

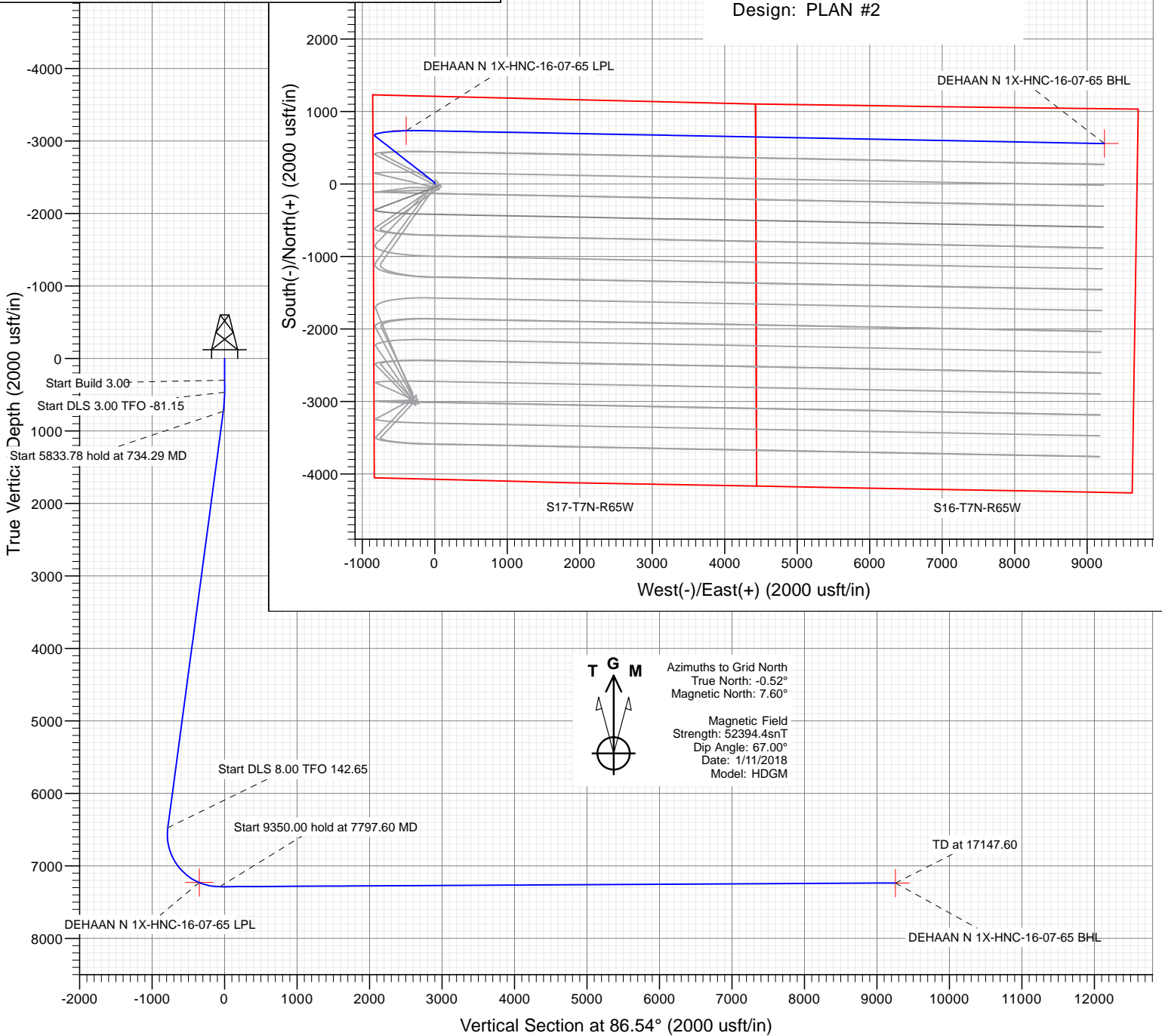
## SECTION DETAILS

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	Target
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	466.67	5.00	0.00	466.46	7.27	0.00	3.00	0.00	0.44	
4	734.29	10.08	307.97	731.94	33.38	-18.50	3.00	-81.15	-16.45	
5	6568.07	10.08	307.97	6475.63	661.69	-823.60	0.00	0.00	-782.20	
6	7797.60	90.32	91.09	7287.44	735.28	-109.02	8.00	142.65	-64.48	
7	17147.60	90.32	91.09	7236.00	558.17	9239.16	0.00	0.00	9256.01	DEHAAN N 1X-HNC-16-07-65 BHL

