

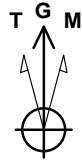
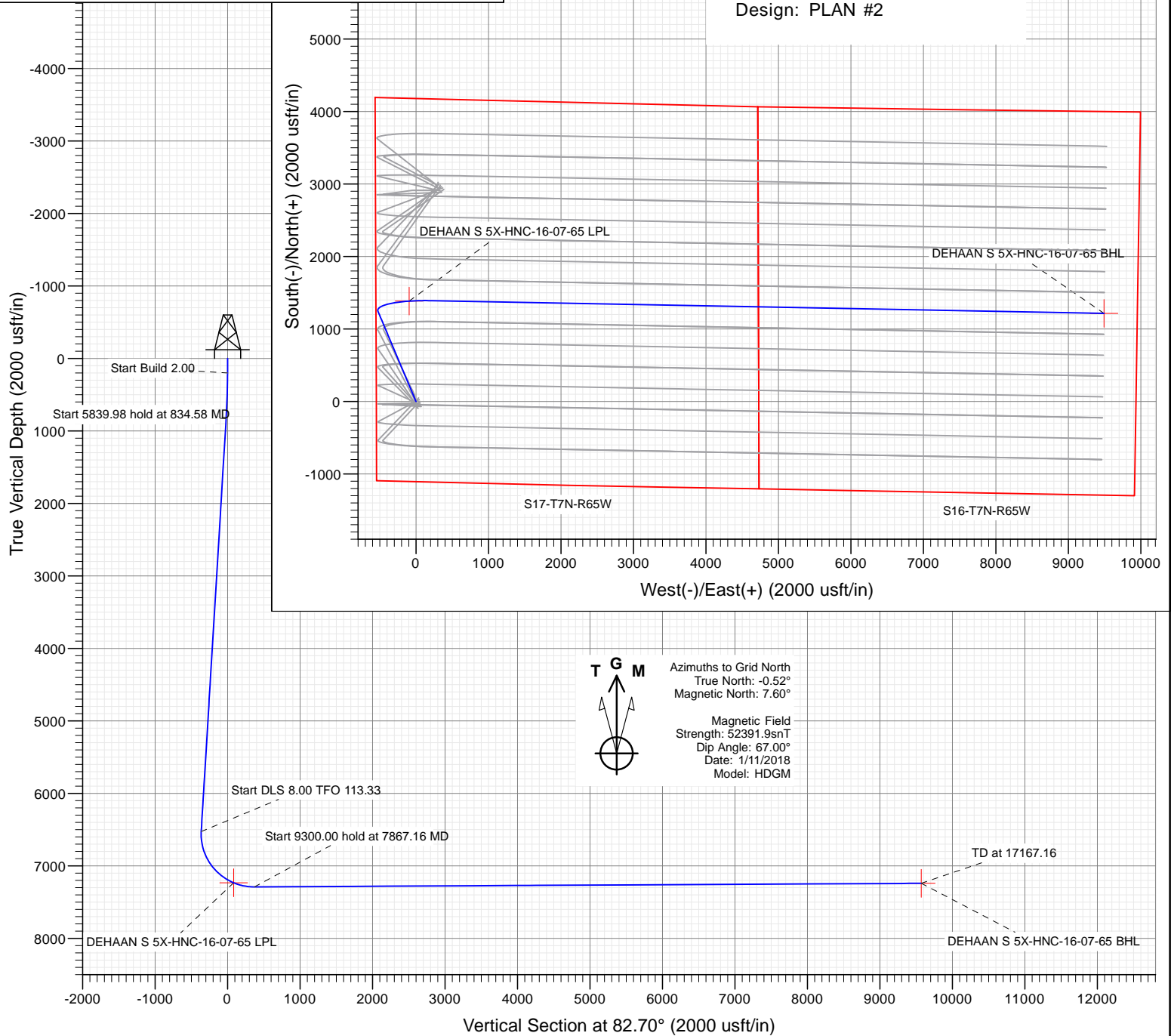
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	834.58	12.69	337.17	829.40	64.51	-27.16	2.00	337.17	-18.74	
4	6674.56	12.69	337.17	6526.70	1247.08	-524.94	0.00	0.00	-362.28	
5	7867.16	90.30	91.08	7290.47	1391.59	195.00	8.00	113.33	370.19	
6	17167.16	90.30	91.08	7241.00	1215.73	9493.21	0.00	0.00	9570.74	DEHAAN S 5X-HNC-16-07-65 BHL

