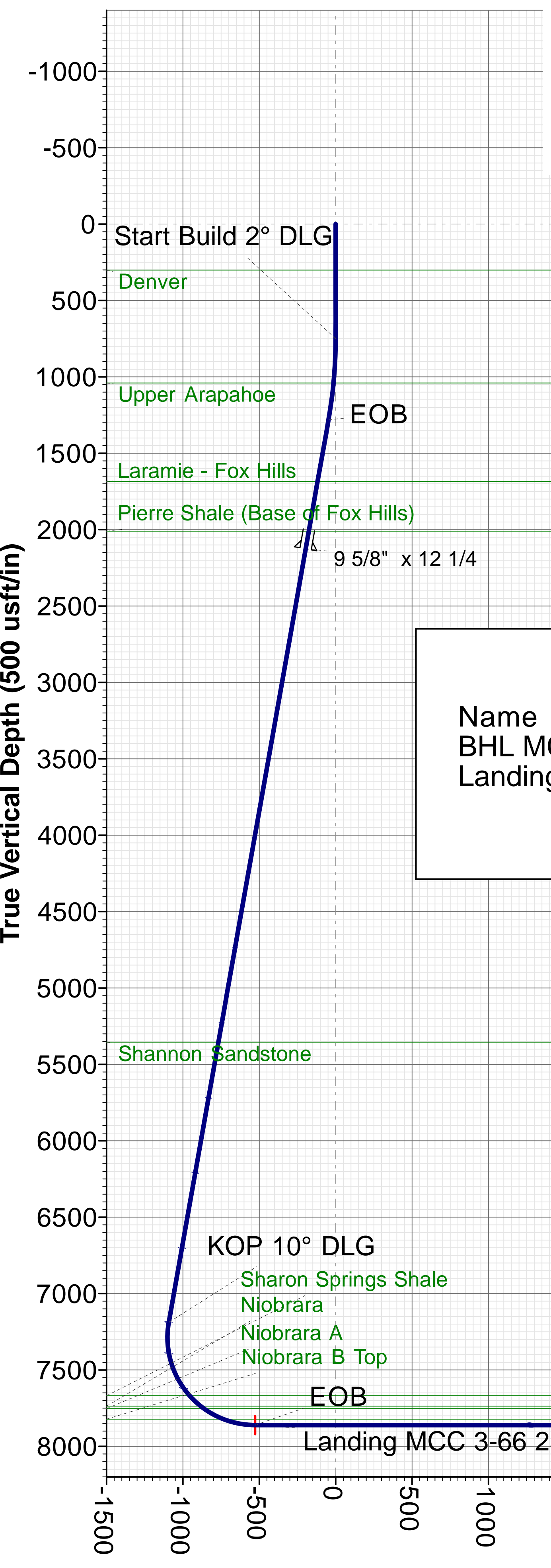
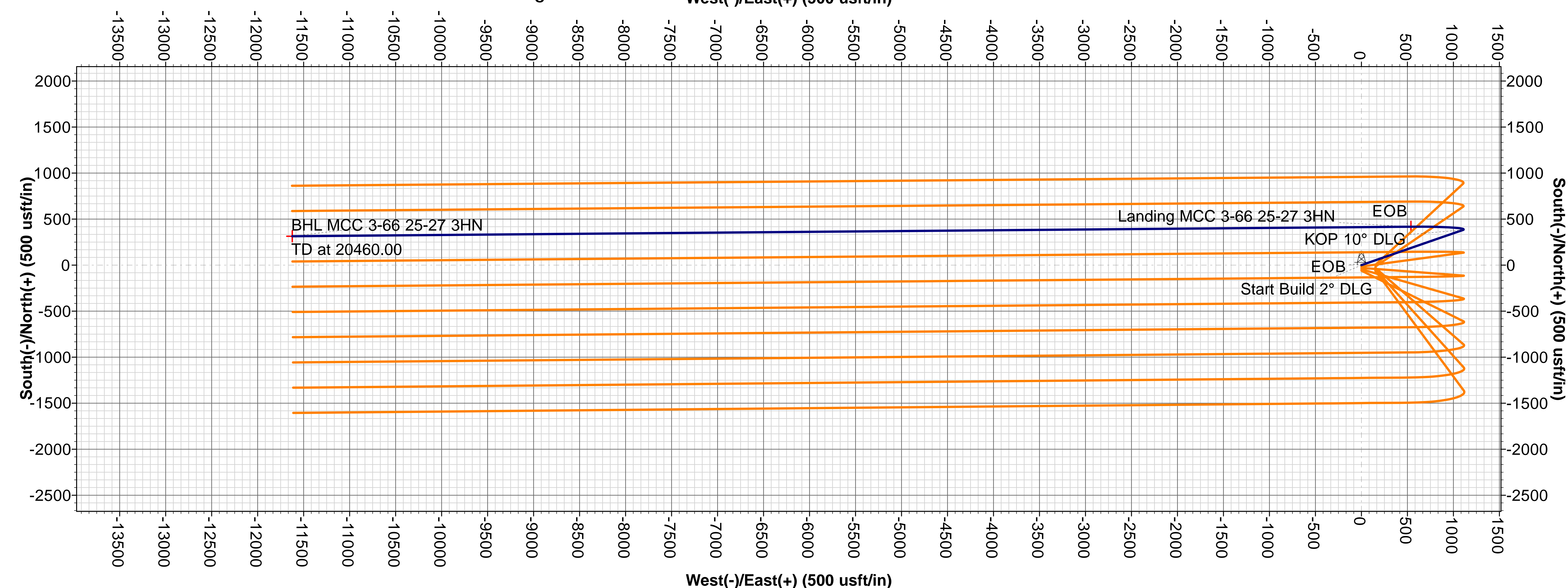
Project: Adams County Co (NAD 83)
Site: Adams Unit (North)
Well: MCC 3-66 25-27 3HN
Wellbore: MCC 3-66 25-27 3HN
Design: MCC 3-66 25-27 3HN Wp 1.0
Rig: West(-)/East(+) (500 usft/in)



Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: Colorado Northern Zone
5471' GL + 20' KB @ 5491.00usft
Ground Level: 5471.00