PLAN #2  
DEHAAN 1X-HNC-16-07-65  
20' KB @ 4914.00usft  
Ground Level @ 4894.00  
North American Datum 1983  
Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL, Grid North

Type	Target	Origin	N/S	E/W	From	TVD
TD	No Target (Freehand)	Slot	0.00	0.00	0.00	0.00
Name						
DEHAAN N 1X-HNC-16-07-65 LPL						
DEHAAN N 1X-HNC-16-07-65 BHL						

Project: WELD COUNTY, CO  
Site: S17-T7N-R65W (DEHAAN)  
Well: DEHAAN 1X-HNC-16-07-65  
Wellbore: OH  
Design: PLAN #2



## WELL DETAILS: DEHAAN 1X-HNC-16-07-65

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1454751.97	3224057.74	40.578896	-104.693374



# **Nickel Road Operating LLC**

**WELD COUNTY, CO**

**S17-T7N-R65W (DEHAAN)**

**DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65  
SHL**

**OH**

**Plan: PLAN #2**

## **Standard Planning Report**

**16 January, 2018**

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	20' KB @ 4914.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	20' KB @ 4914.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 1X-HNC-16-07-65	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2		

<b>Project</b>	WELD COUNTY, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL					
Well Position	+N/-S	19.16 usft	Northing:	1,454,751.97 usft	Latitude:	40.578896
	+E/-W	-16.05 usft	Easting:	3,224,057.74 usft	Longitude:	-104.693374
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,894.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	1/11/2018	8.12	67.00	52,394.40000000

<b>Design</b>	PLAN #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	86.54	

<b>Plan Sections</b>										
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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
466.67	5.00	0.00	466.46	7.27	0.00	3.00	3.00	0.00	0.00	
734.29	10.08	307.97	731.94	33.38	-18.50	3.00	1.90	-19.44	-81.15	
6,568.07	10.08	307.97	6,475.63	661.69	-823.60	0.00	0.00	0.00	0.00	
7,797.60	90.32	91.09	7,287.44	735.28	-109.02	8.00	6.53	11.64	142.65	
17,147.60	90.32	91.09	7,236.00	558.17	9,239.16	0.00	0.00	0.00	0.00	DEHAAN N 1X-HNC-