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

Type	Target	Azimuth	Origin	Type	N/S	E/W	From	TVD
TD	No Target (Freehand)	82.70	Slot		0.00	0.00	0.00	0.00
Name		TVD	+N/-S	+E/-W	Latitude	Longitude		
DEHAAN S 5X-HNC-16-07-65 LPL		7232.42	1384.79	-92.41	40.574578	-104.694805		
DEHAAN S 5X-HNC-16-07-65 BHL		7241.00	1215.73	9493.21	40.573870	-104.690306		

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



Azimuths to Grid North
True North: -0.52°
Magnetic North: 7.60°

Magnetic Field
Strength: 52391.9snT
Dip Angle: 67.00°
Date: 1/11/2018
Model: HDGM

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

+N/-S	+E/-W	Northing	Easting	5280.00	Latitude	Longitude
0.00	0.00	1451790.69	3223766.90		40.570775	-104.694518



Nickel Road Operating LLC

WELD COUNTY, CO

S17-T7N-R65W (DEHAAN)

**DEHAAN 5X-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-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-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-16-07-65 SHL					
Well Position	+N/-S	-2,942.12 usft	Northing:	1,451,790.69 usft	Latitude:	40.570775
	+E/-W	-306.89 usft	Easting:	3,223,766.90 usft	Longitude:	-104.694518
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	8.12	67.00	52,391.90000000

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	82.70	

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
834.58	12.69	337.17	829.40	64.51	-27.16	2.00	2.00	0.00	337.17	
6,674.56	12.69	337.17	6,526.70	1,247.08	-524.94	0.00	0.00	0.00	0.00	
7,867.16	90.30	91.08	7,290.47	1,391.59	195.00	8.00	6.51	9.55	113.33	
17,167.16	90.30	91.08	7,241.00	1,215.73	9,493.21	0.00	0.00	0.00	0.00	DEHAAN S 5X-HNC-

