

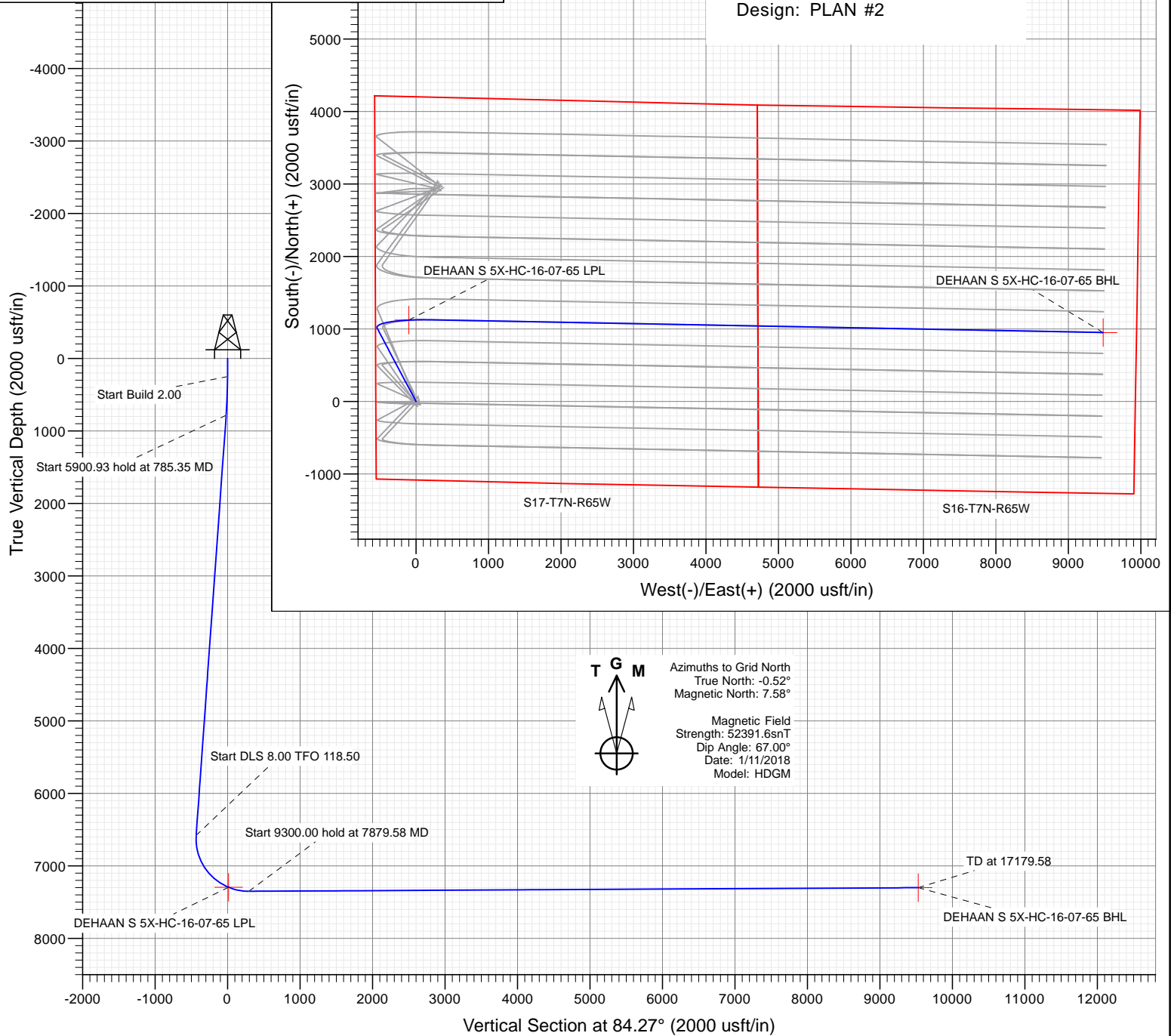
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	785.35	10.71	332.11	782.24	44.08	-23.33	2.00	332.11	-18.81	
4	6686.28	10.71	332.11	6580.43	1013.03	-536.19	0.00	0.00	-432.33	
5	7879.58	90.30	91.08	7350.50	1127.52	183.15	8.00	118.50	294.85	
6	17179.58	90.30	91.08	7301.00	951.70	9481.36	0.00	0.00	9529.00	DEHAAN S 5X-HC-16-07-65 BHL

