



## 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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1022.66	24.68	44.49	997.46	124.46	122.25	3.00	44.49	174.35	
4	5848.57	24.68	44.49	5382.54	1562.04	1534.26	0.00	0.00	2188.13	
5	6671.23	0.00	0.00	6180.00	1686.50	1656.51	3.00	180.00	2362.48	
6	6988.34	3.17	250.00	6496.94	1683.50	1648.27	1.00	250.00	2354.70	
7	10100.16	3.17	250.00	9604.00	1624.63	1486.51	0.00	0.00	2202.07	NPR 22C-10 596 PBHL

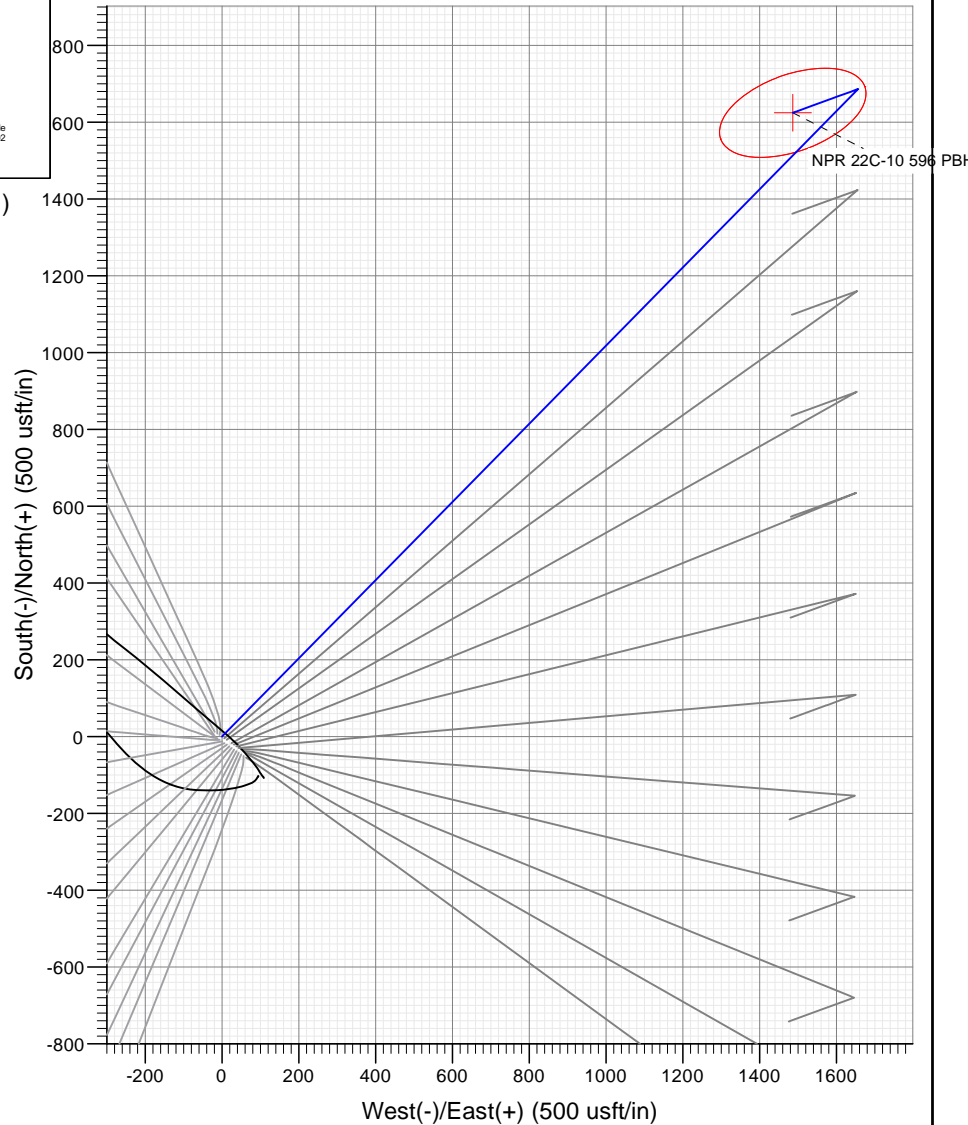
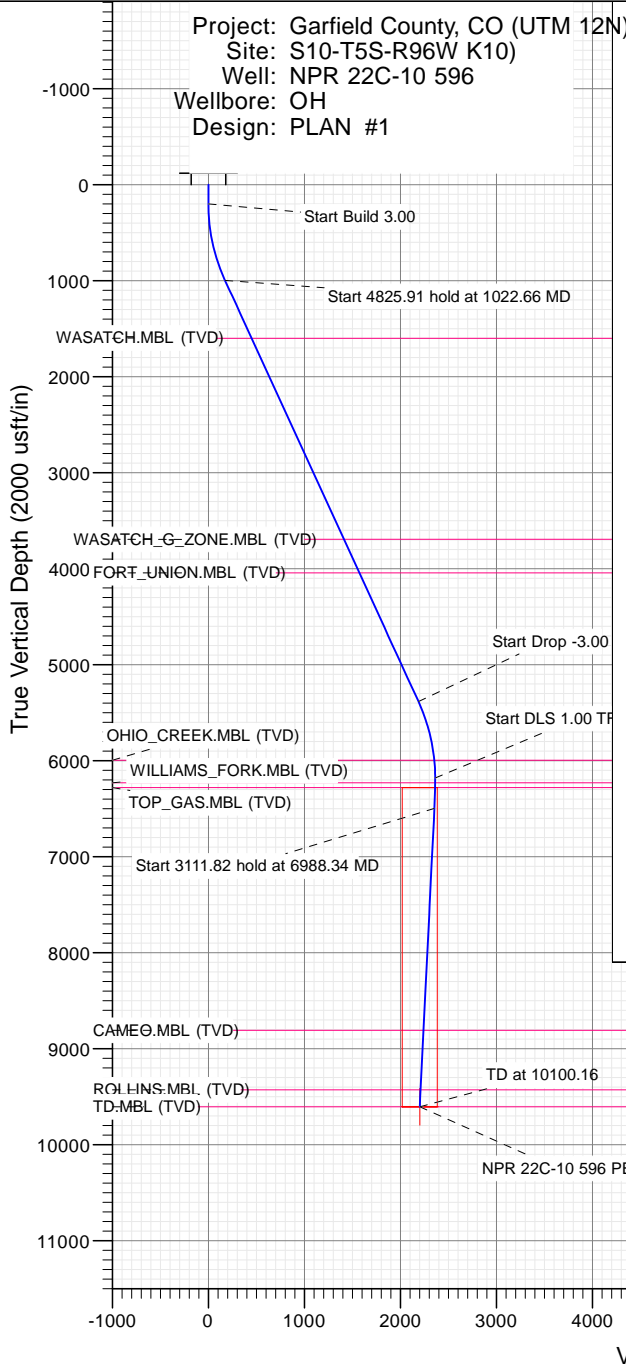
PLAN #1  
NPR 22C-10 596  
30° 15' @ 6753.00ft  
Ground Level @ 6709.00  
NAD 1987 - Western US  
Well NPR 22C-10 596 - Slot NPR 22C-10 596, True North

