

NICKEL ROAD OPERATING

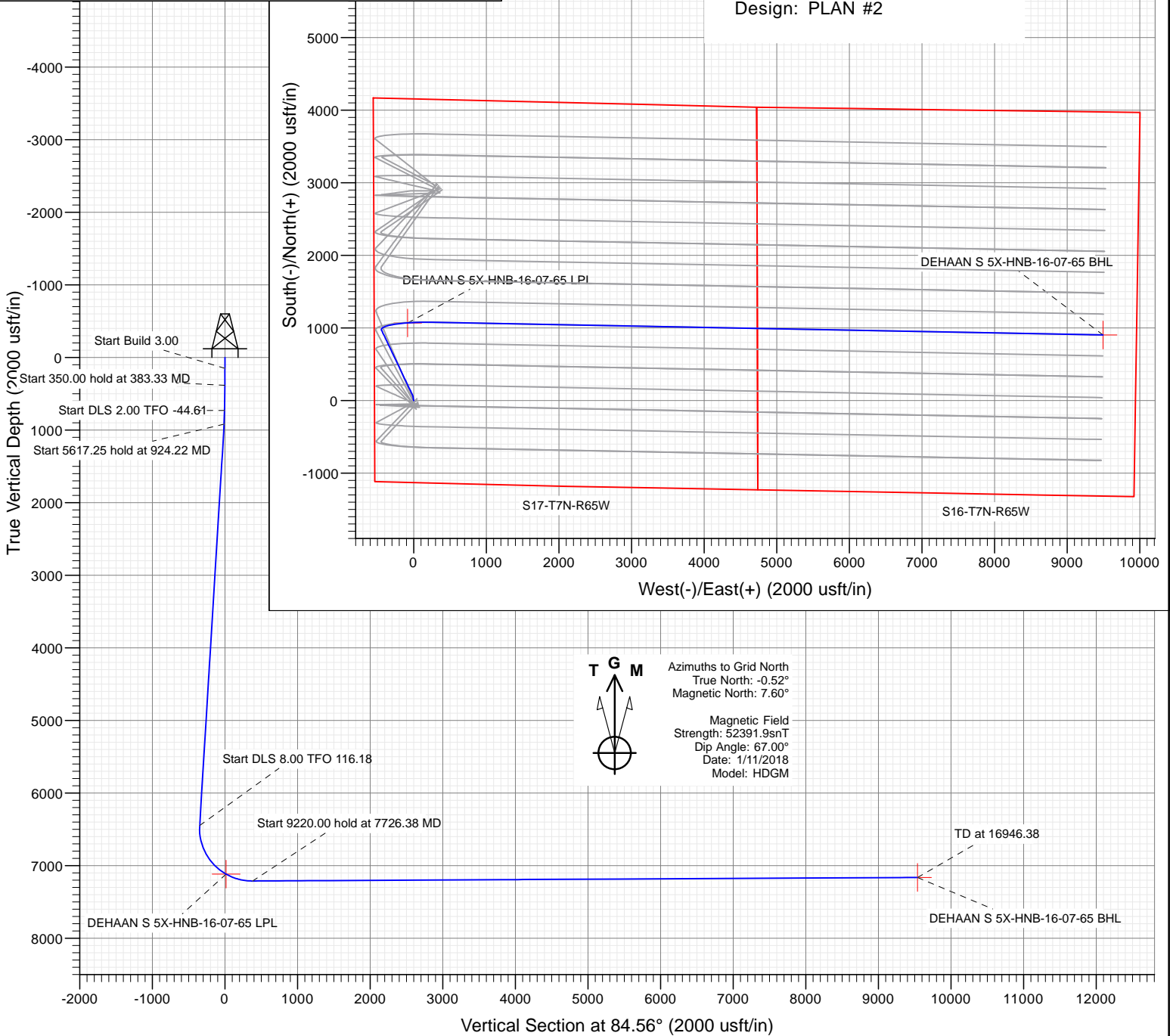
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	
3	383.33	7.00	350.00	382.75	14.02	-2.47	3.00	350.00	-1.13	
4	733.33	7.00	350.00	730.14	56.03	-9.88	0.00	0.00	-4.53	
5	924.22	10.08	334.50	918.92	82.57	-19.09	2.00	-44.61	-11.18	
6	6541.47	10.08	334.50	6449.48	969.87	-442.29	0.00	0.00	-348.40	
7	7726.38	90.30	91.08	7212.07	1078.16	277.65	8.00	116.18	378.56	
8	16946.38	90.30	91.08	7163.00	903.85	9495.87	0.00	0.00	9538.79	DEHAAN S 5X-HNB-16-07-65 BHL

