

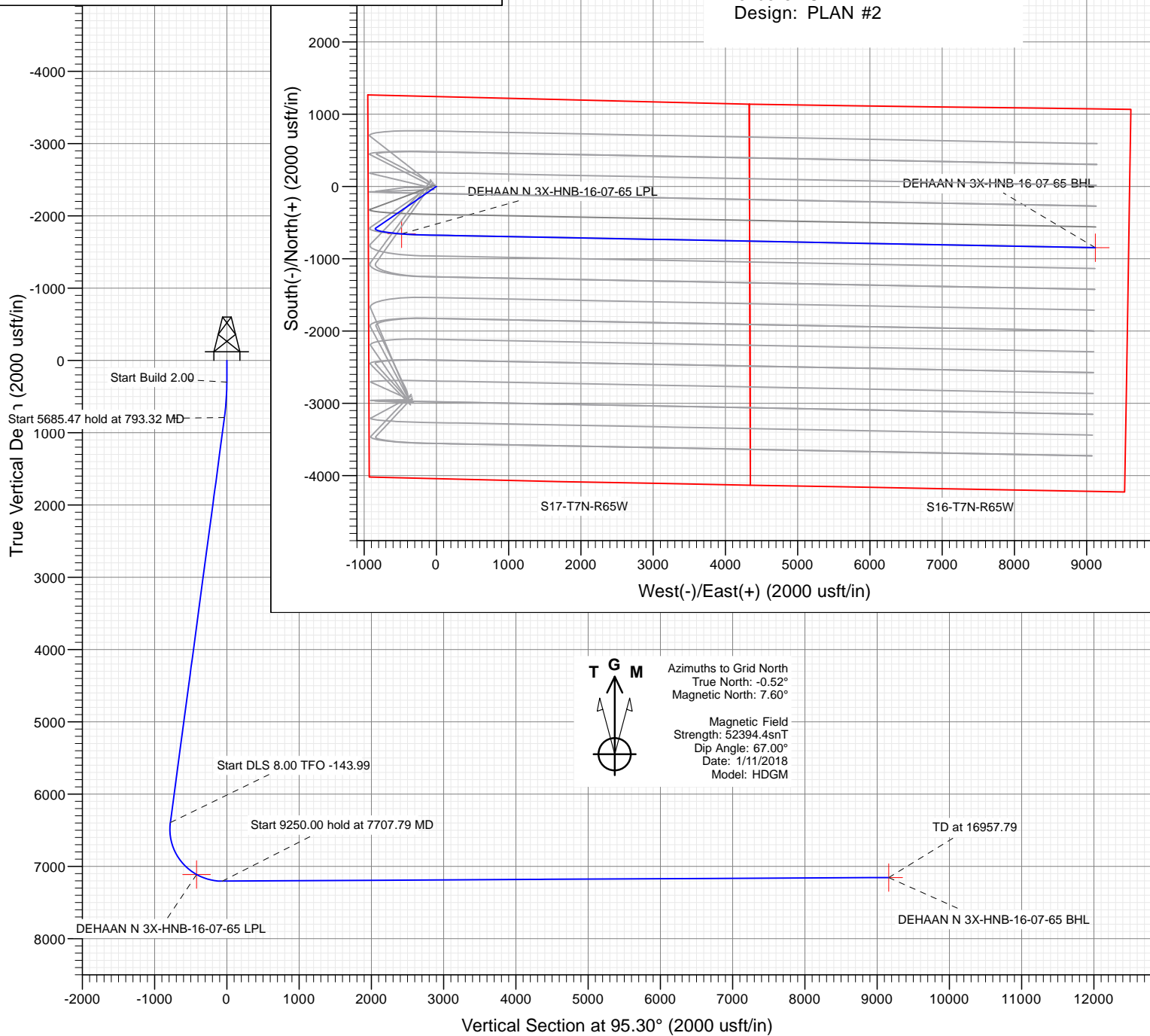
### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	793.32	9.87	235.51	790.88	-23.99	-34.92	2.00	235.51	-32.56	
4	6478.78	9.87	235.51	6392.26	-575.58	-837.93	0.00	0.00	-781.15	
5	7707.79	90.31	91.08	7204.08	-671.64	-126.56	8.00	-143.99	-63.94	
6	16957.79	90.31	91.08	7154.00	-846.67	9121.65	0.00	0.00	9160.86	DEHAAN N 3X-HNB-16-07-65 BHL

PLAN #2  
DEHAAN 3X-HNB-16-07-65  
20' KB @ 4914.00usf  
Ground Level @ 4894.00  
North American Datum 1983  
Well DEHAAN 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-16-07-65 LPL						
DEHAAN N 3X-HNB-16-07-65 BHL						

Project: WELD COUNTY, CO  
Site: S17-T7N-R65W (DEHAAN)  
Well: DEHAAN 3X-HNB-16-07-65  
Wellbore: OH  
Design: PLAN #2



### WELL DETAILS: DEHAAN 3X-HNB-16-07-65

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1454716.99	3224152.26	40.578797	-104.693035

# **Nickel Road Operating LLC**

**WELD COUNTY, CO**

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

**DEHAAN 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-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 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-16-07-65 SHL					
Well Position	+N/-S	-15.82 usft	Northing:	1,454,716.99 usft	Latitude:	40.578797
	+E/-W	78.47 usft	Easting:	3,224,152.26 usft	Longitude:	-104.693035
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	95.30

<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	
793.32	9.87	235.51	790.88	-23.99	-34.92	2.00	2.00	0.00	235.51	
6,478.78	9.87	235.51	6,392.26	-575.58	-837.93	0.00	0.00	0.00	0.00	
7,707.79	90.31	91.08	7,204.08	-671.64	-126.56	8.00	6.55	-11.75	-143.99	
16,957.79	90.31	91.08	7,154.00	-846.67	9,121.65	0.00	0.00	0.00	0.00	DEHAAN N 3X-HNB-

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-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	2.00	235.51	399.98	-0.99	-1.44	-1.34	2.00	2.00	0.00	
500.00	4.00	235.51	499.84	-3.95	-5.75	-5.36	2.00	2.00	0.00	
600.00	6.00	235.51	599.45	-8.89	-12.94	-12.06	2.00	2.00	0.00	
700.00	8.00	235.51	698.70	-15.79	-22.98	-21.42	2.00	2.00	0.00	
793.32	9.87	235.51	790.88	-23.99	-34.92	-32.56	2.00	2.00	0.00	
