

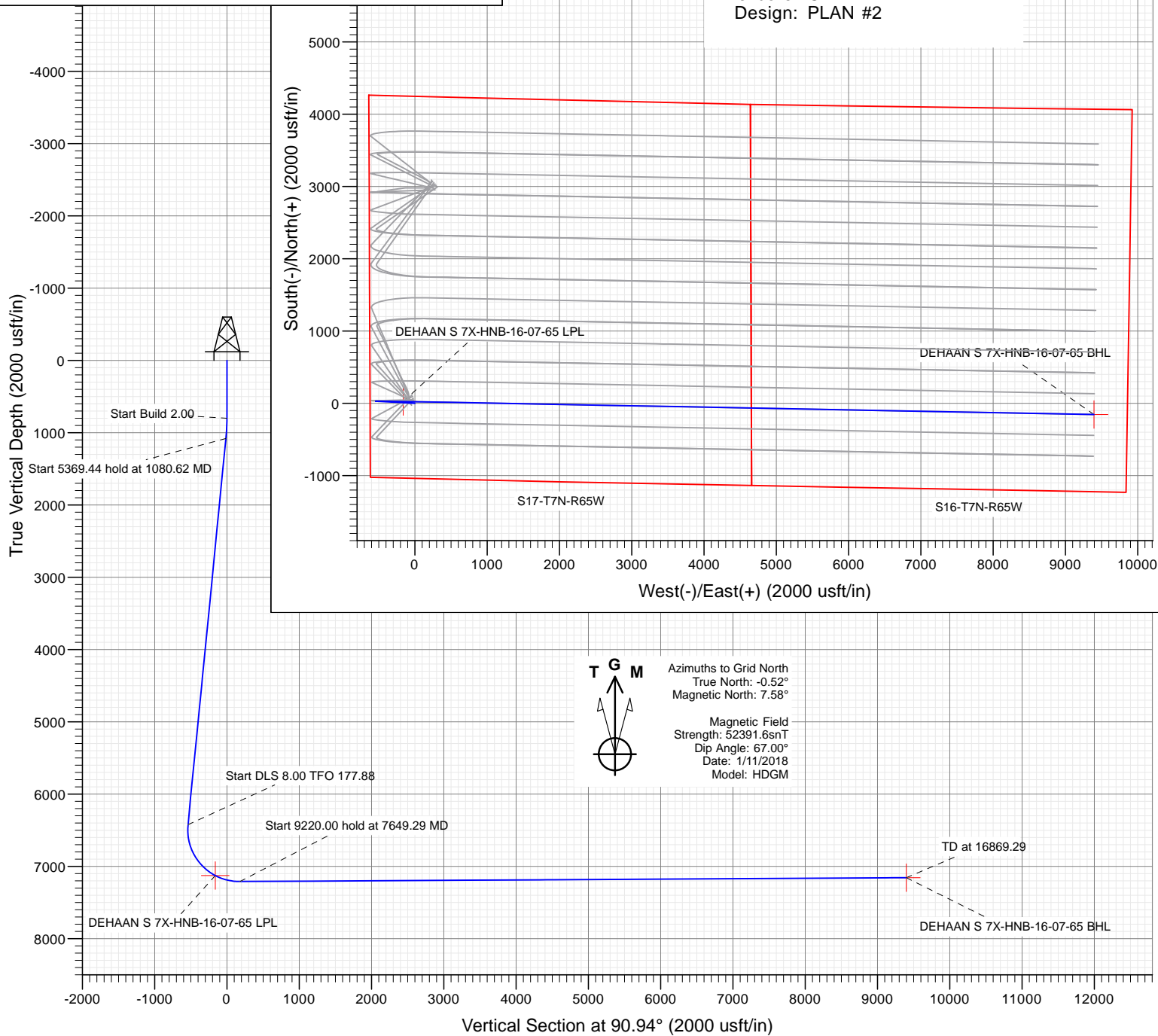
## SECTION DETAILS

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	800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
3	1080.62	5.61	273.19	1080.18	0.76	-13.71	2.00	273.19	-13.72	
4	6450.06	5.61	273.19	6423.87	29.98	-538.03	0.00	0.00	-538.45	
5	7649.29	90.33	91.08	7210.05	19.30	178.79	8.00	177.88	178.45	
6	16869.29	90.33	91.08	7157.00	-154.86	9396.99	0.00	0.00	9398.27	DEHAAN S 7X-HNB-16-07-65 BHL

