

Nickel Road Operating LLC

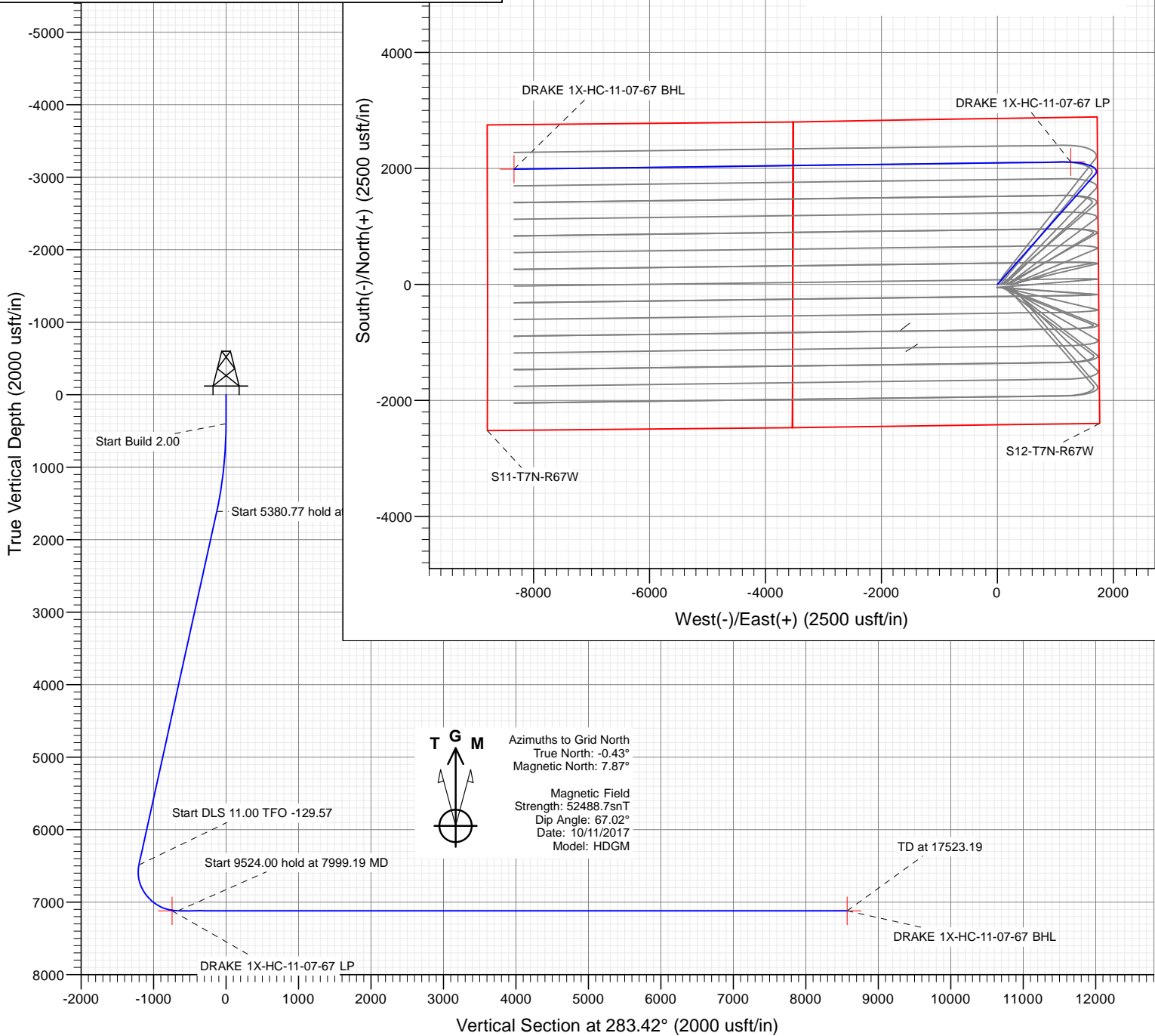
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
3	1649.86	25.00	41.61	1610.58	200.63	178.21	2.00	41.61	-126.80	
4	7030.63	25.00	41.61	6487.33	1900.58	1688.24	0.00	0.00	-1201.23	
5	7999.19	90.00	269.26	7120.00	2112.06	1186.14	11.00	-129.57	-663.76	
6	17523.19	90.00	269.26	7120.00	1988.51	-8337.06	0.00	0.00	8570.92	DRAKE 1X-HC-11-07-67 BHL

PLAN #1
DRAKE 1X-HC-11-07-67
20' KB @ 5220.00usft
Ground Level @ 5220.00
North American Datum 1983
Well DRAKE 1X-HC-11-07-67, Grid North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
TD	No Target (Freehand)	283.42	Slot	0.00	0.00	0.00
Name		TVD	+N/-S	+E/-W	Latitude	Longitude
DRAKE 1X-HC-11-07-67 BHL		7120.00	1988.51	-8337.06	40.593801	-104.833473
DRAKE 1X-HC-11-07-67 LP		7120.00	2113.12	-1267.30	40.593950	-104.833473

Project: WELD COUNTY, CO
Site: S12-T7N-R67W
Well: DRAKE 1X-HC-11-07-67
Wellbore: OH
Design: PLAN #1



WELL DETAILS: DRAKE 1X-HC-11-07-67

+N/-S	+E/-W	Northing	Easting	5200.00	Latitude	Longitude
0.00	0.00	1457799.95	3183834.54		40.588176	-104.838093

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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		S12-T7N-R67W			
Site Position:		Northing:	1,457,799.97 usft	Latitude:	40.588176
From:	Lat/Long	Easting:	3,183,834.54 usft	Longitude:	-104.838093
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.43 °

Well	DRAKE 1X-HC-11-07-67					
Well Position	+N/-S	0.00 usft	Northing:	1,457,799.95 usft	Latitude:	40.588176
	+E/-W	0.00 usft	Easting:	3,183,834.54 usft	Longitude:	-104.838093
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,200.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/11/2017	8.30	67.02	52,488.70000000

Design	PLAN #1				
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	283.42	

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	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,649.86	25.00	41.61	1,610.58	200.63	178.21	2.00	2.00	0.00	41.61	
7,030.63	25.00	41.61	6,487.33	1,900.58	1,688.24	0.00	0.00	0.00	0.00	
7,999.19	90.00	269.26	7,120.00	2,112.06	1,186.14	11.00	6.71	-13.67	-129.57	
17,523.19	90.00	269.26	7,120.00	1,988.51	-8,337.06	0.00	0.00	0.00	0.00	DRAKE 1X-HC-11-07

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