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-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	
300.00	2.00	337.17	299.98	1.61	-0.68	-0.47	2.00	2.00	0.00	
400.00	4.00	337.17	399.84	6.43	-2.71	-1.87	2.00	2.00	0.00	
500.00	6.00	337.17	499.45	14.46	-6.09	-4.20	2.00	2.00	0.00	
600.00	8.00	337.17	598.70	25.70	-10.82	-7.46	2.00	2.00	0.00	
700.00	10.00	337.17	697.47	40.11	-16.89	-11.65	2.00	2.00	0.00	
800.00	12.00	337.17	795.62	57.70	-24.29	-16.76	2.00	2.00	0.00	
834.58	12.69	337.17	829.40	64.51	-27.16	-18.74	2.00	2.00	0.00	
900.00	12.69	337.17	893.22	77.76	-32.73	-22.59	0.00	0.00	0.00	
1,000.00	12.69	337.17	990.78	98.01	-41.26	-28.47	0.00	0.00	0.00	
1,100.00	12.69	337.17	1,088.34	118.26	-49.78	-34.35	0.00	0.00	0.00	
1,200.00	12.69	337.17	1,185.89	138.51	-58.30	-40.24	0.00	0.00	0.00	
1,300.00	12.69	337.17	1,283.45	158.76	-66.83	-46.12	0.00	0.00	0.00	
1,400.00	12.69	337.17	1,381.01	179.01	-75.35	-52.00	0.00	0.00	0.00	
1,500.00	12.69	337.17	1,478.56	199.26	-83.87	-57.88	0.00	0.00	0.00	
1,600.00	12.69	337.17	1,576.12	219.51	-92.40	-63.77	0.00	0.00	0.00	
1,700.00	12.69	337.17	1,673.68	239.76	-100.92	-69.65	0.00	0.00	0.00	
1,800.00	12.69	337.17	1,771.24	260.01	-109.45	-75.53	0.00	0.00	0.00	
1,900.00	12.69	337.17	1,868.79	280.26	-117.97	-81.41	0.00	0.00	0.00	
2,000.00	12.69	337.17	1,966.35	300.50	-126.49	-87.30	0.00	0.00	0.00	
2,100.00	12.69	337.17	2,063.91	320.75	-135.02	-93.18	0.00	0.00	0.00	
2,200.00	12.69	337.17	2,161.46	341.00	-143.54	-99.06	0.00	0.00	0.00	
2,300.00	12.69	337.17	2,259.02	361.25	-152.06	-104.94	0.00	0.00	0.00	
2,400.00	12.69	337.17	2,356.58	381.50	-160.59	-110.83	0.00	0.00	0.00	
2,500.00	12.69	337.17	2,454.13	401.75	-169.11	-116.71	0.00	0.00	0.00	
2,600.00	12.69	337.17	2,551.69	422.00	-177.64	-122.59	0.00	0.00	0.00	
2,700.00	12.69	337.17	2,649.25	442.25	-186.16	-128.47	0.00	0.00	0.00	
2,800.00	12.69	337.17	2,746.80	462.50	-194.68	-134.36	0.00	0.00	0.00	
2,900.00	12.69	337.17	2,844.36	482.75	-203.21	-140.24	0.00	0.00	0.00	
3,000.00	12.69	337.17	2,941.92	503.00	-211.73	-146.12	0.00	0.00	0.00	
3,100.00	12.69	337.17	3,039.47	523.25	-220.25	-152.00	0.00	0.00	0.00	
3,200.00	12.69	337.17	3,137.03	543.50	-228.78	-157.89	0.00	0.00	0.00	
3,300.00	12.69	337.17	3,234.59	563.75	-237.30	-163.77	0.00	0.00	0.00	
3,400.00	12.69	337.17	3,332.14	584.00	-245.83	-169.65	0.00	0.00	0.00	
3,500.00	12.69	337.17	3,429.70	604.25	-254.35	-175.53	0.00	0.00	0.00	
3,600.00	12.69	337.17	3,527.26	624.50	-262.87	-181.42	0.00	0.00	0.00	
3,700.00	12.69	337.17	3,624.81	644.75	-271.40	-187.30	0.00	0.00	0.00	
3,800.00	12.69	337.17	3,722.37	664.99	-279.92	-193.18	0.00	0.00	0.00	
3,900.00	12.69	337.17	3,819.93	685.24	-288.44	-199.06	0.00	0.00	0.00	