PLAN #2  
DEHAAN 7X-HNB-16-07-65  
KB @ 5300.00usft  
Ground Level @ 5280.00  
North American Datum 1983  
Well DEHAAN 7X-HNB-16-07-65 - Slot DEHAAN S 7X-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 S 7X-HNB-16-07-65 LPL						
DEHAAN S 7X-HNB-16-07-65 BHL						

Project: WELD COUNTY, CO  
Site: S17-T7N-R65W (DEHAAN)  
Well: DEHAAN 7X-HNB-16-07-65  
Wellbore: OH  
Design: PLAN #2



WELL DETAILS: DEHAAN 7X-HNB-16-07-65

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1451721.46	3223840.14	40.570583	-104.694257

# **Nickel Road Operating LLC**

**WELD COUNTY, CO**

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

**DEHAAN 7X-HNB-16-07-65 - Slot DEHAAN S 7X-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 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	KB @ 5300.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	KB @ 5300.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 7X-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 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL					
Well Position	+N/-S	-3,011.35 usft	Northing:	1,451,721.46 usft	Latitude:	40.570583
	+E/-W	-233.65 usft	Easting:	3,223,840.14 usft	Longitude:	-104.694257
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,280.00 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	8.10	67.00	52,391.60000000

<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	90.94

<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	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,080.62	5.61	273.19	1,080.18	0.76	-13.71	2.00	2.00	0.00	273.19	
6,450.06	5.61	273.19	6,423.87	29.98	-538.03	0.00	0.00	0.00	0.00	
7,649.29	90.33	91.08	7,210.05	19.30	178.79	8.00	7.06	14.83	177.88	
16,869.29	90.33	91.08	7,157.00	-154.86	9,396.99	0.00	0.00	0.00	0.00	DEHAAN S 7X-HNB-