800.00	9.87	235.51	797.47	-24.64	-35.87	-33.44	0.00	0.00	0.00	
900.00	9.87	235.51	895.99	-34.34	-49.99	-46.60	0.00	0.00	0.00	
1,000.00	9.87	235.51	994.51	-44.04	-64.12	-59.77	0.00	0.00	0.00	
1,100.00	9.87	235.51	1,093.03	-53.74	-78.24	-72.94	0.00	0.00	0.00	
1,200.00	9.87	235.51	1,191.55	-63.44	-92.36	-86.10	0.00	0.00	0.00	
1,300.00	9.87	235.51	1,290.07	-73.15	-106.49	-99.27	0.00	0.00	0.00	
1,400.00	9.87	235.51	1,388.59	-82.85	-120.61	-112.44	0.00	0.00	0.00	
1,500.00	9.87	235.51	1,487.11	-92.55	-134.74	-125.60	0.00	0.00	0.00	
1,600.00	9.87	235.51	1,585.63	-102.25	-148.86	-138.77	0.00	0.00	0.00	
1,700.00	9.87	235.51	1,684.16	-111.95	-162.98	-151.94	0.00	0.00	0.00	
1,800.00	9.87	235.51	1,782.68	-121.66	-177.11	-165.11	0.00	0.00	0.00	
1,900.00	9.87	235.51	1,881.20	-131.36	-191.23	-178.27	0.00	0.00	0.00	
2,000.00	9.87	235.51	1,979.72	-141.06	-205.35	-191.44	0.00	0.00	0.00	
2,100.00	9.87	235.51	2,078.24	-150.76	-219.48	-204.61	0.00	0.00	0.00	
2,200.00	9.87	235.51	2,176.76	-160.46	-233.60	-217.77	0.00	0.00	0.00	
2,300.00	9.87	235.51	2,275.28	-170.16	-247.73	-230.94	0.00	0.00	0.00	
2,400.00	9.87	235.51	2,373.80	-179.87	-261.85	-244.11	0.00	0.00	0.00	
2,500.00	9.87	235.51	2,472.32	-189.57	-275.97	-257.27	0.00	0.00	0.00	
2,600.00	9.87	235.51	2,570.85	-199.27	-290.10	-270.44	0.00	0.00	0.00	
2,700.00	9.87	235.51	2,669.37	-208.97	-304.22	-283.61	0.00	0.00	0.00	
2,800.00	9.87	235.51	2,767.89	-218.67	-318.35	-296.77	0.00	0.00	0.00	
2,900.00	9.87	235.51	2,866.41	-228.37	-332.47	-309.94	0.00	0.00	0.00	
3,000.00	9.87	235.51	2,964.93	-238.08	-346.59	-323.11	0.00	0.00	0.00	
3,100.00	9.87	235.51	3,063.45	-247.78	-360.72	-336.27	0.00	0.00	0.00	
3,200.00	9.87	235.51	3,161.97	-257.48	-374.84	-349.44	0.00	0.00	0.00	
3,300.00	9.87	235.51	3,260.49	-267.18	-388.97	-362.61	0.00	0.00	0.00	
3,400.00	9.87	235.51	3,359.01	-276.88	-403.09	-375.77	0.00	0.00	0.00	
3,500.00	9.87	235.51	3,457.53	-286.58	-417.21	-388.94	0.00	0.00	0.00	
3,600.00	9.87	235.51	3,556.06	-296.29	-431.34	-402.11	0.00	0.00	0.00	
3,700.00	9.87	235.51	3,654.58	-305.99	-445.46	-415.27	0.00	0.00	0.00	
