

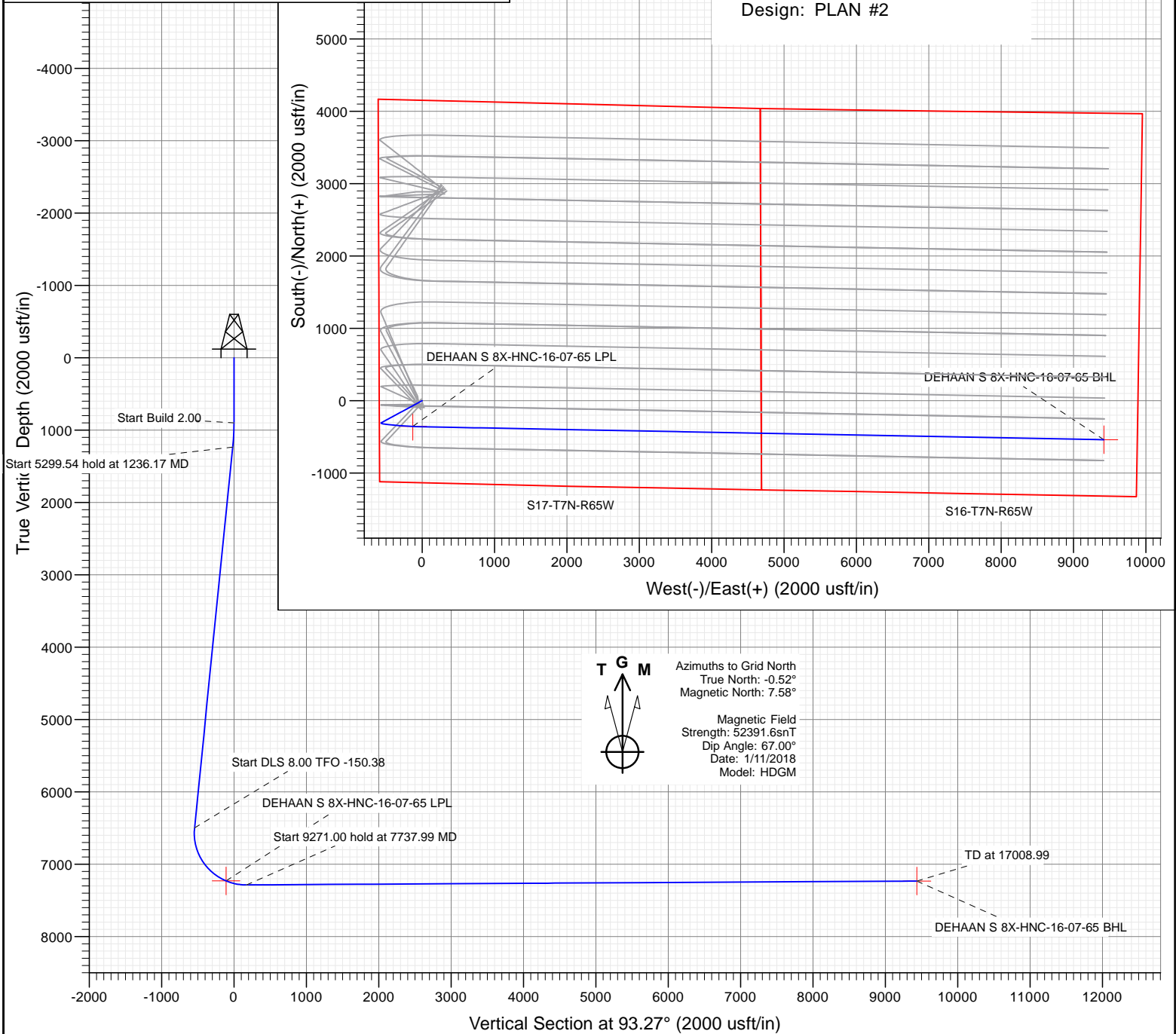
SECTION DETAILS

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	900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
3	1236.17	6.72	241.65	1235.40	-9.36	-17.34	2.00	241.65	-16.78	
4	6535.72	6.72	241.65	6498.50	-304.00	-563.37	0.00	0.00	-545.10	
5	7737.99	90.33	91.08	7286.38	-363.44	152.22	8.00	-150.38	172.71	
6	17008.99	90.33	91.08	7233.00	-538.53	9421.41	0.00	0.00	9436.79	DEHAAN S 8X-HNC-16-07-65 BHL