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

Type	Target	Origin	N/S	E/W	From
TD	No Target (Freehand)	Slot	0.00	0.00	TVD
Name					
DEHAAN S 5X-HNB-16-07-65 LPL					
DEHAAN S 5X-HNB-16-07-65 BHL					

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



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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1451814.61	3223759.64	40.570841	-104.694543

CATHEDRAL



Nickel Road Operating LLC

WELD COUNTY, CO

S17-T7N-R65W (DEHAAN)

**DEHAAN 5X-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-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-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-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-HNB-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-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-16-07-65 SHL					
Well Position	+N/-S	-2,918.20 usft	Northing:	1,451,814.61 usft	Latitude:	40.570841
	+E/-W	-314.15 usft	Easting:	3,223,759.64 usft	Longitude:	-104.694544
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	84.56

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	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
383.33	7.00	350.00	382.75	14.02	-2.47	3.00	3.00	0.00	350.00	
733.33	7.00	350.00	730.14	56.03	-9.88	0.00	0.00	0.00	0.00	
924.22	10.08	334.50	918.92	82.57	-19.09	2.00	1.61	-8.12	-44.61	
6,541.47	10.08	334.50	6,449.48	969.87	-442.29	0.00	0.00	0.00	0.00	
7,726.38	90.30	91.08	7,212.07	1,078.16	277.65	8.00	6.77	9.84	116.18	
16,946.38	90.30	91.08	7,163.00	903.85	9,495.87	0.00	0.00	0.00	0.00	DEHAAN S 5X-HNB-