3,800.00	9.87	235.51	3,753.10	-315.69	-459.58	-428.44	0.00	0.00	0.00	
3,900.00	9.87	235.51	3,851.62	-325.39	-473.71	-441.61	0.00	0.00	0.00	
4,000.00	9.87	235.51	3,950.14	-335.09	-487.83	-454.77	0.00	0.00	0.00	
4,100.00	9.87	235.51	4,048.66	-344.80	-501.96	-467.94	0.00	0.00	0.00	
4,200.00	9.87	235.51	4,147.18	-354.50	-516.08	-481.11	0.00	0.00	0.00	
4,300.00	9.87	235.51	4,245.70	-364.20	-530.20	-494.27	0.00	0.00	0.00	
4,400.00	9.87	235.51	4,344.22	-373.90	-544.33	-507.44	0.00	0.00	0.00	
4,500.00	9.87	235.51	4,442.74	-383.60	-558.45	-520.61	0.00	0.00	0.00	
4,600.00	9.87	235.51	4,541.27	-393.30	-572.58	-533.77	0.00	0.00	0.00	
4,700.00	9.87	235.51	4,639.79	-403.01	-586.70	-546.94	0.00	0.00	0.00	
4,800.00	9.87	235.51	4,738.31	-412.71	-600.82	-560.11	0.00	0.00	0.00	
4,900.00	9.87	235.51	4,836.83	-422.41	-614.95	-573.27	0.00	0.00	0.00	
5,000.00	9.87	235.51	4,935.35	-432.11	-629.07	-586.44	0.00	0.00	0.00	
5,100.00	9.87	235.51	5,033.87	-441.81	-643.19	-599.61	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 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-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)
5,200.00	9.87	235.51	5,132.39	-451.51	-657.32	-612.78	0.00	0.00	0.00
5,300.00	9.87	235.51	5,230.91	-461.22	-671.44	-625.94	0.00	0.00	0.00
5,400.00	9.87	235.51	5,329.43	-470.92	-685.57	-639.11	0.00	0.00	0.00
5,500.00	9.87	235.51	5,427.96	-480.62	-699.69	-652.28	0.00	0.00	0.00
5,600.00	9.87	235.51	5,526.48	-490.32	-713.81	-665.44	0.00	0.00	0.00
5,700.00	9.87	235.51	5,625.00	-500.02	-727.94	-678.61	0.00	0.00	0.00
5,800.00	9.87	235.51	5,723.52	-509.72	-742.06	-691.78	0.00	0.00	0.00
5,900.00	9.87	235.51	5,822.04	-519.43	-756.19	-704.94	0.00	0.00	0.00
6,000.00	9.87	235.51	5,920.56	-529.13	-770.31	-718.11	0.00	0.00	0.00
6,100.00	9.87	235.51	6,019.08	-538.83	-784.43	-731.28	0.00	0.00	0.00
6,200.00	9.87	235.51	6,117.60	-548.53	-798.56	-744.44	0.00	0.00	0.00
6,300.00	9.87	235.51	6,216.12	-558.23	-812.68	-757.61	0.00	0.00	0.00
6,400.00	9.87	235.51	6,314.64	-567.94	-826.81	-770.78	0.00	0.00	0.00
6,478.78	9.87	235.51	6,392.26	-575.58	-837.93	-781.15	0.00	0.00	0.00
6,500.00	8.55	228.79	6,413.21	-577.65	-840.62	-783.63	8.00	-6.20	-31.70