PLAN #2
DEHAAN 8X-HNC-16-07-65
KB @ 5300.00usft
Ground Level @ 5280.00
North American Datum 1983
Well DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-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 S 8X-HNC-16-07-65 LPL	TVD	+N/-S	+E/-W	Latitude	Longitude
	DEHAAN S 8X-HNC-16-07-65 BHL	7230.63	-354.80	-129.90	40.569876	-104.694837
		7233.00	-538.53	9421.41	40.569129	-104.694464

Project: WELD COUNTY, CO
Site: S17-T7N-R65W (DEHAAN)
Well: DEHAAN 8X-HNC-16-07-65
Wellbore: OH
Design: PLAN #2



WELL DETAILS: DEHAAN 8X-HNC-16-07-65

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1451817.16	3223811.12	40.570846	-104.694358

Nickel Road Operating LLC

WELD COUNTY, CO

S17-T7N-R65W (DEHAAN)

**DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-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 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-16-07-65 SHL					
Well Position	+N/-S	-2,915.65 usft	Northing:	1,451,817.16 usft	Latitude:	40.570846
	+E/-W	-262.67 usft	Easting:	3,223,811.12 usft	Longitude:	-104.694358
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	8.10	67.00	52,391.60000000

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	93.27

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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,236.17	6.72	241.65	1,235.40	-9.36	-17.34	2.00	2.00	0.00	241.65	
6,535.72	6.72	241.65	6,498.50	-304.00	-563.37	0.00	0.00	0.00	0.00	
7,737.99	90.33	91.08	7,286.38	-363.44	152.22	8.00	6.95	-12.52	-150.38	
17,008.99	90.33	91.08	7,233.00	-538.53	9,421.41	0.00	0.00	0.00	0.00	DEHAAN S 8X-HNC-

