

WELL DETAILS  
Ground Level: 5472.00  
+N/-S 0.00 +E/-W 0.00 Northing 1158122.27 Easting 3219304.16 Latitude 39.7647650 Longitude -104.7198810

Project: Adams County Co (NAD 83)  
Site: Adams Unit ( North )  
Well: MCC 3-66 25-27 7HN  
Wellbore: MCC 3-66 25-27 7HN  
Design: MCC 3-66 25-27 7HN Wp 1.0  
Rig: West(-)/East(+) (500 usft/in)

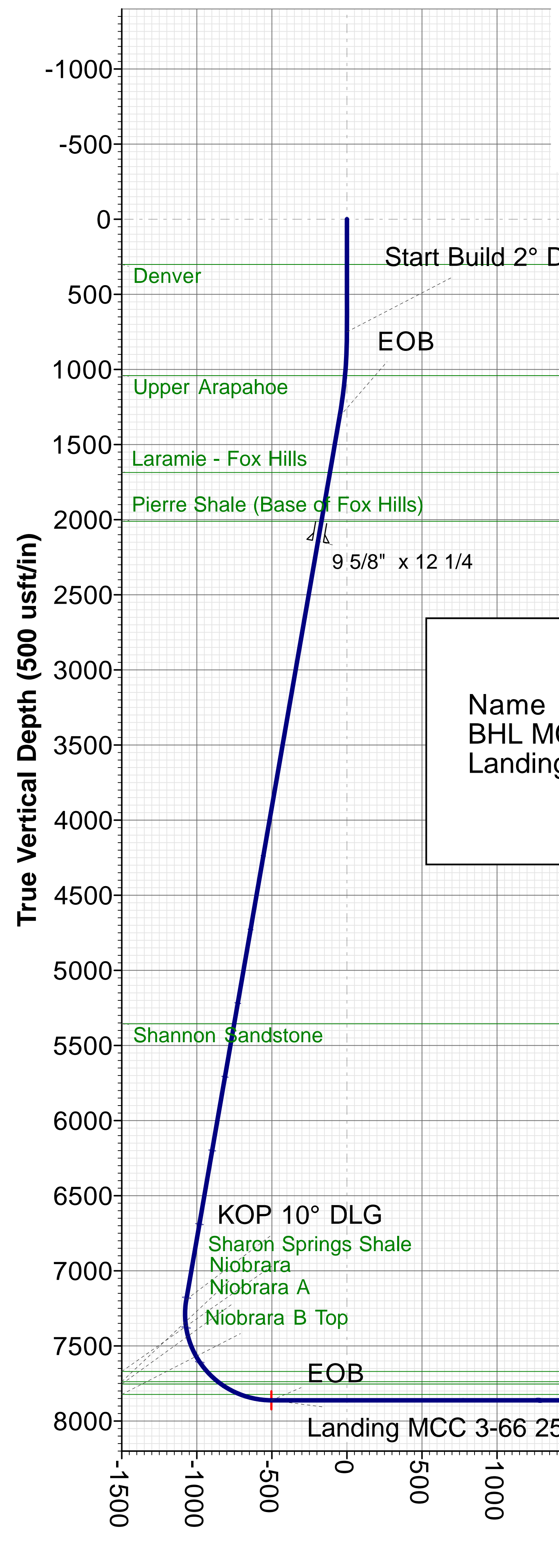
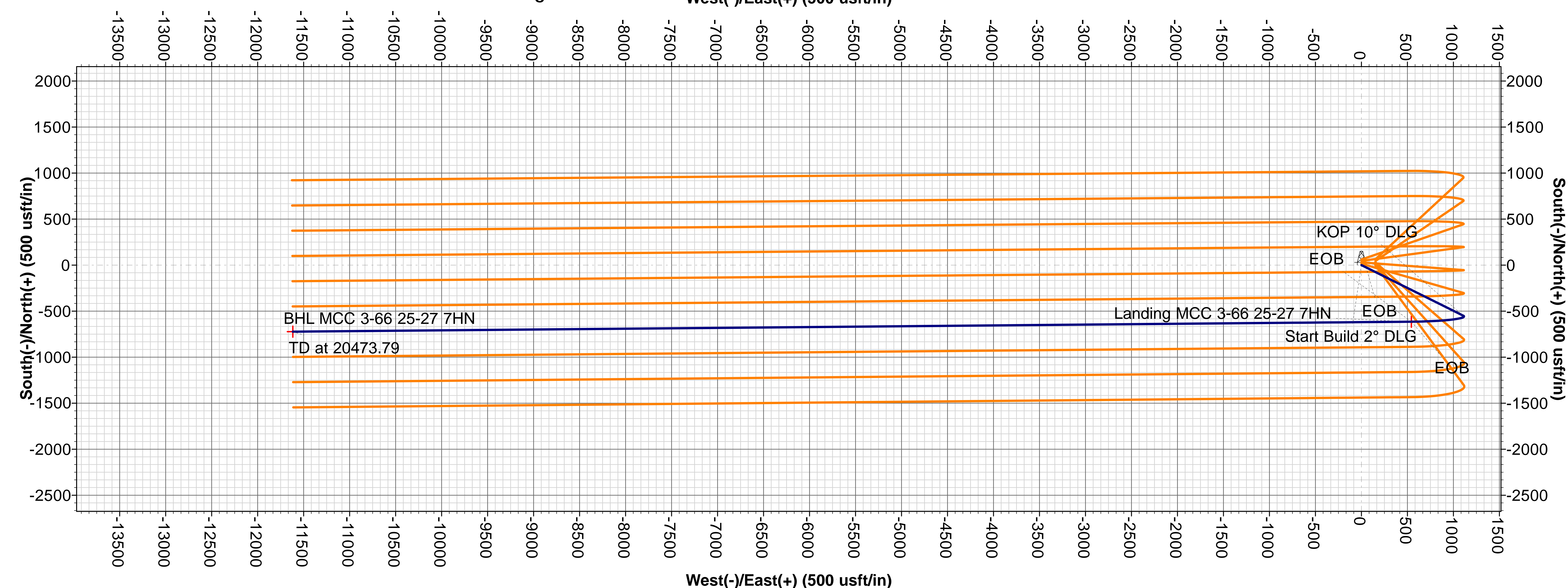