Type	Target	Azimuth	Origin	Type	N/S	E/W	From
TD	No Target (Freehand)	42.46	Slot	0.00	0.00	0.00	TVD

Name: NPR 22C-10 596 PBHL

TVD	+N/-S	+E/-W	Latitude	Longitude
9604.00	1624.63	1486.51	39.632056	-108.150092

Project: Garfield County, CO (UTM 12N)  
Site: S10-T5S-R96W K10  
Well: NPR 22C-10 596  
Wellbore: OH  
Design: PLAN #1



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1600.00	1685.78	WASATCH.MBL (TVD)
3693.00	3989.18	WASATCH_G_ZONE.MBL (TVD)
4043.00	4374.37	FORT_UNION.MBL (TVD)
5995.00	6485.94	OHIO_CREEK.MBL (TVD)
6230.00	6721.23	WILLIAMS_FORK.MBL (TVD)
6280.00	6771.24	TOP_GAS.MBL (TVD)
8809.00	9303.94	CAMEO.MBL (TVD)
9429.00	9924.89	ROLLINS.MBL (TVD)
9604.00	10100.16	TD.MBL (TVD)



Azimuths to True North  
Magnetic North: 9.72°

Magnetic Field  
Strength: 51531.5snT  
Dip Angle: 65.93°  
Date: 9/12/2017  
Model: HDGM

Vertical Section at 42.46° (2000 usft/in)

WELL DETAILS: NPR 22C-10 596

6709.00  
+N/-S 0.00 +E/-W 0.00 Northing 14403132.70 Easting 2441452.30 Latitude 39.627598 Longitude -108.155368 NPR 22C-10 596



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well NPR 22C-10 596 - Slot NPR 22C-10 596
<b>Company:</b>	Caerus Oil & Gas	<b>TVD Reference:</b>	30' KB @ 6739.00usft
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 6739.00usft
<b>Site:</b>	S10-T5S-R96W K10)	<b>North Reference:</b>	True
<b>Well:</b>	NPR 22C-10 596	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1		

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

Site		S10-T5S-R96W K10)			
Site Position:		Northing:	14,403,136.70 usft	Latitude:	39.627609
From:	Map	Easting:	2,441,445.90 usft	Longitude:	-108.155390
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.82 °

Well	NPR 22C-10 596 - Slot NPR 22C-10 596					
Well Position	+N/-S	0.00 usft	Northing:	14,403,132.70 usft	Latitude:	39.627598
	+E/-W	0.00 usft	Easting:	2,441,452.30 usft	Longitude:	-108.155368
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,709.00 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</b>
			(°)	(°)	(nT)
	HDGM	9/12/2017	9.72	65.93	51,531.50000000

<b>Design</b>	PLAN #1			
<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	42.46

<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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,022.66	24.68	44.49	997.46	124.46	122.25	3.00	3.00	0.00	44.49	
5,848.57	24.68	44.49	5,382.54	1,562.04	1,534.26	0.00	0.00	0.00	0.00	
6,671.23	0.00	0.00	6,180.00	1,686.50	1,656.51	3.00	-3.00	0.00	180.00	
6,988.34	3.17	250.00	6,496.94	1,683.50	1,648.27	1.00	1.00	-34.69	250.00	
10,100.16	3.17	250.00	9,604.00	1,624.63	1,486.51	0.00	0.00	0.00	0.00	NPR 22C-10 596 PB+