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-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	
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	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	2.00	241.65	999.98	-0.83	-1.54	-1.49	2.00	2.00	0.00	
1,100.00	4.00	241.65	1,099.84	-3.31	-6.14	-5.94	2.00	2.00	0.00	
1,200.00	6.00	241.65	1,199.45	-7.45	-13.81	-13.36	2.00	2.00	0.00	
1,236.17	6.72	241.65	1,235.40	-9.36	-17.34	-16.78	2.00	2.00	0.00	
1,300.00	6.72	241.65	1,298.79	-12.90	-23.91	-23.14	0.00	0.00	0.00	
1,400.00	6.72	241.65	1,398.10	-18.46	-34.22	-33.11	0.00	0.00	0.00	
1,500.00	6.72	241.65	1,497.41	-24.02	-44.52	-43.08	0.00	0.00	0.00	
1,600.00	6.72	241.65	1,596.73	-29.58	-54.82	-53.05	0.00	0.00	0.00	
1,700.00	6.72	241.65	1,696.04	-35.14	-65.13	-63.02	0.00	0.00	0.00	
1,800.00	6.72	241.65	1,795.35	-40.70	-75.43	-72.99	0.00	0.00	0.00	
1,900.00	6.72	241.65	1,894.66	-46.26	-85.73	-82.95	0.00	0.00	0.00	
2,000.00	6.72	241.65	1,993.98	-51.82	-96.04	-92.92	0.00	0.00	0.00	
2,100.00	6.72	241.65	2,093.29	-57.38	-106.34	-102.89	0.00	0.00	0.00	
2,200.00	6.72	241.65	2,192.60	-62.94	-116.64	-112.86	0.00	0.00	0.00	
2,300.00	6.72	241.65	2,291.91	-68.50	-126.95	-122.83	0.00	0.00	0.00	
2,400.00	6.72	241.65	2,391.23	-74.06	-137.25	-132.80	0.00	0.00	0.00	
2,500.00	6.72	241.65	2,490.54	-79.62	-147.55	-142.77	0.00	0.00	0.00	
2,600.00	6.72	241.65	2,589.85	-85.18	-157.86	-152.74	0.00	0.00	0.00	
2,700.00	6.72	241.65	2,689.16	-90.74	-168.16	-162.71	0.00	0.00	0.00	
2,800.00	6.72	241.65	2,788.47	-96.30	-178.46	-172.68	0.00	0.00	0.00	
2,900.00	6.72	241.65	2,887.79	-101.86	-188.77	-182.65	0.00	0.00	0.00	
3,000.00	6.72	241.65	2,987.10	-107.42	-199.07	-192.62	0.00	0.00	0.00	
3,100.00	6.72	241.65	3,086.41	-112.98	-209.37	-202.59	0.00	0.00	0.00	
3,200.00	6.72	241.65	3,185.72	-118.54	-219.68	-212.56	0.00	0.00	0.00	
3,300.00	6.72	241.65	3,285.04	-124.10	-229.98	-222.52	0.00	0.00	0.00	
3,400.00	6.72	241.65	3,384.35	-129.66	-240.29	-232.49	0.00	0.00	0.00	
3,500.00	6.72	241.65	3,483.66	-135.22	-250.59	-242.46	0.00	0.00	0.00	
3,600.00	6.72	241.65	3,582.97	-140.78	-260.89	-252.43	0.00	0.00	0.00	
3,700.00	6.72	241.65	3,682.28	-146.34	-271.20	-262.40	0.00	0.00	0.00	
3,800.00	6.72	241.65	3,781.60	-151.90	-281.50	-272.37	0.00	0.00	0.00	
3,900.00	6.72	241.65	3,880.91	-157.46	-291.80	-282.34	0.00	0.00	0.00	
4,000.00	6.72	241.65	3,980.22	-163.02	-302.11	-292.31	0.00	0.00	0.00	
4,100.00	6.72	241.65	4,079.53	-168.58	-312.41	-302.28	0.00	0.00	0.00	
4,200.00	6.72	241.65	4,178.85	-174.14	-322.71	-312.25	0.00	0.00	0.00	
4,300.00	6.72	241.65	4,278.16	-179.70	-333.02	-322.22	0.00	0.00	0.00	
4,400.00	6.72	241.65	4,377.47	-185.26	-343.32	-332.19	0.00	0.00	0.00	
4,500.00	6.72	241.65	4,476.78	-190.82	-353.62	-342.16	0.00	0.00	0.00	
