

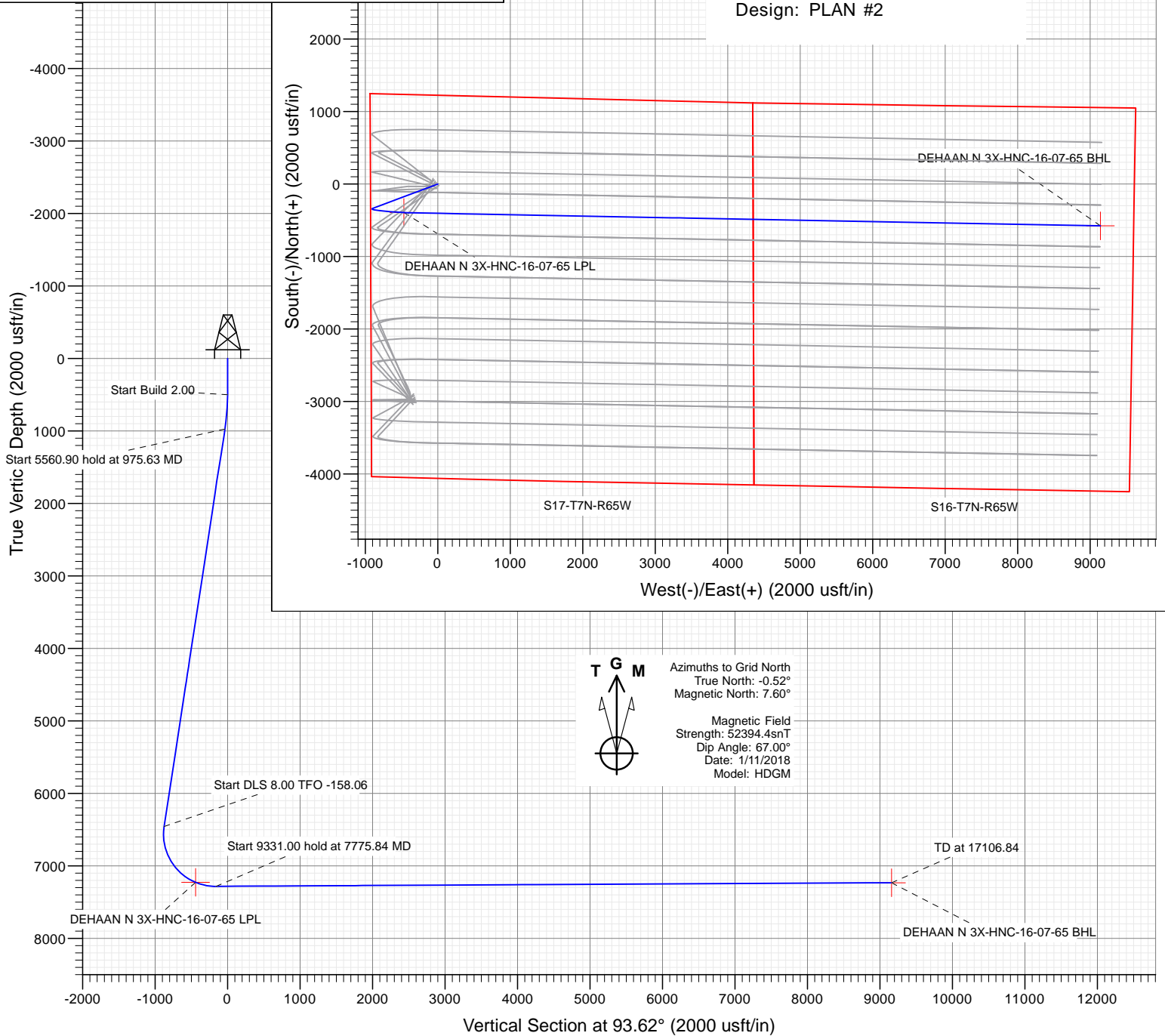
## SECTION DETAILS

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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	975.63	9.51	249.44	973.44	-13.83	-36.88	2.00	249.44	-35.94	
4	6536.52	9.51	249.44	6457.88	-336.57	-897.36	0.00	0.00	-874.34	
5	7775.84	90.31	91.08	7282.49	-401.28	-186.89	8.00	-158.06	-161.21	
6	17106.84	90.31	91.08	7232.00	-577.88	9142.30	0.00	0.00	9160.55	DEHAAN N 3X-HNC-16-07-65 BHL

PLAN #2  
DEHAAN 3X-HNC-16-07-65  
20' KB @ 4894.00usf  
Ground Level @ 4894.00  
North American Datum 1983  
Well DEHAAN 3X-HNC-16-07-65 - Slot DEHAAN N 3X-HNC-16-07-65 SHL, Grid North

Type	Target	Azimuth	Origin	Type	N/S	E/W	From	TVD
TD	No Target (Freehand)	93.62	Slot		0.00	0.00	0.00	0.00
Name		TVD	+N/-S	+E/-W	Latitude	Longitude		
DEHAAN N 3X-HNC-16-07-65 LPL		7227.26	-392.47	-466.24	40.577785	-104.694763		
DEHAAN N 3X-HNC-16-07-65 BHL		7232.00	-577.88	9142.30	40.577031	-104.660201		

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



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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1454736.16	3224136.20	40.578850	-104.693092



# **Nickel Road Operating LLC**

**WELD COUNTY, CO**

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

**DEHAAN 3X-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-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 3X-HNC-16-07-65 - Slot DEHAAN N 3X-HNC-16-07-65 SHL					
Well Position	+N/-S	3.35 usft	Northing:	1,454,736.16 usft	Latitude:	40.578850
	+E/-W	62.41 usft	Easting:	3,224,136.20 usft	Longitude:	-104.693092
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	93.62

<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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
975.63	9.51	249.44	973.44	-13.83	-36.88	2.00	2.00	0.00	249.44	
6,536.52	9.51	249.44	6,457.88	-336.57	-897.36	0.00	0.00	0.00	0.00	
7,775.84	90.31	91.08	7,282.49	-401.28	-186.89	8.00	6.52	-12.78	-158.06	
17,106.84	90.31	91.08	7,232.00	-577.88	9,142.30	0.00	0.00	0.00	0.00	DEHAAN N 3X-HNC-

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 3X-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-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	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	2.00	249.44	599.98	-0.61	-1.63	-1.59	2.00	2.00	0.00	