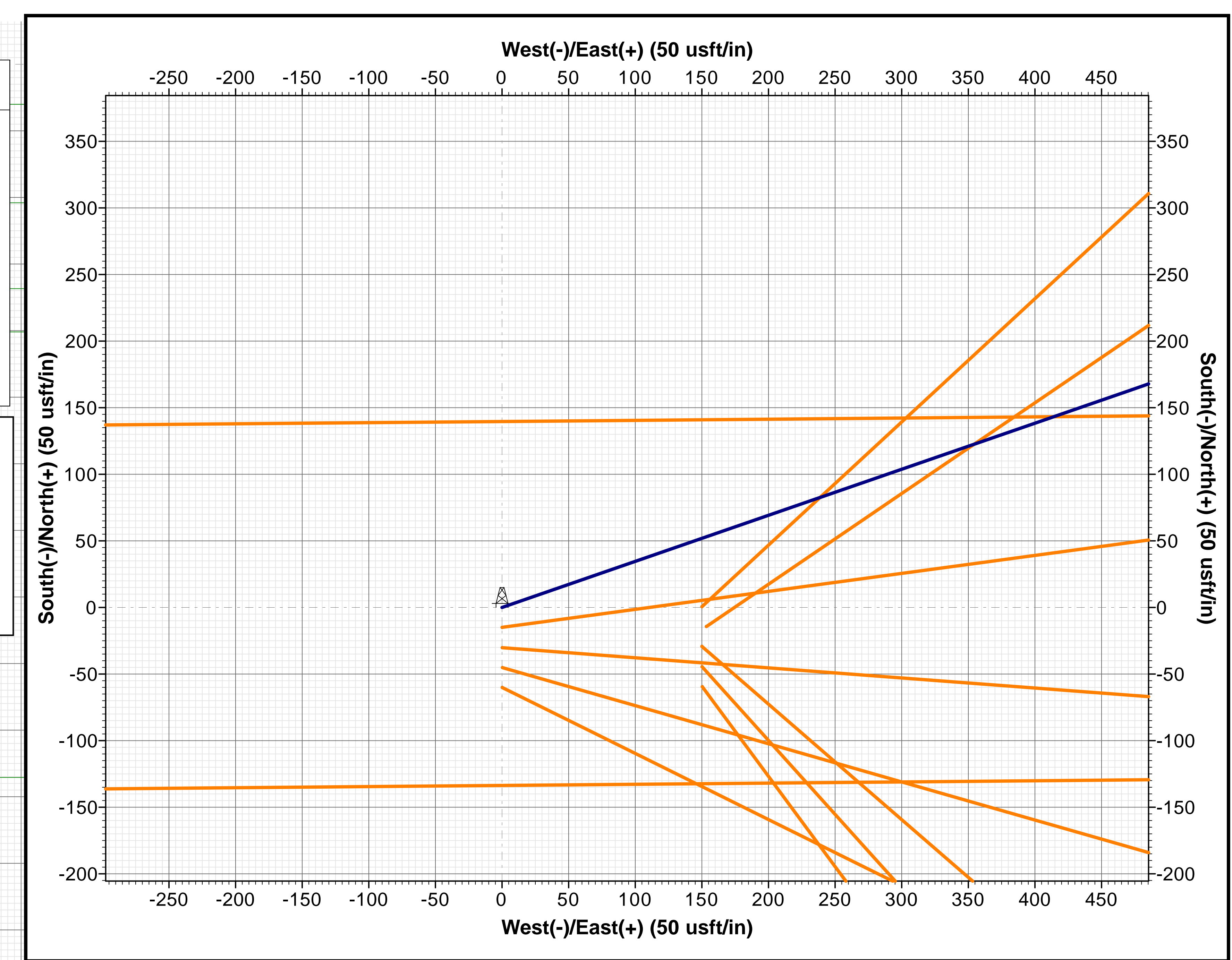


Azimuths to Grid North
True North: -0.50°
Magnetic North: 7.78°
Magnetic Field
Strength: 52000.2snT
Dip Angle: 66.38°
Date: 11/4/2017
Model: BGGM2017



SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2° DLG
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	EOB
1285.43	10.71	70.92	1282.31	16.31	47.15	2.00	70.92	-46.69	KOP 10° DLG
7296.14	10.71	70.92	7188.36	381.38	1102.67	0.00	0.00	-1091.98	EOB
8297.58	90.00	269.51	7861.00	417.13	538.34	10.00	-161.10	-526.90	EOB
20460.00	90.00	269.51	7861.00	313.56	-11623.64	0.00	0.00	11627.87	TD at 20460.00

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL MCC 3-66 25-27 3HN	7861.00	313.56	-11623.64	1158495.93	3207680.27	39.7660640	-104.7612170
Landing MCC 3-66 25-27 3HN	7861.00	417.13	538.34	1158599.49	3219842.26	39.7660620	-104.7179520



GMT

Adams County Co (NAD 83) Adams Unit (North)

API#

MCC 3-66 25-27 3HN

MCC 3-66 25-27 3HN

Plan: MCC 3-66 25-27 3HN Wp 1.0

Please review plan for SCC Application or Non-Mag Spacing.

Highlighted plan sections are within the Short Collar Correction (SCC) Instability Zone

Sperry Drilling Services

Combo Report

08 November, 2017

Well Coordinates: 39° 45' 53.75" N
104° 43' 11.57" W

North American Datum 1983
Colorado Northern Zone
1,158,182.37 N
3,219,303.92 E

Ground Level: 5,471.00 usft

Local Coordinate Origin:

Centered on Well MCC 3-66 25-27 3HN

Viewing Datum:

5471' GL + 20' KB @ 5491.00usft

TVDs to System:

N

North Reference:

Grid

Unit System:

. Two Dec (API US Survey)