4,000.00	12.69	337.17	3,917.48	705.49	-296.97	-204.95	0.00	0.00	0.00	
4,100.00	12.69	337.17	4,015.04	725.74	-305.49	-210.83	0.00	0.00	0.00	
4,200.00	12.69	337.17	4,112.60	745.99	-314.02	-216.71	0.00	0.00	0.00	
4,300.00	12.69	337.17	4,210.15	766.24	-322.54	-222.59	0.00	0.00	0.00	
4,400.00	12.69	337.17	4,307.71	786.49	-331.06	-228.48	0.00	0.00	0.00	
4,500.00	12.69	337.17	4,405.27	806.74	-339.59	-234.36	0.00	0.00	0.00	
4,600.00	12.69	337.17	4,502.82	826.99	-348.11	-240.24	0.00	0.00	0.00	
4,700.00	12.69	337.17	4,600.38	847.24	-356.63	-246.12	0.00	0.00	0.00	
4,800.00	12.69	337.17	4,697.94	867.49	-365.16	-252.01	0.00	0.00	0.00	
4,900.00	12.69	337.17	4,795.49	887.74	-373.68	-257.89	0.00	0.00	0.00	
5,000.00	12.69	337.17	4,893.05	907.99	-382.20	-263.77	0.00	0.00	0.00	
5,100.00	12.69	337.17	4,990.61	928.24	-390.73	-269.65	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-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-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)	
5,200.00	12.69	337.17	5,088.16	948.49	-399.25	-275.54	0.00	0.00	0.00	
5,300.00	12.69	337.17	5,185.72	968.74	-407.78	-281.42	0.00	0.00	0.00	
5,400.00	12.69	337.17	5,283.28	988.99	-416.30	-287.30	0.00	0.00	0.00	
5,500.00	12.69	337.17	5,380.83	1,009.23	-424.82	-293.18	0.00	0.00	0.00	
5,600.00	12.69	337.17	5,478.39	1,029.48	-433.35	-299.07	0.00	0.00	0.00	
5,700.00	12.69	337.17	5,575.95	1,049.73	-441.87	-304.95	0.00	0.00	0.00	
5,800.00	12.69	337.17	5,673.50	1,069.98	-450.39	-310.83	0.00	0.00	0.00	
5,900.00	12.69	337.17	5,771.06	1,090.23	-458.92	-316.71	0.00	0.00	0.00	
6,000.00	12.69	337.17	5,868.62	1,110.48	-467.44	-322.60	0.00	0.00	0.00	
6,100.00	12.69	337.17	5,966.17	1,130.73	-475.97	-328.48	0.00	0.00	0.00	
6,200.00	12.69	337.17	6,063.73	1,150.98	-484.49	-334.36	0.00	0.00	0.00	
6,300.00	12.69	337.17	6,161.29	1,171.23	-493.01	-340.24	0.00	0.00	0.00	
6,400.00	12.69	337.17	6,258.84	1,191.48	-501.54	-346.13	0.00	0.00	0.00	
6,500.00	12.69	337.17	6,356.40	1,211.73	-510.06	-352.01	0.00	0.00	0.00	
6,600.00	12.69	337.17	6,453.96	1,231.98	-518.58	-357.89	0.00	0.00	0.00	
6,674.56	12.69	337.17	6,526.70	1,247.08	-524.94	-362.28	0.00	0.00	0.00	
6,700.00	12.03	346.17	6,551.55	1,252.23	-526.66	-363.33	8.00	-2.60	35.39	
6,800.00	12.63	24.21	6,649.40	1,272.35	-524.66	-358.79	8.00	0.60	38.03	
6,900.00	17.34	49.73	6,746.07	1,291.98	-508.78	-340.55	8.00	4.71	25.53	
7,000.00	23.83	63.22	6,839.69	1,310.74	-479.34	-308.95	8.00	6.49	13.49	
7,100.00	31.00	70.98	6,928.43	1,328.27	-436.89	-264.62	8.00	7.17	7.75	
7,200.00	38.48	76.00	7,010.57	1,344.22	-382.26	-208.42	8.00	7.48	5.03	
7,300.00	46.11	79.59	7,084.49	1,358.27	-316.53	-141.43	8.00	7.63	3.59	
7,400.00	53.82	82.36	7,148.78	1,370.17	-240.97	-64.97	8.00	7.72	2.77	