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	
200.00	0.00	0.00	200.00	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	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
500.00	2.00	41.61	499.98	1.30	1.16	-0.82	2.00	2.00	
600.00	4.00	41.61	599.84	5.22	4.63	-3.30	2.00	2.00	
700.00	6.00	41.61	699.45	11.73	10.42	-7.42	2.00	2.00	
800.00	8.00	41.61	798.70	20.84	18.52	-13.17	2.00	2.00	
900.00	10.00	41.61	897.47	32.54	28.90	-20.57	2.00	2.00	
1,000.00	12.00	41.61	995.62	46.80	41.57	-29.58	2.00	2.00	
1,100.00	14.00	41.61	1,093.06	63.62	56.51	-40.21	2.00	2.00	
1,200.00	16.00	41.61	1,189.64	82.97	73.70	-52.44	2.00	2.00	
1,300.00	18.00	41.61	1,285.27	104.83	93.12	-66.25	2.00	2.00	
1,400.00	20.00	41.61	1,379.82	129.17	114.74	-81.64	2.00	2.00	
1,500.00	22.00	41.61	1,473.17	155.96	138.53	-98.57	2.00	2.00	
1,600.00	24.00	41.61	1,565.21	185.17	164.48	-117.03	2.00	2.00	
1,649.86	25.00	41.61	1,610.58	200.63	178.21	-126.80	2.00	2.00	
1,700.00	25.00	41.61	1,656.03	216.47	192.28	-136.81	0.00	0.00	
1,800.00	25.00	41.61	1,746.66	248.06	220.35	-156.78	0.00	0.00	
1,900.00	25.00	41.61	1,837.29	279.65	248.41	-176.75	0.00	0.00	
2,000.00	25.00	41.61	1,927.93	311.25	276.47	-196.72	0.00	0.00	
2,100.00	25.00	41.61	2,018.56	342.84	304.54	-216.69	0.00	0.00	
2,200.00	25.00	41.61	2,109.19	374.43	332.60	-236.65	0.00	0.00	
2,300.00	25.00	41.61	2,199.83	406.03	360.66	-256.62	0.00	0.00	
2,400.00	25.00	41.61	2,290.46	437.62	388.73	-276.59	0.00	0.00	
2,500.00	25.00	41.61	2,381.09	469.21	416.79	-296.56	0.00	0.00	
2,600.00	25.00	41.61	2,471.72	500.81	444.85	-316.53	0.00	0.00	
2,700.00	25.00	41.61	2,562.36	532.40	472.92	-336.49	0.00	0.00	
2,800.00	25.00	41.61	2,652.99	563.99	500.98	-356.46	0.00	0.00	
2,900.00	25.00	41.61	2,743.62	595.59	529.04	-376.43	0.00	0.00	
3,000.00	25.00	41.61	2,834.26	627.18	557.11	-396.40	0.00	0.00	
3,100.00	25.00	41.61	2,924.89	658.77	585.17	-416.36	0.00	0.00	
3,200.00	25.00	41.61	3,015.52	690.37	613.24	-436.33	0.00	0.00	
3,300.00	25.00	41.61	3,106.15	721.96	641.30	-456.30	0.00	0.00	
3,400.00	25.00	41.61	3,196.79	753.55	669.36	-476.27	0.00	0.00	
3,500.00	25.00	41.61	3,287.42	785.15	697.43	-496.24	0.00	0.00	
3,600.00	25.00	41.61	3,378.05	816.74	725.49	-516.20	0.00	0.00	
3,700.00	25.00	41.61	3,468.69	848.33	753.55	-536.17	0.00	0.00	