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 5X-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-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-HNB-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	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	1.50	350.00	199.99	0.64	-0.11	-0.05	3.00	3.00	0.00	
300.00	4.50	350.00	299.85	5.80	-1.02	-0.47	3.00	3.00	0.00	
383.33	7.00	350.00	382.75	14.02	-2.47	-1.13	3.00	3.00	0.00	
400.00	7.00	350.00	399.30	16.02	-2.82	-1.29	0.00	0.00	0.00	
500.00	7.00	350.00	498.55	28.02	-4.94	-2.26	0.00	0.00	0.00	
600.00	7.00	350.00	597.80	40.02	-7.06	-3.23	0.00	0.00	0.00	
700.00	7.00	350.00	697.06	52.03	-9.17	-4.20	0.00	0.00	0.00	
733.33	7.00	350.00	730.14	56.03	-9.88	-4.53	0.00	0.00	0.00	
800.00	8.00	343.26	796.24	64.47	-11.92	-5.76	2.00	1.51	-10.11	
900.00	9.66	335.91	895.06	78.80	-17.35	-9.81	2.00	1.66	-7.35	
924.22	10.08	334.50	918.92	82.57	-19.09	-11.18	2.00	1.73	-5.83	
1,000.00	10.08	334.50	993.53	94.54	-24.80	-15.73	0.00	0.00	0.00	
1,100.00	10.08	334.50	1,091.98	110.33	-32.34	-21.74	0.00	0.00	0.00	
1,200.00	10.08	334.50	1,190.44	126.13	-39.87	-27.74	0.00	0.00	0.00	
1,300.00	10.08	334.50	1,288.90	141.93	-47.40	-33.74	0.00	0.00	0.00	
1,400.00	10.08	334.50	1,387.35	157.72	-54.94	-39.75	0.00	0.00	0.00	
1,500.00	10.08	334.50	1,485.81	173.52	-62.47	-45.75	0.00	0.00	0.00	
1,600.00	10.08	334.50	1,584.27	189.31	-70.01	-51.75	0.00	0.00	0.00	
1,700.00	10.08	334.50	1,682.72	205.11	-77.54	-57.75	0.00	0.00	0.00	
1,800.00	10.08	334.50	1,781.18	220.91	-85.07	-63.76	0.00	0.00	0.00	
1,900.00	10.08	334.50	1,879.64	236.70	-92.61	-69.76	0.00	0.00	0.00	
2,000.00	10.08	334.50	1,978.09	252.50	-100.14	-75.76	0.00	0.00	0.00	
2,100.00	10.08	334.50	2,076.55	268.29	-107.67	-81.77	0.00	0.00	0.00	
2,200.00	10.08	334.50	2,175.01	284.09	-115.21	-87.77	0.00	0.00	0.00	
2,300.00	10.08	334.50	2,273.46	299.89	-122.74	-93.77	0.00	0.00	0.00	
2,400.00	10.08	334.50	2,371.92	315.68	-130.28	-99.78	0.00	0.00	0.00	
2,500.00	10.08	334.50	2,470.38	331.48	-137.81	-105.78	0.00	0.00	0.00	
2,600.00	10.08	334.50	2,568.83	347.27	-145.34	-111.78	0.00	0.00	0.00	
2,700.00	10.08	334.50	2,667.29	363.07	-152.88	-117.79	0.00	0.00	0.00	
2,800.00	10.08	334.50	2,765.75	378.87	-160.41	-123.79	0.00	0.00	0.00	
2,900.00	10.08	334.50	2,864.20	394.66	-167.95	-129.79	0.00	0.00	0.00	
3,000.00	10.08	334.50	2,962.66	410.46	-175.48	-135.80	0.00	0.00	0.00	
3,100.00	10.08	334.50	3,061.12	426.25	-183.01	-141.80	0.00	0.00	0.00	
3,200.00	10.08	334.50	3,159.57	442.05	-190.55	-147.80	0.00	0.00	0.00	