7,500.00	61.59	84.62	7,202.17	1,379.67	-157.04	19.48	8.00	7.77	2.27	
7,571.60	67.17	86.05	7,233.11	1,384.90	-92.72	83.95	8.00	7.80	1.99	
DEHAAN S 5X-HNC-16-07-65 LPL										
7,600.00	69.39	86.58	7,243.62	1,386.60	-66.39	110.28	8.00	7.81	1.87	
7,700.00	77.21	88.34	7,272.33	1,390.81	29.22	205.65	8.00	7.82	1.76	
7,800.00	85.04	90.00	7,287.75	1,392.23	127.93	303.74	8.00	7.83	1.66	
7,867.16	90.30	91.08	7,290.47	1,391.59	195.00	370.19	8.00	7.84	1.62	
7,900.00	90.30	91.08	7,290.30	1,390.97	227.84	402.68	0.00	0.00	0.00	
8,000.00	90.30	91.08	7,289.76	1,389.08	327.82	501.61	0.00	0.00	0.00	
8,100.00	90.30	91.08	7,289.23	1,387.19	427.80	600.55	0.00	0.00	0.00	
8,200.00	90.30	91.08	7,288.70	1,385.30	527.78	699.48	0.00	0.00	0.00	
8,300.00	90.30	91.08	7,288.17	1,383.41	627.76	798.41	0.00	0.00	0.00	
8,400.00	90.30	91.08	7,287.64	1,381.52	727.74	897.34	0.00	0.00	0.00	
8,500.00	90.30	91.08	7,287.10	1,379.63	827.72	996.27	0.00	0.00	0.00	
8,600.00	90.30	91.08	7,286.57	1,377.74	927.71	1,095.20	0.00	0.00	0.00	
8,700.00	90.30	91.08	7,286.04	1,375.84	1,027.69	1,194.13	0.00	0.00	0.00	
8,800.00	90.30	91.08	7,285.51	1,373.95	1,127.67	1,293.06	0.00	0.00	0.00	
8,900.00	90.30	91.08	7,284.98	1,372.06	1,227.65	1,391.99	0.00	0.00	0.00	
9,000.00	90.30	91.08	7,284.44	1,370.17	1,327.63	1,490.92	0.00	0.00	0.00	
9,100.00	90.30	91.08	7,283.91	1,368.28	1,427.61	1,589.85	0.00	0.00	0.00	
9,200.00	90.30	91.08	7,283.38	1,366.39	1,527.59	1,688.78	0.00	0.00	0.00	
9,300.00	90.30	91.08	7,282.85	1,364.50	1,627.57	1,787.71	0.00	0.00	0.00	
9,400.00	90.30	91.08	7,282.32	1,362.61	1,727.55	1,886.64	0.00	0.00	0.00	
9,500.00	90.30	91.08	7,281.79	1,360.72	1,827.53	1,985.57	0.00	0.00	0.00	
9,600.00	90.30	91.08	7,281.25	1,358.83	1,927.51	2,084.50	0.00	0.00	0.00	
9,700.00	90.30	91.08	7,280.72	1,356.93	2,027.49	2,183.43	0.00	0.00	0.00	
9,800.00	90.30	91.08	7,280.19	1,355.04	2,127.47	2,282.37	0.00	0.00	0.00	
9,900.00	90.30	91.08	7,279.66	1,353.15	2,227.45	2,381.30	0.00	0.00	0.00	
10,000.00	90.30	91.08	7,279.13	1,351.26	2,327.44	2,480.23	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-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-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)
10,100.00	90.30	91.08	7,278.59	1,349.37	2,427.42	2,579.16	0.00	0.00	0.00
10,200.00	90.30	91.08	7,278.06	1,347.48	2,527.40	2,678.09	0.00	0.00	0.00
10,300.00	90.30	91.08	7,277.53	1,345.59	2,627.38	2,777.02	0.00	0.00	0.00
10,400.00	90.30	91.08	7,277.00	1,343.70	2,727.36	2,875.95	0.00	0.00	0.00
10,500.00	90.30	91.08	7,276.47	1,341.81	2,827.34	2,974.88	0.00	0.00	0.00
10,600.00	90.30	91.08	7,275.93	1,339.92	2,927.32	3,073.81	0.00	0.00	0.00
10,700.00	90.30	91.08	7,275.40	1,338.02	3,027.30	3,172.74	0.00	0.00	0.00