700.00	4.00	249.44	699.84	-2.45	-6.53	-6.37	2.00	2.00	0.00	
800.00	6.00	249.44	799.45	-5.51	-14.69	-14.32	2.00	2.00	0.00	
900.00	8.00	249.44	898.70	-9.79	-26.10	-25.43	2.00	2.00	0.00	
975.63	9.51	249.44	973.44	-13.83	-36.88	-35.94	2.00	2.00	0.00	
1,000.00	9.51	249.44	997.48	-15.25	-40.65	-39.61	0.00	0.00	0.00	
1,100.00	9.51	249.44	1,096.11	-21.05	-56.13	-54.69	0.00	0.00	0.00	
1,200.00	9.51	249.44	1,194.73	-26.86	-71.60	-69.77	0.00	0.00	0.00	
1,300.00	9.51	249.44	1,293.36	-32.66	-87.08	-84.84	0.00	0.00	0.00	
1,400.00	9.51	249.44	1,391.98	-38.46	-102.55	-99.92	0.00	0.00	0.00	
1,500.00	9.51	249.44	1,490.61	-44.27	-118.02	-115.00	0.00	0.00	0.00	
1,600.00	9.51	249.44	1,589.23	-50.07	-133.50	-130.07	0.00	0.00	0.00	
1,700.00	9.51	249.44	1,687.86	-55.87	-148.97	-145.15	0.00	0.00	0.00	
1,800.00	9.51	249.44	1,786.48	-61.68	-164.44	-160.23	0.00	0.00	0.00	
1,900.00	9.51	249.44	1,885.11	-67.48	-179.92	-175.30	0.00	0.00	0.00	
2,000.00	9.51	249.44	1,983.73	-73.29	-195.39	-190.38	0.00	0.00	0.00	
2,100.00	9.51	249.44	2,082.36	-79.09	-210.87	-205.46	0.00	0.00	0.00	
2,200.00	9.51	249.44	2,180.98	-84.89	-226.34	-220.53	0.00	0.00	0.00	
2,300.00	9.51	249.44	2,279.61	-90.70	-241.81	-235.61	0.00	0.00	0.00	
2,400.00	9.51	249.44	2,378.23	-96.50	-257.29	-250.69	0.00	0.00	0.00	
2,500.00	9.51	249.44	2,476.86	-102.30	-272.76	-265.76	0.00	0.00	0.00	
2,600.00	9.51	249.44	2,575.48	-108.11	-288.23	-280.84	0.00	0.00	0.00	
2,700.00	9.51	249.44	2,674.11	-113.91	-303.71	-295.92	0.00	0.00	0.00	
2,800.00	9.51	249.44	2,772.73	-119.72	-319.18	-310.99	0.00	0.00	0.00	
2,900.00	9.51	249.44	2,871.36	-125.52	-334.65	-326.07	0.00	0.00	0.00	
3,000.00	9.51	249.44	2,969.98	-131.32	-350.13	-341.15	0.00	0.00	0.00	
3,100.00	9.51	249.44	3,068.61	-137.13	-365.60	-356.22	0.00	0.00	0.00	
3,200.00	9.51	249.44	3,167.23	-142.93	-381.08	-371.30	0.00	0.00	0.00	
3,300.00	9.51	249.44	3,265.86	-148.73	-396.55	-386.38	0.00	0.00	0.00	
3,400.00	9.51	249.44	3,364.48	-154.54	-412.02	-401.45	0.00	0.00	0.00	
3,500.00	9.51	249.44	3,463.11	-160.34	-427.50	-416.53	0.00	0.00	0.00	