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well DEHAAN 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	KB @ 5300.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	KB @ 5300.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 7X-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	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	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	2.00	273.19	899.98	0.10	-1.74	-1.74	2.00	2.00	0.00	
1,000.00	4.00	273.19	999.84	0.39	-6.97	-6.97	2.00	2.00	0.00	
1,080.62	5.61	273.19	1,080.18	0.76	-13.71	-13.72	2.00	2.00	0.00	
1,100.00	5.61	273.19	1,099.46	0.87	-15.60	-15.62	0.00	0.00	0.00	
1,200.00	5.61	273.19	1,198.98	1.41	-25.37	-25.39	0.00	0.00	0.00	
1,300.00	5.61	273.19	1,298.50	1.96	-35.13	-35.16	0.00	0.00	0.00	
1,400.00	5.61	273.19	1,398.02	2.50	-44.90	-44.93	0.00	0.00	0.00	
1,500.00	5.61	273.19	1,497.54	3.05	-54.66	-54.71	0.00	0.00	0.00	
1,600.00	5.61	273.19	1,597.06	3.59	-64.43	-64.48	0.00	0.00	0.00	
1,700.00	5.61	273.19	1,696.58	4.13	-74.19	-74.25	0.00	0.00	0.00	
1,800.00	5.61	273.19	1,796.10	4.68	-83.96	-84.02	0.00	0.00	0.00	
1,900.00	5.61	273.19	1,895.62	5.22	-93.72	-93.80	0.00	0.00	0.00	
2,000.00	5.61	273.19	1,995.14	5.77	-103.49	-103.57	0.00	0.00	0.00	
2,100.00	5.61	273.19	2,094.66	6.31	-113.25	-113.34	0.00	0.00	0.00	
2,200.00	5.61	273.19	2,194.19	6.86	-123.02	-123.11	0.00	0.00	0.00	
2,300.00	5.61	273.19	2,293.71	7.40	-132.78	-132.89	0.00	0.00	0.00	
2,400.00	5.61	273.19	2,393.23	7.94	-142.55	-142.66	0.00	0.00	0.00	
2,500.00	5.61	273.19	2,492.75	8.49	-152.31	-152.43	0.00	0.00	0.00	
2,600.00	5.61	273.19	2,592.27	9.03	-162.08	-162.20	0.00	0.00	0.00	
2,700.00	5.61	273.19	2,691.79	9.58	-171.84	-171.98	0.00	0.00	0.00	
2,800.00	5.61	273.19	2,791.31	10.12	-181.61	-181.75	0.00	0.00	0.00	
2,900.00	5.61	273.19	2,890.83	10.66	-191.37	-191.52	0.00	0.00	0.00	
3,000.00	5.61	273.19	2,990.35	11.21	-201.14	-201.29	0.00	0.00	0.00	
3,100.00	5.61	273.19	3,089.87	11.75	-210.90	-211.07	0.00	0.00	0.00	
3,200.00	5.61	273.19	3,189.39	12.30	-220.67	-220.84	0.00	0.00	0.00	
3,300.00	5.61	273.19	3,288.91	12.84	-230.43	-230.61	0.00	0.00	0.00	
3,400.00	5.61	273.19	3,388.43	13.39	-240.19	-240.38	0.00	0.00	0.00	
3,500.00	5.61	273.19	3,487.95	13.93	-249.96	-250.16	0.00	0.00	0.00	
3,600.00	5.61	273.19	3,587.47	14.47	-259.72	-259.93	0.00	0.00	0.00	
3,700.00	5.61	273.19	3,686.99	15.02	-269.49	-269.70	0.00	0.00	0.00	
3,800.00	5.61	273.19	3,786.52	15.56	-279.25	-279.47	0.00	0.00	0.00	
3,900.00	5.61	273.19	3,886.04	16.11	-289.02	-289.25	0.00	0.00	0.00	
4,000.00	5.61	273.19	3,985.56	16.65	-298.78	-299.02	0.00	0.00	0.00	
4,100.00	5.61	273.19	4,085.08	17.19	-308.55	-308.79	0.00	0.00	0.00	