Version: 5000.1 Build: 81D

Report Version: Midcon Combo v1.11

HALLIBURTON

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
0.00	0.00	0.00	-5,491.00	0.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
100.00	0.00	0.00	-5,391.00	100.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
200.00	0.00	0.00	-5,291.00	200.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
300.00	0.00	0.00	-5,191.00	300.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
301.00	0.00	0.00	-5,190.00	301.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	Denver
400.00	0.00	0.00	-5,091.00	400.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
500.00	0.00	0.00	-4,991.00	500.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
600.00	0.00	0.00	-4,891.00	600.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
700.00	0.00	0.00	-4,791.00	700.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	
750.00	0.00	0.00	-4,741.00	750.00	0.00 N	0.00 E	1,158,182.37	3,219,303.92	0.00	0.00	Start Build 2° DLG
800.00	1.00	70.92	-4,691.00	800.00	0.14 N	0.41 E	1,158,182.51	3,219,304.33	2.00	-0.41	
900.00	3.00	70.92	-4,591.07	899.93	1.28 N	3.71 E	1,158,183.65	3,219,307.63	2.00	-3.67	
1,000.00	5.00	70.92	-4,491.32	999.68	3.56 N	10.30 E	1,158,185.93	3,219,314.22	2.00	-10.20	
1,040.50	5.81	70.92	-4,451.00	1,040.00	4.81 N	13.91 E	1,158,187.18	3,219,317.82	2.00	-13.77	Upper Arapahoe
1,100.00	7.00	70.92	-4,391.87	1,099.13	6.98 N	20.18 E	1,158,189.35	3,219,324.10	2.00	-19.99	
1,200.00	9.00	70.92	-4,292.85	1,198.15	11.53 N	33.33 E	1,158,193.90	3,219,337.25	2.00	-33.01	
1,285.43	10.71	70.92	-4,208.69	1,282.31	16.31 N	47.15 E	1,158,198.67	3,219,351.07	2.00	-46.69	EOB
1,300.00	10.71	70.92	-4,194.37	1,296.63	17.19 N	49.71 E	1,158,199.56	3,219,353.62	0.00	-49.23	
1,400.00	10.71	70.92	-4,096.11	1,394.89	23.27 N	67.27 E	1,158,205.63	3,219,371.19	0.00	-66.62	
1,500.00	10.71	70.92	-3,997.85	1,493.15	29.34 N	84.83 E	1,158,211.71	3,219,388.75	0.00	-84.01	
1,600.00	10.71	70.92	-3,899.59	1,591.41	35.41 N	102.39 E	1,158,217.78	3,219,406.31	0.00	-101.40	
1,695.25	10.71	70.92	-3,806.00	1,685.00	41.20 N	119.12 E	1,158,223.57	3,219,423.03	0.00	-117.96	Laramie - Fox Hills
1,700.00	10.71	70.92	-3,801.33	1,689.67	41.49 N	119.95 E	1,158,223.85	3,219,423.87	0.00	-118.79	
1,800.00	10.71	70.92	-3,703.07	1,787.93	47.56 N	137.51 E	1,158,229.93	3,219,441.43	0.00	-136.18	
1,900.00	10.71	70.92	-3,604.81	1,886.19	53.63 N	155.07 E	1,158,236.00	3,219,458.99	0.00	-153.57	
2,000.00	10.71	70.92	-3,506.56	1,984.44	59.71 N	172.63 E	1,158,242.07	3,219,476.55	0.00	-170.96	
2,026.01	10.71	70.92	-3,481.00	2,010.00	61.29 N	177.20 E	1,158,243.65	3,219,481.12	0.00	-175.48	Pierre Shale (Base of Fox Hills)
2,100.00	10.71	70.92	-3,408.30	2,082.70	65.78 N	190.19 E	1,158,248.15	3,219,494.11	0.00	-188.35	
2,144.00	10.71	70.92	-3,365.06	2,125.94	68.45 N	197.92 E	1,158,250.82	3,219,501.84	0.00	-196.00	9 5/8" x 12 1/4
2,200.00	10.71	70.92	-3,310.04	2,180.96	71.86 N	207.75 E	1,158,254.22	3,219,511.67	0.00	-205.74	
2,300.00	10.71	70.92	-3,211.78	2,279.22	77.93 N	225.31 E	1,158,260.30	3,219,529.23	0.00	-223.13	
2,400.00	10.71	70.92	-3,113.52	2,377.48	84.00 N	242.88 E	1,158,266.37	3,219,546.79	0.00	-240.52	
2,500.00	10.71	70.92	-3,015.26	2,475.74	90.08 N	260.44 E	1,158,272.44	3,219,564.35	0.00	-257.91	
2,600.00	10.71	70.92	-2,917.00	2,574.00	96.15 N	278.00 E	1,158,278.52	3,219,581.91	0.00	-275.30	
2,700.00	10.71	70.92	-2,818.75	2,672.25	102.22 N	295.56 E	1,158,284.59	3,219,599.47	0.00	-292.69	
2,800.00	10.71	70.92	-2,720.49	2,770.51	108.30 N	313.12 E	1,158,290.66	3,219,617.03	0.00	-310.08	
2,900.00	10.71	70.92	-2,622.23	2,868.77	114.37 N	330.68 E	1,158,296.74	3,219,634.59	0.00	-327.47	
3,000.00	10.71	70.92	-2,523.97	2,967.03	120.44 N	348.24 E	1,158,302.81	3,219,652.15	0.00	-344.86	
3,100.00	10.71	70.92	-2,425.71	3,065.29	126.52 N	365.80 E	1,158,308.88	3,219,669.72	0.00	-362.25	
3,200.00	10.71	70.92	-2,327.45	3,163.55	132.59 N	383.36 E	1,158,314.96	3,219,687.28	0.00	-379.65	
3,300.00	10.71	70.92	-2,229.20	3,261.80	138.67 N	400.92 E	1,158,321.03	3,219,704.84	0.00	-397.04	