4,600.00	6.72	241.65	4,576.10	-196.38	-363.93	-352.13	0.00	0.00	0.00	
4,700.00	6.72	241.65	4,675.41	-201.94	-374.23	-362.09	0.00	0.00	0.00	
4,800.00	6.72	241.65	4,774.72	-207.50	-384.53	-372.06	0.00	0.00	0.00	
4,900.00	6.72	241.65	4,874.03	-213.06	-394.84	-382.03	0.00	0.00	0.00	
5,000.00	6.72	241.65	4,973.34	-218.62	-405.14	-392.00	0.00	0.00	0.00	
5,100.00	6.72	241.65	5,072.66	-224.18	-415.44	-401.97	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-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)	
5,200.00	6.72	241.65	5,171.97	-229.74	-425.75	-411.94	0.00	0.00	0.00	
5,300.00	6.72	241.65	5,271.28	-235.30	-436.05	-421.91	0.00	0.00	0.00	
5,400.00	6.72	241.65	5,370.59	-240.86	-446.35	-431.88	0.00	0.00	0.00	
5,500.00	6.72	241.65	5,469.91	-246.42	-456.66	-441.85	0.00	0.00	0.00	
5,600.00	6.72	241.65	5,569.22	-251.98	-466.96	-451.82	0.00	0.00	0.00	
5,700.00	6.72	241.65	5,668.53	-257.54	-477.26	-461.79	0.00	0.00	0.00	
5,800.00	6.72	241.65	5,767.84	-263.10	-487.57	-471.76	0.00	0.00	0.00	
5,900.00	6.72	241.65	5,867.16	-268.66	-497.87	-481.73	0.00	0.00	0.00	
6,000.00	6.72	241.65	5,966.47	-274.22	-508.17	-491.70	0.00	0.00	0.00	
6,100.00	6.72	241.65	6,065.78	-279.78	-518.48	-501.66	0.00	0.00	0.00	
6,200.00	6.72	241.65	6,165.09	-285.34	-528.78	-511.63	0.00	0.00	0.00	
6,300.00	6.72	241.65	6,264.40	-290.90	-539.08	-521.60	0.00	0.00	0.00	
6,400.00	6.72	241.65	6,363.72	-296.46	-549.39	-531.57	0.00	0.00	0.00	
6,500.00	6.72	241.65	6,463.03	-302.02	-559.69	-541.54	0.00	0.00	0.00	
6,535.72	6.72	241.65	6,498.50	-304.00	-563.37	-545.10	0.00	0.00	0.00	
6,600.00	3.39	193.16	6,562.55	-307.64	-567.12	-548.64	8.00	-5.18	-75.42	
6,700.00	8.01	115.44	6,662.14	-313.53	-561.49	-542.68	8.00	4.61	-77.73	
6,800.00	15.64	103.05	6,759.96	-319.57	-542.04	-522.92	8.00	7.63	-12.39	
6,900.00	23.51	98.76	6,854.11	-325.66	-509.14	-489.73	8.00	7.87	-4.29	
7,000.00	31.45	96.54	6,942.75	-331.68	-463.43	-443.75	8.00	7.94	-2.22	
7,100.00	39.41	95.15	7,024.17	-337.51	-405.81	-385.89	8.00	7.96	-1.39	
7,200.00	47.38	94.16	7,096.78	-343.03	-337.39	-317.26	8.00	7.97	-0.99	
7,300.00	55.36	93.40	7,159.16	-348.15	-259.50	-239.21	8.00	7.98	-0.76	
7,400.00	63.34	92.77	7,210.10	-352.75	-173.66	-153.25	8.00	7.98	-0.63	
7,448.38	67.20	92.50	7,230.33	-354.77	-129.78	-109.32	8.00	7.98	-0.56	
DEHAAN S 8X-HNC-16-07-65 LPL										
7,500.00	71.32	92.22	7,248.61	-356.76	-81.55	-61.06	8.00	7.98	-0.53	
7,600.00	79.31	91.73	7,273.94	-360.08	15.05	35.57	8.00	7.99	-0.50	
7,700.00	87.30	91.26	7,285.59	-362.66	114.25	134.76	8.00	7.99	-0.47	
7,737.99	90.33	91.08	7,286.38	-363.44	152.22	172.71	8.00	7.99	-0.46	
7,800.00	90.33	91.08	7,286.02	-364.61	214.22	234.68	0.00	0.00	0.00	