4,200.00	5.61	273.19	4,184.60	17.74	-318.31	-318.56	0.00	0.00	0.00	
4,300.00	5.61	273.19	4,284.12	18.28	-328.08	-328.33	0.00	0.00	0.00	
4,400.00	5.61	273.19	4,383.64	18.83	-337.84	-338.11	0.00	0.00	0.00	
4,500.00	5.61	273.19	4,483.16	19.37	-347.61	-347.88	0.00	0.00	0.00	
4,600.00	5.61	273.19	4,582.68	19.92	-357.37	-357.65	0.00	0.00	0.00	
4,700.00	5.61	273.19	4,682.20	20.46	-367.14	-367.42	0.00	0.00	0.00	
4,800.00	5.61	273.19	4,781.72	21.00	-376.90	-377.20	0.00	0.00	0.00	
4,900.00	5.61	273.19	4,881.24	21.55	-386.67	-386.97	0.00	0.00	0.00	
5,000.00	5.61	273.19	4,980.76	22.09	-396.43	-396.74	0.00	0.00	0.00	
5,100.00	5.61	273.19	5,080.28	22.64	-406.20	-406.51	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 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	KB @ 5300.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	KB @ 5300.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 7X-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	5.61	273.19	5,179.80	23.18	-415.96	-416.29	0.00	0.00	0.00	
5,300.00	5.61	273.19	5,279.32	23.72	-425.73	-426.06	0.00	0.00	0.00	
5,400.00	5.61	273.19	5,378.84	24.27	-435.49	-435.83	0.00	0.00	0.00	
5,500.00	5.61	273.19	5,478.37	24.81	-445.26	-445.60	0.00	0.00	0.00	
5,600.00	5.61	273.19	5,577.89	25.36	-455.02	-455.38	0.00	0.00	0.00	
5,700.00	5.61	273.19	5,677.41	25.90	-464.79	-465.15	0.00	0.00	0.00	
5,800.00	5.61	273.19	5,776.93	26.45	-474.55	-474.92	0.00	0.00	0.00	
5,900.00	5.61	273.19	5,876.45	26.99	-484.32	-484.69	0.00	0.00	0.00	
6,000.00	5.61	273.19	5,975.97	27.53	-494.08	-494.47	0.00	0.00	0.00	
6,100.00	5.61	273.19	6,075.49	28.08	-503.84	-504.24	0.00	0.00	0.00	
6,200.00	5.61	273.19	6,175.01	28.62	-513.61	-514.01	0.00	0.00	0.00	
6,300.00	5.61	273.19	6,274.53	29.17	-523.37	-523.78	0.00	0.00	0.00	
6,400.00	5.61	273.19	6,374.05	29.71	-533.14	-533.56	0.00	0.00	0.00	
6,450.06	5.61	273.19	6,423.87	29.98	-538.03	-538.45	0.00	0.00	0.00	
6,500.00	1.63	278.39	6,473.70	30.22	-541.17	-541.59	8.00	-7.98	10.42	
6,600.00	6.39	89.23	6,573.53	30.51	-537.00	-537.43	8.00	4.76	170.84	
6,700.00	14.39	90.27	6,671.81	30.52	-518.98	-519.42	8.00	8.00	1.04	
6,800.00	22.39	90.58	6,766.63	30.27	-487.47	-487.90	8.00	8.00	0.30	
6,900.00	30.39	90.73	6,856.14	29.75	-443.06	-443.49	8.00	8.00	0.15	
7,000.00	38.39	90.82	6,938.60	28.99	-386.64	-387.06	8.00	8.00	0.09	
7,100.00	46.39	90.88	7,012.40	27.98	-319.29	-319.70	8.00	8.00	0.06	
7,200.00	54.39	90.93	7,076.11	26.76	-242.32	-242.73	8.00	8.00	0.05	
7,296.88	62.14	90.97	7,127.03	25.39	-160.00	-160.40	8.00	8.00	0.04	
DEHAAN S 7X-HNB-16-07-65 LPL										
7,300.00	62.39	90.97	7,128.48	25.35	-157.24	-157.64	8.00	8.00	0.04	