3,800.00	25.00	41.61	3,559.32	879.92	781.62	-556.14	0.00	0.00	
3,900.00	25.00	41.61	3,649.95	911.52	809.68	-576.11	0.00	0.00	
4,000.00	25.00	41.61	3,740.58	943.11	837.74	-596.08	0.00	0.00	
4,100.00	25.00	41.61	3,831.22	974.70	865.81	-616.04	0.00	0.00	
4,200.00	25.00	41.61	3,921.85	1,006.30	893.87	-636.01	0.00	0.00	
4,300.00	25.00	41.61	4,012.48	1,037.89	921.93	-655.98	0.00	0.00	
4,400.00	25.00	41.61	4,103.12	1,069.48	950.00	-675.95	0.00	0.00	
4,500.00	25.00	41.61	4,193.75	1,101.08	978.06	-695.91	0.00	0.00	
4,600.00	25.00	41.61	4,284.38	1,132.67	1,006.12	-715.88	0.00	0.00	
4,700.00	25.00	41.61	4,375.01	1,164.26	1,034.19	-735.85	0.00	0.00	
4,800.00	25.00	41.61	4,465.65	1,195.86	1,062.25	-755.82	0.00	0.00	
4,900.00	25.00	41.61	4,556.28	1,227.45	1,090.31	-775.79	0.00	0.00	
5,000.00	25.00	41.61	4,646.91	1,259.04	1,118.38	-795.75	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,100.00	25.00	41.61	4,737.55	1,290.64	1,146.44	-815.72	0.00	0.00	
5,200.00	25.00	41.61	4,828.18	1,322.23	1,174.50	-835.69	0.00	0.00	
5,300.00	25.00	41.61	4,918.81	1,353.82	1,202.57	-855.66	0.00	0.00	
5,400.00	25.00	41.61	5,009.44	1,385.42	1,230.63	-875.63	0.00	0.00	
5,500.00	25.00	41.61	5,100.08	1,417.01	1,258.69	-895.59	0.00	0.00	
5,600.00	25.00	41.61	5,190.71	1,448.60	1,286.76	-915.56	0.00	0.00	
5,700.00	25.00	41.61	5,281.34	1,480.19	1,314.82	-935.53	0.00	0.00	
5,800.00	25.00	41.61	5,371.98	1,511.79	1,342.88	-955.50	0.00	0.00	
5,900.00	25.00	41.61	5,462.61	1,543.38	1,370.95	-975.46	0.00	0.00	
6,000.00	25.00	41.61	5,553.24	1,574.97	1,399.01	-995.43	0.00	0.00	
6,100.00	25.00	41.61	5,643.87	1,606.57	1,427.07	-1,015.40	0.00	0.00	
6,200.00	25.00	41.61	5,734.51	1,638.16	1,455.14	-1,035.37	0.00	0.00	
6,300.00	25.00	41.61	5,825.14	1,669.75	1,483.20	-1,055.34	0.00	0.00	
6,400.00	25.00	41.61	5,915.77	1,701.35	1,511.26	-1,075.30	0.00	0.00	
6,500.00	25.00	41.61	6,006.41	1,732.94	1,539.33	-1,095.27	0.00	0.00	
6,600.00	25.00	41.61	6,097.04	1,764.53	1,567.39	-1,115.24	0.00	0.00	
6,700.00	25.00	41.61	6,187.67	1,796.13	1,595.45	-1,135.21	0.00	0.00	
6,800.00	25.00	41.61	6,278.30	1,827.72	1,623.52	-1,155.18	0.00	0.00	
6,900.00	25.00	41.61	6,368.94	1,859.31	1,651.58	-1,175.14	0.00	0.00	
7,000.00	25.00	41.61	6,459.57	1,890.91	1,679.65	-1,195.11	0.00	0.00	