3,300.00	10.08	334.50	3,258.03	457.85	-198.08	-153.81	0.00	0.00	0.00	
3,400.00	10.08	334.50	3,356.49	473.64	-205.61	-159.81	0.00	0.00	0.00	
3,500.00	10.08	334.50	3,454.95	489.44	-213.15	-165.81	0.00	0.00	0.00	
3,600.00	10.08	334.50	3,553.40	505.23	-220.68	-171.82	0.00	0.00	0.00	
3,700.00	10.08	334.50	3,651.86	521.03	-228.22	-177.82	0.00	0.00	0.00	
3,800.00	10.08	334.50	3,750.32	536.83	-235.75	-183.82	0.00	0.00	0.00	
3,900.00	10.08	334.50	3,848.77	552.62	-243.28	-189.83	0.00	0.00	0.00	
4,000.00	10.08	334.50	3,947.23	568.42	-250.82	-195.83	0.00	0.00	0.00	
4,100.00	10.08	334.50	4,045.69	584.21	-258.35	-201.83	0.00	0.00	0.00	
4,200.00	10.08	334.50	4,144.14	600.01	-265.89	-207.84	0.00	0.00	0.00	
4,300.00	10.08	334.50	4,242.60	615.81	-273.42	-213.84	0.00	0.00	0.00	
4,400.00	10.08	334.50	4,341.06	631.60	-280.95	-219.84	0.00	0.00	0.00	
4,500.00	10.08	334.50	4,439.51	647.40	-288.49	-225.85	0.00	0.00	0.00	
4,600.00	10.08	334.50	4,537.97	663.19	-296.02	-231.85	0.00	0.00	0.00	
4,700.00	10.08	334.50	4,636.43	678.99	-303.56	-237.85	0.00	0.00	0.00	
4,800.00	10.08	334.50	4,734.88	694.79	-311.09	-243.85	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-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-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-HNB-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)
4,900.00	10.08	334.50	4,833.34	710.58	-318.62	-249.86	0.00	0.00	0.00
5,000.00	10.08	334.50	4,931.80	726.38	-326.16	-255.86	0.00	0.00	0.00
5,100.00	10.08	334.50	5,030.25	742.18	-333.69	-261.86	0.00	0.00	0.00
5,200.00	10.08	334.50	5,128.71	757.97	-341.22	-267.87	0.00	0.00	0.00
5,300.00	10.08	334.50	5,227.17	773.77	-348.76	-273.87	0.00	0.00	0.00
5,400.00	10.08	334.50	5,325.62	789.56	-356.29	-279.87	0.00	0.00	0.00
5,500.00	10.08	334.50	5,424.08	805.36	-363.83	-285.88	0.00	0.00	0.00
5,600.00	10.08	334.50	5,522.54	821.16	-371.36	-291.88	0.00	0.00	0.00
5,700.00	10.08	334.50	5,620.99	836.95	-378.89	-297.88	0.00	0.00	0.00
5,800.00	10.08	334.50	5,719.45	852.75	-386.43	-303.89	0.00	0.00	0.00
5,900.00	10.08	334.50	5,817.91	868.54	-393.96	-309.89	0.00	0.00	0.00
6,000.00	10.08	334.50	5,916.36	884.34	-401.50	-315.89	0.00	0.00	0.00
6,100.00	10.08	334.50	6,014.82	900.14	-409.03	-321.90	0.00	0.00	0.00
6,200.00	10.08	334.50	6,113.28	915.93	-416.56	-327.90	0.00	0.00	0.00
6,300.00	10.08	334.50	6,211.73	931.73	-424.10	-333.90	0.00	0.00	0.00
6,400.00	10.08	334.50	6,310.19	947.52	-431.63	-339.91	0.00	0.00	0.00
6,500.00	10.08	334.50	6,408.65	963.32	-439.17	-345.91	0.00	0.00	0.00