7,400.00	70.39	91.01	7,168.51	23.76	-65.70	-66.09	8.00	8.00	0.03	
7,500.00	78.39	91.04	7,195.40	22.04	30.51	30.15	8.00	8.00	0.03	
7,600.00	86.39	91.07	7,208.64	20.22	129.53	129.18	8.00	8.00	0.03	
7,649.29	90.33	91.08	7,210.05	19.30	178.79	178.45	8.00	8.00	0.03	
7,700.00	90.33	91.08	7,209.76	18.34	229.49	229.15	0.00	0.00	0.00	
7,800.00	90.33	91.08	7,209.18	16.45	329.47	329.15	0.00	0.00	0.00	
7,900.00	90.33	91.08	7,208.61	14.56	429.45	429.15	0.00	0.00	0.00	
8,000.00	90.33	91.08	7,208.03	12.67	529.43	529.15	0.00	0.00	0.00	
8,100.00	90.33	91.08	7,207.46	10.79	629.41	629.14	0.00	0.00	0.00	
8,200.00	90.33	91.08	7,206.88	8.90	729.39	729.14	0.00	0.00	0.00	
8,300.00	90.33	91.08	7,206.31	7.01	829.37	829.14	0.00	0.00	0.00	
8,400.00	90.33	91.08	7,205.73	5.12	929.35	929.14	0.00	0.00	0.00	
8,500.00	90.33	91.08	7,205.16	3.23	1,029.33	1,029.14	0.00	0.00	0.00	
8,600.00	90.33	91.08	7,204.58	1.34	1,129.31	1,129.14	0.00	0.00	0.00	
8,700.00	90.33	91.08	7,204.00	-0.55	1,229.29	1,229.13	0.00	0.00	0.00	
8,800.00	90.33	91.08	7,203.43	-2.44	1,329.27	1,329.13	0.00	0.00	0.00	
8,900.00	90.33	91.08	7,202.85	-4.33	1,429.25	1,429.13	0.00	0.00	0.00	
9,000.00	90.33	91.08	7,202.28	-6.22	1,529.23	1,529.13	0.00	0.00	0.00	
9,100.00	90.33	91.08	7,201.70	-8.10	1,629.21	1,629.13	0.00	0.00	0.00	
9,200.00	90.33	91.08	7,201.13	-9.99	1,729.19	1,729.12	0.00	0.00	0.00	
9,300.00	90.33	91.08	7,200.55	-11.88	1,829.17	1,829.12	0.00	0.00	0.00	
9,400.00	90.33	91.08	7,199.98	-13.77	1,929.15	1,929.12	0.00	0.00	0.00	
9,500.00	90.33	91.08	7,199.40	-15.66	2,029.14	2,029.12	0.00	0.00	0.00	
9,600.00	90.33	91.08	7,198.83	-17.55	2,129.12	2,129.12	0.00	0.00	0.00	
9,700.00	90.33	91.08	7,198.25	-19.44	2,229.10	2,229.11	0.00	0.00	0.00	
9,800.00	90.33	91.08	7,197.68	-21.33	2,329.08	2,329.11	0.00	0.00	0.00	
9,900.00	90.33	91.08	7,197.10	-23.22	2,429.06	2,429.11	0.00	0.00	0.00	
10,000.00	90.33	91.08	7,196.52	-25.10	2,529.04	2,529.11	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 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	KB @ 5300.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	KB @ 5300.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 7X-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	90.33	91.08	7,195.95	-26.99	2,629.02	2,629.11	0.00	0.00	0.00
10,200.00	90.33	91.08	7,195.37	-28.88	2,729.00	2,729.10	0.00	0.00	0.00
10,300.00	90.33	91.08	7,194.80	-30.77	2,828.98	2,829.10	0.00	0.00	0.00
10,400.00	90.33	91.08	7,194.22	-32.66	2,928.96	2,929.10	0.00	0.00	0.00
10,500.00	90.33	91.08	7,193.65	-34.55	3,028.94	3,029.10	0.00	0.00	0.00
10,600.00	90.33	91.08	7,193.07	-36.44	3,128.92	3,129.10	0.00	0.00	0.00