7,030.63	25.00	41.61	6,487.33	1,900.58	1,688.24	-1,201.23	0.00	0.00	
7,100.00	20.93	24.96	6,551.26	1,922.80	1,703.22	-1,210.65	11.00	-5.87	
7,200.00	19.12	352.87	6,645.49	1,955.35	1,708.74	-1,208.46	11.00	-1.80	
7,300.00	22.94	323.74	6,739.07	1,987.41	1,695.14	-1,187.79	11.00	3.82	
7,387.85	29.32	307.09	6,818.00	2,014.25	1,667.79	-1,154.96	11.00	7.26	Niobrara A Chalk
7,400.00	30.33	305.33	6,828.54	2,017.82	1,662.91	-1,149.39	11.00	8.31	
7,500.00	39.32	294.13	6,910.63	2,045.46	1,613.25	-1,094.67	11.00	8.99	
7,509.59	40.23	293.29	6,918.00	2,047.93	1,607.63	-1,088.63	11.00	9.47	Niobrara B Chalk
7,600.00	49.03	286.67	6,982.32	2,069.32	1,547.97	-1,025.63	11.00	9.73	
7,634.26	52.45	284.62	7,004.00	2,076.46	1,522.43	-999.14	11.00	9.98	Niobrara C Chalk
7,700.00	59.09	281.16	7,040.97	2,088.51	1,469.48	-944.83	11.00	10.11	
7,800.00	69.34	276.72	7,084.43	2,102.33	1,380.65	-855.22	11.00	10.25	
7,813.39	70.72	276.18	7,089.00	2,103.74	1,368.15	-842.73	11.00	10.32	Fort Hays Limestone
7,900.00	79.69	272.85	7,111.10	2,110.28	1,284.76	-760.11	11.00	10.36	
7,905.17	80.23	272.66	7,112.00	2,110.52	1,279.67	-755.10	11.00	10.38	Codell
7,999.19	90.00	269.26	7,120.00	2,112.06	1,186.14	-663.76	11.00	10.39	Target Depth
8,000.00	90.00	269.26	7,120.00	2,112.05	1,185.33	-662.97	0.00	0.00	
8,100.00	90.00	269.26	7,120.00	2,110.76	1,085.34	-566.01	0.00	0.00	
8,200.00	90.00	269.26	7,120.00	2,109.46	985.35	-469.05	0.00	0.00	
8,300.00	90.00	269.26	7,120.00	2,108.16	885.35	-372.09	0.00	0.00	
8,400.00	90.00	269.26	7,120.00	2,106.87	785.36	-275.13	0.00	0.00	
8,500.00	90.00	269.26	7,120.00	2,105.57	685.37	-178.16	0.00	0.00	
8,600.00	90.00	269.26	7,120.00	2,104.27	585.38	-81.20	0.00	0.00	
8,700.00	90.00	269.26	7,120.00	2,102.97	485.39	15.76	0.00	0.00	
8,800.00	90.00	269.26	7,120.00	2,101.68	385.40	112.72	0.00	0.00	
8,900.00	90.00	269.26	7,120.00	2,100.38	285.40	209.69	0.00	0.00	
9,000.00	90.00	269.26	7,120.00	2,099.08	185.41	306.65	0.00	0.00	
9,100.00	90.00	269.26	7,120.00	2,097.78	85.42	403.61	0.00	0.00	
9,200.00	90.00	269.26	7,120.00	2,096.49	-14.57	500.57	0.00	0.00	
9,300.00	90.00	269.26	7,120.00	2,095.19	-114.56	597.53	0.00	0.00	
9,400.00	90.00	269.26	7,120.00	2,093.89	-214.55	694.50	0.00	0.00	
