

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well UWF05D-03H H04 596
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 8300.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 8300.00usft
Site:	S4-T5S-R96W (H04)	North Reference:	True
Well:	UWF05D-03H H04 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Project	Garfield County, CO (UTM 12N)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		
Map Zone:	Zone 12N (114 W to 108 W)		

Site	S4-T5S-R96W (H04)		
Site Position:		Northing:	14,409,713.20 usft
From:	Map	Easting:	2,438,700.39 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	39.645887
		Longitude:	-108.164391
		Grid Convergence:	1.81 °

Well	UWF05D-03H H04 596					
Well Position	+N/-S	0.00 usft	Northing:	14,409,791.20 usft	Latitude:	39.646099
	+E/-W	0.00 usft	Easting:	2,438,719.90 usft	Longitude:	-108.164313
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	8,270.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	8/31/2017	9.72	65.93	51,509.40000000

Design	PLAN #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	100.74

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
616.48	12.49	97.37	613.18	-5.80	44.86	3.00	3.00	0.00	97.37	
7,442.77	12.49	97.37	7,277.82	-195.34	1,509.46	0.00	0.00	0.00	0.00	
7,859.25	0.00	0.00	7,691.00	-201.14	1,554.32	3.00	-3.00	0.00	180.00	
8,169.58	3.10	250.00	8,001.18	-204.01	1,546.42	1.00	1.00	-35.45	250.00	
11,343.06	3.10	250.00	11,170.00	-262.78	1,384.99	0.00	0.00	0.00	0.00	UWF05D PBHL

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Site:	S4-T5S-R96W (H04)	North Reference:	True
Well:	UWF05D-03H H04 596	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	3.00	97.37	299.95	-0.34	2.60	2.61	3.00	3.00	
400.00	6.00	97.37	399.63	-1.34	10.38	10.44	3.00	3.00	
500.00	9.00	97.37	498.77	-3.02	23.32	23.47	3.00	3.00	
600.00	12.00	97.37	597.08	-5.36	41.39	41.66	3.00	3.00	
616.48	12.49	97.37	613.18	-5.80	44.86	45.15	3.00	3.00	
700.00	12.49	97.37	694.73	-8.12	62.78	63.19	0.00	0.00	
800.00	12.49	97.37	792.36	-10.90	84.23	84.79	0.00	0.00	
900.00	12.49	97.37	889.99	-13.68	105.69	106.38	0.00	0.00	
1,000.00	12.49	97.37	987.62	-16.45	127.14	127.98	0.00	0.00	
1,100.00	12.49	97.37	1,085.26	-19.23	148.60	149.58	0.00	0.00	
1,200.00	12.49	97.37	1,182.89	-22.01	170.05	171.17	0.00	0.00	
1,300.00	12.49	97.37	1,280.52	-24.78	191.51	192.77	0.00	0.00	