PLAN #2
DEHAAN 5X-HC-16-07-65
KB @ 5300.00usft
Ground Level @ 5280.00
North American Datum 1983
Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL Grid North

Type	Target	Origin	N/S	E/W	From
TD	No Target (Freehand)	Slot	0.00	0.00	TVD
Name					Latitude
DEHAAN S 5X-HC-16-07-65 LPL					-104.694811
DEHAAN S 5X-HC-16-07-65 BHL					-104.694811

Project: WELD COUNTY, CO
Site: S17-T7N-R65W (DEHAAN)
Well: DEHAAN 5X-HC-16-07-65
Wellbore: OH
Design: PLAN #2



WELL DETAILS: DEHAAN 5X-HC-16-07-65

5280.00
+N/-S 0.00 +E/-W 0.00 Northing 1451766.76 Easting 3223774.15 Latitude 40.57079 Longitude -104.694493



Nickel Road Operating LLC

WELD COUNTY, CO

S17-T7N-R65W (DEHAAN)

DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65

SHL

OH

Plan: PLAN #2

Standard Planning Report

16 January, 2018

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL
Company:	Nickel Road Operating LLC	TVD Reference:	KB @ 5300.00usft
Project:	WELD COUNTY, CO	MD Reference:	KB @ 5300.00usft
Site:	S17-T7N-R65W (DEHAAN)	North Reference:	Grid
Well:	DEHAAN 5X-HC-16-07-65	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Project	WELD COUNTY, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S17-T7N-R65W (DEHAAN)			
Site Position:		Northing:	1,454,732.81 usft	Latitude:	40.578843
From:	Map	Easting:	3,224,073.79 usft	Longitude:	-104.693317
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.52 °

Well	DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL					
Well Position	+N/-S	-2,966.05 usft	Northing:	1,451,766.76 usft	Latitude:	40.570709
	+E/-W	-299.64 usft	Easting:	3,223,774.15 usft	Longitude:	-104.694493
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,280.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/11/2018	8.10	67.00	52,391.60000000

Design	PLAN #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	84.27

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
785.35	10.71	332.11	782.24	44.08	-23.33	2.00	2.00	0.00	332.11	
6,686.28	10.71	332.11	6,580.43	1,013.03	-536.19	0.00	0.00	0.00	0.00	
7,879.58	90.30	91.08	7,350.50	1,127.52	183.15	8.00	6.67	9.97	118.50	
17,179.58	90.30	91.08	7,301.00	951.70	9,481.36	0.00	0.00	0.00	0.00	DEHAAN S 5X-HC-16