9,500.00	90.00	269.26	7,120.00	2,092.60	-314.54	791.46	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,600.00	90.00	269.26	7,120.00	2,091.30	-414.54	888.42	0.00	0.00	
9,700.00	90.00	269.26	7,120.00	2,090.00	-514.53	985.38	0.00	0.00	
9,800.00	90.00	269.26	7,120.00	2,088.70	-614.52	1,082.35	0.00	0.00	
9,900.00	90.00	269.26	7,120.00	2,087.41	-714.51	1,179.31	0.00	0.00	
10,000.00	90.00	269.26	7,120.00	2,086.11	-814.50	1,276.27	0.00	0.00	
10,100.00	90.00	269.26	7,120.00	2,084.81	-914.49	1,373.23	0.00	0.00	
10,200.00	90.00	269.26	7,120.00	2,083.51	-1,014.49	1,470.19	0.00	0.00	
10,300.00	90.00	269.26	7,120.00	2,082.22	-1,114.48	1,567.16	0.00	0.00	
10,400.00	90.00	269.26	7,120.00	2,080.92	-1,214.47	1,664.12	0.00	0.00	
10,500.00	90.00	269.26	7,120.00	2,079.62	-1,314.46	1,761.08	0.00	0.00	
10,600.00	90.00	269.26	7,120.00	2,078.33	-1,414.45	1,858.04	0.00	0.00	
10,700.00	90.00	269.26	7,120.00	2,077.03	-1,514.44	1,955.01	0.00	0.00	
10,800.00	90.00	269.26	7,120.00	2,075.73	-1,614.44	2,051.97	0.00	0.00	
10,900.00	90.00	269.26	7,120.00	2,074.43	-1,714.43	2,148.93	0.00	0.00	
11,000.00	90.00	269.26	7,120.00	2,073.14	-1,814.42	2,245.89	0.00	0.00	
11,100.00	90.00	269.26	7,120.00	2,071.84	-1,914.41	2,342.85	0.00	0.00	
11,200.00	90.00	269.26	7,120.00	2,070.54	-2,014.40	2,439.82	0.00	0.00	
11,300.00	90.00	269.26	7,120.00	2,069.24	-2,114.39	2,536.78	0.00	0.00	
11,400.00	90.00	269.26	7,120.00	2,067.95	-2,214.38	2,633.74	0.00	0.00	
11,500.00	90.00	269.26	7,120.00	2,066.65	-2,314.38	2,730.70	0.00	0.00	
11,600.00	90.00	269.26	7,120.00	2,065.35	-2,414.37	2,827.67	0.00	0.00	
11,700.00	90.00	269.26	7,120.00	2,064.06	-2,514.36	2,924.63	0.00	0.00	
11,800.00	90.00	269.26	7,120.00	2,062.76	-2,614.35	3,021.59	0.00	0.00	
11,900.00	90.00	269.26	7,120.00	2,061.46	-2,714.34	3,118.55	0.00	0.00	
12,000.00	90.00	269.26	7,120.00	2,060.16	-2,814.33	3,215.52	0.00	0.00	
12,100.00	90.00	269.26	7,120.00	2,058.87	-2,914.33	3,312.48	0.00	0.00	
12,200.00	90.00	269.26	7,120.00	2,057.57	-3,014.32	3,409.44	0.00	0.00	
12,300.00	90.00	269.26	7,120.00	2,056.27	-3,114.31	3,506.40	0.00	0.00	
12,400.00	90.00	269.26	7,120.00	2,054.97	-3,214.30	3,603.36	0.00	0.00	
12,500.00	90.00	269.26	7,120.00	2,053.68	-3,314.29	3,700.33	0.00	0.00	
12,600.00	90.00	269.26	7,120.00	2,052.38	-3,414.28	3,797.29	0.00	0.00	