Map System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone Name: Colorado Northern Zone  
5472' GL + 20' KB @ 5492.00usft  
Ground Level: 5472.00

**GMT**

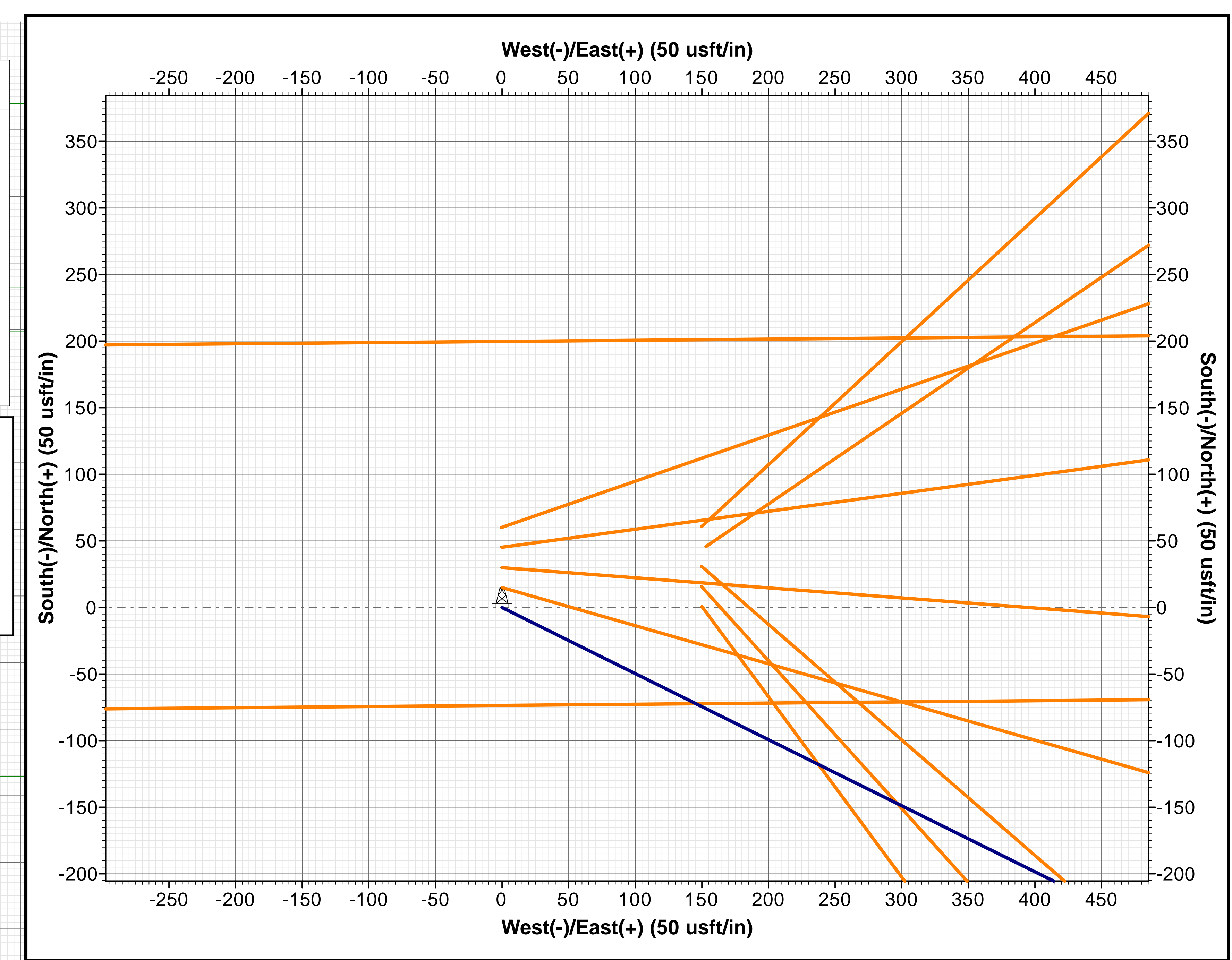
**Azimuths to Grid North**  
True North: -0.50°  
Magnetic North: 7.78°

**Magnetic Field**  
Strength: 52000.1snT  
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	
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	Start Build 2° DLG
1317.08	11.34	116.39	1313.38	-24.87	50.11	2.00	116.39	-48.47	EOB
7312.08	11.34	116.39	7191.32	-548.96	1106.18	0.00	0.00	-1069.94	KOP 10° DLG
8313.09	90.00	269.49	7862.00	-614.85	542.66	10.00	152.64	-503.42	EOB
20473.79	90.00	269.49	7862.00	-723.14	-11617.56	0.00	0.00	11640.05	TD at 20473.79

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL MCC 3-66 25-27 7HN	7862.00	-723.14	-11617.56	1157399.13	3207686.60	39.7630530	-104.7612270
Landing MCC 3-66 25-27 7HN	7862.00	-614.85	542.66	1157507.41	3219846.83	39.7630640	-104.7179700



# GMT

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

API#

**MCC 3-66 25-27 7HN**

**MCC 3-66 25-27 7HN**

**Plan: MCC 3-66 25-27 7HN 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' 53.15" N  
104° 43' 11.57" W

North American Datum 1983  
Colorado Northern Zone  
1,158,122.27 N  
3,219,304.16 E

Ground Level: 5,472.00 usft

Local Coordinate Origin:

Centered on Well MCC 3-66 25-27 7HN

Viewing Datum:

5472' GL + 20' KB @ 5492.00usft

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 7HN - MCC 3-66 25-27 7HN 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	-5,492.00	0.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
100.00	0.00	0.00	-5,392.00	100.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
200.00	0.00	0.00	-5,292.00	200.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
300.00	0.00	0.00	-5,192.00	300.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
302.00	0.00	0.00	-5,190.00	302.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	Denver
400.00	0.00	0.00	-5,092.00	400.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
500.00	0.00	0.00	-4,992.00	500.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
600.00	0.00	0.00	-4,892.00	600.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
700.00	0.00	0.00	-4,792.00	700.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	
750.00	0.00	0.00	-4,742.00	750.00	0.00 N	0.00 E	1,158,122.27	3,219,304.16	0.00	0.00	Start Build 2° DLG
800.00	1.00	116.39	-4,692.00	800.00	0.19 S	0.39 E	1,158,122.07	3,219,304.55	2.00	-0.38	
900.00	3.00	116.39	-4,592.07	899.93	1.75 S	3.52 E	1,158,120.52	3,219,307.68	2.00	-3.40	
1,000.00	5.00	116.39	-4,492.32	999.68	4.85 S	9.77 E	1,158,117.42	3,219,313.93	2.00	-9.45	
1,041.50	5.83	116.39	-4,451.00	1,041.00	6.59 S	13.27 E	1,158,115.68	3,219,317.44	2.00	-12.84	Upper Arapahoe
1,100.00	7.00	116.39	-4,392.87	1,099.13	9.49 S	19.13 E	1,158,112.77	3,219,323.29	2.00	-18.50	
1,200.00	9.00	116.39	-4,293.85	1,198.15	15.68 S	31.59 E	1,158,106.59	3,219,335.76	2.00	-30.56	
1,300.00	11.00	116.39	-4,195.37	1,296.63	23.40 S	47.15 E	1,158,098.87	3,219,351.31	2.00	-45.60	
1,317.08	11.34	116.39	-4,178.62	1,313.38	24.87 S	50.11 E	1,158,097.40	3,219,354.28	2.00	-48.47	EOB
1,400.00	11.34	116.39	-4,097.32	1,394.68	32.12 S	64.72 E	1,158,090.15	3,219,368.88	0.00	-62.60	
1,500.00	11.34	116.39	-3,999.27	1,492.73	40.86 S	82.33 E	1,158,081.41	3,219,386.50	0.00	-79.64	
1,600.00	11.34	116.39	-3,901.22	1,590.78	49.60 S	99.95 E	1,158,072.66	3,219,404.11	0.00	-96.68	
1,697.12	11.34	116.39	-3,806.00	1,686.00	58.09 S	117.06 E	1,158,064.17	3,219,421.22	0.00	-113.22	Laramie - Fox Hills
1,700.00	11.34	116.39	-3,803.17	1,688.83	58.34 S	117.57 E	1,158,063.92	3,219,421.73	0.00	-113.71	
1,800.00	11.34	116.39	-3,705.13	1,786.87	67.09 S	135.18 E	1,158,055.18	3,219,439.35	0.00	-130.75	
1,900.00	11.34	116.39	-3,607.08	1,884.92	75.83 S	152.80 E	1,158,046.44	3,219,456.96	0.00	-147.79	
2,000.00	11.34	116.39	-3,509.03	1,982.97	84.57 S	170.41 E	1,158,037.70	3,219,474.58	0.00	-164.83	
2,028.59	11.34	116.39	-3,481.00	2,011.00	87.07 S	175.45 E	1,158,035.20	3,219,479.61	0.00	-169.70	Pierre Shale (Base of Fox Hills)
2,100.00	11.34	116.39	-3,410.98	2,081.02	93.31 S	188.03 E	1,158,028.95	3,219,492.19	0.00	-181.87	
2,164.00	11.34	116.39	-3,348.23	2,143.77	98.91 S	199.30 E	1,158,023.36	3,219,503.47	0.00	-192.77	9 5/8" x 12 1/4
2,200.00	11.34	116.39	-3,312.94	2,179.06	102.06 S	205.64 E	1,158,020.21	3,219,509.81	0.00	-198.91	
2,300.00	11.34	116.39	-3,214.89	2,277.11	110.80 S	223.26 E	1,158,011.47	3,219,527.42	0.00	-215.95	
2,400.00	11.34	116.39	-3,116.84	2,375.16	119.54 S	240.88 E	1,158,002.73	3,219,545.04	0.00	-232.98	
2,500.00	11.34	116.39	-3,018.80	2,473.20	128.28 S	258.49 E	1,157,993.98	3,219,562.66	0.00	-250.02	
2,600.00	11.34	116.39	-2,920.75	2,571.25	137.02 S	276.11 E	1,157,985.24	3,219,580.27	0.00	-267.06	
2,700.00	11.34	116.39	-2,822.70	2,669.30	145.77 S	293.72 E	1,157,976.50	3,219,597.89	0.00	-284.10	
2,800.00	11.34	116.39	-2,724.65	2,767.35	154.51 S	311.34 E	1,157,967.76	3,219,615.50	0.00	-301.14	
2,900.00	11.34	116.39	-2,626.61	2,865.39	163.25 S	328.96 E	1,157,959.02	3,219,633.12	0.00	-318.18	
3,000.00	11.34	116.39	-2,528.56	2,963.44	171.99 S	346.57 E	1,157,950.27	3,219,650.73	0.00	-335.22	
3,100.00	11.34	116.39	-2,430.51	3,061.49	180.73 S	364.19 E	1,157,941.53	3,219,668.35	0.00	-352.26	
3,200.00	11.34	116.39	-2,332.47	3,159.53	189.48 S	381.80 E	1,157,932.79	3,219,685.97	0.00	-369.29	
3,300.00	11.34	116.39	-2,234.42	3,257.58	198.22 S	399.42 E	1,157,924.05	3,219,703.58	0.00	-386.33	

## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN 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	11.34	116.39	-2,136.37	3,355.63	206.96 S	417.03 E	1,157,915.31	3,219,721.20	0.00	-403.37	
3,500.00	11.34	116.39	-2,038.32	3,453.68	215.70 S	434.65 E	1,157,906.56	3,219,738.81	0.00	-420.41	
3,600.00	11.34	116.39	-1,940.28	3,551.72	224.45 S	452.27 E	1,157,897.82	3,219,756.43	0.00	-437.45	
3,700.00	11.34	116.39	-1,842.23	3,649.77	233.19 S	469.88 E	1,157,889.08	3,219,774.05	0.00	-454.49	
3,800.00	11.34	116.39	-1,744.18	3,747.82	241.93 S	487.50 E	1,157,880.34	3,219,791.66	0.00	-471.53	
3,900.00	11.34	116.39	-1,646.13	3,845.87	250.67 S	505.11 E	1,157,871.59	3,219,809.28	0.00	-488.56	
4,000.00	11.34	116.39	-1,548.09	3,943.91	259.41 S	522.73 E	1,157,862.85	3,219,826.89	0.00	-505.60	
4,100.00	11.34	116.39	-1,450.04	4,041.96	268.16 S	540.34 E	1,157,854.11	3,219,844.51	0.00	-522.64	
4,200.00	11.34	116.39	-1,351.99	4,140.01	276.90 S	557.96 E	1,157,845.37	3,219,862.12	0.00	-539.68	
4,300.00	11.34	116.39	-1,253.95	4,238.05	285.64 S	575.58 E	1,157,836.63	3,219,879.74	0.00	-556.72	
4,400.00	11.34	116.39	-1,155.90	4,336.10	294.38 S	593.19 E	1,157,827.88	3,219,897.36	0.00	-573.76	
4,500.00	11.34	116.39	-1,057.85	4,434.15	303.12 S	610.81 E	1,157,819.14	3,219,914.97	0.00	-590.80	
4,600.00	11.34	116.39	-959.80	4,532.20	311.87 S	628.42 E	1,157,810.40	3,219,932.59	0.00	-607.83	
4,700.00	11.34	116.39	-861.76	4,630.24	320.61 S	646.04 E	1,157,801.66	3,219,950.20	0.00	-624.87	
4,800.00	11.34	116.39	-763.71	4,728.29	329.35 S	663.65 E	1,157,792.92	3,219,967.82	0.00	-641.91	
4,900.00	11.34	116.39	-665.66	4,826.34	338.09 S	681.27 E	1,157,784.17	3,219,985.43	0.00	-658.95	
5,000.00	11.34	116.39	-567.62	4,924.38	346.84 S	698.89 E	1,157,775.43	3,220,003.05	0.00	-675.99	
5,100.00	11.34	116.39	-469.57	5,022.43	355.58 S	716.50 E	1,157,766.69	3,220,020.67	0.00	-693.03	
5,200.00	11.34	116.39	-371.52	5,120.48	364.32 S	734.12 E	1,157,757.95	3,220,038.28	0.00	-710.07	
5,300.00	11.34	116.39	-273.47	5,218.53	373.06 S	751.73 E	1,157,749.20	3,220,055.90	0.00	-727.10	
5,400.00	11.34	116.39	-175.43	5,316.57	381.80 S	769.35 E	1,157,740.46	3,220,073.51	0.00	-744.14	
5,440.21	11.34	116.39	-136.00	5,356.00	385.32 S	776.43 E	1,157,736.95	3,220,080.60	0.00	-751.00	Shannon Sandstone
5,500.00	11.34	116.39	-77.38	5,414.62	390.55 S	786.97 E	1,157,731.72	3,220,091.13	0.00	-761.18	
5,600.00	11.34	116.39	20.67	5,512.67	399.29 S	804.58 E	1,157,722.98	3,220,108.74	0.00	-778.22	
5,700.00	11.34	116.39	118.72	5,610.72	408.03 S	822.20 E	1,157,714.24	3,220,126.36	0.00	-795.26	
5,800.00	11.34	116.39	216.76	5,708.76	416.77 S	839.81 E	1,157,705.49	3,220,143.98	0.00	-812.30	
5,900.00	11.34	116.39	314.81	5,806.81	425.51 S	857.43 E	1,157,696.75	3,220,161.59	0.00	-829.34	
6,000.00	11.34	116.39	412.86	5,904.86	434.26 S	875.04 E	1,157,688.01	3,220,179.21	0.00	-846.38	
6,100.00	11.34	116.39	510.90	6,002.90	443.00 S	892.66 E	1,157,679.27	3,220,196.82	0.00	-863.41	
6,200.00	11.34	116.39	608.95	6,100.95	451.74 S	910.28 E	1,157,670.52	3,220,214.44	0.00	-880.45	
6,300.00	11.34	116.39	707.00	6,199.00	460.48 S	927.89 E	1,157,661.78	3,220,232.06	0.00	-897.49	
6,400.00	11.34	116.39	805.05	6,297.05	469.23 S	945.51 E	1,157,653.04	3,220,249.67	0.00	-914.53	
6,500.00	11.34	116.39	903.09	6,395.09	477.97 S	963.12 E	1,157,644.30	3,220,267.29	0.00	-931.57	
6,600.00	11.34	116.39	1,001.14	6,493.14	486.71 S	980.74 E	1,157,635.56	3,220,284.90	0.00	-948.61	
6,700.00	11.34	116.39	1,099.19	6,591.19	495.45 S	998.35 E	1,157,626.81	3,220,302.52	0.00	-965.65	
6,800.00	11.34	116.39	1,197.24	6,689.24	504.19 S	1,015.97 E	1,157,618.07	3,220,320.13	0.00	-982.68	
6,900.00	11.34	116.39	1,295.28	6,787.28	512.94 S	1,033.59 E	1,157,609.33	3,220,337.75	0.00	-999.72	
7,000.00	11.34	116.39	1,393.33	6,885.33	521.68 S	1,051.20 E	1,157,600.59	3,220,355.37	0.00	-1,016.76	
7,100.00	11.34	116.39	1,491.38	6,983.38	530.42 S	1,068.82 E	1,157,591.85	3,220,372.98	0.00	-1,033.80	
7,200.00	11.34	116.39	1,589.42	7,081.42	539.16 S	1,086.43 E	1,157,583.10	3,220,390.60	0.00	-1,050.84	
7,300.00	11.34	116.39	1,687.47	7,179.47	547.90 S	1,104.05 E	1,157,574.36	3,220,408.21	0.00	-1,067.88	

## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN 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)			
7,312.08	11.34	116.39	1,699.32	7,191.32	548.96 S	1,106.18 E	1,157,573.30	3,220,410.34	0.00	-1,069.94	KOP 10° DLG
7,400.00	5.35	165.31	1,786.36	7,278.36	556.78 S	1,114.98 E	1,157,565.48	3,220,419.14	10.00	-1,078.23	
7,500.00	10.11	238.89	1,885.61	7,377.61	565.85 S	1,108.63 E	1,157,556.42	3,220,412.79	10.00	-1,071.33	
7,600.00	19.37	254.53	1,982.25	7,474.25	574.83 S	1,085.07 E	1,157,547.44	3,220,389.23	10.00	-1,047.26	
7,700.00	29.12	260.11	2,073.33	7,565.33	583.45 S	1,045.01 E	1,157,538.81	3,220,349.18	10.00	-1,006.75	
7,800.00	38.98	263.05	2,156.09	7,648.09	591.46 S	989.68 E	1,157,530.81	3,220,293.84	10.00	-951.02	
7,828.77	41.83	263.67	2,178.00	7,670.00	593.61 S	971.16 E	1,157,528.66	3,220,275.32	10.00	-932.40	Sharon Springs Shale
7,900.00	48.90	264.95	2,228.01	7,720.01	598.60 S	920.75 E	1,157,523.67	3,220,224.92	10.00	-881.78	
7,928.16	51.69	265.38	2,246.00	7,738.00	600.42 S	899.17 E	1,157,521.84	3,220,203.33	10.00	-860.13	Niobrara
7,954.76	54.34	265.76	2,262.00	7,754.00	602.06 S	877.98 E	1,157,520.20	3,220,182.15	10.00	-838.89	Niobrara A
8,000.00	58.83	266.34	2,286.91	7,778.91	604.66 S	840.32 E	1,157,517.61	3,220,144.48	10.00	-801.13	
8,100.00	68.78	267.47	2,330.99	7,822.99	609.46 S	750.83 E	1,157,512.81	3,220,055.00	10.00	-711.52	
8,100.02	68.78	267.47	2,331.00	7,823.00	609.46 S	750.81 E	1,157,512.81	3,220,054.97	0.00	-711.50	Niobrara B Top
8,200.00	78.74	268.45	2,358.92	7,850.92	612.85 S	655.00 E	1,157,509.42	3,219,959.17	10.00	-615.66	
8,300.00	88.70	269.37	2,369.85	7,861.85	614.72 S	555.75 E	1,157,507.54	3,219,859.91	10.00	-516.48	
8,313.09	90.00	269.49	2,370.00	7,862.00	614.85 S	542.66 E	1,157,507.41	3,219,846.83	10.00	-503.42	EOB - Landing MCC 3-66 25-27 7HN
8,400.00	90.00	269.49	2,370.00	7,862.00	615.63 S	455.75 E	1,157,506.64	3,219,759.92	0.00	-416.63	
8,500.00	90.00	269.49	2,370.00	7,862.00	616.52 S	355.76 E	1,157,505.75	3,219,659.92	0.00	-316.77	
8,600.00	90.00	269.49	2,370.00	7,862.00	617.41 S	255.76 E	1,157,504.86	3,219,559.92	0.00	-216.91	
8,700.00	90.00	269.49	2,370.00	7,862.00	618.30 S	155.76 E	1,157,503.97	3,219,459.93	0.00	-117.05	
8,800.00	90.00	269.49	2,370.00	7,862.00	619.19 S	55.77 E	1,157,503.08	3,219,359.93	0.00	-17.19	
8,900.00	90.00	269.49	2,370.00	7,862.00	620.08 S	44.23 W	1,157,502.19	3,219,259.94	0.00	82.66	
9,000.00	90.00	269.49	2,370.00	7,862.00	620.97 S	144.22 W	1,157,501.30	3,219,159.94	0.00	182.52	
9,100.00	90.00	269.49	2,370.00	7,862.00	621.86 S	244.22 W	1,157,500.41	3,219,059.94	0.00	282.38	
9,200.00	90.00	269.49	2,370.00	7,862.00	622.75 S	344.22 W	1,157,499.52	3,218,959.95	0.00	382.24	
9,300.00	90.00	269.49	2,370.00	7,862.00	623.64 S	444.21 W	1,157,498.63	3,218,859.95	0.00	482.10	
9,400.00	90.00	269.49	2,370.00	7,862.00	624.53 S	544.21 W	1,157,497.74	3,218,759.96	0.00	581.96	
9,500.00	90.00	269.49	2,370.00	7,862.00	625.42 S	644.20 W	1,157,496.85	3,218,659.96	0.00	681.81	
9,600.00	90.00	269.49	2,370.00	7,862.00	626.31 S	744.20 W	1,157,495.95	3,218,559.96	0.00	781.67	
9,700.00	90.00	269.49	2,370.00	7,862.00	627.20 S	844.20 W	1,157,495.06	3,218,459.97	0.00	881.53	
9,800.00	90.00	269.49	2,370.00	7,862.00	628.09 S	944.19 W	1,157,494.17	3,218,359.97	0.00	981.39	
9,900.00	90.00	269.49	2,370.00	7,862.00	628.98 S	1,044.19 W	1,157,493.28	3,218,259.98	0.00	1,081.25	
10,000.00	90.00	269.49	2,370.00	7,862.00	629.87 S	1,144.18 W	1,157,492.39	3,218,159.98	0.00	1,181.10	
10,100.00	90.00	269.49	2,370.00	7,862.00	630.76 S	1,244.18 W	1,157,491.50	3,218,059.98	0.00	1,280.96	
10,200.00	90.00	269.49	2,370.00	7,862.00	631.65 S	1,344.18 W	1,157,490.61	3,217,959.99	0.00	1,380.82	
10,300.00	90.00	269.49	2,370.00	7,862.00	632.54 S	1,444.17 W	1,157,489.72	3,217,859.99	0.00	1,480.68	
10,400.00	90.00	269.49	2,370.00	7,862.00	633.43 S	1,544.17 W	1,157,488.83	3,217,760.00	0.00	1,580.54	
10,500.00	90.00	269.49	2,370.00	7,862.00	634.33 S	1,644.16 W	1,157,487.94	3,217,660.00	0.00	1,680.40	
10,600.00	90.00	269.49	2,370.00	7,862.00	635.22 S	1,744.16 W	1,157,487.05	3,217,560.00	0.00	1,780.25	
10,700.00	90.00	269.49	2,370.00	7,862.00	636.11 S	1,844.16 W	1,157,486.16	3,217,460.01	0.00	1,880.11	
10,800.00	90.00	269.49	2,370.00	7,862.00	637.00 S	1,944.15 W	1,157,485.27	3,217,360.01	0.00	1,979.97	

## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN 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	269.49	2,370.00	7,862.00	637.89 S	2,044.15 W	1,157,484.38	3,217,260.02	0.00	2,079.83	
11,000.00	90.00	269.49	2,370.00	7,862.00	638.78 S	2,144.14 W	1,157,483.49	3,217,160.02	0.00	2,179.69	
11,100.00	90.00	269.49	2,370.00	7,862.00	639.67 S	2,244.14 W	1,157,482.60	3,217,060.02	0.00	2,279.54	
11,200.00	90.00	269.49	2,370.00	7,862.00	640.56 S	2,344.14 W	1,157,481.71	3,216,960.03	0.00	2,379.40	
11,300.00	90.00	269.49	2,370.00	7,862.00	641.45 S	2,444.13 W	1,157,480.82	3,216,860.03	0.00	2,479.26	
11,400.00	90.00	269.49	2,370.00	7,862.00	642.34 S	2,544.13 W	1,157,479.93	3,216,760.04	0.00	2,579.12	
11,500.00	90.00	269.49	2,370.00	7,862.00	643.23 S	2,644.12 W	1,157,479.04	3,216,660.04	0.00	2,678.98	
11,600.00	90.00	269.49	2,370.00	7,862.00	644.12 S	2,744.12 W	1,157,478.15	3,216,560.04	0.00	2,778.84	
11,700.00	90.00	269.49	2,370.00	7,862.00	645.01 S	2,844.12 W	1,157,477.26	3,216,460.05	0.00	2,878.69	
11,800.00	90.00	269.49	2,370.00	7,862.00	645.90 S	2,944.11 W	1,157,476.36	3,216,360.05	0.00	2,978.55	
11,900.00	90.00	269.49	2,370.00	7,862.00	646.79 S	3,044.11 W	1,157,475.47	3,216,260.06	0.00	3,078.41	
12,000.00	90.00	269.49	2,370.00	7,862.00	647.68 S	3,144.10 W	1,157,474.58	3,216,160.06	0.00	3,178.27	
12,100.00	90.00	269.49	2,370.00	7,862.00	648.57 S	3,244.10 W	1,157,473.69	3,216,060.06	0.00	3,278.13	
12,200.00	90.00	269.49	2,370.00	7,862.00	649.46 S	3,344.10 W	1,157,472.80	3,215,960.07	0.00	3,377.98	
12,300.00	90.00	269.49	2,370.00	7,862.00	650.35 S	3,444.09 W	1,157,471.91	3,215,860.07	0.00	3,477.84	
12,400.00	90.00	269.49	2,370.00	7,862.00	651.24 S	3,544.09 W	1,157,471.02	3,215,760.08	0.00	3,577.70	
12,500.00	90.00	269.49	2,370.00	7,862.00	652.13 S	3,644.08 W	1,157,470.13	3,215,660.08	0.00	3,677.56	
12,600.00	90.00	269.49	2,370.00	7,862.00	653.02 S	3,744.08 W	1,157,469.24	3,215,560.08	0.00	3,777.42	
12,700.00	90.00	269.49	2,370.00	7,862.00	653.92 S	3,844.08 W	1,157,468.35	3,215,460.09	0.00	3,877.28	
12,800.00	90.00	269.49	2,370.00	7,862.00	654.81 S	3,944.07 W	1,157,467.46	3,215,360.09	0.00	3,977.13	
12,900.00	90.00	269.49	2,370.00	7,862.00	655.70 S	4,044.07 W	1,157,466.57	3,215,260.10	0.00	4,076.99	
13,000.00	90.00	269.49	2,370.00	7,862.00	656.59 S	4,144.06 W	1,157,465.68	3,215,160.10	0.00	4,176.85	
13,100.00	90.00	269.49	2,370.00	7,862.00	657.48 S	4,244.06 W	1,157,464.79	3,215,060.10	0.00	4,276.71	
13,200.00	90.00	269.49	2,370.00	7,862.00	658.37 S	4,344.06 W	1,157,463.90	3,214,960.11	0.00	4,376.57	
13,300.00	90.00	269.49	2,370.00	7,862.00	659.26 S	4,444.05 W	1,157,463.01	3,214,860.11	0.00	4,476.43	
13,400.00	90.00	269.49	2,370.00	7,862.00	660.15 S	4,544.05 W	1,157,462.12	3,214,760.11	0.00	4,576.28	
13,500.00	90.00	269.49	2,370.00	7,862.00	661.04 S	4,644.04 W	1,157,461.23	3,214,660.12	0.00	4,676.14	
13,600.00	90.00	269.49	2,370.00	7,862.00	661.93 S	4,744.04 W	1,157,460.34	3,214,560.12	0.00	4,776.00	
13,700.00	90.00	269.49	2,370.00	7,862.00	662.82 S	4,844.04 W	1,157,459.45	3,214,460.13	0.00	4,875.86	
13,800.00	90.00	269.49	2,370.00	7,862.00	663.71 S	4,944.03 W	1,157,458.56	3,214,360.13	0.00	4,975.72	
13,900.00	90.00	269.49	2,370.00	7,862.00	664.60 S	5,044.03 W	1,157,457.67	3,214,260.13	0.00	5,075.57	
14,000.00	90.00	269.49	2,370.00	7,862.00	665.49 S	5,144.03 W	1,157,456.77	3,214,160.14	0.00	5,175.43	
14,100.00	90.00	269.49	2,370.00	7,862.00	666.38 S	5,244.02 W	1,157,455.88	3,214,060.14	0.00	5,275.29	
14,200.00	90.00	269.49	2,370.00	7,862.00	667.27 S	5,344.02 W	1,157,454.99	3,213,960.15	0.00	5,375.15	
14,300.00	90.00	269.49	2,370.00	7,862.00	668.16 S	5,444.01 W	1,157,454.10	3,213,860.15	0.00	5,475.01	
14,400.00	90.00	269.49	2,370.00	7,862.00	669.05 S	5,544.01 W	1,157,453.21	3,213,760.15	0.00	5,574.87	
14,500.00	90.00	269.49	2,370.00	7,862.00	669.94 S	5,644.01 W	1,157,452.32	3,213,660.16	0.00	5,674.72	
14,600.00	90.00	269.49	2,370.00	7,862.00	670.83 S	5,744.00 W	1,157,451.43	3,213,560.16	0.00	5,774.58	
14,700.00	90.00	269.49	2,370.00	7,862.00	671.72 S	5,844.00 W	1,157,450.54	3,213,460.17	0.00	5,874.44	
14,800.00	90.00	269.49	2,370.00	7,862.00	672.61 S	5,943.99 W	1,157,449.65	3,213,360.17	0.00	5,974.30	
14,900.00	90.00	269.49	2,370.00	7,862.00	673.51 S	6,043.99 W	1,157,448.76	3,213,260.17	0.00	6,074.16	

## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN 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	269.49	2,370.00	7,862.00	674.40 S	6,143.99 W	1,157,447.87	3,213,160.18	0.00	6,174.01	
15,100.00	90.00	269.49	2,370.00	7,862.00	675.29 S	6,243.98 W	1,157,446.98	3,213,060.18	0.00	6,273.87	
15,200.00	90.00	269.49	2,370.00	7,862.00	676.18 S	6,343.98 W	1,157,446.09	3,212,960.19	0.00	6,373.73	
15,300.00	90.00	269.49	2,370.00	7,862.00	677.07 S	6,443.97 W	1,157,445.20	3,212,860.19	0.00	6,473.59	
15,400.00	90.00	269.49	2,370.00	7,862.00	677.96 S	6,543.97 W	1,157,444.31	3,212,760.19	0.00	6,573.45	
15,500.00	90.00	269.49	2,370.00	7,862.00	678.85 S	6,643.97 W	1,157,443.42	3,212,660.20	0.00	6,673.31	
15,600.00	90.00	269.49	2,370.00	7,862.00	679.74 S	6,743.96 W	1,157,442.53	3,212,560.20	0.00	6,773.16	
15,700.00	90.00	269.49	2,370.00	7,862.00	680.63 S	6,843.96 W	1,157,441.64	3,212,460.21	0.00	6,873.02	
15,800.00	90.00	269.49	2,370.00	7,862.00	681.52 S	6,943.95 W	1,157,440.75	3,212,360.21	0.00	6,972.88	
15,900.00	90.00	269.49	2,370.00	7,862.00	682.41 S	7,043.95 W	1,157,439.86	3,212,260.21	0.00	7,072.74	
16,000.00	90.00	269.49	2,370.00	7,862.00	683.30 S	7,143.95 W	1,157,438.97	3,212,160.22	0.00	7,172.60	
16,100.00	90.00	269.49	2,370.00	7,862.00	684.19 S	7,243.94 W	1,157,438.08	3,212,060.22	0.00	7,272.45	
16,200.00	90.00	269.49	2,370.00	7,862.00	685.08 S	7,343.94 W	1,157,437.18	3,211,960.23	0.00	7,372.31	
16,300.00	90.00	269.49	2,370.00	7,862.00	685.97 S	7,443.93 W	1,157,436.29	3,211,860.23	0.00	7,472.17	
16,400.00	90.00	269.49	2,370.00	7,862.00	686.86 S	7,543.93 W	1,157,435.40	3,211,760.23	0.00	7,572.03	
16,500.00	90.00	269.49	2,370.00	7,862.00	687.75 S	7,643.93 W	1,157,434.51	3,211,660.24	0.00	7,671.89	
16,600.00	90.00	269.49	2,370.00	7,862.00	688.64 S	7,743.92 W	1,157,433.62	3,211,560.24	0.00	7,771.75	
16,700.00	90.00	269.49	2,370.00	7,862.00	689.53 S	7,843.92 W	1,157,432.73	3,211,460.25	0.00	7,871.60	
16,800.00	90.00	269.49	2,370.00	7,862.00	690.42 S	7,943.91 W	1,157,431.84	3,211,360.25	0.00	7,971.46	
16,900.00	90.00	269.49	2,370.00	7,862.00	691.31 S	8,043.91 W	1,157,430.95	3,211,260.25	0.00	8,071.32	
17,000.00	90.00	269.49	2,370.00	7,862.00	692.20 S	8,143.91 W	1,157,430.06	3,211,160.26	0.00	8,171.18	
17,100.00	90.00	269.49	2,370.00	7,862.00	693.10 S	8,243.90 W	1,157,429.17	3,211,060.26	0.00	8,271.04	
17,200.00	90.00	269.49	2,370.00	7,862.00	693.99 S	8,343.90 W	1,157,428.28	3,210,960.27	0.00	8,370.89	
17,300.00	90.00	269.49	2,370.00	7,862.00	694.88 S	8,443.89 W	1,157,427.39	3,210,860.27	0.00	8,470.75	
17,400.00	90.00	269.49	2,370.00	7,862.00	695.77 S	8,543.89 W	1,157,426.50	3,210,760.27	0.00	8,570.61	
17,500.00	90.00	269.49	2,370.00	7,862.00	696.66 S	8,643.89 W	1,157,425.61	3,210,660.28	0.00	8,670.47	
17,600.00	90.00	269.49	2,370.00	7,862.00	697.55 S	8,743.88 W	1,157,424.72	3,210,560.28	0.00	8,770.33	
17,700.00	90.00	269.49	2,370.00	7,862.00	698.44 S	8,843.88 W	1,157,423.83	3,210,460.29	0.00	8,870.19	
17,800.00	90.00	269.49	2,370.00	7,862.00	699.33 S	8,943.87 W	1,157,422.94	3,210,360.29	0.00	8,970.04	
17,900.00	90.00	269.49	2,370.00	7,862.00	700.22 S	9,043.87 W	1,157,422.05	3,210,260.29	0.00	9,069.90	
18,000.00	90.00	269.49	2,370.00	7,862.00	701.11 S	9,143.87 W	1,157,421.16	3,210,160.30	0.00	9,169.76	
18,100.00	90.00	269.49	2,370.00	7,862.00	702.00 S	9,243.86 W	1,157,420.27	3,210,060.30	0.00	9,269.62	
18,200.00	90.00	269.49	2,370.00	7,862.00	702.89 S	9,343.86 W	1,157,419.38	3,209,960.31	0.00	9,369.48	
18,300.00	90.00	269.49	2,370.00	7,862.00	703.78 S	9,443.85 W	1,157,418.49	3,209,860.31	0.00	9,469.34	
18,400.00	90.00	269.49	2,370.00	7,862.00	704.67 S	9,543.85 W	1,157,417.59	3,209,760.31	0.00	9,569.19	
18,500.00	90.00	269.49	2,370.00	7,862.00	705.56 S	9,643.85 W	1,157,416.70	3,209,660.32	0.00	9,669.05	
18,600.00	90.00	269.49	2,370.00	7,862.00	706.45 S	9,743.84 W	1,157,415.81	3,209,560.32	0.00	9,768.91	
18,700.00	90.00	269.49	2,370.00	7,862.00	707.34 S	9,843.84 W	1,157,414.92	3,209,460.32	0.00	9,868.77	
18,800.00	90.00	269.49	2,370.00	7,862.00	708.23 S	9,943.83 W	1,157,414.03	3,209,360.33	0.00	9,968.63	
18,900.00	90.00	269.49	2,370.00	7,862.00	709.12 S	10,043.83 W	1,157,413.14	3,209,260.33	0.00	10,068.48	
19,000.00	90.00	269.49	2,370.00	7,862.00	710.01 S	10,143.83 W	1,157,412.25	3,209,160.34	0.00	10,168.34	

## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN 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	269.49	2,370.00	7,862.00	710.90 S	10,243.82 W	1,157,411.36	3,209,060.34	0.00	10,268.20	
19,200.00	90.00	269.49	2,370.00	7,862.00	711.80 S	10,343.82 W	1,157,410.47	3,208,960.34	0.00	10,368.06	
19,300.00	90.00	269.49	2,370.00	7,862.00	712.69 S	10,443.81 W	1,157,409.58	3,208,860.35	0.00	10,467.92	
19,400.00	90.00	269.49	2,370.00	7,862.00	713.58 S	10,543.81 W	1,157,408.69	3,208,760.35	0.00	10,567.78	
19,500.00	90.00	269.49	2,370.00	7,862.00	714.47 S	10,643.81 W	1,157,407.80	3,208,660.36	0.00	10,667.63	
19,600.00	90.00	269.49	2,370.00	7,862.00	715.36 S	10,743.80 W	1,157,406.91	3,208,560.36	0.00	10,767.49	
19,700.00	90.00	269.49	2,370.00	7,862.00	716.25 S	10,843.80 W	1,157,406.02	3,208,460.36	0.00	10,867.35	
19,800.00	90.00	269.49	2,370.00	7,862.00	717.14 S	10,943.80 W	1,157,405.13	3,208,360.37	0.00	10,967.21	
19,900.00	90.00	269.49	2,370.00	7,862.00	718.03 S	11,043.79 W	1,157,404.24	3,208,260.37	0.00	11,067.07	
20,000.00	90.00	269.49	2,370.00	7,862.00	718.92 S	11,143.79 W	1,157,403.35	3,208,160.38	0.00	11,166.92	
20,100.00	90.00	269.49	2,370.00	7,862.00	719.81 S	11,243.78 W	1,157,402.46	3,208,060.38	0.00	11,266.78	
20,200.00	90.00	269.49	2,370.00	7,862.00	720.70 S	11,343.78 W	1,157,401.57	3,207,960.38	0.00	11,366.64	
20,300.00	90.00	269.49	2,370.00	7,862.00	721.59 S	11,443.78 W	1,157,400.68	3,207,860.39	0.00	11,466.50	
20,400.00	90.00	269.49	2,370.00	7,862.00	722.48 S	11,543.77 W	1,157,399.79	3,207,760.39	0.00	11,566.36	
20,473.79	90.00	269.49	2,370.00	7,862.00	723.14 S	11,617.56 W	1,157,399.13	3,207,686.61	0.00	11,640.04	TD at 20473.79 - 5 1/2" x 8 1/2" - BHL MCC 3-66 25-27 7HN

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
1,317.08	1,313.38	-24.87	50.11	EOB
7,312.08	7,191.32	-548.96	1,106.18	KOP 10° DLG
8,313.09	7,862.00	-614.85	542.66	EOB
20,473.79	7,862.00	-723.14	-11,617.56	TD at 20473.79

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
TD	No Target (Freehand)	266.44	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	8,313.00	MCC 3-66 25-27 7HN Wp 1.0	2_MWD
8,313.00	20,473.79	MCC 3-66 25-27 7HN Wp 1.0	2_MWD+IFR1+MS



## Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN Wp 1.0

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,164.00	2,143.77	9 5/8" x 12 1/4	9-5/8	12-1/4
20,473.79	7,862.00	5 1/2" x 8 1/2"	5-1/2	8-1/2

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	TVDSS (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
302.00	302.00	-5,190.00	Denver			
1,041.50	1,041.00	-4,451.00	Upper Arapahoe			
1,697.12	1,686.00	-3,806.00	Laramie - Fox Hills			
2,028.59	2,011.00	-3,481.00	Pierre Shale (Base of Fox Hills)			
5,440.21	5,356.00	-136.00	Shannon Sandstone			
7,828.77	7,670.00	2,178.00	Sharon Springs Shale			
7,928.16	7,738.00	2,246.00	Niobrara			
7,954.76	7,754.00	2,262.00	Niobrara A			
8,100.02	7,823.00	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
Landing MCC 3-66 25-27 7HN ()									
- plan hits target center	0.00	0.00	7,862.00	-614.85	542.66	1,157,507.41	3,219,846.83	39.7630640	-104.7179700
- Point									
BHL MCC 3-66 25-27 7HN ()									
- plan hits target center	0.00	0.00	7,862.00	-723.14	-11,617.56	1,157,399.13	3,207,686.60	39.7630530	-104.7612270
- Point									

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Plan Report for MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN Wp 1.0

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Directional Difficulty Index

Average Dogleg over Survey: 0.54 °/100usft

Maximum Dogleg over Survey:

10.00 °/100usft at 8,313.09  
usft

Net Tortosity applicable to Plans: 0.54 °/100usft

Directional Difficulty Index:

6.875

Audit Info

**North Reference Sheet for Adams Unit ( North ) - MCC 3-66 25-27 7HN - MCC 3-66 25-27 7HN**

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

Vertical Depths are relative to 5472' GL + 20' KB @ 5492.00usft. Northing and Easting are relative to MCC 3-66 25-27 7HN

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: 0.99999259

Grid Coordinates of Well: 1,158,122.27 usft N, 3,219,304.16 usft E

Geographical Coordinates of Well: 39° 45' 53.15" N, 104° 43' 11.57" W

Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 20,473.79usft  
the Bottom Hole Displacement is 11,640.04usft in the Direction of 266.44° (Grid).

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