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL
Company:	Nickel Road Operating LLC	TVD Reference:	KB @ 5300.00usft
Project:	WELD COUNTY, CO	MD Reference:	KB @ 5300.00usft
Site:	S17-T7N-R65W (DEHAAN)	North Reference:	Grid
Well:	DEHAAN 5X-HC-16-07-65	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	1.00	332.11	300.00	0.39	-0.20	-0.16	2.00	2.00	0.00	
400.00	3.00	332.11	399.93	3.47	-1.84	-1.48	2.00	2.00	0.00	
500.00	5.00	332.11	499.68	9.63	-5.10	-4.11	2.00	2.00	0.00	
600.00	7.00	332.11	599.13	18.87	-9.99	-8.05	2.00	2.00	0.00	
700.00	9.00	332.11	698.15	31.17	-16.50	-13.30	2.00	2.00	0.00	
785.35	10.71	332.11	782.24	44.08	-23.33	-18.81	2.00	2.00	0.00	
800.00	10.71	332.11	796.63	46.49	-24.61	-19.84	0.00	0.00	0.00	
900.00	10.71	332.11	894.89	62.91	-33.30	-26.85	0.00	0.00	0.00	
1,000.00	10.71	332.11	993.15	79.33	-41.99	-33.85	0.00	0.00	0.00	
1,100.00	10.71	332.11	1,091.41	95.75	-50.68	-40.86	0.00	0.00	0.00	
1,200.00	10.71	332.11	1,189.67	112.17	-59.37	-47.87	0.00	0.00	0.00	
1,300.00	10.71	332.11	1,287.93	128.59	-68.06	-54.88	0.00	0.00	0.00	
1,400.00	10.71	332.11	1,386.19	145.01	-76.75	-61.89	0.00	0.00	0.00	
1,500.00	10.71	332.11	1,484.45	161.43	-85.44	-68.89	0.00	0.00	0.00	
1,600.00	10.71	332.11	1,582.71	177.85	-94.13	-75.90	0.00	0.00	0.00	
1,700.00	10.71	332.11	1,680.97	194.27	-102.83	-82.91	0.00	0.00	0.00	
1,800.00	10.71	332.11	1,779.22	210.69	-111.52	-89.92	0.00	0.00	0.00	
1,900.00	10.71	332.11	1,877.48	227.11	-120.21	-96.92	0.00	0.00	0.00	
2,000.00	10.71	332.11	1,975.74	243.53	-128.90	-103.93	0.00	0.00	0.00	
2,100.00	10.71	332.11	2,074.00	259.95	-137.59	-110.94	0.00	0.00	0.00	
2,200.00	10.71	332.11	2,172.26	276.37	-146.28	-117.95	0.00	0.00	0.00	
2,300.00	10.71	332.11	2,270.52	292.79	-154.97	-124.96	0.00	0.00	0.00	
2,400.00	10.71	332.11	2,368.78	309.21	-163.66	-131.96	0.00	0.00	0.00	
2,500.00	10.71	332.11	2,467.04	325.63	-172.35	-138.97	0.00	0.00	0.00	
2,600.00	10.71	332.11	2,565.30	342.05	-181.05	-145.98	0.00	0.00	0.00	
2,700.00	10.71	332.11	2,663.56	358.47	-189.74	-152.99	0.00	0.00	0.00	
2,800.00	10.71	332.11	2,761.82	374.89	-198.43	-159.99	0.00	0.00	0.00	
2,900.00	10.71	332.11	2,860.07	391.31	-207.12	-167.00	0.00	0.00	0.00	
3,000.00	10.71	332.11	2,958.33	407.73	-215.81	-174.01	0.00	0.00	0.00	
3,100.00	10.71	332.11	3,056.59	424.15	-224.50	-181.02	0.00	0.00	0.00	
3,200.00	10.71	332.11	3,154.85	440.57	-233.19	-188.03	0.00	0.00	0.00	
3,300.00	10.71	332.11	3,253.11	457.00	-241.88	-195.03	0.00	0.00	0.00	
3,400.00	10.71	332.11	3,351.37	473.42	-250.58	-202.04	0.00	0.00	0.00	
3,500.00	10.71	332.11	3,449.63	489.84	-259.27	-209.05	0.00	0.00	0.00	
3,600.00	10.71	332.11	3,547.89	506.26	-267.96	-216.06	0.00	0.00	0.00	
3,700.00	10.71	332.11	3,646.15	522.68	-276.65	-223.06	0.00	0.00	0.00	
3,800.00	10.71	332.11	3,744.41	539.10	-285.34	-230.07	0.00	0.00	0.00	
3,900.00	10.71	332.11	3,842.66	555.52	-294.03	-237.08	0.00	0.00	0.00	
4,000.00	10.71	332.11	3,940.92	571.94	-302.72	-244.09	0.00	0.00	0.00	