3,600.00	9.51	249.44	3,561.73	-166.15	-442.97	-431.61	0.00	0.00	0.00	
3,700.00	9.51	249.44	3,660.36	-171.95	-458.44	-446.68	0.00	0.00	0.00	
3,800.00	9.51	249.44	3,758.98	-177.75	-473.92	-461.76	0.00	0.00	0.00	
3,900.00	9.51	249.44	3,857.61	-183.56	-489.39	-476.84	0.00	0.00	0.00	
4,000.00	9.51	249.44	3,956.23	-189.36	-504.87	-491.91	0.00	0.00	0.00	
4,100.00	9.51	249.44	4,054.86	-195.16	-520.34	-506.99	0.00	0.00	0.00	
4,200.00	9.51	249.44	4,153.48	-200.97	-535.81	-522.07	0.00	0.00	0.00	
4,300.00	9.51	249.44	4,252.11	-206.77	-551.29	-537.14	0.00	0.00	0.00	
4,400.00	9.51	249.44	4,350.73	-212.57	-566.76	-552.22	0.00	0.00	0.00	
4,500.00	9.51	249.44	4,449.36	-218.38	-582.23	-567.30	0.00	0.00	0.00	
4,600.00	9.51	249.44	4,547.98	-224.18	-597.71	-582.38	0.00	0.00	0.00	
4,700.00	9.51	249.44	4,646.61	-229.99	-613.18	-597.45	0.00	0.00	0.00	
4,800.00	9.51	249.44	4,745.23	-235.79	-628.66	-612.53	0.00	0.00	0.00	
4,900.00	9.51	249.44	4,843.86	-241.59	-644.13	-627.61	0.00	0.00	0.00	
5,000.00	9.51	249.44	4,942.48	-247.40	-659.60	-642.68	0.00	0.00	0.00	
5,100.00	9.51	249.44	5,041.11	-253.20	-675.08	-657.76	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-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-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)	
5,200.00	9.51	249.44	5,139.73	-259.00	-690.55	-672.84	0.00	0.00	0.00	
5,300.00	9.51	249.44	5,238.36	-264.81	-706.02	-687.91	0.00	0.00	0.00	
5,400.00	9.51	249.44	5,336.98	-270.61	-721.50	-702.99	0.00	0.00	0.00	
5,500.00	9.51	249.44	5,435.61	-276.42	-736.97	-718.07	0.00	0.00	0.00	
5,600.00	9.51	249.44	5,534.23	-282.22	-752.44	-733.14	0.00	0.00	0.00	
5,700.00	9.51	249.44	5,632.86	-288.02	-767.92	-748.22	0.00	0.00	0.00	
5,800.00	9.51	249.44	5,731.48	-293.83	-783.39	-763.30	0.00	0.00	0.00	
5,900.00	9.51	249.44	5,830.11	-299.63	-798.87	-778.37	0.00	0.00	0.00	
6,000.00	9.51	249.44	5,928.73	-305.43	-814.34	-793.45	0.00	0.00	0.00	
6,100.00	9.51	249.44	6,027.36	-311.24	-829.81	-808.53	0.00	0.00	0.00	
6,200.00	9.51	249.44	6,125.98	-317.04	-845.29	-823.60	0.00	0.00	0.00	
6,300.00	9.51	249.44	6,224.61	-322.85	-860.76	-838.68	0.00	0.00	0.00	
6,400.00	9.51	249.44	6,323.23	-328.65	-876.23	-853.76	0.00	0.00	0.00	