1,400.00	12.49	97.37	1,378.15	-27.56	212.96	214.37	0.00	0.00	
1,500.00	12.49	97.37	1,475.78	-30.34	234.42	235.97	0.00	0.00	
1,600.00	12.49	97.37	1,573.41	-33.11	255.87	257.56	0.00	0.00	
1,700.00	12.49	97.37	1,671.05	-35.89	277.33	279.16	0.00	0.00	
1,800.00	12.49	97.37	1,768.68	-38.66	298.79	300.76	0.00	0.00	
1,900.00	12.49	97.37	1,866.31	-41.44	320.24	322.35	0.00	0.00	
2,000.00	12.49	97.37	1,963.94	-44.22	341.70	343.95	0.00	0.00	
2,100.00	12.49	97.37	2,061.57	-46.99	363.15	365.55	0.00	0.00	
2,200.00	12.49	97.37	2,159.21	-49.77	384.61	387.14	0.00	0.00	
2,300.00	12.49	97.37	2,256.84	-52.55	406.06	408.74	0.00	0.00	
2,400.00	12.49	97.37	2,354.47	-55.32	427.52	430.34	0.00	0.00	
2,500.00	12.49	97.37	2,452.10	-58.10	448.97	451.93	0.00	0.00	
2,600.00	12.49	97.37	2,549.73	-60.88	470.43	473.53	0.00	0.00	
2,700.00	12.49	97.37	2,647.36	-63.65	491.88	495.13	0.00	0.00	
2,800.00	12.49	97.37	2,745.00	-66.43	513.34	516.72	0.00	0.00	
2,900.00	12.49	97.37	2,842.63	-69.21	534.79	538.32	0.00	0.00	
3,000.00	12.49	97.37	2,940.26	-71.98	556.25	559.92	0.00	0.00	
3,100.00	12.49	97.37	3,037.89	-74.76	577.71	581.52	0.00	0.00	
3,200.00	12.49	97.37	3,135.52	-77.54	599.16	603.11	0.00	0.00	
3,300.00	12.49	97.37	3,233.15	-80.31	620.62	624.71	0.00	0.00	
3,400.00	12.49	97.37	3,330.79	-83.09	642.07	646.31	0.00	0.00	
3,500.00	12.49	97.37	3,428.42	-85.87	663.53	667.90	0.00	0.00	
3,600.00	12.49	97.37	3,526.05	-88.64	684.98	689.50	0.00	0.00	
3,700.00	12.49	97.37	3,623.68	-91.42	706.44	711.10	0.00	0.00	
3,800.00	12.49	97.37	3,721.31	-94.19	727.89	732.69	0.00	0.00	
3,900.00	12.49	97.37	3,818.94	-96.97	749.35	754.29	0.00	0.00	
4,000.00	12.49	97.37	3,916.58	-99.75	770.80	775.89	0.00	0.00	
4,100.00	12.49	97.37	4,014.21	-102.52	792.26	797.48	0.00	0.00	
4,200.00	12.49	97.37	4,111.84	-105.30	813.71	819.08	0.00	0.00	
4,300.00	12.49	97.37	4,209.47	-108.08	835.17	840.68	0.00	0.00	
4,400.00	12.49	97.37	4,307.10	-110.85	856.63	862.27	0.00	0.00	
4,500.00	12.49	97.37	4,404.74	-113.63	878.08	883.87	0.00	0.00	
4,600.00	12.49	97.37	4,502.37	-116.41	899.54	905.47	0.00	0.00	
4,700.00	12.49	97.37	4,600.00	-119.18	920.99	927.07	0.00	0.00	
4,800.00	12.49	97.37	4,697.63	-121.96	942.45	948.66	0.00	0.00	
4,900.00	12.49	97.37	4,795.26	-124.74	963.90	970.26	0.00	0.00	
5,000.00	12.49	97.37	4,892.89	-127.51	985.36	991.86	0.00	0.00	