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
3,400.00	10.71	70.92	-2,130.94	3,360.06	144.74 N	418.48 E	1,158,327.11	3,219,722.40	0.00	-414.43	
3,500.00	10.71	70.92	-2,032.68	3,458.32	150.81 N	436.04 E	1,158,333.18	3,219,739.96	0.00	-431.82	
3,600.00	10.71	70.92	-1,934.42	3,556.58	156.89 N	453.60 E	1,158,339.25	3,219,757.52	0.00	-449.21	
3,700.00	10.71	70.92	-1,836.16	3,654.84	162.96 N	471.16 E	1,158,345.33	3,219,775.08	0.00	-466.60	
3,800.00	10.71	70.92	-1,737.90	3,753.10	169.03 N	488.72 E	1,158,351.40	3,219,792.64	0.00	-483.99	
3,900.00	10.71	70.92	-1,639.64	3,851.36	175.11 N	506.28 E	1,158,357.47	3,219,810.20	0.00	-501.38	
4,000.00	10.71	70.92	-1,541.39	3,949.61	181.18 N	523.84 E	1,158,363.55	3,219,827.76	0.00	-518.77	
4,100.00	10.71	70.92	-1,443.13	4,047.87	187.26 N	541.41 E	1,158,369.62	3,219,845.32	0.00	-536.16	
4,200.00	10.71	70.92	-1,344.87	4,146.13	193.33 N	558.97 E	1,158,375.70	3,219,862.88	0.00	-553.55	
4,300.00	10.71	70.92	-1,246.61	4,244.39	199.40 N	576.53 E	1,158,381.77	3,219,880.44	0.00	-570.94	
4,400.00	10.71	70.92	-1,148.35	4,342.65	205.48 N	594.09 E	1,158,387.84	3,219,898.00	0.00	-588.33	
4,500.00	10.71	70.92	-1,050.09	4,440.91	211.55 N	611.65 E	1,158,393.92	3,219,915.56	0.00	-605.72	
4,600.00	10.71	70.92	-951.83	4,539.17	217.62 N	629.21 E	1,158,399.99	3,219,933.12	0.00	-623.11	
4,700.00	10.71	70.92	-853.58	4,637.42	223.70 N	646.77 E	1,158,406.06	3,219,950.68	0.00	-640.50	
4,800.00	10.71	70.92	-755.32	4,735.68	229.77 N	664.33 E	1,158,412.14	3,219,968.25	0.00	-657.89	
4,900.00	10.71	70.92	-657.06	4,833.94	235.84 N	681.89 E	1,158,418.21	3,219,985.81	0.00	-675.28	
5,000.00	10.71	70.92	-558.80	4,932.20	241.92 N	699.45 E	1,158,424.28	3,220,003.37	0.00	-692.67	
5,100.00	10.71	70.92	-460.54	5,030.46	247.99 N	717.01 E	1,158,430.36	3,220,020.93	0.00	-710.06	
5,200.00	10.71	70.92	-362.28	5,128.72	254.07 N	734.57 E	1,158,436.43	3,220,038.49	0.00	-727.45	
5,300.00	10.71	70.92	-264.02	5,226.98	260.14 N	752.13 E	1,158,442.51	3,220,056.05	0.00	-744.84	
5,400.00	10.71	70.92	-165.77	5,325.23	266.21 N	769.69 E	1,158,448.58	3,220,073.61	0.00	-762.23	
5,430.29	10.71	70.92	-136.00	5,355.00	268.05 N	775.01 E	1,158,450.42	3,220,078.93	0.00	-767.50	Shannon Sandstone
5,500.00	10.71	70.92	-67.51	5,423.49	272.29 N	787.25 E	1,158,454.65	3,220,091.17	0.00	-779.62	
5,600.00	10.71	70.92	30.75	5,521.75	278.36 N	804.81 E	1,158,460.73	3,220,108.73	0.00	-797.02	
5,700.00	10.71	70.92	129.01	5,620.01	284.43 N	822.37 E	1,158,466.80	3,220,126.29	0.00	-814.41	
5,800.00	10.71	70.92	227.27	5,718.27	290.51 N	839.94 E	1,158,472.87	3,220,143.85	0.00	-831.80	
5,900.00	10.71	70.92	325.53	5,816.53	296.58 N	857.50 E	1,158,478.95	3,220,161.41	0.00	-849.19	
6,000.00	10.71	70.92	423.78	5,914.78	302.65 N	875.06 E	1,158,485.02	3,220,178.97	0.00	-866.58	
6,100.00	10.71	70.92	522.04	6,013.04	308.73 N	892.62 E	1,158,491.09	3,220,196.53	0.00	-883.97	
6,200.00	10.71	70.92	620.30	6,111.30	314.80 N	910.18 E	1,158,497.17	3,220,214.09	0.00	-901.36	
6,300.00	10.71	70.92	718.56	6,209.56	320.88 N	927.74 E	1,158,503.24	3,220,231.65	0.00	-918.75	
6,400.00	10.71	70.92	816.82	6,307.82	326.95 N	945.30 E	1,158,509.32	3,220,249.21	0.00	-936.14	
6,500.00	10.71	70.92	915.08	6,406.08	333.02 N	962.86 E	1,158,515.39	3,220,266.78	0.00	-953.53	
6,600.00	10.71	70.92	1,013.34	6,504.34	339.10 N	980.42 E	1,158,521.46	3,220,284.34	0.00	-970.92	
6,700.00	10.71	70.92	1,111.59	6,602.59	345.17 N	997.98 E	1,158,527.54	3,220,301.90	0.00	-988.31	
6,800.00	10.71	70.92	1,209.85	6,700.85	351.24 N	1,015.54 E	1,158,533.61	3,220,319.46	0.00	-1,005.70	
6,900.00	10.71	70.92	1,308.11	6,799.11	357.32 N	1,033.10 E	1,158,539.68	3,220,337.02	0.00	-1,023.09	
7,000.00	10.71	70.92	1,406.37	6,897.37	363.39 N	1,050.66 E	1,158,545.76	3,220,354.58	0.00	-1,040.48	
7,100.00	10.71	70.92	1,504.63	6,995.63	369.47 N	1,068.22 E	1,158,551.83	3,220,372.14	0.00	-1,057.87	
7,200.00	10.71	70.92	1,602.89	7,093.89	375.54 N	1,085.78 E	1,158,557.91	3,220,389.70	0.00	-1,075.26	
7,296.14	10.71	70.92	1,697.36	7,188.36	381.38 N	1,102.67 E	1,158,563.74	3,220,406.58	0.00	-1,091.98	KOP 10° DLG