# Cathedral Energy Services

## Planning Report

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<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 6739.00usft
<b>Site:</b>	S10-T5S-R96W K10)	<b>North Reference:</b>	True
<b>Well:</b>	NPR 22C-10 596	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	44.49	299.95	1.87	1.83	2.62	3.00	3.00	
400.00	6.00	44.49	399.63	7.46	7.33	10.46	3.00	3.00	
500.00	9.00	44.49	498.77	16.78	16.48	23.50	3.00	3.00	
600.00	12.00	44.49	597.08	29.77	29.25	41.71	3.00	3.00	
700.00	15.00	44.49	694.31	46.43	45.60	65.04	3.00	3.00	
800.00	18.00	44.49	790.18	66.69	65.50	93.42	3.00	3.00	
900.00	21.00	44.49	884.43	90.50	88.89	126.77	3.00	3.00	
1,000.00	24.00	44.49	976.81	117.80	115.70	165.01	3.00	3.00	
1,022.66	24.68	44.49	997.46	124.46	122.25	174.35	3.00	3.00	
1,100.00	24.68	44.49	1,067.73	147.50	144.88	206.62	0.00	0.00	
1,200.00	24.68	44.49	1,158.60	177.29	174.13	248.35	0.00	0.00	
1,300.00	24.68	44.49	1,249.46	207.08	203.39	290.08	0.00	0.00	
1,400.00	24.68	44.49	1,340.33	236.87	232.65	331.80	0.00	0.00	
1,500.00	24.68	44.49	1,431.19	266.65	261.91	373.53	0.00	0.00	
1,600.00	24.68	44.49	1,522.06	296.44	291.17	415.26	0.00	0.00	
1,685.78	24.68	44.49	1,600.00	321.99	316.27	451.06	0.00	0.00	WASATCH.MBL (TVD)
1,700.00	24.68	44.49	1,612.92	326.23	320.43	456.99	0.00	0.00	
1,800.00	24.68	44.49	1,703.79	356.02	349.69	498.72	0.00	0.00	
1,900.00	24.68	44.49	1,794.65	385.81	378.95	540.45	0.00	0.00	
2,000.00	24.68	44.49	1,885.52	415.60	408.21	582.18	0.00	0.00	
2,100.00	24.68	44.49	1,976.39	445.39	437.47	623.91	0.00	0.00	
2,200.00	24.68	44.49	2,067.25	475.18	466.73	665.63	0.00	0.00	
2,300.00	24.68	44.49	2,158.12	504.96	495.98	707.36	0.00	0.00	
2,400.00	24.68	44.49	2,248.98	534.75	525.24	749.09	0.00	0.00	
2,500.00	24.68	44.49	2,339.85	564.54	554.50	790.82	0.00	0.00	
2,600.00	24.68	44.49	2,430.71	594.33	583.76	832.55	0.00	0.00	
2,700.00	24.68	44.49	2,521.58	624.12	613.02	874.28	0.00	0.00	
2,800.00	24.68	44.49	2,612.44	653.91	642.28	916.01	0.00	0.00	
2,900.00	24.68	44.49	2,703.31	683.70	671.54	957.73	0.00	0.00	
3,000.00	24.68	44.49	2,794.18	713.49	700.80	999.46	0.00	0.00	
3,100.00	24.68	44.49	2,885.04	743.27	730.06	1,041.19	0.00	0.00	
3,200.00	24.68	44.49	2,975.91	773.06	759.32	1,082.92	0.00	0.00	
3,300.00	24.68	44.49	3,066.77	802.85	788.57	1,124.65	0.00	0.00	
3,400.00	24.68	44.49	3,157.64	832.64	817.83	1,166.38	0.00	0.00	
3,500.00	24.68	44.49	3,248.50	862.43	847.09	1,208.11	0.00	0.00	
3,600.00	24.68	44.49	3,339.37	892.22	876.35	1,249.83	0.00	0.00	