6,600.00	6.02	164.80	6,512.54	-587.62	-844.84	-786.92	8.00	-2.53	-63.99
6,700.00	11.27	121.66	6,611.46	-597.83	-835.13	-776.31	8.00	5.25	-43.15
6,800.00	18.58	108.64	6,708.04	-608.07	-811.68	-752.01	8.00	7.31	-13.01
6,900.00	26.29	102.94	6,800.42	-618.14	-774.95	-714.50	8.00	7.71	-5.70
7,000.00	34.12	99.71	6,886.78	-627.84	-725.64	-664.50	8.00	7.84	-3.23
7,100.00	42.01	97.57	6,965.44	-637.00	-664.72	-603.00	8.00	7.89	-2.14
7,200.00	49.94	96.00	7,034.89	-645.42	-593.37	-531.18	8.00	7.92	-1.57
7,300.00	57.87	94.76	7,093.76	-652.94	-512.99	-450.44	8.00	7.94	-1.24
7,336.94	60.81	94.36	7,112.59	-655.47	-481.31	-418.67	8.00	7.94	-1.09
DEHAAN N 3X-HNB-16-07-65 LPL									
7,400.00	65.82	93.72	7,140.90	-659.43	-425.13	-362.36	8.00	7.95	-1.01
7,500.00	73.77	92.80	7,175.41	-664.75	-331.51	-268.65	8.00	7.95	-0.92
7,600.00	81.73	91.96	7,196.61	-668.79	-233.95	-171.13	8.00	7.96	-0.85
7,700.00	89.69	91.15	7,204.08	-671.49	-134.34	-71.71	8.00	7.96	-0.81
7,707.79	90.31	91.08	7,204.08	-671.64	-126.56	-63.94	8.00	7.96	-0.81
7,800.00	90.31	91.08	7,203.58	-673.39	-34.36	28.02	0.00	0.00	0.00
7,900.00	90.31	91.08	7,203.04	-675.28	65.62	127.75	0.00	0.00	0.00
8,000.00	90.31	91.08	7,202.50	-677.17	165.60	227.47	0.00	0.00	0.00
8,100.00	90.31	91.08	7,201.96	-679.06	265.58	327.20	0.00	0.00	0.00
8,200.00	90.31	91.08	7,201.42	-680.95	365.56	426.93	0.00	0.00	0.00
8,300.00	90.31	91.08	7,200.87	-682.85	465.54	526.66	0.00	0.00	0.00
8,400.00	90.31	91.08	7,200.33	-684.74	565.52	626.38	0.00	0.00	0.00
8,500.00	90.31	91.08	7,199.79	-686.63	665.50	726.11	0.00	0.00	0.00
8,600.00	90.31	91.08	7,199.25	-688.52	765.48	825.84	0.00	0.00	0.00
8,700.00	90.31	91.08	7,198.71	-690.42	865.46	925.57	0.00	0.00	0.00
8,800.00	90.31	91.08	7,198.17	-692.31	965.44	1,025.30	0.00	0.00	0.00
8,900.00	90.31	91.08	7,197.63	-694.20	1,065.42	1,125.02	0.00	0.00	0.00
9,000.00	90.31	91.08	7,197.08	-696.09	1,165.40	1,224.75	0.00	0.00	0.00
9,100.00	90.31	91.08	7,196.54	-697.98	1,265.38	1,324.48	0.00	0.00	0.00
9,200.00	90.31	91.08	7,196.00	-699.88	1,365.37	1,424.21	0.00	0.00	0.00
9,300.00	90.31	91.08	7,195.46	-701.77	1,465.35	1,523.93	0.00	0.00	0.00