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	20' KB @ 4914.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	20' KB @ 4914.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 1X-HNC-16-07-65	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	3.00	0.00	399.95	2.62	0.00	0.16	3.00	3.00	0.00	
466.67	5.00	0.00	466.46	7.27	0.00	0.44	3.00	3.00	0.00	
500.00	5.25	349.13	499.66	10.22	-0.29	0.33	3.00	0.74	-32.61	
600.00	6.86	324.78	599.11	19.59	-4.60	-3.41	3.00	1.62	-24.35	
700.00	9.20	311.14	698.13	29.73	-14.07	-12.25	3.00	2.34	-13.64	
734.29	10.08	307.97	731.94	33.38	-18.50	-16.45	3.00	2.57	-9.23	
800.00	10.08	307.97	796.63	40.46	-27.57	-25.08	0.00	0.00	0.00	
900.00	10.08	307.97	895.09	51.23	-41.37	-38.20	0.00	0.00	0.00	
1,000.00	10.08	307.97	993.54	62.00	-55.17	-51.33	0.00	0.00	0.00	
1,100.00	10.08	307.97	1,092.00	72.77	-68.97	-64.45	0.00	0.00	0.00	
1,200.00	10.08	307.97	1,190.46	83.54	-82.77	-77.58	0.00	0.00	0.00	
1,300.00	10.08	307.97	1,288.91	94.31	-96.57	-90.71	0.00	0.00	0.00	
1,400.00	10.08	307.97	1,387.37	105.08	-110.37	-103.83	0.00	0.00	0.00	
1,500.00	10.08	307.97	1,485.82	115.85	-124.17	-116.96	0.00	0.00	0.00	
1,600.00	10.08	307.97	1,584.28	126.62	-137.97	-130.08	0.00	0.00	0.00	
1,700.00	10.08	307.97	1,682.74	137.39	-151.77	-143.21	0.00	0.00	0.00	
1,800.00	10.08	307.97	1,781.19	148.16	-165.57	-156.34	0.00	0.00	0.00	
1,900.00	10.08	307.97	1,879.65	158.93	-179.37	-169.46	0.00	0.00	0.00	
2,000.00	10.08	307.97	1,978.10	169.70	-193.17	-182.59	0.00	0.00	0.00	
2,100.00	10.08	307.97	2,076.56	180.47	-206.98	-195.72	0.00	0.00	0.00	
2,200.00	10.08	307.97	2,175.01	191.24	-220.78	-208.84	0.00	0.00	0.00	
2,300.00	10.08	307.97	2,273.47	202.01	-234.58	-221.97	0.00	0.00	0.00	
2,400.00	10.08	307.97	2,371.93	212.78	-248.38	-235.09	0.00	0.00	0.00	
2,500.00	10.08	307.97	2,470.38	223.55	-262.18	-248.22	0.00	0.00	0.00	
2,600.00	10.08	307.97	2,568.84	234.32	-275.98	-261.35	0.00	0.00	0.00	
2,700.00	10.08	307.97	2,667.29	245.09	-289.78	-274.47	0.00	0.00	0.00	
2,800.00	10.08	307.97	2,765.75	255.86	-303.58	-287.60	0.00	0.00	0.00	
2,900.00	10.08	307.97	2,864.20	266.63	-317.38	-300.72	0.00	0.00	0.00	
3,000.00	10.08	307.97	2,962.66	277.40	-331.18	-313.85	0.00	0.00	0.00	
3,100.00	10.08	307.97	3,061.12	288.17	-344.98	-326.98	0.00	0.00	0.00	
3,200.00	10.08	307.97	3,159.57	298.94	-358.78	-340.10	0.00	0.00	0.00	
3,300.00	10.08	307.97	3,258.03	309.71	-372.58	-353.23	0.00	0.00	0.00	
3,400.00	10.08	307.97	3,356.48	320.48	-386.39	-366.36	0.00	0.00	0.00	
3,500.00	10.08	307.97	3,454.94	331.25	-400.19	-379.48	0.00	0.00	0.00	
3,600.00	10.08	307.97	3,553.40	342.02	-413.99	-392.61	0.00	0.00	0.00	
3,700.00	10.08	307.97	3,651.85	352.79	-427.79	-405.73	0.00	0.00	0.00	
3,800.00	10.08	307.97	3,750.31	363.56	-441.59	-418.86	0.00	0.00	0.00	
3,900.00	10.08	307.97	3,848.76	374.33	-455.39	-431.99	0.00	0.00	0.00	
4,000.00	10.08	307.97	3,947.22	385.10	-469.19	-445.11	0.00	0.00	0.00	