3,700.00	24.68	44.49	3,430.23	922.01	905.61	1,291.56	0.00	0.00	
3,800.00	24.68	44.49	3,521.10	951.80	934.87	1,333.29	0.00	0.00	
3,900.00	24.68	44.49	3,611.96	981.58	964.13	1,375.02	0.00	0.00	
3,989.18	24.68	44.49	3,693.00	1,008.15	990.22	1,412.24	0.00	0.00	WASATCH_G_ZONE.MBL (TVD)
4,000.00	24.68	44.49	3,702.83	1,011.37	993.39	1,416.75	0.00	0.00	
4,100.00	24.68	44.49	3,793.70	1,041.16	1,022.65	1,458.48	0.00	0.00	
4,200.00	24.68	44.49	3,884.56	1,070.95	1,051.91	1,500.21	0.00	0.00	
4,300.00	24.68	44.49	3,975.43	1,100.74	1,081.17	1,541.94	0.00	0.00	
4,374.37	24.68	44.49	4,043.00	1,122.89	1,102.92	1,572.97	0.00	0.00	FORT_UNION.MBL (TVD)
4,400.00	24.68	44.49	4,066.29	1,130.53	1,110.42	1,583.66	0.00	0.00	
4,500.00	24.68	44.49	4,157.16	1,160.32	1,139.68	1,625.39	0.00	0.00	
4,600.00	24.68	44.49	4,248.02	1,190.11	1,168.94	1,667.12	0.00	0.00	
4,700.00	24.68	44.49	4,338.89	1,219.89	1,198.20	1,708.85	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 NPR 22C-10 596 - Slot NPR 22C-10 596
<b>Company:</b>	Caerus Oil & Gas	<b>TVD Reference:</b>	30' KB @ 6739.00usft
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 6739.00usft
<b>Site:</b>	S10-T5S-R96W K10)	<b>North Reference:</b>	True
<b>Well:</b>	NPR 22C-10 596	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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
4,800.00	24.68	44.49	4,429.75	1,249.68	1,227.46	1,750.58	0.00	0.00	
4,900.00	24.68	44.49	4,520.62	1,279.47	1,256.72	1,792.31	0.00	0.00	
5,000.00	24.68	44.49	4,611.49	1,309.26	1,285.98	1,834.04	0.00	0.00	
5,100.00	24.68	44.49	4,702.35	1,339.05	1,315.24	1,875.76	0.00	0.00	
5,200.00	24.68	44.49	4,793.22	1,368.84	1,344.50	1,917.49	0.00	0.00	
5,300.00	24.68	44.49	4,884.08	1,398.63	1,373.76	1,959.22	0.00	0.00	
5,400.00	24.68	44.49	4,974.95	1,428.42	1,403.02	2,000.95	0.00	0.00	
5,500.00	24.68	44.49	5,065.81	1,458.20	1,432.27	2,042.68	0.00	0.00	
5,600.00	24.68	44.49	5,156.68	1,487.99	1,461.53	2,084.41	0.00	0.00	
5,700.00	24.68	44.49	5,247.54	1,517.78	1,490.79	2,126.14	0.00	0.00	
5,800.00	24.68	44.49	5,338.41	1,547.57	1,520.05	2,167.87	0.00	0.00	
5,848.57	24.68	44.49	5,382.54	1,562.04	1,534.26	2,188.13	0.00	0.00	
5,900.00	23.14	44.49	5,429.56	1,576.91	1,548.87	2,208.96	3.00	-3.00	
6,000.00	20.14	44.49	5,522.50	1,603.21	1,574.70	2,245.81	3.00	-3.00	
6,100.00	17.14	44.49	5,617.25	1,626.01	1,597.09	2,277.74	3.00	-3.00	
6,200.00	14.14	44.49	5,713.53	1,645.24	1,615.98	2,304.67	3.00	-3.00	