6,500.00	9.51	249.44	6,421.86	-334.45	-891.71	-868.83	0.00	0.00	0.00	
6,536.52	9.51	249.44	6,457.88	-336.57	-897.36	-874.34	0.00	0.00	0.00	
6,600.00	5.16	227.87	6,520.83	-340.33	-904.39	-881.12	8.00	-6.86	-33.98	
6,700.00	5.52	130.87	6,620.56	-346.51	-904.09	-880.43	8.00	0.36	-97.00	
6,800.00	12.74	106.99	6,719.25	-352.89	-889.88	-865.85	8.00	7.21	-23.88	
6,900.00	20.54	100.61	6,815.00	-359.35	-862.05	-837.67	8.00	7.80	-6.38	
7,000.00	28.45	97.66	6,905.94	-365.76	-821.14	-796.43	8.00	7.91	-2.95	
7,100.00	36.39	95.92	6,990.28	-372.01	-767.94	-742.95	8.00	7.95	-1.74	
7,200.00	44.36	94.73	7,066.41	-377.96	-703.50	-678.25	8.00	7.96	-1.19	
7,300.00	52.33	93.84	7,132.82	-383.50	-629.05	-603.61	8.00	7.97	-0.89	
7,400.00	60.31	93.13	7,188.24	-388.53	-546.06	-520.46	8.00	7.98	-0.72	
7,489.01	67.41	92.58	7,227.43	-392.49	-466.31	-440.62	8.00	7.98	-0.61	
DEHAAN N 3X-HNC-16-07-65 LPL										
7,500.00	68.29	92.52	7,231.58	-392.94	-456.14	-430.44	8.00	7.98	-0.58	
7,600.00	76.27	91.97	7,261.99	-396.65	-361.03	-335.29	8.00	7.98	-0.55	
7,700.00	84.25	91.46	7,278.89	-399.60	-262.60	-236.87	8.00	7.98	-0.51	
7,775.84	90.31	91.08	7,282.49	-401.28	-186.89	-161.21	8.00	7.98	-0.50	
7,800.00	90.31	91.08	7,282.36	-401.73	-162.74	-137.07	0.00	0.00	0.00	
7,900.00	90.31	91.08	7,281.82	-403.63	-62.76	-37.17	0.00	0.00	0.00	
8,000.00	90.31	91.08	7,281.28	-405.52	37.22	62.73	0.00	0.00	0.00	
8,100.00	90.31	91.08	7,280.73	-407.41	137.20	162.63	0.00	0.00	0.00	
8,200.00	90.31	91.08	7,280.19	-409.31	237.18	262.53	0.00	0.00	0.00	
8,300.00	90.31	91.08	7,279.65	-411.20	337.16	362.43	0.00	0.00	0.00	
8,400.00	90.31	91.08	7,279.11	-413.09	437.14	462.33	0.00	0.00	0.00	
8,500.00	90.31	91.08	7,278.57	-414.98	537.12	562.23	0.00	0.00	0.00	
8,600.00	90.31	91.08	7,278.03	-416.88	637.10	662.13	0.00	0.00	0.00	
8,700.00	90.31	91.08	7,277.49	-418.77	737.08	762.03	0.00	0.00	0.00	
8,800.00	90.31	91.08	7,276.95	-420.66	837.07	861.93	0.00	0.00	0.00	
8,900.00	90.31	91.08	7,276.41	-422.55	937.05	961.84	0.00	0.00	0.00	
9,000.00	90.31	91.08	7,275.86	-424.45	1,037.03	1,061.74	0.00	0.00	0.00	
9,100.00	90.31	91.08	7,275.32	-426.34	1,137.01	1,161.64	0.00	0.00	0.00	
9,200.00	90.31	91.08	7,274.78	-428.23	1,236.99	1,261.54	0.00	0.00	0.00	