7,900.00	90.33	91.08	7,285.44	-366.50	314.20	334.60	0.00	0.00	0.00	
8,000.00	90.33	91.08	7,284.87	-368.39	414.18	434.53	0.00	0.00	0.00	
8,100.00	90.33	91.08	7,284.29	-370.28	514.16	534.45	0.00	0.00	0.00	
8,200.00	90.33	91.08	7,283.72	-372.16	614.14	634.38	0.00	0.00	0.00	
8,300.00	90.33	91.08	7,283.14	-374.05	714.12	734.30	0.00	0.00	0.00	
8,400.00	90.33	91.08	7,282.56	-375.94	814.10	834.23	0.00	0.00	0.00	
8,500.00	90.33	91.08	7,281.99	-377.83	914.08	934.15	0.00	0.00	0.00	
8,600.00	90.33	91.08	7,281.41	-379.72	1,014.06	1,034.08	0.00	0.00	0.00	
8,700.00	90.33	91.08	7,280.84	-381.61	1,114.04	1,134.00	0.00	0.00	0.00	
8,800.00	90.33	91.08	7,280.26	-383.50	1,214.02	1,233.93	0.00	0.00	0.00	
8,900.00	90.33	91.08	7,279.69	-385.38	1,314.00	1,333.86	0.00	0.00	0.00	
9,000.00	90.33	91.08	7,279.11	-387.27	1,413.98	1,433.78	0.00	0.00	0.00	
9,100.00	90.33	91.08	7,278.53	-389.16	1,513.96	1,533.71	0.00	0.00	0.00	
9,200.00	90.33	91.08	7,277.96	-391.05	1,613.95	1,633.63	0.00	0.00	0.00	
9,300.00	90.33	91.08	7,277.38	-392.94	1,713.93	1,733.56	0.00	0.00	0.00	
9,400.00	90.33	91.08	7,276.81	-394.83	1,813.91	1,833.48	0.00	0.00	0.00	
9,500.00	90.33	91.08	7,276.23	-396.72	1,913.89	1,933.41	0.00	0.00	0.00	
9,600.00	90.33	91.08	7,275.66	-398.60	2,013.87	2,033.33	0.00	0.00	0.00	
9,700.00	90.33	91.08	7,275.08	-400.49	2,113.85	2,133.26	0.00	0.00	0.00	
9,800.00	90.33	91.08	7,274.50	-402.38	2,213.83	2,233.18	0.00	0.00	0.00	
9,900.00	90.33	91.08	7,273.93	-404.27	2,313.81	2,333.11	0.00	0.00	0.00	
10,000.00	90.33	91.08	7,273.35	-406.16	2,413.79	2,433.03	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-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)
10,100.00	90.33	91.08	7,272.78	-408.05	2,513.77	2,532.96	0.00	0.00	0.00
10,200.00	90.33	91.08	7,272.20	-409.94	2,613.75	2,632.88	0.00	0.00	0.00
10,300.00	90.33	91.08	7,271.63	-411.82	2,713.73	2,732.81	0.00	0.00	0.00
10,400.00	90.33	91.08	7,271.05	-413.71	2,813.71	2,832.74	0.00	0.00	0.00
10,500.00	90.33	91.08	7,270.47	-415.60	2,913.69	2,932.66	0.00	0.00	0.00
10,600.00	90.33	91.08	7,269.90	-417.49	3,013.67	3,032.59	0.00	0.00	0.00
10,700.00	90.33	91.08	7,269.32	-419.38	3,113.65	3,132.51	0.00	0.00	0.00
10,800.00	90.33	91.08	7,268.75	-421.27	3,213.63	3,232.44	0.00	0.00	0.00
10,900.00	90.33	91.08	7,268.17	-423.16	3,313.61	3,332.36	0.00	0.00	0.00
11,000.00	90.33	91.08	7,267.60	-425.05	3,413.59	3,432.29	0.00	0.00	0.00
11,100.00	90.33	91.08	7,267.02	-426.93	3,513.57	3,532.21	0.00	0.00	0.00
11,200.00	90.33	91.08	7,266.44	-428.82	3,613.56	3,632.14	0.00	0.00	0.00
11,300.00	90.33	91.08	7,265.87	-430.71	3,713.54	3,732.06	0.00	0.00	0.00
11,400.00	90.33	91.08	7,265.29	-432.60	3,813.52	3,831.99	0.00	0.00	0.00
11,500.00	90.33	91.08	7,264.72	-434.49	3,913.50	3,931.91	0.00	0.00	0.00