10,800.00	90.30	91.08	7,274.87	1,336.13	3,127.28	3,271.67	0.00	0.00	0.00
10,900.00	90.30	91.08	7,274.34	1,334.24	3,227.26	3,370.60	0.00	0.00	0.00
11,000.00	90.30	91.08	7,273.81	1,332.35	3,327.24	3,469.53	0.00	0.00	0.00
11,100.00	90.30	91.08	7,273.27	1,330.46	3,427.22	3,568.46	0.00	0.00	0.00
11,200.00	90.30	91.08	7,272.74	1,328.57	3,527.20	3,667.39	0.00	0.00	0.00
11,300.00	90.30	91.08	7,272.21	1,326.68	3,627.18	3,766.32	0.00	0.00	0.00
11,400.00	90.30	91.08	7,271.68	1,324.79	3,727.17	3,865.26	0.00	0.00	0.00
11,500.00	90.30	91.08	7,271.15	1,322.90	3,827.15	3,964.19	0.00	0.00	0.00
11,600.00	90.30	91.08	7,270.61	1,321.01	3,927.13	4,063.12	0.00	0.00	0.00
11,700.00	90.30	91.08	7,270.08	1,319.11	4,027.11	4,162.05	0.00	0.00	0.00
11,800.00	90.30	91.08	7,269.55	1,317.22	4,127.09	4,260.98	0.00	0.00	0.00
11,900.00	90.30	91.08	7,269.02	1,315.33	4,227.07	4,359.91	0.00	0.00	0.00
12,000.00	90.30	91.08	7,268.49	1,313.44	4,327.05	4,458.84	0.00	0.00	0.00
12,100.00	90.30	91.08	7,267.95	1,311.55	4,427.03	4,557.77	0.00	0.00	0.00
12,200.00	90.30	91.08	7,267.42	1,309.66	4,527.01	4,656.70	0.00	0.00	0.00
12,300.00	90.30	91.08	7,266.89	1,307.77	4,626.99	4,755.63	0.00	0.00	0.00
12,400.00	90.30	91.08	7,266.36	1,305.88	4,726.97	4,854.56	0.00	0.00	0.00
12,500.00	90.30	91.08	7,265.83	1,303.99	4,826.95	4,953.49	0.00	0.00	0.00
12,600.00	90.30	91.08	7,265.29	1,302.10	4,926.93	5,052.42	0.00	0.00	0.00
12,700.00	90.30	91.08	7,264.76	1,300.20	5,026.91	5,151.35	0.00	0.00	0.00
12,800.00	90.30	91.08	7,264.23	1,298.31	5,126.90	5,250.28	0.00	0.00	0.00
12,900.00	90.30	91.08	7,263.70	1,296.42	5,226.88	5,349.21	0.00	0.00	0.00
13,000.00	90.30	91.08	7,263.17	1,294.53	5,326.86	5,448.14	0.00	0.00	0.00
13,100.00	90.30	91.08	7,262.64	1,292.64	5,426.84	5,547.08	0.00	0.00	0.00
13,200.00	90.30	91.08	7,262.10	1,290.75	5,526.82	5,646.01	0.00	0.00	0.00
13,300.00	90.30	91.08	7,261.57	1,288.86	5,626.80	5,744.94	0.00	0.00	0.00
13,400.00	90.30	91.08	7,261.04	1,286.97	5,726.78	5,843.87	0.00	0.00	0.00
13,500.00	90.30	91.08	7,260.51	1,285.08	5,826.76	5,942.80	0.00	0.00	0.00
13,600.00	90.30	91.08	7,259.98	1,283.19	5,926.74	6,041.73	0.00	0.00	0.00
13,700.00	90.30	91.08	7,259.44	1,281.29	6,026.72	6,140.66	0.00	0.00	0.00
13,800.00	90.30	91.08	7,258.91	1,279.40	6,126.70	6,239.59	0.00	0.00	0.00
13,900.00	90.30	91.08	7,258.38	1,277.51	6,226.68	6,338.52	0.00	0.00	0.00
14,000.00	90.30	91.08	7,257.85	1,275.62	6,326.66	6,437.45	0.00	0.00	0.00
14,100.00	90.30	91.08	7,257.32	1,273.73	6,426.64	6,536.38	0.00	0.00	0.00
14,200.00	90.30	91.08	7,256.78	1,271.84	6,526.63	6,635.31	0.00	0.00	0.00
14,300.00	90.30	91.08	7,256.25	1,269.95	6,626.61	6,734.24	0.00	0.00	0.00
14,400.00	90.30	91.08	7,255.72	1,268.06	6,726.59	6,833.17	0.00	0.00	0.00