6,541.47	10.08	334.50	6,449.48	969.87	-442.29	-348.40	0.00	0.00	0.00
6,600.00	9.04	2.30	6,507.22	979.09	-444.31	-349.54	8.00	-1.78	47.49
6,700.00	12.18	43.57	6,605.64	994.61	-436.71	-340.51	8.00	3.14	41.27
6,800.00	18.49	62.64	6,702.09	1,009.56	-415.33	-317.80	8.00	6.31	19.07
6,900.00	25.73	71.77	6,794.70	1,023.66	-380.57	-281.86	8.00	7.25	9.13
7,000.00	33.31	77.03	6,881.67	1,036.64	-333.11	-233.39	8.00	7.58	5.26
7,100.00	41.03	80.51	6,961.30	1,048.24	-273.88	-173.33	8.00	7.72	3.48
7,200.00	48.83	83.04	7,032.04	1,058.23	-204.03	-102.84	8.00	7.80	2.54
7,300.00	56.67	85.03	7,092.53	1,066.42	-124.92	-23.31	8.00	7.84	1.99
7,348.11	60.46	85.86	7,117.61	1,069.67	-84.01	17.72	8.00	7.86	1.73
DEHAAN S 5X-HNB-16-07-65 LPL									
7,400.00	64.54	86.69	7,141.57	1,072.65	-38.09	63.72	8.00	7.87	1.60
7,500.00	72.43	88.15	7,178.22	1,076.80	54.77	156.56	8.00	7.88	1.46
7,600.00	80.32	89.48	7,201.76	1,078.79	151.85	253.39	8.00	7.89	1.33
7,700.00	88.22	90.75	7,211.74	1,078.58	251.27	352.35	8.00	7.90	1.27
7,726.38	90.30	91.08	7,212.07	1,078.16	277.65	378.56	8.00	7.90	1.26
7,800.00	90.30	91.08	7,211.68	1,076.77	351.25	451.70	0.00	0.00	0.00
7,900.00	90.30	91.08	7,211.15	1,074.88	451.23	551.05	0.00	0.00	0.00
8,000.00	90.30	91.08	7,210.62	1,072.99	551.21	650.41	0.00	0.00	0.00
8,100.00	90.30	91.08	7,210.09	1,071.10	651.20	749.76	0.00	0.00	0.00
8,200.00	90.30	91.08	7,209.55	1,069.21	751.18	849.11	0.00	0.00	0.00
8,300.00	90.30	91.08	7,209.02	1,067.32	851.16	948.46	0.00	0.00	0.00
8,400.00	90.30	91.08	7,208.49	1,065.43	951.14	1,047.81	0.00	0.00	0.00
8,500.00	90.30	91.08	7,207.96	1,063.54	1,051.12	1,147.16	0.00	0.00	0.00
8,600.00	90.30	91.08	7,207.42	1,061.64	1,151.10	1,246.52	0.00	0.00	0.00
8,700.00	90.30	91.08	7,206.89	1,059.75	1,251.08	1,345.87	0.00	0.00	0.00
8,800.00	90.30	91.08	7,206.36	1,057.86	1,351.06	1,445.22	0.00	0.00	0.00
8,900.00	90.30	91.08	7,205.83	1,055.97	1,451.04	1,544.57	0.00	0.00	0.00
9,000.00	90.30	91.08	7,205.30	1,054.08	1,551.02	1,643.92	0.00	0.00	0.00
9,100.00	90.30	91.08	7,204.76	1,052.19	1,651.00	1,743.27	0.00	0.00	0.00
9,200.00	90.30	91.08	7,204.23	1,050.30	1,750.98	1,842.63	0.00	0.00	0.00
9,300.00	90.30	91.08	7,203.70	1,048.41	1,850.96	1,941.98	0.00	0.00	0.00
9,400.00	90.30	91.08	7,203.17	1,046.52	1,950.94	2,041.33	0.00	0.00	0.00
9,500.00	90.30	91.08	7,202.63	1,044.63	2,050.93	2,140.68	0.00	0.00	0.00
9,600.00	90.30	91.08	7,202.10	1,042.74	2,150.91	2,240.03	0.00	0.00	0.00
9,700.00	90.30	91.08	7,201.57	1,040.85	2,250.89	2,339.38	0.00	0.00	0.00