9,400.00	90.31	91.08	7,194.92	-703.66	1,565.33	1,623.66	0.00	0.00	0.00
9,500.00	90.31	91.08	7,194.38	-705.55	1,665.31	1,723.39	0.00	0.00	0.00
9,600.00	90.31	91.08	7,193.84	-707.45	1,765.29	1,823.12	0.00	0.00	0.00
9,700.00	90.31	91.08	7,193.29	-709.34	1,865.27	1,922.84	0.00	0.00	0.00
9,800.00	90.31	91.08	7,192.75	-711.23	1,965.25	2,022.57	0.00	0.00	0.00
9,900.00	90.31	91.08	7,192.21	-713.12	2,065.23	2,122.30	0.00	0.00	0.00
10,000.00	90.31	91.08	7,191.67	-715.01	2,165.21	2,222.03	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 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-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)
10,100.00	90.31	91.08	7,191.13	-716.91	2,265.19	2,321.75	0.00	0.00	0.00
10,200.00	90.31	91.08	7,190.59	-718.80	2,365.17	2,421.48	0.00	0.00	0.00
10,300.00	90.31	91.08	7,190.05	-720.69	2,465.15	2,521.21	0.00	0.00	0.00
10,400.00	90.31	91.08	7,189.50	-722.58	2,565.13	2,620.94	0.00	0.00	0.00
10,500.00	90.31	91.08	7,188.96	-724.48	2,665.11	2,720.66	0.00	0.00	0.00
10,600.00	90.31	91.08	7,188.42	-726.37	2,765.09	2,820.39	0.00	0.00	0.00
10,700.00	90.31	91.08	7,187.88	-728.26	2,865.07	2,920.12	0.00	0.00	0.00
10,800.00	90.31	91.08	7,187.34	-730.15	2,965.06	3,019.85	0.00	0.00	0.00
10,900.00	90.31	91.08	7,186.80	-732.04	3,065.04	3,119.57	0.00	0.00	0.00
11,000.00	90.31	91.08	7,186.26	-733.94	3,165.02	3,219.30	0.00	0.00	0.00
11,100.00	90.31	91.08	7,185.71	-735.83	3,265.00	3,319.03	0.00	0.00	0.00
11,200.00	90.31	91.08	7,185.17	-737.72	3,364.98	3,418.76	0.00	0.00	0.00
11,300.00	90.31	91.08	7,184.63	-739.61	3,464.96	3,518.48	0.00	0.00	0.00
11,400.00	90.31	91.08	7,184.09	-741.51	3,564.94	3,618.21	0.00	0.00	0.00
11,500.00	90.31	91.08	7,183.55	-743.40	3,664.92	3,717.94	0.00	0.00	0.00
11,600.00	90.31	91.08	7,183.01	-745.29	3,764.90	3,817.67	0.00	0.00	0.00
11,700.00	90.31	91.08	7,182.47	-747.18	3,864.88	3,917.40	0.00	0.00	0.00
11,800.00	90.31	91.08	7,181.92	-749.07	3,964.86	4,017.12	0.00	0.00	0.00
11,900.00	90.31	91.08	7,181.38	-750.97	4,064.84	4,116.85	0.00	0.00	0.00
12,000.00	90.31	91.08	7,180.84	-752.86	4,164.82	4,216.58	0.00	0.00	0.00