9,300.00	90.31	91.08	7,274.24	-430.12	1,336.97	1,361.44	0.00	0.00	0.00	
9,400.00	90.31	91.08	7,273.70	-432.02	1,436.95	1,461.34	0.00	0.00	0.00	
9,500.00	90.31	91.08	7,273.16	-433.91	1,536.93	1,561.24	0.00	0.00	0.00	
9,600.00	90.31	91.08	7,272.62	-435.80	1,636.91	1,661.14	0.00	0.00	0.00	
9,700.00	90.31	91.08	7,272.08	-437.70	1,736.89	1,761.04	0.00	0.00	0.00	
9,800.00	90.31	91.08	7,271.54	-439.59	1,836.87	1,860.94	0.00	0.00	0.00	
9,900.00	90.31	91.08	7,271.00	-441.48	1,936.85	1,960.84	0.00	0.00	0.00	
10,000.00	90.31	91.08	7,270.45	-443.37	2,036.83	2,060.75	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-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-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)
10,100.00	90.31	91.08	7,269.91	-445.27	2,136.81	2,160.65	0.00	0.00	0.00
10,200.00	90.31	91.08	7,269.37	-447.16	2,236.79	2,260.55	0.00	0.00	0.00
10,300.00	90.31	91.08	7,268.83	-449.05	2,336.77	2,360.45	0.00	0.00	0.00
10,400.00	90.31	91.08	7,268.29	-450.94	2,436.76	2,460.35	0.00	0.00	0.00
10,500.00	90.31	91.08	7,267.75	-452.84	2,536.74	2,560.25	0.00	0.00	0.00
10,600.00	90.31	91.08	7,267.21	-454.73	2,636.72	2,660.15	0.00	0.00	0.00
10,700.00	90.31	91.08	7,266.67	-456.62	2,736.70	2,760.05	0.00	0.00	0.00
10,800.00	90.31	91.08	7,266.13	-458.51	2,836.68	2,859.95	0.00	0.00	0.00
10,900.00	90.31	91.08	7,265.58	-460.41	2,936.66	2,959.85	0.00	0.00	0.00
11,000.00	90.31	91.08	7,265.04	-462.30	3,036.64	3,059.75	0.00	0.00	0.00
11,100.00	90.31	91.08	7,264.50	-464.19	3,136.62	3,159.66	0.00	0.00	0.00
11,200.00	90.31	91.08	7,263.96	-466.08	3,236.60	3,259.56	0.00	0.00	0.00
11,300.00	90.31	91.08	7,263.42	-467.98	3,336.58	3,359.46	0.00	0.00	0.00
11,400.00	90.31	91.08	7,262.88	-469.87	3,436.56	3,459.36	0.00	0.00	0.00
11,500.00	90.31	91.08	7,262.34	-471.76	3,536.54	3,559.26	0.00	0.00	0.00
11,600.00	90.31	91.08	7,261.80	-473.66	3,636.52	3,659.16	0.00	0.00	0.00
11,700.00	90.31	91.08	7,261.26	-475.55	3,736.50	3,759.06	0.00	0.00	0.00
11,800.00	90.31	91.08	7,260.71	-477.44	3,836.48	3,858.96	0.00	0.00	0.00
11,900.00	90.31	91.08	7,260.17	-479.33	3,936.46	3,958.86	0.00	0.00	0.00
12,000.00	90.31	91.08	7,259.63	-481.23	4,036.45	4,058.76	0.00	0.00	0.00