4,100.00	10.08	307.97	4,045.67	395.87	-482.99	-458.24	0.00	0.00	0.00	
4,200.00	10.08	307.97	4,144.13	406.64	-496.79	-471.37	0.00	0.00	0.00	
4,300.00	10.08	307.97	4,242.59	417.41	-510.59	-484.49	0.00	0.00	0.00	
4,400.00	10.08	307.97	4,341.04	428.18	-524.39	-497.62	0.00	0.00	0.00	
4,500.00	10.08	307.97	4,439.50	438.95	-538.19	-510.74	0.00	0.00	0.00	
4,600.00	10.08	307.97	4,537.95	449.72	-551.99	-523.87	0.00	0.00	0.00	
4,700.00	10.08	307.97	4,636.41	460.49	-565.79	-537.00	0.00	0.00	0.00	
4,800.00	10.08	307.97	4,734.87	471.26	-579.60	-550.12	0.00	0.00	0.00	
4,900.00	10.08	307.97	4,833.32	482.03	-593.40	-563.25	0.00	0.00	0.00	
5,000.00	10.08	307.97	4,931.78	492.80	-607.20	-576.37	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	20' KB @ 4914.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	20' KB @ 4914.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 1X-HNC-16-07-65	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	10.08	307.97	5,030.23	503.57	-621.00	-589.50	0.00	0.00	0.00	
5,200.00	10.08	307.97	5,128.69	514.34	-634.80	-602.63	0.00	0.00	0.00	
5,300.00	10.08	307.97	5,227.14	525.12	-648.60	-615.75	0.00	0.00	0.00	
5,400.00	10.08	307.97	5,325.60	535.89	-662.40	-628.88	0.00	0.00	0.00	
5,500.00	10.08	307.97	5,424.06	546.66	-676.20	-642.01	0.00	0.00	0.00	
5,600.00	10.08	307.97	5,522.51	557.43	-690.00	-655.13	0.00	0.00	0.00	
5,700.00	10.08	307.97	5,620.97	568.20	-703.80	-668.26	0.00	0.00	0.00	
5,800.00	10.08	307.97	5,719.42	578.97	-717.60	-681.38	0.00	0.00	0.00	
5,900.00	10.08	307.97	5,817.88	589.74	-731.40	-694.51	0.00	0.00	0.00	
6,000.00	10.08	307.97	5,916.33	600.51	-745.20	-707.64	0.00	0.00	0.00	
6,100.00	10.08	307.97	6,014.79	611.28	-759.01	-720.76	0.00	0.00	0.00	
6,200.00	10.08	307.97	6,113.25	622.05	-772.81	-733.89	0.00	0.00	0.00	
6,300.00	10.08	307.97	6,211.70	632.82	-786.61	-747.01	0.00	0.00	0.00	
6,400.00	10.08	307.97	6,310.16	643.59	-800.41	-760.14	0.00	0.00	0.00	
6,500.00	10.08	307.97	6,408.61	654.36	-814.21	-773.27	0.00	0.00	0.00	
6,568.07	10.08	307.97	6,475.63	661.69	-823.60	-782.20	0.00	0.00	0.00	
6,600.00	8.20	318.90	6,507.16	665.12	-827.30	-785.69	8.00	-5.90	34.23	
6,700.00	6.59	23.47	6,606.48	675.78	-829.71	-787.45	8.00	-1.61	64.57	
6,800.00	12.13	61.26	6,705.19	686.11	-818.19	-775.33	8.00	5.54	37.79	
6,900.00	19.45	73.45	6,801.38	695.92	-792.97	-749.56	8.00	7.32	12.19	
7,000.00	27.15	79.03	6,893.16	705.02	-754.55	-710.66	8.00	7.70	5.58	
7,100.00	34.98	82.27	6,978.76	713.23	-703.66	-659.37	8.00	7.83	3.24	
7,200.00	42.86	84.44	7,056.51	720.39	-641.31	-596.70	8.00	7.88	2.17	
7,300.00	50.78	86.05	7,124.89	726.36	-568.70	-523.86	8.00	7.91	1.61	
7,400.00	58.71	87.33	7,182.57	731.02	-487.24	-442.27	8.00	7.93	1.28	
7,500.00	66.65	88.41	7,228.43	734.29	-398.53	-353.53	8.00	7.94	1.08	
7,506.19	67.14	88.47	7,230.86	734.45	-392.84	-347.84	8.00	7.95	1.00	
DEHAAN N 1X-HNC-16-07-65 LPL										