4,100.00	10.71	332.11	4,039.18	588.36	-311.41	-251.09	0.00	0.00	0.00	
4,200.00	10.71	332.11	4,137.44	604.78	-320.10	-258.10	0.00	0.00	0.00	
4,300.00	10.71	332.11	4,235.70	621.20	-328.80	-265.11	0.00	0.00	0.00	
4,400.00	10.71	332.11	4,333.96	637.62	-337.49	-272.12	0.00	0.00	0.00	
4,500.00	10.71	332.11	4,432.22	654.04	-346.18	-279.13	0.00	0.00	0.00	
4,600.00	10.71	332.11	4,530.48	670.46	-354.87	-286.13	0.00	0.00	0.00	
4,700.00	10.71	332.11	4,628.74	686.88	-363.56	-293.14	0.00	0.00	0.00	
4,800.00	10.71	332.11	4,727.00	703.30	-372.25	-300.15	0.00	0.00	0.00	
4,900.00	10.71	332.11	4,825.25	719.72	-380.94	-307.16	0.00	0.00	0.00	
5,000.00	10.71	332.11	4,923.51	736.14	-389.63	-314.16	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL
Company:	Nickel Road Operating LLC	TVD Reference:	KB @ 5300.00usft
Project:	WELD COUNTY, CO	MD Reference:	KB @ 5300.00usft
Site:	S17-T7N-R65W (DEHAAN)	North Reference:	Grid
Well:	DEHAAN 5X-HC-16-07-65	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,100.00	10.71	332.11	5,021.77	752.56	-398.32	-321.17	0.00	0.00	0.00	
5,200.00	10.71	332.11	5,120.03	768.98	-407.02	-328.18	0.00	0.00	0.00	
5,300.00	10.71	332.11	5,218.29	785.40	-415.71	-335.19	0.00	0.00	0.00	
5,400.00	10.71	332.11	5,316.55	801.82	-424.40	-342.20	0.00	0.00	0.00	
5,500.00	10.71	332.11	5,414.81	818.24	-433.09	-349.20	0.00	0.00	0.00	
5,600.00	10.71	332.11	5,513.07	834.66	-441.78	-356.21	0.00	0.00	0.00	
5,700.00	10.71	332.11	5,611.33	851.08	-450.47	-363.22	0.00	0.00	0.00	
5,800.00	10.71	332.11	5,709.59	867.50	-459.16	-370.23	0.00	0.00	0.00	
5,900.00	10.71	332.11	5,807.85	883.92	-467.85	-377.23	0.00	0.00	0.00	
6,000.00	10.71	332.11	5,906.10	900.34	-476.55	-384.24	0.00	0.00	0.00	
6,100.00	10.71	332.11	6,004.36	916.76	-485.24	-391.25	0.00	0.00	0.00	
6,200.00	10.71	332.11	6,102.62	933.18	-493.93	-398.26	0.00	0.00	0.00	
6,300.00	10.71	332.11	6,200.88	949.60	-502.62	-405.26	0.00	0.00	0.00	
6,400.00	10.71	332.11	6,299.14	966.02	-511.31	-412.27	0.00	0.00	0.00	
6,500.00	10.71	332.11	6,397.40	982.44	-520.00	-419.28	0.00	0.00	0.00	
6,600.00	10.71	332.11	6,495.66	998.87	-528.69	-426.29	0.00	0.00	0.00	
6,686.28	10.71	332.11	6,580.43	1,013.03	-536.19	-432.33	0.00	0.00	0.00	
6,700.00	10.23	337.55	6,593.93	1,015.28	-537.25	-433.17	8.00	-3.49	39.65	
6,800.00	10.18	23.92	6,692.51	1,031.60	-537.06	-431.34	8.00	-0.04	46.37	
6,900.00	15.15	53.37	6,790.14	1,047.50	-522.96	-415.73	8.00	4.97	29.45	
7,000.00	21.96	66.81	6,884.93	1,062.69	-495.24	-386.63	8.00	6.81	13.44	
7,100.00	29.36	73.92	6,975.02	1,076.87	-454.43	-344.60	8.00	7.40	7.12	
7,200.00	36.99	78.34	7,058.67	1,089.76	-401.32	-290.48	8.00	7.63	4.42	
7,300.00	44.73	81.42	7,134.25	1,101.11	-336.96	-225.30	8.00	7.74	3.08	
7,400.00	52.54	83.75	7,200.29	1,110.70	-262.59	-150.34	8.00	7.81	2.33	
7,500.00	60.39	85.64	7,255.49	1,118.34	-179.65	-67.06	8.00	7.84	1.89	
7,590.29	67.49	87.10	7,295.14	1,123.44	-98.76	13.93	8.00	7.87	1.62	
DEHAAN S 5X-HC-16-07-65 LPL										