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Site:	S4-T5S-R96W (H04)	North Reference:	True
Well:	UWF05D-03H H04 596	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	12.49	97.37	4,990.53	-130.29	1,006.81	1,013.45	0.00	0.00	
5,200.00	12.49	97.37	5,088.16	-133.07	1,028.27	1,035.05	0.00	0.00	
5,300.00	12.49	97.37	5,185.79	-135.84	1,049.72	1,056.65	0.00	0.00	
5,372.94	12.49	97.37	5,257.00	-137.87	1,065.37	1,072.40	0.00	0.00	WASATCH_G_ZONE.MBL (TVD)
5,400.00	12.49	97.37	5,283.42	-138.62	1,071.18	1,078.24	0.00	0.00	
5,447.71	12.49	97.37	5,330.00	-139.94	1,081.42	1,088.55	0.00	0.00	WASATCH.MBL (TVD)
5,500.00	12.49	97.37	5,381.05	-141.39	1,092.63	1,099.84	0.00	0.00	
5,600.00	12.49	97.37	5,478.68	-144.17	1,114.09	1,121.44	0.00	0.00	
5,700.00	12.49	97.37	5,576.32	-146.95	1,135.55	1,143.03	0.00	0.00	
5,731.43	12.49	97.37	5,607.00	-147.82	1,142.29	1,149.82	0.00	0.00	FORT_UNION.MBL (TVD)
5,800.00	12.49	97.37	5,673.95	-149.72	1,157.00	1,164.63	0.00	0.00	
5,900.00	12.49	97.37	5,771.58	-152.50	1,178.46	1,186.23	0.00	0.00	
6,000.00	12.49	97.37	5,869.21	-155.28	1,199.91	1,207.82	0.00	0.00	
6,100.00	12.49	97.37	5,966.84	-158.05	1,221.37	1,229.42	0.00	0.00	
6,200.00	12.49	97.37	6,064.48	-160.83	1,242.82	1,251.02	0.00	0.00	
6,300.00	12.49	97.37	6,162.11	-163.61	1,264.28	1,272.62	0.00	0.00	
6,400.00	12.49	97.37	6,259.74	-166.38	1,285.73	1,294.21	0.00	0.00	
6,500.00	12.49	97.37	6,357.37	-169.16	1,307.19	1,315.81	0.00	0.00	
6,600.00	12.49	97.37	6,455.00	-171.94	1,328.64	1,337.41	0.00	0.00	
6,700.00	12.49	97.37	6,552.63	-174.71	1,350.10	1,359.00	0.00	0.00	
6,800.00	12.49	97.37	6,650.27	-177.49	1,371.55	1,380.60	0.00	0.00	
6,900.00	12.49	97.37	6,747.90	-180.27	1,393.01	1,402.20	0.00	0.00	
7,000.00	12.49	97.37	6,845.53	-183.04	1,414.47	1,423.79	0.00	0.00	
7,100.00	12.49	97.37	6,943.16	-185.82	1,435.92	1,445.39	0.00	0.00	
7,200.00	12.49	97.37	7,040.79	-188.59	1,457.38	1,466.99	0.00	0.00	
7,300.00	12.49	97.37	7,138.42	-191.37	1,478.83	1,488.58	0.00	0.00	
7,400.00	12.49	97.37	7,236.06	-194.15	1,500.29	1,510.18	0.00	0.00	
7,442.77	12.49	97.37	7,277.82	-195.34	1,509.46	1,519.42	0.00	0.00	
7,500.00	10.78	97.37	7,333.86	-196.82	1,520.91	1,530.94	3.00	-3.00	
7,600.00	7.78	97.37	7,432.55	-198.89	1,536.90	1,547.03	3.00	-3.00	
7,672.95	5.59	97.37	7,505.00	-199.97	1,545.32	1,555.51	3.00	-3.00	OHIO_CREEK.MBL (TVD)
7,700.00	4.78	97.37	7,531.93	-200.29	1,547.74	1,557.95	3.00	-3.00	
7,800.00	1.78	97.37	7,631.76	-201.02	1,553.41	1,563.65	3.00	-3.00	
7,859.25	0.00	0.00	7,691.00	-201.14	1,554.32	1,564.57	3.00	-3.00	
7,900.00	0.41	250.00	7,731.75	-201.19	1,554.18	1,564.45	1.00	1.00	
7,909.25	0.50	250.00	7,741.00	-201.21	1,554.11	1,564.38	1.00	1.00	WILLIAMS_FORK.MBL (TVD)
7,959.25	1.00	250.00	7,791.00	-201.44	1,553.50	1,563.82	1.00	1.00	TOP_GAS.MBL (TVD)
8,000.00	1.41	250.00	7,831.74	-201.73	1,552.70	1,563.08	1.00	1.00	
8,100.00	2.41	250.00	7,931.68	-202.87	1,549.57	1,560.22	1.00	1.00	
8,169.58	3.10	250.00	8,001.18	-204.01	1,546.42	1,557.35	1.00	1.00	
8,200.00	3.10	250.00	8,031.55	-204.58	1,544.88	1,555.93	0.00	0.00	
8,300.00	3.10	250.00	8,131.41	-206.43	1,539.79	1,551.28	0.00	0.00	
8,400.00	3.10	250.00	8,231.26	-208.28	1,534.70	1,546.63	0.00	0.00	
8,500.00	3.10	250.00	8,331.11	-210.13	1,529.62	1,541.98	0.00	0.00	
8,600.00	3.10	250.00	8,430.97	-211.99	1,524.53	1,537.32	0.00	0.00	
8,700.00	3.10	250.00	8,530.82	-213.84	1,519.44	1,532.67	0.00	0.00	
8,800.00	3.10	250.00	8,630.67	-215.69	1,514.36	1,528.02	0.00	0.00	
8,900.00	3.10	250.00	8,730.53	-217.54	1,509.27	1,523.37	0.00	0.00	
9,000.00	3.10	250.00	8,830.38	-219.39	1,504.18	1,518.71	0.00	0.00	
9,100.00	3.10	250.00	8,930.23	-221.24	1,499.09	1,514.06	0.00	0.00	
9,200.00	3.10	250.00	9,030.09	-223.10	1,494.01	1,509.41	0.00	0.00	
9,300.00	3.10	250.00	9,129.94	-224.95	1,488.92	1,504.76	0.00	0.00	