6,300.00	11.14	44.49	5,811.10	1,660.84	1,631.31	2,326.54	3.00	-3.00	
6,400.00	8.14	44.49	5,909.68	1,672.78	1,643.04	2,343.26	3.00	-3.00	
6,485.94	5.56	44.49	5,995.00	1,680.09	1,650.22	2,353.50	3.00	-3.00	OHIO_CREEK.MBL (TVD)
6,500.00	5.14	44.49	6,009.00	1,681.03	1,651.13	2,354.81	3.00	-3.00	
6,600.00	2.14	44.49	6,108.78	1,685.55	1,655.58	2,361.15	3.00	-3.00	
6,671.23	0.00	0.00	6,180.00	1,686.50	1,656.51	2,362.48	3.00	-3.00	
6,700.00	0.29	250.00	6,208.77	1,686.48	1,656.44	2,362.42	1.00	1.00	
6,721.23	0.50	250.00	6,230.00	1,686.43	1,656.30	2,362.29	1.00	1.00	WILLIAMS_FORK.MBL (TVD)
6,771.24	1.00	250.00	6,280.00	1,686.20	1,655.69	2,361.71	1.00	1.00	TOP_GAS.MBL (TVD)
6,800.00	1.29	250.00	6,308.76	1,686.01	1,655.15	2,361.20	1.00	1.00	
6,900.00	2.29	250.00	6,408.71	1,684.94	1,652.22	2,358.43	1.00	1.00	
6,988.34	3.17	250.00	6,496.94	1,683.50	1,648.27	2,354.70	1.00	1.00	
7,000.00	3.17	250.00	6,508.59	1,683.28	1,647.66	2,354.13	0.00	0.00	
7,100.00	3.17	250.00	6,608.43	1,681.39	1,642.46	2,349.22	0.00	0.00	
7,200.00	3.17	250.00	6,708.28	1,679.50	1,637.26	2,344.32	0.00	0.00	
7,300.00	3.17	250.00	6,808.13	1,677.60	1,632.07	2,339.41	0.00	0.00	
7,400.00	3.17	250.00	6,907.98	1,675.71	1,626.87	2,334.51	0.00	0.00	
7,500.00	3.17	250.00	7,007.82	1,673.82	1,621.67	2,329.60	0.00	0.00	
7,600.00	3.17	250.00	7,107.67	1,671.93	1,616.47	2,324.70	0.00	0.00	
7,700.00	3.17	250.00	7,207.52	1,670.04	1,611.27	2,319.80	0.00	0.00	
7,800.00	3.17	250.00	7,307.36	1,668.14	1,606.08	2,314.89	0.00	0.00	
7,900.00	3.17	250.00	7,407.21	1,666.25	1,600.88	2,309.99	0.00	0.00	
8,000.00	3.17	250.00	7,507.06	1,664.36	1,595.68	2,305.08	0.00	0.00	
8,100.00	3.17	250.00	7,606.90	1,662.47	1,590.48	2,300.18	0.00	0.00	
8,200.00	3.17	250.00	7,706.75	1,660.58	1,585.28	2,295.27	0.00	0.00	
8,300.00	3.17	250.00	7,806.60	1,658.68	1,580.08	2,290.37	0.00	0.00	
8,400.00	3.17	250.00	7,906.44	1,656.79	1,574.89	2,285.46	0.00	0.00	
8,500.00	3.17	250.00	8,006.29	1,654.90	1,569.69	2,280.56	0.00	0.00	
8,600.00	3.17	250.00	8,106.14	1,653.01	1,564.49	2,275.65	0.00	0.00	
8,700.00	3.17	250.00	8,205.98	1,651.12	1,559.29	2,270.75	0.00	0.00	
8,800.00	3.17	250.00	8,305.83	1,649.22	1,554.09	2,265.84	0.00	0.00	
8,900.00	3.17	250.00	8,405.68	1,647.33	1,548.90	2,260.94	0.00	0.00	
9,000.00	3.17	250.00	8,505.53	1,645.44	1,543.70	2,256.03	0.00	0.00	
9,100.00	3.17	250.00	8,605.37	1,643.55	1,538.50	2,251.13	0.00	0.00	
9,200.00	3.17	250.00	8,705.22	1,641.66	1,533.30	2,246.22	0.00	0.00	
9,300.00	3.17	250.00	8,805.07	1,639.76	1,528.10	2,241.32	0.00	0.00	