12,100.00	90.31	91.08	7,259.09	-483.12	4,136.43	4,158.66	0.00	0.00	0.00
12,200.00	90.31	91.08	7,258.55	-485.01	4,236.41	4,258.56	0.00	0.00	0.00
12,300.00	90.31	91.08	7,258.01	-486.90	4,336.39	4,358.47	0.00	0.00	0.00
12,400.00	90.31	91.08	7,257.47	-488.80	4,436.37	4,458.37	0.00	0.00	0.00
12,500.00	90.31	91.08	7,256.93	-490.69	4,536.35	4,558.27	0.00	0.00	0.00
12,600.00	90.31	91.08	7,256.39	-492.58	4,636.33	4,658.17	0.00	0.00	0.00
12,700.00	90.31	91.08	7,255.84	-494.47	4,736.31	4,758.07	0.00	0.00	0.00
12,800.00	90.31	91.08	7,255.30	-496.37	4,836.29	4,857.97	0.00	0.00	0.00
12,900.00	90.31	91.08	7,254.76	-498.26	4,936.27	4,957.87	0.00	0.00	0.00
13,000.00	90.31	91.08	7,254.22	-500.15	5,036.25	5,057.77	0.00	0.00	0.00
13,100.00	90.31	91.08	7,253.68	-502.04	5,136.23	5,157.67	0.00	0.00	0.00
13,200.00	90.31	91.08	7,253.14	-503.94	5,236.21	5,257.57	0.00	0.00	0.00
13,300.00	90.31	91.08	7,252.60	-505.83	5,336.19	5,357.47	0.00	0.00	0.00
13,400.00	90.31	91.08	7,252.06	-507.72	5,436.17	5,457.38	0.00	0.00	0.00
13,500.00	90.31	91.08	7,251.52	-509.62	5,536.15	5,557.28	0.00	0.00	0.00
13,600.00	90.31	91.08	7,250.98	-511.51	5,636.14	5,657.18	0.00	0.00	0.00
13,700.00	90.31	91.08	7,250.43	-513.40	5,736.12	5,757.08	0.00	0.00	0.00
13,800.00	90.31	91.08	7,249.89	-515.29	5,836.10	5,856.98	0.00	0.00	0.00
13,900.00	90.31	91.08	7,249.35	-517.19	5,936.08	5,956.88	0.00	0.00	0.00
14,000.00	90.31	91.08	7,248.81	-519.08	6,036.06	6,056.78	0.00	0.00	0.00
14,100.00	90.31	91.08	7,248.27	-520.97	6,136.04	6,156.68	0.00	0.00	0.00
14,200.00	90.31	91.08	7,247.73	-522.86	6,236.02	6,256.58	0.00	0.00	0.00
14,300.00	90.31	91.08	7,247.19	-524.76	6,336.00	6,356.48	0.00	0.00	0.00
14,400.00	90.31	91.08	7,246.65	-526.65	6,435.98	6,456.38	0.00	0.00	0.00
14,500.00	90.31	91.08	7,246.11	-528.54	6,535.96	6,556.29	0.00	0.00	0.00
14,600.00	90.31	91.08	7,245.56	-530.43	6,635.94	6,656.19	0.00	0.00	0.00
14,700.00	90.31	91.08	7,245.02	-532.33	6,735.92	6,756.09	0.00	0.00	0.00
14,800.00	90.31	91.08	7,244.48	-534.22	6,835.90	6,855.99	0.00	0.00	0.00
14,900.00	90.31	91.08	7,243.94	-536.11	6,935.88	6,955.89	0.00	0.00	0.00
15,000.00	90.31	91.08	7,243.40	-538.01	7,035.86	7,055.79	0.00	0.00	0.00
15,100.00	90.31	91.08	7,242.86	-539.90	7,135.84	7,155.69	0.00	0.00	0.00