11,600.00	90.33	91.08	7,264.14	-436.38	4,013.48	4,031.84	0.00	0.00	0.00
11,700.00	90.33	91.08	7,263.57	-438.27	4,113.46	4,131.76	0.00	0.00	0.00
11,800.00	90.33	91.08	7,262.99	-440.15	4,213.44	4,231.69	0.00	0.00	0.00
11,900.00	90.33	91.08	7,262.41	-442.04	4,313.42	4,331.62	0.00	0.00	0.00
12,000.00	90.33	91.08	7,261.84	-443.93	4,413.40	4,431.54	0.00	0.00	0.00
12,100.00	90.33	91.08	7,261.26	-445.82	4,513.38	4,531.47	0.00	0.00	0.00
12,200.00	90.33	91.08	7,260.69	-447.71	4,613.36	4,631.39	0.00	0.00	0.00
12,300.00	90.33	91.08	7,260.11	-449.60	4,713.34	4,731.32	0.00	0.00	0.00
12,400.00	90.33	91.08	7,259.54	-451.49	4,813.32	4,831.24	0.00	0.00	0.00
12,500.00	90.33	91.08	7,258.96	-453.37	4,913.30	4,931.17	0.00	0.00	0.00
12,600.00	90.33	91.08	7,258.38	-455.26	5,013.28	5,031.09	0.00	0.00	0.00
12,700.00	90.33	91.08	7,257.81	-457.15	5,113.26	5,131.02	0.00	0.00	0.00
12,800.00	90.33	91.08	7,257.23	-459.04	5,213.24	5,230.94	0.00	0.00	0.00
12,900.00	90.33	91.08	7,256.66	-460.93	5,313.22	5,330.87	0.00	0.00	0.00
13,000.00	90.33	91.08	7,256.08	-462.82	5,413.20	5,430.79	0.00	0.00	0.00
13,100.00	90.33	91.08	7,255.51	-464.71	5,513.18	5,530.72	0.00	0.00	0.00
13,200.00	90.33	91.08	7,254.93	-466.59	5,613.17	5,630.65	0.00	0.00	0.00
13,300.00	90.33	91.08	7,254.35	-468.48	5,713.15	5,730.57	0.00	0.00	0.00
13,400.00	90.33	91.08	7,253.78	-470.37	5,813.13	5,830.50	0.00	0.00	0.00
13,500.00	90.33	91.08	7,253.20	-472.26	5,913.11	5,930.42	0.00	0.00	0.00
13,600.00	90.33	91.08	7,252.63	-474.15	6,013.09	6,030.35	0.00	0.00	0.00
13,700.00	90.33	91.08	7,252.05	-476.04	6,113.07	6,130.27	0.00	0.00	0.00
13,800.00	90.33	91.08	7,251.48	-477.93	6,213.05	6,230.20	0.00	0.00	0.00
13,900.00	90.33	91.08	7,250.90	-479.81	6,313.03	6,330.12	0.00	0.00	0.00
14,000.00	90.33	91.08	7,250.32	-481.70	6,413.01	6,430.05	0.00	0.00	0.00
14,100.00	90.33	91.08	7,249.75	-483.59	6,512.99	6,529.97	0.00	0.00	0.00
14,200.00	90.33	91.08	7,249.17	-485.48	6,612.97	6,629.90	0.00	0.00	0.00
14,300.00	90.33	91.08	7,248.60	-487.37	6,712.95	6,729.82	0.00	0.00	0.00
14,400.00	90.33	91.08	7,248.02	-489.26	6,812.93	6,829.75	0.00	0.00	0.00
14,500.00	90.33	91.08	7,247.45	-491.15	6,912.91	6,929.67	0.00	0.00	0.00
14,600.00	90.33	91.08	7,246.87	-493.03	7,012.89	7,029.60	0.00	0.00	0.00
14,700.00	90.33	91.08	7,246.29	-494.92	7,112.87	7,129.53	0.00	0.00	0.00
14,800.00	90.33	91.08	7,245.72	-496.81	7,212.85	7,229.45	0.00	0.00	0.00
14,900.00	90.33	91.08	7,245.14	-498.70	7,312.83	7,329.38	0.00	0.00	0.00
15,000.00	90.33	91.08	7,244.57	-500.59	7,412.81	7,429.30	0.00	0.00	0.00
15,100.00	90.33	91.08	7,243.99	-502.48	7,512.80	7,529.23	0.00	0.00	0.00
15,200.00	90.33	91.08	7,243.41	-504.37	7,612.78	7,629.15	0.00	0.00	0.00
15,300.00	90.33	91.08	7,242.84	-506.25	7,712.76	7,729.08	0.00	0.00	0.00