Cathedral Energy Services

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Well:	DEHAAN 5X-HNB-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)
9,800.00	90.30	91.08	7,201.04	1,038.96	2,350.87	2,438.74	0.00	0.00	0.00
9,900.00	90.30	91.08	7,200.51	1,037.07	2,450.85	2,538.09	0.00	0.00	0.00
10,000.00	90.30	91.08	7,199.97	1,035.18	2,550.83	2,637.44	0.00	0.00	0.00
10,100.00	90.30	91.08	7,199.44	1,033.29	2,650.81	2,736.79	0.00	0.00	0.00
10,200.00	90.30	91.08	7,198.91	1,031.40	2,750.79	2,836.14	0.00	0.00	0.00
10,300.00	90.30	91.08	7,198.38	1,029.50	2,850.77	2,935.50	0.00	0.00	0.00
10,400.00	90.30	91.08	7,197.84	1,027.61	2,950.75	3,034.85	0.00	0.00	0.00
10,500.00	90.30	91.08	7,197.31	1,025.72	3,050.73	3,134.20	0.00	0.00	0.00
10,600.00	90.30	91.08	7,196.78	1,023.83	3,150.71	3,233.55	0.00	0.00	0.00
10,700.00	90.30	91.08	7,196.25	1,021.94	3,250.69	3,332.90	0.00	0.00	0.00
10,800.00	90.30	91.08	7,195.72	1,020.05	3,350.67	3,432.25	0.00	0.00	0.00
10,900.00	90.30	91.08	7,195.18	1,018.16	3,450.66	3,531.61	0.00	0.00	0.00
11,000.00	90.30	91.08	7,194.65	1,016.27	3,550.64	3,630.96	0.00	0.00	0.00
11,100.00	90.30	91.08	7,194.12	1,014.38	3,650.62	3,730.31	0.00	0.00	0.00
11,200.00	90.30	91.08	7,193.59	1,012.49	3,750.60	3,829.66	0.00	0.00	0.00
11,300.00	90.30	91.08	7,193.05	1,010.60	3,850.58	3,929.01	0.00	0.00	0.00
11,400.00	90.30	91.08	7,192.52	1,008.71	3,950.56	4,028.36	0.00	0.00	0.00
11,500.00	90.30	91.08	7,191.99	1,006.82	4,050.54	4,127.72	0.00	0.00	0.00
11,600.00	90.30	91.08	7,191.46	1,004.93	4,150.52	4,227.07	0.00	0.00	0.00
11,700.00	90.30	91.08	7,190.92	1,003.04	4,250.50	4,326.42	0.00	0.00	0.00
11,800.00	90.30	91.08	7,190.39	1,001.15	4,350.48	4,425.77	0.00	0.00	0.00
11,900.00	90.30	91.08	7,189.86	999.26	4,450.46	4,525.12	0.00	0.00	0.00
12,000.00	90.30	91.08	7,189.33	997.37	4,550.44	4,624.47	0.00	0.00	0.00
12,100.00	90.30	91.08	7,188.80	995.47	4,650.42	4,723.83	0.00	0.00	0.00
12,200.00	90.30	91.08	7,188.26	993.58	4,750.40	4,823.18	0.00	0.00	0.00
12,300.00	90.30	91.08	7,187.73	991.69	4,850.39	4,922.53	0.00	0.00	0.00
12,400.00	90.30	91.08	7,187.20	989.80	4,950.37	5,021.88	0.00	0.00	0.00
12,500.00	90.30	91.08	7,186.67	987.91	5,050.35	5,121.23	0.00	0.00	0.00
12,600.00	90.30	91.08	7,186.13	986.02	5,150.33	5,220.58	0.00	0.00	0.00
12,700.00	90.30	91.08	7,185.60	984.13	5,250.31	5,319.94	0.00	0.00	0.00
12,800.00	90.30	91.08	7,185.07	982.24	5,350.29	5,419.29	0.00	0.00	0.00
12,900.00	90.30	91.08	7,184.54	980.35	5,450.27	5,518.64	0.00	0.00	0.00
13,000.00	90.30	91.08	7,184.01	978.46	5,550.25	5,617.99	0.00	0.00	0.00
13,100.00	90.30	91.08	7,183.47	976.57	5,650.23	5,717.34	0.00	0.00	0.00
13,200.00	90.30	91.08	7,182.94	974.68	5,750.21	5,816.69	0.00	0.00	0.00
13,300.00	90.30	91.08	7,182.41	972.79	5,850.19	5,916.05	0.00	0.00	0.00
13,400.00	90.30	91.08	7,181.88	970.90	5,950.17	6,015.40	0.00	0.00	0.00
13,500.00	90.30	91.08	7,181.34	969.01	6,050.15	6,114.75	0.00	0.00	0.00
13,600.00	90.30	91.08	7,180.81	967.12	6,150.13	6,214.10	0.00	0.00	0.00
13,700.00	90.30	91.08	7,180.28	965.23	6,250.12	6,313.45	0.00	0.00	0.00