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured	Grid	TVD below	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Comments	
Depth (usft)	Inclination (°)	Azimuth (°)	System (usft)	Depth (usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	Rate (°/100usft)		Section (usft)
7,300.00	10.34	70.23	1,701.15	7,192.15	381.61 N	1,103.33 E	1,158,563.98	3,220,407.25	10.00	-1,092.64	
7,400.00	3.46	355.50	1,800.50	7,291.50	387.67 N	1,111.56 E	1,158,570.04	3,220,415.48	10.00	-1,100.71	
7,500.00	10.80	287.93	1,899.77	7,390.77	393.58 N	1,102.39 E	1,158,575.95	3,220,406.31	10.00	-1,091.37	
7,600.00	20.52	278.78	1,995.96	7,486.96	399.16 N	1,076.08 E	1,158,581.52	3,220,380.00	10.00	-1,064.93	
7,700.00	30.42	275.41	2,086.13	7,577.13	404.23 N	1,033.45 E	1,158,586.59	3,220,337.37	10.00	-1,022.17	
7,800.00	40.36	273.58	2,167.55	7,658.55	408.65 N	975.78 E	1,158,591.01	3,220,279.70	10.00	-964.41	
7,813.86	41.74	273.39	2,178.00	7,669.00	409.20 N	966.70 E	1,158,591.57	3,220,270.61	10.00	-955.31	Sharon Springs Shale
7,900.00	50.33	272.38	2,237.75	7,728.75	412.27 N	904.83 E	1,158,594.64	3,220,208.74	10.00	-893.38	
7,913.11	51.64	272.25	2,246.00	7,737.00	412.69 N	894.65 E	1,158,595.05	3,220,198.56	10.00	-883.19	Niobrara
7,939.68	54.28	272.00	2,262.00	7,753.00	413.47 N	873.46 E	1,158,595.84	3,220,177.38	10.00	-861.99	Niobrara A
8,000.00	60.30	271.48	2,294.58	7,785.58	415.00 N	822.75 E	1,158,597.37	3,220,126.67	10.00	-811.26	
8,084.77	68.76	270.85	2,331.00	7,822.00	416.55 N	746.31 E	1,158,598.91	3,220,050.22	10.00	-734.80	Niobrara B Top
8,100.00	70.28	270.75	2,336.33	7,827.33	416.75 N	732.04 E	1,158,599.11	3,220,035.95	10.00	-720.53	
8,200.00	80.26	270.11	2,361.73	7,852.73	417.46 N	635.45 E	1,158,599.82	3,219,939.37	10.00	-623.96	
8,297.58	90.00	269.51	2,370.00	7,861.00	417.13 N	538.34 E	1,158,599.49	3,219,842.26	10.00	-526.90	EOB - Landing MCC 3-66 25-27 3HN
8,300.00	90.00	269.51	2,370.00	7,861.00	417.11 N	535.92 E	1,158,599.47	3,219,839.84	0.00	-524.48	
8,400.00	90.00	269.51	2,370.00	7,861.00	416.26 N	435.92 E	1,158,598.62	3,219,739.84	0.00	-424.54	
8,500.00	90.00	269.51	2,370.00	7,861.00	415.40 N	335.93 E	1,158,597.77	3,219,639.84	0.00	-324.60	
8,600.00	90.00	269.51	2,370.00	7,861.00	414.55 N	235.93 E	1,158,596.92	3,219,539.85	0.00	-224.67	
8,700.00	90.00	269.51	2,370.00	7,861.00	413.70 N	135.93 E	1,158,596.07	3,219,439.85	0.00	-124.73	
8,800.00	90.00	269.51	2,370.00	7,861.00	412.85 N	35.94 E	1,158,595.22	3,219,339.85	0.00	-24.79	
8,900.00	90.00	269.51	2,370.00	7,861.00	412.00 N	64.06 W	1,158,594.36	3,219,239.86	0.00	75.14	
9,000.00	90.00	269.51	2,370.00	7,861.00	411.15 N	164.05 W	1,158,593.51	3,219,139.86	0.00	175.08	
9,100.00	90.00	269.51	2,370.00	7,861.00	410.29 N	264.05 W	1,158,592.66	3,219,039.87	0.00	275.02	
9,200.00	90.00	269.51	2,370.00	7,861.00	409.44 N	364.05 W	1,158,591.81	3,218,939.87	0.00	374.96	
9,300.00	90.00	269.51	2,370.00	7,861.00	408.59 N	464.04 W	1,158,590.96	3,218,839.87	0.00	474.89	
9,400.00	90.00	269.51	2,370.00	7,861.00	407.74 N	564.04 W	1,158,590.11	3,218,739.88	0.00	574.83	
9,500.00	90.00	269.51	2,370.00	7,861.00	406.89 N	664.04 W	1,158,589.25	3,218,639.88	0.00	674.77	
9,600.00	90.00	269.51	2,370.00	7,861.00	406.04 N	764.03 W	1,158,588.40	3,218,539.88	0.00	774.70	
9,700.00	90.00	269.51	2,370.00	7,861.00	405.19 N	864.03 W	1,158,587.55	3,218,439.89	0.00	874.64	
9,800.00	90.00	269.51	2,370.00	7,861.00	404.33 N	964.03 W	1,158,586.70	3,218,339.89	0.00	974.58	
9,900.00	90.00	269.51	2,370.00	7,861.00	403.48 N	1,064.02 W	1,158,585.85	3,218,239.89	0.00	1,074.52	
10,000.00	90.00	269.51	2,370.00	7,861.00	402.63 N	1,164.02 W	1,158,585.00	3,218,139.90	0.00	1,174.45	
10,100.00	90.00	269.51	2,370.00	7,861.00	401.78 N	1,264.01 W	1,158,584.15	3,218,039.90	0.00	1,274.39	
10,200.00	90.00	269.51	2,370.00	7,861.00	400.93 N	1,364.01 W	1,158,583.29	3,217,939.91	0.00	1,374.33	
10,300.00	90.00	269.51	2,370.00	7,861.00	400.08 N	1,464.01 W	1,158,582.44	3,217,839.91	0.00	1,474.26	
10,400.00	90.00	269.51	2,370.00	7,861.00	399.22 N	1,564.00 W	1,158,581.59	3,217,739.91	0.00	1,574.20	
10,500.00	90.00	269.51	2,370.00	7,861.00	398.37 N	1,664.00 W	1,158,580.74	3,217,639.92	0.00	1,674.14	
10,600.00	90.00	269.51	2,370.00	7,861.00	397.52 N	1,764.00 W	1,158,579.89	3,217,539.92	0.00	1,774.07	
10,700.00	90.00	269.51	2,370.00	7,861.00	396.67 N	1,863.99 W	1,158,579.04	3,217,439.92	0.00	1,874.01	
10,800.00	90.00	269.51	2,370.00	7,861.00	395.82 N	1,963.99 W	1,158,578.18	3,217,339.93	0.00	1,973.95	