7,600.00	68.25	87.25	7,298.79	1,123.89	-89.78	22.92	8.00	7.87	1.52	
7,700.00	76.13	88.69	7,329.35	1,127.23	5.30	117.85	8.00	7.88	1.44	
7,800.00	84.02	90.04	7,346.57	1,128.30	103.71	215.88	8.00	7.89	1.35	
7,879.58	90.30	91.08	7,350.50	1,127.52	183.15	294.85	8.00	7.89	1.31	
7,900.00	90.30	91.08	7,350.39	1,127.14	203.57	315.12	0.00	0.00	0.00	
8,000.00	90.30	91.08	7,349.86	1,125.25	303.55	414.41	0.00	0.00	0.00	
8,100.00	90.30	91.08	7,349.33	1,123.36	403.53	513.71	0.00	0.00	0.00	
8,200.00	90.30	91.08	7,348.80	1,121.47	503.51	613.00	0.00	0.00	0.00	
8,300.00	90.30	91.08	7,348.26	1,119.58	603.49	712.29	0.00	0.00	0.00	
8,400.00	90.30	91.08	7,347.73	1,117.68	703.47	811.58	0.00	0.00	0.00	
8,500.00	90.30	91.08	7,347.20	1,115.79	803.45	910.87	0.00	0.00	0.00	
8,600.00	90.30	91.08	7,346.67	1,113.90	903.43	1,010.17	0.00	0.00	0.00	
8,700.00	90.30	91.08	7,346.13	1,112.01	1,003.41	1,109.46	0.00	0.00	0.00	
8,800.00	90.30	91.08	7,345.60	1,110.12	1,103.39	1,208.75	0.00	0.00	0.00	
8,900.00	90.30	91.08	7,345.07	1,108.23	1,203.38	1,308.04	0.00	0.00	0.00	
9,000.00	90.30	91.08	7,344.54	1,106.34	1,303.36	1,407.33	0.00	0.00	0.00	
9,100.00	90.30	91.08	7,344.00	1,104.45	1,403.34	1,506.63	0.00	0.00	0.00	
9,200.00	90.30	91.08	7,343.47	1,102.56	1,503.32	1,605.92	0.00	0.00	0.00	
9,300.00	90.30	91.08	7,342.94	1,100.67	1,603.30	1,705.21	0.00	0.00	0.00	
9,400.00	90.30	91.08	7,342.41	1,098.78	1,703.28	1,804.50	0.00	0.00	0.00	
9,500.00	90.30	91.08	7,341.88	1,096.89	1,803.26	1,903.79	0.00	0.00	0.00	
9,600.00	90.30	91.08	7,341.34	1,095.00	1,903.24	2,003.09	0.00	0.00	0.00	
9,700.00	90.30	91.08	7,340.81	1,093.11	2,003.22	2,102.38	0.00	0.00	0.00	
9,800.00	90.30	91.08	7,340.28	1,091.22	2,103.20	2,201.67	0.00	0.00	0.00	
9,900.00	90.30	91.08	7,339.75	1,089.33	2,203.18	2,300.96	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL
Company:	Nickel Road Operating LLC	TVD Reference:	KB @ 5300.00usft
Project:	WELD COUNTY, CO	MD Reference:	KB @ 5300.00usft
Site:	S17-T7N-R65W (DEHAAN)	North Reference:	Grid
Well:	DEHAAN 5X-HC-16-07-65	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,000.00	90.30	91.08	7,339.21	1,087.44	2,303.16	2,400.25	0.00	0.00	0.00
10,100.00	90.30	91.08	7,338.68	1,085.54	2,403.14	2,499.55	0.00	0.00	0.00
10,200.00	90.30	91.08	7,338.15	1,083.65	2,503.12	2,598.84	0.00	0.00	0.00
10,300.00	90.30	91.08	7,337.62	1,081.76	2,603.11	2,698.13	0.00	0.00	0.00
10,400.00	90.30	91.08	7,337.09	1,079.87	2,703.09	2,797.42	0.00	0.00	0.00
10,500.00	90.30	91.08	7,336.55	1,077.98	2,803.07	2,896.71	0.00	0.00	0.00
10,600.00	90.30	91.08	7,336.02	1,076.09	2,903.05	2,996.01	0.00	0.00	0.00
10,700.00	90.30	91.08	7,335.49	1,074.20	3,003.03	3,095.30	0.00	0.00	0.00
10,800.00	90.30	91.08	7,334.96	1,072.31	3,103.01	3,194.59	0.00	0.00	0.00
10,900.00	90.30	91.08	7,334.42	1,070.42	3,202.99	3,293.88	0.00	0.00	0.00
11,000.00	90.30	91.08	7,333.89	1,068.53	3,302.97	3,393.17	0.00	0.00	0.00
11,100.00	90.30	91.08	7,333.36	1,066.64	3,402.95	3,492.47	0.00	0.00	0.00