13,800.00	90.30	91.08	7,179.75	963.33	6,350.10	6,412.81	0.00	0.00	0.00
13,900.00	90.30	91.08	7,179.21	961.44	6,450.08	6,512.16	0.00	0.00	0.00
14,000.00	90.30	91.08	7,178.68	959.55	6,550.06	6,611.51	0.00	0.00	0.00
14,100.00	90.30	91.08	7,178.15	957.66	6,650.04	6,710.86	0.00	0.00	0.00
14,200.00	90.30	91.08	7,177.62	955.77	6,750.02	6,810.21	0.00	0.00	0.00
14,300.00	90.30	91.08	7,177.09	953.88	6,850.00	6,909.56	0.00	0.00	0.00
14,400.00	90.30	91.08	7,176.55	951.99	6,949.98	7,008.92	0.00	0.00	0.00
14,500.00	90.30	91.08	7,176.02	950.10	7,049.96	7,108.27	0.00	0.00	0.00
14,600.00	90.30	91.08	7,175.49	948.21	7,149.94	7,207.62	0.00	0.00	0.00
14,700.00	90.30	91.08	7,174.96	946.32	7,249.92	7,306.97	0.00	0.00	0.00
14,800.00	90.30	91.08	7,174.42	944.43	7,349.90	7,406.32	0.00	0.00	0.00
14,900.00	90.30	91.08	7,173.89	942.54	7,449.88	7,505.67	0.00	0.00	0.00
15,000.00	90.30	91.08	7,173.36	940.65	7,549.86	7,605.03	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-HNB-16-07-65 - Slot DEHAAN S 5X-HNB-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-HNB-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)	
15,100.00	90.30	91.08	7,172.83	938.76	7,649.85	7,704.38	0.00	0.00	0.00	
15,200.00	90.30	91.08	7,172.30	936.87	7,749.83	7,803.73	0.00	0.00	0.00	
15,300.00	90.30	91.08	7,171.76	934.98	7,849.81	7,903.08	0.00	0.00	0.00	
15,400.00	90.30	91.08	7,171.23	933.09	7,949.79	8,002.43	0.00	0.00	0.00	
15,500.00	90.30	91.08	7,170.70	931.19	8,049.77	8,101.78	0.00	0.00	0.00	
15,600.00	90.30	91.08	7,170.17	929.30	8,149.75	8,201.14	0.00	0.00	0.00	
15,700.00	90.30	91.08	7,169.63	927.41	8,249.73	8,300.49	0.00	0.00	0.00	
15,800.00	90.30	91.08	7,169.10	925.52	8,349.71	8,399.84	0.00	0.00	0.00	
15,900.00	90.30	91.08	7,168.57	923.63	8,449.69	8,499.19	0.00	0.00	0.00	
16,000.00	90.30	91.08	7,168.04	921.74	8,549.67	8,598.54	0.00	0.00	0.00	
16,100.00	90.30	91.08	7,167.51	919.85	8,649.65	8,697.89	0.00	0.00	0.00	
16,200.00	90.30	91.08	7,166.97	917.96	8,749.63	8,797.25	0.00	0.00	0.00	
16,300.00	90.30	91.08	7,166.44	916.07	8,849.61	8,896.60	0.00	0.00	0.00	
16,400.00	90.30	91.08	7,165.91	914.18	8,949.59	8,995.95	0.00	0.00	0.00	
16,500.00	90.30	91.08	7,165.38	912.29	9,049.58	9,095.30	0.00	0.00	0.00	
16,600.00	90.30	91.08	7,164.84	910.40	9,149.56	9,194.65	0.00	0.00	0.00	
16,700.00	90.30	91.08	7,164.31	908.51	9,249.54	9,294.00	0.00	0.00	0.00	
16,800.00	90.30	91.08	7,163.78	906.62	9,349.52	9,393.36	0.00	0.00	0.00	
16,900.00	90.30	91.08	7,163.25	904.73	9,449.50	9,492.71	0.00	0.00	0.00	
16,946.38	90.30	91.08	7,163.00	903.85	9,495.87	9,538.79	0.00	0.00	0.00	
DEHAAN S 5X-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 S 5X-HNB-16-	0.00	0.00	7,117.54	1,069.66	-83.97	1,452,884.27	3,223,675.67	40.573779	-104.694811
- plan misses target center by 0.09usft at 7348.11usft MD (7117.62 TVD, 1069.67 N, -84.01 E)									
- Point									
DEHAAN S 5X-HNB-16-	0.00	0.00	7,163.00	903.85	9,495.87	1,452,718.46	3,233,255.51	40.573080	-104.660333
- plan hits target center									
- Point									