12,700.00	90.00	269.26	7,120.00	2,051.08	-3,514.28	3,894.25	0.00	0.00	
12,800.00	90.00	269.26	7,120.00	2,049.79	-3,614.27	3,991.21	0.00	0.00	
12,900.00	90.00	269.26	7,120.00	2,048.49	-3,714.26	4,088.18	0.00	0.00	
13,000.00	90.00	269.26	7,120.00	2,047.19	-3,814.25	4,185.14	0.00	0.00	
13,100.00	90.00	269.26	7,120.00	2,045.89	-3,914.24	4,282.10	0.00	0.00	
13,200.00	90.00	269.26	7,120.00	2,044.60	-4,014.23	4,379.06	0.00	0.00	
13,300.00	90.00	269.26	7,120.00	2,043.30	-4,114.23	4,476.02	0.00	0.00	
13,400.00	90.00	269.26	7,120.00	2,042.00	-4,214.22	4,572.99	0.00	0.00	
13,500.00	90.00	269.26	7,120.00	2,040.71	-4,314.21	4,669.95	0.00	0.00	
13,600.00	90.00	269.26	7,120.00	2,039.41	-4,414.20	4,766.91	0.00	0.00	
13,700.00	90.00	269.26	7,120.00	2,038.11	-4,514.19	4,863.87	0.00	0.00	
13,800.00	90.00	269.26	7,120.00	2,036.81	-4,614.18	4,960.84	0.00	0.00	
13,900.00	90.00	269.26	7,120.00	2,035.52	-4,714.17	5,057.80	0.00	0.00	
14,000.00	90.00	269.26	7,120.00	2,034.22	-4,814.17	5,154.76	0.00	0.00	
14,100.00	90.00	269.26	7,120.00	2,032.92	-4,914.16	5,251.72	0.00	0.00	
14,200.00	90.00	269.26	7,120.00	2,031.62	-5,014.15	5,348.68	0.00	0.00	
14,300.00	90.00	269.26	7,120.00	2,030.33	-5,114.14	5,445.65	0.00	0.00	
14,400.00	90.00	269.26	7,120.00	2,029.03	-5,214.13	5,542.61	0.00	0.00	
14,500.00	90.00	269.26	7,120.00	2,027.73	-5,314.12	5,639.57	0.00	0.00	
14,600.00	90.00	269.26	7,120.00	2,026.44	-5,414.12	5,736.53	0.00	0.00	
14,700.00	90.00	269.26	7,120.00	2,025.14	-5,514.11	5,833.50	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
14,800.00	90.00	269.26	7,120.00	2,023.84	-5,614.10	5,930.46	0.00	0.00	
14,900.00	90.00	269.26	7,120.00	2,022.54	-5,714.09	6,027.42	0.00	0.00	
15,000.00	90.00	269.26	7,120.00	2,021.25	-5,814.08	6,124.38	0.00	0.00	
15,100.00	90.00	269.26	7,120.00	2,019.95	-5,914.07	6,221.35	0.00	0.00	
15,200.00	90.00	269.26	7,120.00	2,018.65	-6,014.07	6,318.31	0.00	0.00	
15,300.00	90.00	269.26	7,120.00	2,017.35	-6,114.06	6,415.27	0.00	0.00	
15,400.00	90.00	269.26	7,120.00	2,016.06	-6,214.05	6,512.23	0.00	0.00	
15,500.00	90.00	269.26	7,120.00	2,014.76	-6,314.04	6,609.19	0.00	0.00	
15,600.00	90.00	269.26	7,120.00	2,013.46	-6,414.03	6,706.16	0.00	0.00	
15,700.00	90.00	269.26	7,120.00	2,012.17	-6,514.02	6,803.12	0.00	0.00	