10,700.00	90.33	91.08	7,192.50	-38.33	3,228.90	3,229.09	0.00	0.00	0.00
10,800.00	90.33	91.08	7,191.92	-40.22	3,328.88	3,329.09	0.00	0.00	0.00
10,900.00	90.33	91.08	7,191.35	-42.10	3,428.86	3,429.09	0.00	0.00	0.00
11,000.00	90.33	91.08	7,190.77	-43.99	3,528.84	3,529.09	0.00	0.00	0.00
11,100.00	90.33	91.08	7,190.20	-45.88	3,628.82	3,629.09	0.00	0.00	0.00
11,200.00	90.33	91.08	7,189.62	-47.77	3,728.80	3,729.08	0.00	0.00	0.00
11,300.00	90.33	91.08	7,189.04	-49.66	3,828.78	3,829.08	0.00	0.00	0.00
11,400.00	90.33	91.08	7,188.47	-51.55	3,928.76	3,929.08	0.00	0.00	0.00
11,500.00	90.33	91.08	7,187.89	-53.44	4,028.75	4,029.08	0.00	0.00	0.00
11,600.00	90.33	91.08	7,187.32	-55.33	4,128.73	4,129.08	0.00	0.00	0.00
11,700.00	90.33	91.08	7,186.74	-57.22	4,228.71	4,229.07	0.00	0.00	0.00
11,800.00	90.33	91.08	7,186.17	-59.11	4,328.69	4,329.07	0.00	0.00	0.00
11,900.00	90.33	91.08	7,185.59	-60.99	4,428.67	4,429.07	0.00	0.00	0.00
12,000.00	90.33	91.08	7,185.02	-62.88	4,528.65	4,529.07	0.00	0.00	0.00
12,100.00	90.33	91.08	7,184.44	-64.77	4,628.63	4,629.07	0.00	0.00	0.00
12,200.00	90.33	91.08	7,183.87	-66.66	4,728.61	4,729.07	0.00	0.00	0.00
12,300.00	90.33	91.08	7,183.29	-68.55	4,828.59	4,829.06	0.00	0.00	0.00
12,400.00	90.33	91.08	7,182.72	-70.44	4,928.57	4,929.06	0.00	0.00	0.00
12,500.00	90.33	91.08	7,182.14	-72.33	5,028.55	5,029.06	0.00	0.00	0.00
12,600.00	90.33	91.08	7,181.56	-74.22	5,128.53	5,129.06	0.00	0.00	0.00
12,700.00	90.33	91.08	7,180.99	-76.11	5,228.51	5,229.06	0.00	0.00	0.00
12,800.00	90.33	91.08	7,180.41	-77.99	5,328.49	5,329.05	0.00	0.00	0.00
12,900.00	90.33	91.08	7,179.84	-79.88	5,428.47	5,429.05	0.00	0.00	0.00
13,000.00	90.33	91.08	7,179.26	-81.77	5,528.45	5,529.05	0.00	0.00	0.00
13,100.00	90.33	91.08	7,178.69	-83.66	5,628.43	5,629.05	0.00	0.00	0.00
13,200.00	90.33	91.08	7,178.11	-85.55	5,728.41	5,729.05	0.00	0.00	0.00
13,300.00	90.33	91.08	7,177.54	-87.44	5,828.39	5,829.04	0.00	0.00	0.00
13,400.00	90.33	91.08	7,176.96	-89.33	5,928.37	5,929.04	0.00	0.00	0.00
13,500.00	90.33	91.08	7,176.39	-91.22	6,028.36	6,029.04	0.00	0.00	0.00
13,600.00	90.33	91.08	7,175.81	-93.11	6,128.34	6,129.04	0.00	0.00	0.00
13,700.00	90.33	91.08	7,175.24	-94.99	6,228.32	6,229.04	0.00	0.00	0.00
13,800.00	90.33	91.08	7,174.66	-96.88	6,328.30	6,329.03	0.00	0.00	0.00
13,900.00	90.33	91.08	7,174.08	-98.77	6,428.28	6,429.03	0.00	0.00	0.00
14,000.00	90.33	91.08	7,173.51	-100.66	6,528.26	6,529.03	0.00	0.00	0.00
14,100.00	90.33	91.08	7,172.93	-102.55	6,628.24	6,629.03	0.00	0.00	0.00
14,200.00	90.33	91.08	7,172.36	-104.44	6,728.22	6,729.03	0.00	0.00	0.00
14,300.00	90.33	91.08	7,171.78	-106.33	6,828.20	6,829.02	0.00	0.00	0.00
14,400.00	90.33	91.08	7,171.21	-108.22	6,928.18	6,929.02	0.00	0.00	0.00