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
10,900.00	90.00	269.51	2,370.00	7,861.00	394.97 N	2,063.99 W	1,158,577.33	3,217,239.93	0.00	2,073.89	
11,000.00	90.00	269.51	2,370.00	7,861.00	394.12 N	2,163.98 W	1,158,576.48	3,217,139.93	0.00	2,173.82	
11,100.00	90.00	269.51	2,370.00	7,861.00	393.26 N	2,263.98 W	1,158,575.63	3,217,039.94	0.00	2,273.76	
11,200.00	90.00	269.51	2,370.00	7,861.00	392.41 N	2,363.97 W	1,158,574.78	3,216,939.94	0.00	2,373.70	
11,300.00	90.00	269.51	2,370.00	7,861.00	391.56 N	2,463.97 W	1,158,573.93	3,216,839.95	0.00	2,473.63	
11,400.00	90.00	269.51	2,370.00	7,861.00	390.71 N	2,563.97 W	1,158,573.08	3,216,739.95	0.00	2,573.57	
11,500.00	90.00	269.51	2,370.00	7,861.00	389.86 N	2,663.96 W	1,158,572.22	3,216,639.95	0.00	2,673.51	
11,600.00	90.00	269.51	2,370.00	7,861.00	389.01 N	2,763.96 W	1,158,571.37	3,216,539.96	0.00	2,773.44	
11,700.00	90.00	269.51	2,370.00	7,861.00	388.15 N	2,863.96 W	1,158,570.52	3,216,439.96	0.00	2,873.38	
11,800.00	90.00	269.51	2,370.00	7,861.00	387.30 N	2,963.95 W	1,158,569.67	3,216,339.96	0.00	2,973.32	
11,900.00	90.00	269.51	2,370.00	7,861.00	386.45 N	3,063.95 W	1,158,568.82	3,216,239.97	0.00	3,073.26	
12,000.00	90.00	269.51	2,370.00	7,861.00	385.60 N	3,163.95 W	1,158,567.97	3,216,139.97	0.00	3,173.19	
12,100.00	90.00	269.51	2,370.00	7,861.00	384.75 N	3,263.94 W	1,158,567.11	3,216,039.97	0.00	3,273.13	
12,200.00	90.00	269.51	2,370.00	7,861.00	383.90 N	3,363.94 W	1,158,566.26	3,215,939.98	0.00	3,373.07	
12,300.00	90.00	269.51	2,370.00	7,861.00	383.05 N	3,463.93 W	1,158,565.41	3,215,839.98	0.00	3,473.00	
12,400.00	90.00	269.51	2,370.00	7,861.00	382.19 N	3,563.93 W	1,158,564.56	3,215,739.98	0.00	3,572.94	
12,500.00	90.00	269.51	2,370.00	7,861.00	381.34 N	3,663.93 W	1,158,563.71	3,215,639.99	0.00	3,672.88	
12,600.00	90.00	269.51	2,370.00	7,861.00	380.49 N	3,763.92 W	1,158,562.86	3,215,539.99	0.00	3,772.82	
12,700.00	90.00	269.51	2,370.00	7,861.00	379.64 N	3,863.92 W	1,158,562.01	3,215,440.00	0.00	3,872.75	
12,800.00	90.00	269.51	2,370.00	7,861.00	378.79 N	3,963.92 W	1,158,561.15	3,215,340.00	0.00	3,972.69	
12,900.00	90.00	269.51	2,370.00	7,861.00	377.94 N	4,063.91 W	1,158,560.30	3,215,240.00	0.00	4,072.63	
13,000.00	90.00	269.51	2,370.00	7,861.00	377.08 N	4,163.91 W	1,158,559.45	3,215,140.01	0.00	4,172.56	
13,100.00	90.00	269.51	2,370.00	7,861.00	376.23 N	4,263.91 W	1,158,558.60	3,215,040.01	0.00	4,272.50	
13,200.00	90.00	269.51	2,370.00	7,861.00	375.38 N	4,363.90 W	1,158,557.75	3,214,940.01	0.00	4,372.44	
13,300.00	90.00	269.51	2,370.00	7,861.00	374.53 N	4,463.90 W	1,158,556.90	3,214,840.02	0.00	4,472.37	
13,400.00	90.00	269.51	2,370.00	7,861.00	373.68 N	4,563.89 W	1,158,556.04	3,214,740.02	0.00	4,572.31	
13,500.00	90.00	269.51	2,370.00	7,861.00	372.83 N	4,663.89 W	1,158,555.19	3,214,640.02	0.00	4,672.25	
13,600.00	90.00	269.51	2,370.00	7,861.00	371.98 N	4,763.89 W	1,158,554.34	3,214,540.03	0.00	4,772.19	
13,700.00	90.00	269.51	2,370.00	7,861.00	371.12 N	4,863.88 W	1,158,553.49	3,214,440.03	0.00	4,872.12	
13,800.00	90.00	269.51	2,370.00	7,861.00	370.27 N	4,963.88 W	1,158,552.64	3,214,340.04	0.00	4,972.06	
13,900.00	90.00	269.51	2,370.00	7,861.00	369.42 N	5,063.88 W	1,158,551.79	3,214,240.04	0.00	5,072.00	
14,000.00	90.00	269.51	2,370.00	7,861.00	368.57 N	5,163.87 W	1,158,550.94	3,214,140.04	0.00	5,171.93	
14,100.00	90.00	269.51	2,370.00	7,861.00	367.72 N	5,263.87 W	1,158,550.08	3,214,040.05	0.00	5,271.87	
14,200.00	90.00	269.51	2,370.00	7,861.00	366.87 N	5,363.87 W	1,158,549.23	3,213,940.05	0.00	5,371.81	
14,300.00	90.00	269.51	2,370.00	7,861.00	366.01 N	5,463.86 W	1,158,548.38	3,213,840.05	0.00	5,471.75	
14,400.00	90.00	269.51	2,370.00	7,861.00	365.16 N	5,563.86 W	1,158,547.53	3,213,740.06	0.00	5,571.68	
14,500.00	90.00	269.51	2,370.00	7,861.00	364.31 N	5,663.85 W	1,158,546.68	3,213,640.06	0.00	5,671.62	
14,600.00	90.00	269.51	2,370.00	7,861.00	363.46 N	5,763.85 W	1,158,545.83	3,213,540.06	0.00	5,771.56	
14,700.00	90.00	269.51	2,370.00	7,861.00	362.61 N	5,863.85 W	1,158,544.97	3,213,440.07	0.00	5,871.49	
14,800.00	90.00	269.51	2,370.00	7,861.00	361.76 N	5,963.84 W	1,158,544.12	3,213,340.07	0.00	5,971.43	
14,900.00	90.00	269.51	2,370.00	7,861.00	360.91 N	6,063.84 W	1,158,543.27	3,213,240.08	0.00	6,071.37	