# Cathedral Energy Services

## Planning Report

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<b>Company:</b>	Caerus Oil & Gas	<b>TVD Reference:</b>	30' KB @ 6739.00usft
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 6739.00usft
<b>Site:</b>	S10-T5S-R96W K10)	<b>North Reference:</b>	True
<b>Well:</b>	NPR 22C-10 596	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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
9,303.94	3.17	250.00	8,809.00	1,639.69	1,527.90	2,241.13	0.00	0.00	CAMEO.MBL (TVD)
9,400.00	3.17	250.00	8,904.91	1,637.87	1,522.91	2,236.41	0.00	0.00	
9,500.00	3.17	250.00	9,004.76	1,635.98	1,517.71	2,231.51	0.00	0.00	
9,600.00	3.17	250.00	9,104.61	1,634.09	1,512.51	2,226.60	0.00	0.00	
9,700.00	3.17	250.00	9,204.45	1,632.20	1,507.31	2,221.70	0.00	0.00	
9,800.00	3.17	250.00	9,304.30	1,630.31	1,502.11	2,216.79	0.00	0.00	
9,900.00	3.17	250.00	9,404.15	1,628.41	1,496.91	2,211.89	0.00	0.00	
9,924.89	3.17	250.00	9,429.00	1,627.94	1,495.62	2,210.67	0.00	0.00	ROLLINS.MBL (TVD)
10,000.00	3.17	250.00	9,503.99	1,626.52	1,491.72	2,206.99	0.00	0.00	
10,100.00	3.17	250.00	9,603.84	1,624.63	1,486.52	2,202.08	0.00	0.00	
10,100.16	3.17	250.00	9,604.00	1,624.63	1,486.51	2,202.07	0.00	0.00	TD.MBL (TVD)

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
NPR 22C-10 596 PBHL	- plan hits target center	0.00	0.00	9,604.00	1,624.63	1,486.51	14,404,803.60	2,442,886.60	39.632056 -108.150092
	- Ellipse (radii L200.00 W100.00 on 250.00 azi)								

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,685.78	1,600.00	WASATCH.MBL (TVD)				
3,989.18	3,693.00	WASATCH_G_ZONE.MBL (TVD)				
4,374.37	4,043.00	FORT_UNION.MBL (TVD)				
6,485.94	5,995.00	OHIO_CREEK.MBL (TVD)				
6,721.23	6,230.00	WILLIAMS_FORK.MBL (TVD)				
6,771.24	6,280.00	TOP_GAS.MBL (TVD)				
9,303.94	8,809.00	CAMEO.MBL (TVD)				
9,924.89	9,429.00	ROLLINS.MBL (TVD)				
10,100.16	9,604.00	TD.MBL (TVD)				