7,600.00	74.60	89.37	7,261.58	736.11	-304.29	-259.35	8.00	7.95	0.95	
7,700.00	82.55	90.25	7,281.37	736.42	-206.35	-161.57	8.00	7.95	0.89	
7,797.60	90.32	91.09	7,287.44	735.28	-109.02	-64.48	8.00	7.95	0.85	
7,800.00	90.32	91.09	7,287.43	735.24	-106.62	-62.09	0.00	0.00	0.00	
7,900.00	90.32	91.09	7,286.88	733.34	-6.64	37.59	0.00	0.00	0.00	
8,000.00	90.32	91.09	7,286.33	731.45	93.34	137.28	0.00	0.00	0.00	
8,100.00	90.32	91.09	7,285.78	729.56	193.32	236.96	0.00	0.00	0.00	
8,200.00	90.32	91.09	7,285.23	727.66	293.30	336.65	0.00	0.00	0.00	
8,300.00	90.32	91.09	7,284.68	725.77	393.28	436.33	0.00	0.00	0.00	
8,400.00	90.32	91.09	7,284.13	723.87	493.26	536.01	0.00	0.00	0.00	
8,500.00	90.32	91.09	7,283.58	721.98	593.24	635.70	0.00	0.00	0.00	
8,600.00	90.32	91.09	7,283.03	720.08	693.22	735.38	0.00	0.00	0.00	
8,700.00	90.32	91.09	7,282.48	718.19	793.20	835.07	0.00	0.00	0.00	
8,800.00	90.32	91.09	7,281.93	716.30	893.18	934.75	0.00	0.00	0.00	
8,900.00	90.32	91.09	7,281.38	714.40	993.16	1,034.44	0.00	0.00	0.00	
9,000.00	90.32	91.09	7,280.83	712.51	1,093.14	1,134.12	0.00	0.00	0.00	
9,100.00	90.32	91.09	7,280.28	710.61	1,193.12	1,233.80	0.00	0.00	0.00	
9,200.00	90.32	91.09	7,279.73	708.72	1,293.10	1,333.49	0.00	0.00	0.00	
9,300.00	90.32	91.09	7,279.18	706.82	1,393.08	1,433.17	0.00	0.00	0.00	
9,400.00	90.32	91.09	7,278.63	704.93	1,493.07	1,532.86	0.00	0.00	0.00	
9,500.00	90.32	91.09	7,278.08	703.04	1,593.05	1,632.54	0.00	0.00	0.00	
9,600.00	90.32	91.09	7,277.53	701.14	1,693.03	1,732.23	0.00	0.00	0.00	
9,700.00	90.32	91.09	7,276.97	699.25	1,793.01	1,831.91	0.00	0.00	0.00	
9,800.00	90.32	91.09	7,276.42	697.35	1,892.99	1,931.60	0.00	0.00	0.00	
9,900.00	90.32	91.09	7,275.87	695.46	1,992.97	2,031.28	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	20' KB @ 4914.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	20' KB @ 4914.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 1X-HNC-16-07-65	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	90.32	91.09	7,275.32	693.56	2,092.95	2,130.96	0.00	0.00	0.00
10,100.00	90.32	91.09	7,274.77	691.67	2,192.93	2,230.65	0.00	0.00	0.00
10,200.00	90.32	91.09	7,274.22	689.78	2,292.91	2,330.33	0.00	0.00	0.00
10,300.00	90.32	91.09	7,273.67	687.88	2,392.89	2,430.02	0.00	0.00	0.00
10,400.00	90.32	91.09	7,273.12	685.99	2,492.87	2,529.70	0.00	0.00	0.00
10,500.00	90.32	91.09	7,272.57	684.09	2,592.85	2,629.39	0.00	0.00	0.00
10,600.00	90.32	91.09	7,272.02	682.20	2,692.83	2,729.07	0.00	0.00	0.00
10,700.00	90.32	91.09	7,271.47	680.30	2,792.81	2,828.75	0.00	0.00	0.00
10,800.00	90.32	91.09	7,270.92	678.41	2,892.79	2,928.44	0.00	0.00	0.00
10,900.00	90.32	91.09	7,270.37	676.52	2,992.77	3,028.12	0.00	0.00	0.00
11,000.00	90.32	91.09	7,269.82	674.62	3,092.75	3,127.81	0.00	0.00	0.00
11,100.00	90.32	91.09	7,269.27	672.73	3,192.73	3,227.49	0.00	0.00	0.00
11,200.00	90.32	91.09	7,268.72	670.83	3,292.72	3,327.18	0.00	0.00	0.00