12,100.00	90.31	91.08	7,180.30	-754.75	4,264.80	4,316.31	0.00	0.00	0.00
12,200.00	90.31	91.08	7,179.76	-756.64	4,364.78	4,416.03	0.00	0.00	0.00
12,300.00	90.31	91.08	7,179.22	-758.54	4,464.76	4,515.76	0.00	0.00	0.00
12,400.00	90.31	91.08	7,178.68	-760.43	4,564.75	4,615.49	0.00	0.00	0.00
12,500.00	90.31	91.08	7,178.13	-762.32	4,664.73	4,715.22	0.00	0.00	0.00
12,600.00	90.31	91.08	7,177.59	-764.21	4,764.71	4,814.94	0.00	0.00	0.00
12,700.00	90.31	91.08	7,177.05	-766.10	4,864.69	4,914.67	0.00	0.00	0.00
12,800.00	90.31	91.08	7,176.51	-768.00	4,964.67	5,014.40	0.00	0.00	0.00
12,900.00	90.31	91.08	7,175.97	-769.89	5,064.65	5,114.13	0.00	0.00	0.00
13,000.00	90.31	91.08	7,175.43	-771.78	5,164.63	5,213.85	0.00	0.00	0.00
13,100.00	90.31	91.08	7,174.89	-773.67	5,264.61	5,313.58	0.00	0.00	0.00
13,200.00	90.31	91.08	7,174.34	-775.56	5,364.59	5,413.31	0.00	0.00	0.00
13,300.00	90.31	91.08	7,173.80	-777.46	5,464.57	5,513.04	0.00	0.00	0.00
13,400.00	90.31	91.08	7,173.26	-779.35	5,564.55	5,612.76	0.00	0.00	0.00
13,500.00	90.31	91.08	7,172.72	-781.24	5,664.53	5,712.49	0.00	0.00	0.00
13,600.00	90.31	91.08	7,172.18	-783.13	5,764.51	5,812.22	0.00	0.00	0.00
13,700.00	90.31	91.08	7,171.64	-785.03	5,864.49	5,911.95	0.00	0.00	0.00
13,800.00	90.31	91.08	7,171.10	-786.92	5,964.47	6,011.67	0.00	0.00	0.00
13,900.00	90.31	91.08	7,170.56	-788.81	6,064.45	6,111.40	0.00	0.00	0.00
14,000.00	90.31	91.08	7,170.01	-790.70	6,164.44	6,211.13	0.00	0.00	0.00
14,100.00	90.31	91.08	7,169.47	-792.59	6,264.42	6,310.86	0.00	0.00	0.00
14,200.00	90.31	91.08	7,168.93	-794.49	6,364.40	6,410.58	0.00	0.00	0.00
14,300.00	90.31	91.08	7,168.39	-796.38	6,464.38	6,510.31	0.00	0.00	0.00
14,400.00	90.31	91.08	7,167.85	-798.27	6,564.36	6,610.04	0.00	0.00	0.00
14,500.00	90.31	91.08	7,167.31	-800.16	6,664.34	6,709.77	0.00	0.00	0.00
14,600.00	90.31	91.08	7,166.77	-802.06	6,764.32	6,809.50	0.00	0.00	0.00
14,700.00	90.31	91.08	7,166.22	-803.95	6,864.30	6,909.22	0.00	0.00	0.00
14,800.00	90.31	91.08	7,165.68	-805.84	6,964.28	7,008.95	0.00	0.00	0.00
14,900.00	90.31	91.08	7,165.14	-807.73	7,064.26	7,108.68	0.00	0.00	0.00
15,000.00	90.31	91.08	7,164.60	-809.62	7,164.24	7,208.41	0.00	0.00	0.00