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
15,000.00	90.00	269.51	2,370.00	7,861.00	360.05 N	6,163.84 W	1,158,542.42	3,213,140.08	0.00	6,171.30	
15,100.00	90.00	269.51	2,370.00	7,861.00	359.20 N	6,263.83 W	1,158,541.57	3,213,040.08	0.00	6,271.24	
15,200.00	90.00	269.51	2,370.00	7,861.00	358.35 N	6,363.83 W	1,158,540.72	3,212,940.09	0.00	6,371.18	
15,300.00	90.00	269.51	2,370.00	7,861.00	357.50 N	6,463.83 W	1,158,539.87	3,212,840.09	0.00	6,471.12	
15,400.00	90.00	269.51	2,370.00	7,861.00	356.65 N	6,563.82 W	1,158,539.01	3,212,740.09	0.00	6,571.05	
15,500.00	90.00	269.51	2,370.00	7,861.00	355.80 N	6,663.82 W	1,158,538.16	3,212,640.10	0.00	6,670.99	
15,600.00	90.00	269.51	2,370.00	7,861.00	354.94 N	6,763.82 W	1,158,537.31	3,212,540.10	0.00	6,770.93	
15,700.00	90.00	269.51	2,370.00	7,861.00	354.09 N	6,863.81 W	1,158,536.46	3,212,440.10	0.00	6,870.86	
15,800.00	90.00	269.51	2,370.00	7,861.00	353.24 N	6,963.81 W	1,158,535.61	3,212,340.11	0.00	6,970.80	
15,900.00	90.00	269.51	2,370.00	7,861.00	352.39 N	7,063.80 W	1,158,534.76	3,212,240.11	0.00	7,070.74	
16,000.00	90.00	269.51	2,370.00	7,861.00	351.54 N	7,163.80 W	1,158,533.91	3,212,140.12	0.00	7,170.68	
16,100.00	90.00	269.51	2,370.00	7,861.00	350.69 N	7,263.80 W	1,158,533.05	3,212,040.12	0.00	7,270.61	
16,200.00	90.00	269.51	2,370.00	7,861.00	349.84 N	7,363.79 W	1,158,532.20	3,211,940.12	0.00	7,370.55	
16,300.00	90.00	269.51	2,370.00	7,861.00	348.98 N	7,463.79 W	1,158,531.35	3,211,840.13	0.00	7,470.49	
16,400.00	90.00	269.51	2,370.00	7,861.00	348.13 N	7,563.79 W	1,158,530.50	3,211,740.13	0.00	7,570.42	
16,500.00	90.00	269.51	2,370.00	7,861.00	347.28 N	7,663.78 W	1,158,529.65	3,211,640.13	0.00	7,670.36	
16,600.00	90.00	269.51	2,370.00	7,861.00	346.43 N	7,763.78 W	1,158,528.80	3,211,540.14	0.00	7,770.30	
16,700.00	90.00	269.51	2,370.00	7,861.00	345.58 N	7,863.78 W	1,158,527.94	3,211,440.14	0.00	7,870.23	
16,800.00	90.00	269.51	2,370.00	7,861.00	344.73 N	7,963.77 W	1,158,527.09	3,211,340.14	0.00	7,970.17	
16,900.00	90.00	269.51	2,370.00	7,861.00	343.87 N	8,063.77 W	1,158,526.24	3,211,240.15	0.00	8,070.11	
17,000.00	90.00	269.51	2,370.00	7,861.00	343.02 N	8,163.76 W	1,158,525.39	3,211,140.15	0.00	8,170.05	
17,100.00	90.00	269.51	2,370.00	7,861.00	342.17 N	8,263.76 W	1,158,524.54	3,211,040.16	0.00	8,269.98	
17,200.00	90.00	269.51	2,370.00	7,861.00	341.32 N	8,363.76 W	1,158,523.69	3,210,940.16	0.00	8,369.92	
17,300.00	90.00	269.51	2,370.00	7,861.00	340.47 N	8,463.75 W	1,158,522.84	3,210,840.16	0.00	8,469.86	
17,400.00	90.00	269.51	2,370.00	7,861.00	339.62 N	8,563.75 W	1,158,521.98	3,210,740.17	0.00	8,569.79	
17,500.00	90.00	269.51	2,370.00	7,861.00	338.77 N	8,663.75 W	1,158,521.13	3,210,640.17	0.00	8,669.73	
17,600.00	90.00	269.51	2,370.00	7,861.00	337.91 N	8,763.74 W	1,158,520.28	3,210,540.17	0.00	8,769.67	
17,700.00	90.00	269.51	2,370.00	7,861.00	337.06 N	8,863.74 W	1,158,519.43	3,210,440.18	0.00	8,869.60	
17,800.00	90.00	269.51	2,370.00	7,861.00	336.21 N	8,963.74 W	1,158,518.58	3,210,340.18	0.00	8,969.54	
17,900.00	90.00	269.51	2,370.00	7,861.00	335.36 N	9,063.73 W	1,158,517.73	3,210,240.18	0.00	9,069.48	
18,000.00	90.00	269.51	2,370.00	7,861.00	334.51 N	9,163.73 W	1,158,516.87	3,210,140.19	0.00	9,169.42	
18,100.00	90.00	269.51	2,370.00	7,861.00	333.66 N	9,263.72 W	1,158,516.02	3,210,040.19	0.00	9,269.35	
18,200.00	90.00	269.51	2,370.00	7,861.00	332.81 N	9,363.72 W	1,158,515.17	3,209,940.20	0.00	9,369.29	
18,300.00	90.00	269.51	2,370.00	7,861.00	331.95 N	9,463.72 W	1,158,514.32	3,209,840.20	0.00	9,469.23	
18,400.00	90.00	269.51	2,370.00	7,861.00	331.10 N	9,563.71 W	1,158,513.47	3,209,740.20	0.00	9,569.16	
18,500.00	90.00	269.51	2,370.00	7,861.00	330.25 N	9,663.71 W	1,158,512.62	3,209,640.21	0.00	9,669.10	
18,600.00	90.00	269.51	2,370.00	7,861.00	329.40 N	9,763.71 W	1,158,511.77	3,209,540.21	0.00	9,769.04	
18,700.00	90.00	269.51	2,370.00	7,861.00	328.55 N	9,863.70 W	1,158,510.91	3,209,440.21	0.00	9,868.98	
18,800.00	90.00	269.51	2,370.00	7,861.00	327.70 N	9,963.70 W	1,158,510.06	3,209,340.22	0.00	9,968.91	
18,900.00	90.00	269.51	2,370.00	7,861.00	326.84 N	10,063.70 W	1,158,509.21	3,209,240.22	0.00	10,068.85	
19,000.00	90.00	269.51	2,370.00	7,861.00	325.99 N	10,163.69 W	1,158,508.36	3,209,140.22	0.00	10,168.79	