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Well:	UWF05D-03H H04 596	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
9,400.00	3.10	250.00	9,229.79	-226.80	1,483.83	1,500.10	0.00	0.00	
9,500.00	3.10	250.00	9,329.65	-228.65	1,478.75	1,495.45	0.00	0.00	
9,600.00	3.10	250.00	9,429.50	-230.50	1,473.66	1,490.80	0.00	0.00	
9,700.00	3.10	250.00	9,529.35	-232.36	1,468.57	1,486.14	0.00	0.00	
9,800.00	3.10	250.00	9,629.21	-234.21	1,463.49	1,481.49	0.00	0.00	
9,900.00	3.10	250.00	9,729.06	-236.06	1,458.40	1,476.84	0.00	0.00	
10,000.00	3.10	250.00	9,828.91	-237.91	1,453.31	1,472.19	0.00	0.00	
10,100.00	3.10	250.00	9,928.77	-239.76	1,448.22	1,467.53	0.00	0.00	
10,200.00	3.10	250.00	10,028.62	-241.62	1,443.14	1,462.88	0.00	0.00	
10,300.00	3.10	250.00	10,128.47	-243.47	1,438.05	1,458.23	0.00	0.00	
10,400.00	3.10	250.00	10,228.33	-245.32	1,432.96	1,453.58	0.00	0.00	
10,500.00	3.10	250.00	10,328.18	-247.17	1,427.88	1,448.92	0.00	0.00	
10,546.89	3.10	250.00	10,375.00	-248.04	1,425.49	1,446.74	0.00	0.00	CAMEO.MBL (TVD)
10,600.00	3.10	250.00	10,428.03	-249.02	1,422.79	1,444.27	0.00	0.00	
10,700.00	3.10	250.00	10,527.89	-250.87	1,417.70	1,439.62	0.00	0.00	
10,800.00	3.10	250.00	10,627.74	-252.73	1,412.62	1,434.97	0.00	0.00	
10,900.00	3.10	250.00	10,727.59	-254.58	1,407.53	1,430.31	0.00	0.00	
11,000.00	3.10	250.00	10,827.45	-256.43	1,402.44	1,425.66	0.00	0.00	
11,100.00	3.10	250.00	10,927.30	-258.28	1,397.35	1,421.01	0.00	0.00	
11,167.80	3.10	250.00	10,995.00	-259.54	1,393.91	1,417.85	0.00	0.00	ROLLINS.MBL (TVD)
11,200.00	3.10	250.00	11,027.15	-260.13	1,392.27	1,416.36	0.00	0.00	
11,300.00	3.10	250.00	11,127.01	-261.99	1,387.18	1,411.70	0.00	0.00	
11,343.06	3.10	250.00	11,170.00	-262.78	1,384.99	1,409.70	0.00	0.00	TD.MBL (TVD)

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									
UWF05D PBHL	0.00	0.00	11,170.00	-262.78	1,384.99	14,409,572.30	2,440,112.50	39.645378	-108.159397
- plan hits target center									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,372.94	5,257.00	WASATCH_G_ZONE.MBL (TVD)			
5,447.71	5,330.00	WASATCH.MBL (TVD)			
5,731.43	5,607.00	FORT_UNION.MBL (TVD)			
7,672.95	7,505.00	OHIO_CREEK.MBL (TVD)			
7,909.25	7,741.00	WILLIAMS_FORK.MBL (TVD)			
7,959.25	7,791.00	TOP_GAS.MBL (TVD)			
10,546.89	10,375.00	CAMEO.MBL (TVD)			
11,167.80	10,995.00	ROLLINS.MBL (TVD)			
11,343.06	11,170.00	TD.MBL (TVD)			