11,200.00	90.30	91.08	7,332.83	1,064.75	3,502.93	3,591.76	0.00	0.00	0.00
11,300.00	90.30	91.08	7,332.29	1,062.86	3,602.91	3,691.05	0.00	0.00	0.00
11,400.00	90.30	91.08	7,331.76	1,060.97	3,702.89	3,790.34	0.00	0.00	0.00
11,500.00	90.30	91.08	7,331.23	1,059.08	3,802.87	3,889.63	0.00	0.00	0.00
11,600.00	90.30	91.08	7,330.70	1,057.19	3,902.85	3,988.93	0.00	0.00	0.00
11,700.00	90.30	91.08	7,330.17	1,055.30	4,002.84	4,088.22	0.00	0.00	0.00
11,800.00	90.30	91.08	7,329.63	1,053.41	4,102.82	4,187.51	0.00	0.00	0.00
11,900.00	90.30	91.08	7,329.10	1,051.51	4,202.80	4,286.80	0.00	0.00	0.00
12,000.00	90.30	91.08	7,328.57	1,049.62	4,302.78	4,386.09	0.00	0.00	0.00
12,100.00	90.30	91.08	7,328.04	1,047.73	4,402.76	4,485.39	0.00	0.00	0.00
12,200.00	90.30	91.08	7,327.50	1,045.84	4,502.74	4,584.68	0.00	0.00	0.00
12,300.00	90.30	91.08	7,326.97	1,043.95	4,602.72	4,683.97	0.00	0.00	0.00
12,400.00	90.30	91.08	7,326.44	1,042.06	4,702.70	4,783.26	0.00	0.00	0.00
12,500.00	90.30	91.08	7,325.91	1,040.17	4,802.68	4,882.55	0.00	0.00	0.00
12,600.00	90.30	91.08	7,325.38	1,038.28	4,902.66	4,981.85	0.00	0.00	0.00
12,700.00	90.30	91.08	7,324.84	1,036.39	5,002.64	5,081.14	0.00	0.00	0.00
12,800.00	90.30	91.08	7,324.31	1,034.50	5,102.62	5,180.43	0.00	0.00	0.00
12,900.00	90.30	91.08	7,323.78	1,032.61	5,202.60	5,279.72	0.00	0.00	0.00
13,000.00	90.30	91.08	7,323.25	1,030.72	5,302.58	5,379.01	0.00	0.00	0.00
13,100.00	90.30	91.08	7,322.71	1,028.83	5,402.57	5,478.31	0.00	0.00	0.00
13,200.00	90.30	91.08	7,322.18	1,026.94	5,502.55	5,577.60	0.00	0.00	0.00
13,300.00	90.30	91.08	7,321.65	1,025.05	5,602.53	5,676.89	0.00	0.00	0.00
13,400.00	90.30	91.08	7,321.12	1,023.16	5,702.51	5,776.18	0.00	0.00	0.00
13,500.00	90.30	91.08	7,320.59	1,021.27	5,802.49	5,875.47	0.00	0.00	0.00
13,600.00	90.30	91.08	7,320.05	1,019.37	5,902.47	5,974.77	0.00	0.00	0.00
13,700.00	90.30	91.08	7,319.52	1,017.48	6,002.45	6,074.06	0.00	0.00	0.00
13,800.00	90.30	91.08	7,318.99	1,015.59	6,102.43	6,173.35	0.00	0.00	0.00
13,900.00	90.30	91.08	7,318.46	1,013.70	6,202.41	6,272.64	0.00	0.00	0.00
14,000.00	90.30	91.08	7,317.92	1,011.81	6,302.39	6,371.93	0.00	0.00	0.00
14,100.00	90.30	91.08	7,317.39	1,009.92	6,402.37	6,471.23	0.00	0.00	0.00
14,200.00	90.30	91.08	7,316.86	1,008.03	6,502.35	6,570.52	0.00	0.00	0.00
14,300.00	90.30	91.08	7,316.33	1,006.14	6,602.33	6,669.81	0.00	0.00	0.00
14,400.00	90.30	91.08	7,315.79	1,004.25	6,702.31	6,769.10	0.00	0.00	0.00
14,500.00	90.30	91.08	7,315.26	1,002.36	6,802.30	6,868.39	0.00	0.00	0.00
14,600.00	90.30	91.08	7,314.73	1,000.47	6,902.28	6,967.69	0.00	0.00	0.00
14,700.00	90.30	91.08	7,314.20	998.58	7,002.26	7,066.98	0.00	0.00	0.00
14,800.00	90.30	91.08	7,313.67	996.69	7,102.24	7,166.27	0.00	0.00	0.00
14,900.00	90.30	91.08	7,313.13	994.80	7,202.22	7,265.56	0.00	0.00	0.00
15,000.00	90.30	91.08	7,312.60	992.91	7,302.20	7,364.85	0.00	0.00	0.00
15,100.00	90.30	91.08	7,312.07	991.02	7,402.18	7,464.15	0.00	0.00	0.00
15,200.00	90.30	91.08	7,311.54	989.13	7,502.16	7,563.44	0.00	0.00	0.00