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
19,100.00	90.00	269.51	2,370.00	7,861.00	325.14 N	10,263.69 W	1,158,507.51	3,209,040.23	0.00	10,268.72	
19,200.00	90.00	269.51	2,370.00	7,861.00	324.29 N	10,363.68 W	1,158,506.66	3,208,940.23	0.00	10,368.66	
19,300.00	90.00	269.51	2,370.00	7,861.00	323.44 N	10,463.68 W	1,158,505.80	3,208,840.24	0.00	10,468.60	
19,400.00	90.00	269.51	2,370.00	7,861.00	322.59 N	10,563.68 W	1,158,504.95	3,208,740.24	0.00	10,568.53	
19,500.00	90.00	269.51	2,370.00	7,861.00	321.74 N	10,663.67 W	1,158,504.10	3,208,640.24	0.00	10,668.47	
19,600.00	90.00	269.51	2,370.00	7,861.00	320.88 N	10,763.67 W	1,158,503.25	3,208,540.25	0.00	10,768.41	
19,700.00	90.00	269.51	2,370.00	7,861.00	320.03 N	10,863.67 W	1,158,502.40	3,208,440.25	0.00	10,868.35	
19,800.00	90.00	269.51	2,370.00	7,861.00	319.18 N	10,963.66 W	1,158,501.55	3,208,340.25	0.00	10,968.28	
19,900.00	90.00	269.51	2,370.00	7,861.00	318.33 N	11,063.66 W	1,158,500.70	3,208,240.26	0.00	11,068.22	
20,000.00	90.00	269.51	2,370.00	7,861.00	317.48 N	11,163.66 W	1,158,499.84	3,208,140.26	0.00	11,168.16	
20,100.00	90.00	269.51	2,370.00	7,861.00	316.63 N	11,263.65 W	1,158,498.99	3,208,040.26	0.00	11,268.09	
20,200.00	90.00	269.51	2,370.00	7,861.00	315.77 N	11,363.65 W	1,158,498.14	3,207,940.27	0.00	11,368.03	
20,300.00	90.00	269.51	2,370.00	7,861.00	314.92 N	11,463.64 W	1,158,497.29	3,207,840.27	0.00	11,467.97	
20,400.00	90.00	269.51	2,370.00	7,861.00	314.07 N	11,563.64 W	1,158,496.44	3,207,740.28	0.00	11,567.91	
20,460.00	90.00	269.51	2,370.00	7,861.00	313.56 N	11,623.64 W	1,158,495.93	3,207,680.28	0.00	11,627.87	TD at 20460.00 - 5 1/2 x 8 1/2 Hole - BHL MCC 3-66 25-27 3HN

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
750.00	750.00	0.00	0.00	Start Build 2° DLG
1,285.43	1,282.31	16.31	47.15	EOB
7,296.14	7,188.36	381.38	1,102.67	KOP 10° DLG
8,297.58	7,861.00	417.13	538.34	EOB
20,460.00	7,861.00	313.56	-11,623.64	TD at 20460.00

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
TD	No Target (Freehand)	271.55	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	8,297.00	MCC 3-66 25-27 3HN Wp 1.0	2_MWD
8,297.00	20,460.00	MCC 3-66 25-27 3HN Wp 1.0	2_MWD+IFR1+MS

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,144.00	2,125.94	9 5/8" x 12 1/4	9-5/8	12-1/4
20,460.00	7,861.00	5 1/2 x 8 1/2 Hole	5-1/2	8-1/2

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	TVDSS (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
301.00	301.00	-5,190.00	Denver			
1,040.50	1,040.00	-4,451.00	Upper Arapahoe			
1,695.25	1,685.00	-3,806.00	Laramie - Fox Hills			
2,026.01	2,010.00	-3,481.00	Pierre Shale (Base of Fox Hills)			
5,430.29	5,355.00	-136.00	Shannon Sandstone			
7,813.86	7,669.00	2,178.00	Sharon Springs Shale			
7,913.11	7,737.00	2,246.00	Niobrara			
7,939.68	7,753.00	2,262.00	Niobrara A			
8,084.76	7,822.00	2,331.00	Niobrara B Top			

Design 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
BHL MCC 3-66 25-27 3HN ()									
- plan hits target center	0.00	0.00	7,861.00	313.56	-11,623.64	1,158,495.93	3,207,680.27	39.7660640	-104.7612170
- Point									
Landing MCC 3-66 25-27 3HN ()									
- plan hits target center	0.00	0.00	7,861.00	417.13	538.34	1,158,599.49	3,219,842.26	39.7660620	-104.7179520
- Point									

Plan Report for MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN Wp 1.0

Directional Difficulty Index

Average Dogleg over Survey: 0.54 °/100usft

Maximum Dogleg over Survey: 10.00 °/100usft at 8,297.58
usft

Net Tortosity applicable to Plans: 0.54 °/100usft

Directional Difficulty Index: 6.872

Audit Info

North Reference Sheet for Adams Unit (North) - MCC 3-66 25-27 3HN - MCC 3-66 25-27 3HN

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

Vertical Depths are relative to 5471' GL + 20' KB @ 5491.00usft. Northing and Easting are relative to MCC 3-66 25-27 3HN

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 -105.5000000°, Longitude Origin:0.0000000°, Latitude Origin:40.7833333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99999256

Grid Coordinates of Well: 1,158,182.37 usft N, 3,219,303.92 usft E

Geographical Coordinates of Well: 39° 45' 53.75" N, 104° 43' 11.57" W

Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 20,460.00usft
the Bottom Hole Displacement is 11,627.87usft in the Direction of 271.55° (Grid).

Magnetic Convergence at surface is: -7.78° (4 November 2017, , BGGM2017)