11,300.00	90.32	91.09	7,268.17	668.94	3,392.70	3,426.86	0.00	0.00	0.00
11,400.00	90.32	91.09	7,267.62	667.04	3,492.68	3,526.54	0.00	0.00	0.00
11,500.00	90.32	91.09	7,267.07	665.15	3,592.66	3,626.23	0.00	0.00	0.00
11,600.00	90.32	91.09	7,266.52	663.26	3,692.64	3,725.91	0.00	0.00	0.00
11,700.00	90.32	91.09	7,265.97	661.36	3,792.62	3,825.60	0.00	0.00	0.00
11,800.00	90.32	91.09	7,265.42	659.47	3,892.60	3,925.28	0.00	0.00	0.00
11,900.00	90.32	91.09	7,264.87	657.57	3,992.58	4,024.97	0.00	0.00	0.00
12,000.00	90.32	91.09	7,264.32	655.68	4,092.56	4,124.65	0.00	0.00	0.00
12,100.00	90.32	91.09	7,263.77	653.78	4,192.54	4,224.34	0.00	0.00	0.00
12,200.00	90.32	91.09	7,263.22	651.89	4,292.52	4,324.02	0.00	0.00	0.00
12,300.00	90.32	91.09	7,262.67	650.00	4,392.50	4,423.70	0.00	0.00	0.00
12,400.00	90.32	91.09	7,262.12	648.10	4,492.48	4,523.39	0.00	0.00	0.00
12,500.00	90.32	91.09	7,261.57	646.21	4,592.46	4,623.07	0.00	0.00	0.00
12,600.00	90.32	91.09	7,261.02	644.31	4,692.44	4,722.76	0.00	0.00	0.00
12,700.00	90.32	91.09	7,260.47	642.42	4,792.42	4,822.44	0.00	0.00	0.00
12,800.00	90.32	91.09	7,259.92	640.52	4,892.40	4,922.13	0.00	0.00	0.00
12,900.00	90.32	91.09	7,259.37	638.63	4,992.38	5,021.81	0.00	0.00	0.00
13,000.00	90.32	91.09	7,258.82	636.74	5,092.36	5,121.49	0.00	0.00	0.00
13,100.00	90.32	91.09	7,258.27	634.84	5,192.35	5,221.18	0.00	0.00	0.00
13,200.00	90.32	91.09	7,257.72	632.95	5,292.33	5,320.86	0.00	0.00	0.00
13,300.00	90.32	91.09	7,257.17	631.05	5,392.31	5,420.55	0.00	0.00	0.00
13,400.00	90.32	91.09	7,256.62	629.16	5,492.29	5,520.23	0.00	0.00	0.00
13,500.00	90.32	91.09	7,256.07	627.27	5,592.27	5,619.92	0.00	0.00	0.00
13,600.00	90.32	91.09	7,255.52	625.37	5,692.25	5,719.60	0.00	0.00	0.00
13,700.00	90.32	91.09	7,254.97	623.48	5,792.23	5,819.29	0.00	0.00	0.00
13,800.00	90.32	91.09	7,254.42	621.58	5,892.21	5,918.97	0.00	0.00	0.00
13,900.00	90.32	91.09	7,253.87	619.69	5,992.19	6,018.65	0.00	0.00	0.00
14,000.00	90.32	91.09	7,253.32	617.79	6,092.17	6,118.34	0.00	0.00	0.00
14,100.00	90.32	91.09	7,252.77	615.90	6,192.15	6,218.02	0.00	0.00	0.00
14,200.00	90.32	91.09	7,252.22	614.01	6,292.13	6,317.71	0.00	0.00	0.00
14,300.00	90.32	91.09	7,251.67	612.11	6,392.11	6,417.39	0.00	0.00	0.00
14,400.00	90.32	91.09	7,251.12	610.22	6,492.09	6,517.08	0.00	0.00	0.00
14,500.00	90.32	91.09	7,250.57	608.32	6,592.07	6,616.76	0.00	0.00	0.00
14,600.00	90.32	91.09	7,250.02	606.43	6,692.05	6,716.44	0.00	0.00	0.00
14,700.00	90.32	91.09	7,249.47	604.53	6,792.03	6,816.13	0.00	0.00	0.00
14,800.00	90.32	91.09	7,248.92	602.64	6,892.01	6,915.81	0.00	0.00	0.00
14,900.00	90.32	91.09	7,248.37	600.75	6,992.00	7,015.50	0.00	0.00	0.00
15,000.00	90.32	91.09	7,247.82	598.85	7,091.98	7,115.18	0.00	0.00	0.00
15,100.00	90.32	91.09	7,247.27	596.96	7,191.96	7,214.87	0.00	0.00	0.00
15,200.00	90.32	91.09	7,246.72	595.06	7,291.94	7,314.55	0.00	0.00	0.00