14,500.00	90.33	91.08	7,170.63	-110.11	7,028.16	7,029.02	0.00	0.00	0.00
14,600.00	90.33	91.08	7,170.06	-111.99	7,128.14	7,129.02	0.00	0.00	0.00
14,700.00	90.33	91.08	7,169.48	-113.88	7,228.12	7,229.02	0.00	0.00	0.00
14,800.00	90.33	91.08	7,168.91	-115.77	7,328.10	7,329.01	0.00	0.00	0.00
14,900.00	90.33	91.08	7,168.33	-117.66	7,428.08	7,429.01	0.00	0.00	0.00
15,000.00	90.33	91.08	7,167.76	-119.55	7,528.06	7,529.01	0.00	0.00	0.00
15,100.00	90.33	91.08	7,167.18	-121.44	7,628.04	7,629.01	0.00	0.00	0.00
15,200.00	90.33	91.08	7,166.60	-123.33	7,728.02	7,729.01	0.00	0.00	0.00
15,300.00	90.33	91.08	7,166.03	-125.22	7,828.00	7,829.00	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 7X-HNB-16-07-65 - Slot DEHAAN S 7X-HNB-16-07-65 SHL
<b>Company:</b>	Nickel Road Operating LLC	<b>TVD Reference:</b>	KB @ 5300.00usft
<b>Project:</b>	WELD COUNTY, CO	<b>MD Reference:</b>	KB @ 5300.00usft
<b>Site:</b>	S17-T7N-R65W (DEHAAN)	<b>North Reference:</b>	Grid
<b>Well:</b>	DEHAAN 7X-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	90.33	91.08	7,165.45	-127.11	7,927.98	7,929.00	0.00	0.00	0.00
15,500.00	90.33	91.08	7,164.88	-129.00	8,027.97	8,029.00	0.00	0.00	0.00
15,600.00	90.33	91.08	7,164.30	-130.88	8,127.95	8,129.00	0.00	0.00	0.00
15,700.00	90.33	91.08	7,163.73	-132.77	8,227.93	8,229.00	0.00	0.00	0.00
15,800.00	90.33	91.08	7,163.15	-134.66	8,327.91	8,329.00	0.00	0.00	0.00
15,900.00	90.33	91.08	7,162.58	-136.55	8,427.89	8,428.99	0.00	0.00	0.00
16,000.00	90.33	91.08	7,162.00	-138.44	8,527.87	8,528.99	0.00	0.00	0.00
16,100.00	90.33	91.08	7,161.43	-140.33	8,627.85	8,628.99	0.00	0.00	0.00
16,200.00	90.33	91.08	7,160.85	-142.22	8,727.83	8,728.99	0.00	0.00	0.00
16,300.00	90.33	91.08	7,160.28	-144.11	8,827.81	8,828.99	0.00	0.00	0.00
16,400.00	90.33	91.08	7,159.70	-146.00	8,927.79	8,928.98	0.00	0.00	0.00
16,500.00	90.33	91.08	7,159.12	-147.88	9,027.77	9,028.98	0.00	0.00	0.00
16,600.00	90.33	91.08	7,158.55	-149.77	9,127.75	9,128.98	0.00	0.00	0.00
16,700.00	90.33	91.08	7,157.97	-151.66	9,227.73	9,228.98	0.00	0.00	0.00
16,800.00	90.33	91.08	7,157.40	-153.55	9,327.71	9,328.98	0.00	0.00	0.00
16,869.29	90.33	91.08	7,157.00	-154.86	9,396.99	9,398.27	0.00	0.00	0.00
DEHAAN S 7X-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
DEHAAN S 7X-HNB-16- - hit/miss target - Shape - Point	0.00	0.00	7,127.09	25.39	-160.04	1,451,746.85	3,223,680.10	40.570657	-104.694832
- plan misses target center by 0.07usft at 7296.88usft MD (7127.03 TVD, 25.39 N, -160.00 E)									
DEHAAN S 7X-HNB-16- - plan hits target center - Point	0.00	0.00	7,157.00	-154.86	9,396.99	1,451,566.60	3,233,237.13	40.569919	-104.660438