14,500.00	90.30	91.08	7,255.19	1,266.17	6,826.57	6,932.10	0.00	0.00	0.00
14,600.00	90.30	91.08	7,254.66	1,264.28	6,926.55	7,031.03	0.00	0.00	0.00
14,700.00	90.30	91.08	7,254.12	1,262.38	7,026.53	7,129.96	0.00	0.00	0.00
14,800.00	90.30	91.08	7,253.59	1,260.49	7,126.51	7,228.90	0.00	0.00	0.00
14,900.00	90.30	91.08	7,253.06	1,258.60	7,226.49	7,327.83	0.00	0.00	0.00
15,000.00	90.30	91.08	7,252.53	1,256.71	7,326.47	7,426.76	0.00	0.00	0.00
15,100.00	90.30	91.08	7,252.00	1,254.82	7,426.45	7,525.69	0.00	0.00	0.00
15,200.00	90.30	91.08	7,251.46	1,252.93	7,526.43	7,624.62	0.00	0.00	0.00
15,300.00	90.30	91.08	7,250.93	1,251.04	7,626.41	7,723.55	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-HNC-16-07-65 - Slot DEHAAN S 5X-HNC-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-HNC-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)	
15,400.00	90.30	91.08	7,250.40	1,249.15	7,726.39	7,822.48	0.00	0.00	0.00	
15,500.00	90.30	91.08	7,249.87	1,247.26	7,826.37	7,921.41	0.00	0.00	0.00	
15,600.00	90.30	91.08	7,249.34	1,245.37	7,926.35	8,020.34	0.00	0.00	0.00	
15,700.00	90.30	91.08	7,248.80	1,243.47	8,026.34	8,119.27	0.00	0.00	0.00	
15,800.00	90.30	91.08	7,248.27	1,241.58	8,126.32	8,218.20	0.00	0.00	0.00	
15,900.00	90.30	91.08	7,247.74	1,239.69	8,226.30	8,317.13	0.00	0.00	0.00	
16,000.00	90.30	91.08	7,247.21	1,237.80	8,326.28	8,416.06	0.00	0.00	0.00	
16,100.00	90.30	91.08	7,246.68	1,235.91	8,426.26	8,514.99	0.00	0.00	0.00	
16,200.00	90.30	91.08	7,246.14	1,234.02	8,526.24	8,613.92	0.00	0.00	0.00	
16,300.00	90.30	91.08	7,245.61	1,232.13	8,626.22	8,712.85	0.00	0.00	0.00	
16,400.00	90.30	91.08	7,245.08	1,230.24	8,726.20	8,811.79	0.00	0.00	0.00	
16,500.00	90.30	91.08	7,244.55	1,228.35	8,826.18	8,910.72	0.00	0.00	0.00	
16,600.00	90.30	91.08	7,244.02	1,226.46	8,926.16	9,009.65	0.00	0.00	0.00	
16,700.00	90.30	91.08	7,243.49	1,224.56	9,026.14	9,108.58	0.00	0.00	0.00	
16,800.00	90.30	91.08	7,242.95	1,222.67	9,126.12	9,207.51	0.00	0.00	0.00	
16,900.00	90.30	91.08	7,242.42	1,220.78	9,226.10	9,306.44	0.00	0.00	0.00	
17,000.00	90.30	91.08	7,241.89	1,218.89	9,326.08	9,405.37	0.00	0.00	0.00	
17,100.00	90.30	91.08	7,241.36	1,217.00	9,426.07	9,504.30	0.00	0.00	0.00	
17,167.16	90.30	91.08	7,241.00	1,215.73	9,493.21	9,570.74	0.00	0.00	0.00	
DEHAAN S 5X-HNC-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
DEHAAN S 5X-HNC-16- - hit/miss target - Shape - Point	0.00	0.00	7,232.42	1,384.79	-92.41	1,453,175.48	3,223,674.49	40.574578	-104.694806
- plan misses target center by 0.77usft at 7571.57usft MD (7233.10 TVD, 1384.90 N, -92.75 E)									
DEHAAN S 5X-HNC-16- - plan hits target center - Point	0.00	0.00	7,241.00	1,215.73	9,493.21	1,453,006.42	3,233,260.11	40.573870	-104.660307