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 1X-HNC-16-07-65 - Slot DEHAAN N 1X-HNC-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	20' KB @ 4914.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	20' KB @ 4914.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 1X-HNC-16-07-65	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	90.32	91.09	7,246.17	593.17	7,391.92	7,414.23	0.00	0.00	0.00	
15,400.00	90.32	91.09	7,245.62	591.27	7,491.90	7,513.92	0.00	0.00	0.00	
15,500.00	90.32	91.09	7,245.06	589.38	7,591.88	7,613.60	0.00	0.00	0.00	
15,600.00	90.32	91.09	7,244.51	587.49	7,691.86	7,713.29	0.00	0.00	0.00	
15,700.00	90.32	91.09	7,243.96	585.59	7,791.84	7,812.97	0.00	0.00	0.00	
15,800.00	90.32	91.09	7,243.41	583.70	7,891.82	7,912.66	0.00	0.00	0.00	
15,900.00	90.32	91.09	7,242.86	581.80	7,991.80	8,012.34	0.00	0.00	0.00	
16,000.00	90.32	91.09	7,242.31	579.91	8,091.78	8,112.03	0.00	0.00	0.00	
16,100.00	90.32	91.09	7,241.76	578.01	8,191.76	8,211.71	0.00	0.00	0.00	
16,200.00	90.32	91.09	7,241.21	576.12	8,291.74	8,311.39	0.00	0.00	0.00	
16,300.00	90.32	91.09	7,240.66	574.23	8,391.72	8,411.08	0.00	0.00	0.00	
16,400.00	90.32	91.09	7,240.11	572.33	8,491.70	8,510.76	0.00	0.00	0.00	
16,500.00	90.32	91.09	7,239.56	570.44	8,591.68	8,610.45	0.00	0.00	0.00	
16,600.00	90.32	91.09	7,239.01	568.54	8,691.66	8,710.13	0.00	0.00	0.00	
16,700.00	90.32	91.09	7,238.46	566.65	8,791.65	8,809.82	0.00	0.00	0.00	
16,800.00	90.32	91.09	7,237.91	564.75	8,891.63	8,909.50	0.00	0.00	0.00	
16,900.00	90.32	91.09	7,237.36	562.86	8,991.61	9,009.18	0.00	0.00	0.00	
17,000.00	90.32	91.09	7,236.81	560.97	9,091.59	9,108.87	0.00	0.00	0.00	
17,100.00	90.32	91.09	7,236.26	559.07	9,191.57	9,208.55	0.00	0.00	0.00	
17,147.60	90.32	91.09	7,236.00	558.17	9,239.16	9,256.01	0.00	0.00	0.00	
DEHAAN N 1X-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
- hit/miss target									
- Shape									
DEHAAN N 1X-HNC-16-	0.00	0.00	7,229.29	734.35	-392.28	1,455,486.32	3,223,665.46	40.580921	-104.694763
- plan misses target center by 1.67usft at 7506.09usft MD (7230.82 TVD, 734.45 N, -392.94 E)									
- Point									
DEHAAN N 1X-HNC-16-	0.00	0.00	7,236.00	558.17	9,239.16	1,455,310.14	3,233,296.90	40.580192	-104.660096
- plan hits target center									
- Point									