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HC-16-07-65 - Slot DEHAAN S 5X-HC-16-07-65 SHL
Company:	Nickel Road Operating LLC	TVD Reference:	KB @ 5300.00usft
Project:	WELD COUNTY, CO	MD Reference:	KB @ 5300.00usft
Site:	S17-T7N-R65W (DEHAAN)	North Reference:	Grid
Well:	DEHAAN 5X-HC-16-07-65	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
15,300.00	90.30	91.08	7,311.00	987.23	7,602.14	7,662.73	0.00	0.00	0.00	
15,400.00	90.30	91.08	7,310.47	985.34	7,702.12	7,762.02	0.00	0.00	0.00	
15,500.00	90.30	91.08	7,309.94	983.45	7,802.10	7,861.31	0.00	0.00	0.00	
15,600.00	90.30	91.08	7,309.41	981.56	7,902.08	7,960.61	0.00	0.00	0.00	
15,700.00	90.30	91.08	7,308.88	979.67	8,002.06	8,059.90	0.00	0.00	0.00	
15,800.00	90.30	91.08	7,308.34	977.78	8,102.04	8,159.19	0.00	0.00	0.00	
15,900.00	90.30	91.08	7,307.81	975.89	8,202.03	8,258.48	0.00	0.00	0.00	
16,000.00	90.30	91.08	7,307.28	974.00	8,302.01	8,357.77	0.00	0.00	0.00	
16,100.00	90.30	91.08	7,306.75	972.11	8,401.99	8,457.07	0.00	0.00	0.00	
16,200.00	90.30	91.08	7,306.21	970.22	8,501.97	8,556.36	0.00	0.00	0.00	
16,300.00	90.30	91.08	7,305.68	968.33	8,601.95	8,655.65	0.00	0.00	0.00	
16,400.00	90.30	91.08	7,305.15	966.44	8,701.93	8,754.94	0.00	0.00	0.00	
16,500.00	90.30	91.08	7,304.62	964.55	8,801.91	8,854.23	0.00	0.00	0.00	
16,600.00	90.30	91.08	7,304.09	962.66	8,901.89	8,953.53	0.00	0.00	0.00	
16,700.00	90.30	91.08	7,303.55	960.77	9,001.87	9,052.82	0.00	0.00	0.00	
16,800.00	90.30	91.08	7,303.02	958.88	9,101.85	9,152.11	0.00	0.00	0.00	
16,900.00	90.30	91.08	7,302.49	956.99	9,201.83	9,251.40	0.00	0.00	0.00	
17,000.00	90.30	91.08	7,301.96	955.10	9,301.81	9,350.69	0.00	0.00	0.00	
17,100.00	90.30	91.08	7,301.42	953.20	9,401.79	9,449.99	0.00	0.00	0.00	
17,179.58	90.30	91.08	7,301.00	951.70	9,481.36	9,529.00	0.00	0.00	0.00	
DEHAAN S 5X-HC-16-07-65 BHL										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
DEHAAN S 5X-HC-16-0	0.00	0.00	7,294.63	1,123.38	-98.53	1,452,890.14	3,223,675.62	40.573795	-104.694811
- plan misses target center by 0.56usft at 7590.31usft MD (7295.14 TVD, 1123.44 N, -98.74 E)									
- Point									
DEHAAN S 5X-HC-16-0	0.00	0.00	7,301.00	951.70	9,481.36	1,452,718.46	3,233,255.51	40.573080	-104.660333
- plan hits target center									
- Point									