15,100.00	90.31	91.08	7,164.06	-811.52	7,264.22	7,308.13	0.00	0.00	0.00
15,200.00	90.31	91.08	7,163.52	-813.41	7,364.20	7,407.86	0.00	0.00	0.00
15,300.00	90.31	91.08	7,162.98	-815.30	7,464.18	7,507.59	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 3X-HNB-16-07-65 - Slot DEHAAN N 3X-HNB-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 3X-HNB-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)	
15,400.00	90.31	91.08	7,162.43	-817.19	7,564.16	7,607.32	0.00	0.00	0.00	
15,500.00	90.31	91.08	7,161.89	-819.09	7,664.14	7,707.04	0.00	0.00	0.00	
15,600.00	90.31	91.08	7,161.35	-820.98	7,764.13	7,806.77	0.00	0.00	0.00	
15,700.00	90.31	91.08	7,160.81	-822.87	7,864.11	7,906.50	0.00	0.00	0.00	
15,800.00	90.31	91.08	7,160.27	-824.76	7,964.09	8,006.23	0.00	0.00	0.00	
15,900.00	90.31	91.08	7,159.73	-826.65	8,064.07	8,105.95	0.00	0.00	0.00	
16,000.00	90.31	91.08	7,159.19	-828.55	8,164.05	8,205.68	0.00	0.00	0.00	
16,100.00	90.31	91.08	7,158.64	-830.44	8,264.03	8,305.41	0.00	0.00	0.00	
16,200.00	90.31	91.08	7,158.10	-832.33	8,364.01	8,405.14	0.00	0.00	0.00	
16,300.00	90.31	91.08	7,157.56	-834.22	8,463.99	8,504.86	0.00	0.00	0.00	
16,400.00	90.31	91.08	7,157.02	-836.12	8,563.97	8,604.59	0.00	0.00	0.00	
16,500.00	90.31	91.08	7,156.48	-838.01	8,663.95	8,704.32	0.00	0.00	0.00	
16,600.00	90.31	91.08	7,155.94	-839.90	8,763.93	8,804.05	0.00	0.00	0.00	
16,700.00	90.31	91.08	7,155.40	-841.79	8,863.91	8,903.77	0.00	0.00	0.00	
16,800.00	90.31	91.08	7,154.85	-843.68	8,963.89	9,003.50	0.00	0.00	0.00	
16,900.00	90.31	91.08	7,154.31	-845.58	9,063.87	9,103.23	0.00	0.00	0.00	
16,957.79	90.31	91.08	7,154.00	-846.67	9,121.65	9,160.86	0.00	0.00	0.00	
DEHAAN N 3X-HNB-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 3X-HNB-16-	0.00	0.00	7,112.39	-655.44	-481.19	1,454,061.55	3,223,671.07	40.577010	-104.694789
- plan misses target center by 0.24usft at 7336.96usft MD (7112.60 TVD, -655.47 N, -481.30 E)									
- Point									
DEHAAN N 3X-HNB-16-	0.00	0.00	7,154.00	-846.67	9,121.65	1,453,870.32	3,233,273.91	40.576241	-104.660227
- plan hits target center									
- Point									