15,800.00	90.00	269.26	7,120.00	2,010.87	-6,614.01	6,900.08	0.00	0.00	
15,900.00	90.00	269.26	7,120.00	2,009.57	-6,714.01	6,997.04	0.00	0.00	
16,000.00	90.00	269.26	7,120.00	2,008.27	-6,814.00	7,094.01	0.00	0.00	
16,100.00	90.00	269.26	7,120.00	2,006.98	-6,913.99	7,190.97	0.00	0.00	
16,200.00	90.00	269.26	7,120.00	2,005.68	-7,013.98	7,287.93	0.00	0.00	
16,300.00	90.00	269.26	7,120.00	2,004.38	-7,113.97	7,384.89	0.00	0.00	
16,400.00	90.00	269.26	7,120.00	2,003.08	-7,213.96	7,481.85	0.00	0.00	
16,500.00	90.00	269.26	7,120.00	2,001.79	-7,313.96	7,578.82	0.00	0.00	
16,600.00	90.00	269.26	7,120.00	2,000.49	-7,413.95	7,675.78	0.00	0.00	
16,700.00	90.00	269.26	7,120.00	1,999.19	-7,513.94	7,772.74	0.00	0.00	
16,800.00	90.00	269.26	7,120.00	1,997.90	-7,613.93	7,869.70	0.00	0.00	
16,900.00	90.00	269.26	7,120.00	1,996.60	-7,713.92	7,966.67	0.00	0.00	
17,000.00	90.00	269.26	7,120.00	1,995.30	-7,813.91	8,063.63	0.00	0.00	
17,100.00	90.00	269.26	7,120.00	1,994.00	-7,913.91	8,160.59	0.00	0.00	
17,200.00	90.00	269.26	7,120.00	1,992.71	-8,013.90	8,257.55	0.00	0.00	
17,300.00	90.00	269.26	7,120.00	1,991.41	-8,113.89	8,354.51	0.00	0.00	
17,400.00	90.00	269.26	7,120.00	1,990.11	-8,213.88	8,451.48	0.00	0.00	
17,500.00	90.00	269.26	7,120.00	1,988.81	-8,313.87	8,548.44	0.00	0.00	
17,523.19	90.00	269.26	7,120.00	1,988.51	-8,337.06	8,570.92	0.00	0.00	

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									
DRAKE 1X-HC-11-07-67	0.00	359.57	7,120.00	2,113.12	1,267.30	1,459,913.07	3,185,101.83	40.593950	-104.833473
- plan misses target center by 6.30usft at 7918.24usft MD (7114.07 TVD, 2111.07 N, 1266.78 E)									
- Point									
DRAKE 1X-HC-11-07-67	0.00	359.59	7,120.00	1,988.51	-8,337.06	1,459,788.47	3,175,497.48	40.593801	-104.868059
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DRAKE 1X-HC-11-07-67
Company:	Nickel Road Operating LLC	TVD Reference:	20' KB @ 5220.00usft
Project:	WELD COUNTY, CO	MD Reference:	20' KB @ 5220.00usft
Site:	S12-T7N-R67W	North Reference:	Grid
Well:	DRAKE 1X-HC-11-07-67	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,387.85	6,818.00	Niobrara A Chalk			
7,509.59	6,918.00	Niobrara B Chalk			
7,634.26	7,004.00	Niobrara C Chalk			
7,813.39	7,089.00	Fort Hays Limestone			
7,905.17	7,112.00	Codell			
7,999.19	7,120.00	Target Depth			