15,200.00	90.31	91.08	7,242.32	-541.79	7,235.83	7,255.59	0.00	0.00	0.00
15,300.00	90.31	91.08	7,241.78	-543.68	7,335.81	7,355.49	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-HNC-16-07-65 - Slot DEHAAN N 3X-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 3X-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)	
15,400.00	90.31	91.08	7,241.24	-545.58	7,435.79	7,455.39	0.00	0.00	0.00	
15,500.00	90.31	91.08	7,240.69	-547.47	7,535.77	7,555.29	0.00	0.00	0.00	
15,600.00	90.31	91.08	7,240.15	-549.36	7,635.75	7,655.19	0.00	0.00	0.00	
15,700.00	90.31	91.08	7,239.61	-551.25	7,735.73	7,755.10	0.00	0.00	0.00	
15,800.00	90.31	91.08	7,239.07	-553.15	7,835.71	7,855.00	0.00	0.00	0.00	
15,900.00	90.31	91.08	7,238.53	-555.04	7,935.69	7,954.90	0.00	0.00	0.00	
16,000.00	90.31	91.08	7,237.99	-556.93	8,035.67	8,054.80	0.00	0.00	0.00	
16,100.00	90.31	91.08	7,237.45	-558.82	8,135.65	8,154.70	0.00	0.00	0.00	
16,200.00	90.31	91.08	7,236.91	-560.72	8,235.63	8,254.60	0.00	0.00	0.00	
16,300.00	90.31	91.08	7,236.37	-562.61	8,335.61	8,354.50	0.00	0.00	0.00	
16,400.00	90.31	91.08	7,235.82	-564.50	8,435.59	8,454.40	0.00	0.00	0.00	
16,500.00	90.31	91.08	7,235.28	-566.39	8,535.57	8,554.30	0.00	0.00	0.00	
16,600.00	90.31	91.08	7,234.74	-568.29	8,635.55	8,654.20	0.00	0.00	0.00	
16,700.00	90.31	91.08	7,234.20	-570.18	8,735.53	8,754.10	0.00	0.00	0.00	
16,800.00	90.31	91.08	7,233.66	-572.07	8,835.52	8,854.01	0.00	0.00	0.00	
16,900.00	90.31	91.08	7,233.12	-573.97	8,935.50	8,953.91	0.00	0.00	0.00	
17,000.00	90.31	91.08	7,232.58	-575.86	9,035.48	9,053.81	0.00	0.00	0.00	
17,100.00	90.31	91.08	7,232.04	-577.75	9,135.46	9,153.71	0.00	0.00	0.00	
17,106.84	90.31	91.08	7,232.00	-577.88	9,142.30	9,160.55	0.00	0.00	0.00	
DEHAAN N 3X-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 N 3X-HNC-16- - hit/miss target - Shape - Point	0.00	0.00	7,227.26	-392.47	-466.24	1,454,343.69	3,223,669.96	40.577785	-104.694784
- plan misses target center by 0.19usft at 7488.99usft MD (7227.43 TVD, -392.49 N, -466.32 E)									
DEHAAN N 3X-HNC-16- - plan hits target center - Point	0.00	0.00	7,232.00	-577.88	9,142.30	1,454,158.28	3,233,278.50	40.577031	-104.660201