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DEHAAN 8X-HNC-16-07-65 - Slot DEHAAN S 8X-HNC-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 8X-HNC-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)	
15,400.00	90.33	91.08	7,242.26	-508.14	7,812.74	7,829.00	0.00	0.00	0.00	
15,500.00	90.33	91.08	7,241.69	-510.03	7,912.72	7,928.93	0.00	0.00	0.00	
15,600.00	90.33	91.08	7,241.11	-511.92	8,012.70	8,028.85	0.00	0.00	0.00	
15,700.00	90.33	91.08	7,240.54	-513.81	8,112.68	8,128.78	0.00	0.00	0.00	
15,800.00	90.33	91.08	7,239.96	-515.70	8,212.66	8,228.70	0.00	0.00	0.00	
15,900.00	90.33	91.08	7,239.38	-517.59	8,312.64	8,328.63	0.00	0.00	0.00	
16,000.00	90.33	91.08	7,238.81	-519.47	8,412.62	8,428.55	0.00	0.00	0.00	
16,100.00	90.33	91.08	7,238.23	-521.36	8,512.60	8,528.48	0.00	0.00	0.00	
16,200.00	90.33	91.08	7,237.66	-523.25	8,612.58	8,628.41	0.00	0.00	0.00	
16,300.00	90.33	91.08	7,237.08	-525.14	8,712.56	8,728.33	0.00	0.00	0.00	
16,400.00	90.33	91.08	7,236.51	-527.03	8,812.54	8,828.26	0.00	0.00	0.00	
16,500.00	90.33	91.08	7,235.93	-528.92	8,912.52	8,928.18	0.00	0.00	0.00	
16,600.00	90.33	91.08	7,235.35	-530.81	9,012.50	9,028.11	0.00	0.00	0.00	
16,700.00	90.33	91.08	7,234.78	-532.69	9,112.48	9,128.03	0.00	0.00	0.00	
16,800.00	90.33	91.08	7,234.20	-534.58	9,212.46	9,227.96	0.00	0.00	0.00	
16,900.00	90.33	91.08	7,233.63	-536.47	9,312.44	9,327.88	0.00	0.00	0.00	
17,000.00	90.33	91.08	7,233.05	-538.36	9,412.42	9,427.81	0.00	0.00	0.00	
17,008.99	90.33	91.08	7,233.00	-538.53	9,421.41	9,436.79	0.00	0.00	0.00	
DEHAAN S 8X-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 S 8X-HNC-16- - plan misses target center by 0.32usft at 7448.38usft MD (7230.33 TVD, -354.77 N, -129.78 E) - Point	0.00	0.00	7,230.63	-354.80	-129.90	1,451,462.36	3,223,681.22	40.569876	-104.694837
DEHAAN S 8X-HNC-16- - plan hits target center - Point	0.00	0.00	7,233.00	-538.53	9,421.41	1,451,278.63	3,233,232.53	40.569128	-104.660465