



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	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	804.63	15.14	226.27	798.78	-45.82	-47.90	3.00	226.27	66.21	
4	5639.88	15.14	226.27	5466.22	-918.70	-960.41	0.00	0.00	1327.62	
5	6144.51	0.00	0.00	5965.00	-964.52	-1008.31	3.00	180.00	1393.83	
6	6465.11	3.21	250.00	6285.43	-967.59	-1016.74	1.00	250.00	1402.20	
7	9539.49	3.21	250.00	9355.00	-1026.39	-1178.31	0.00	0.00	1562.65	NPR 15A-10 596 PBHL

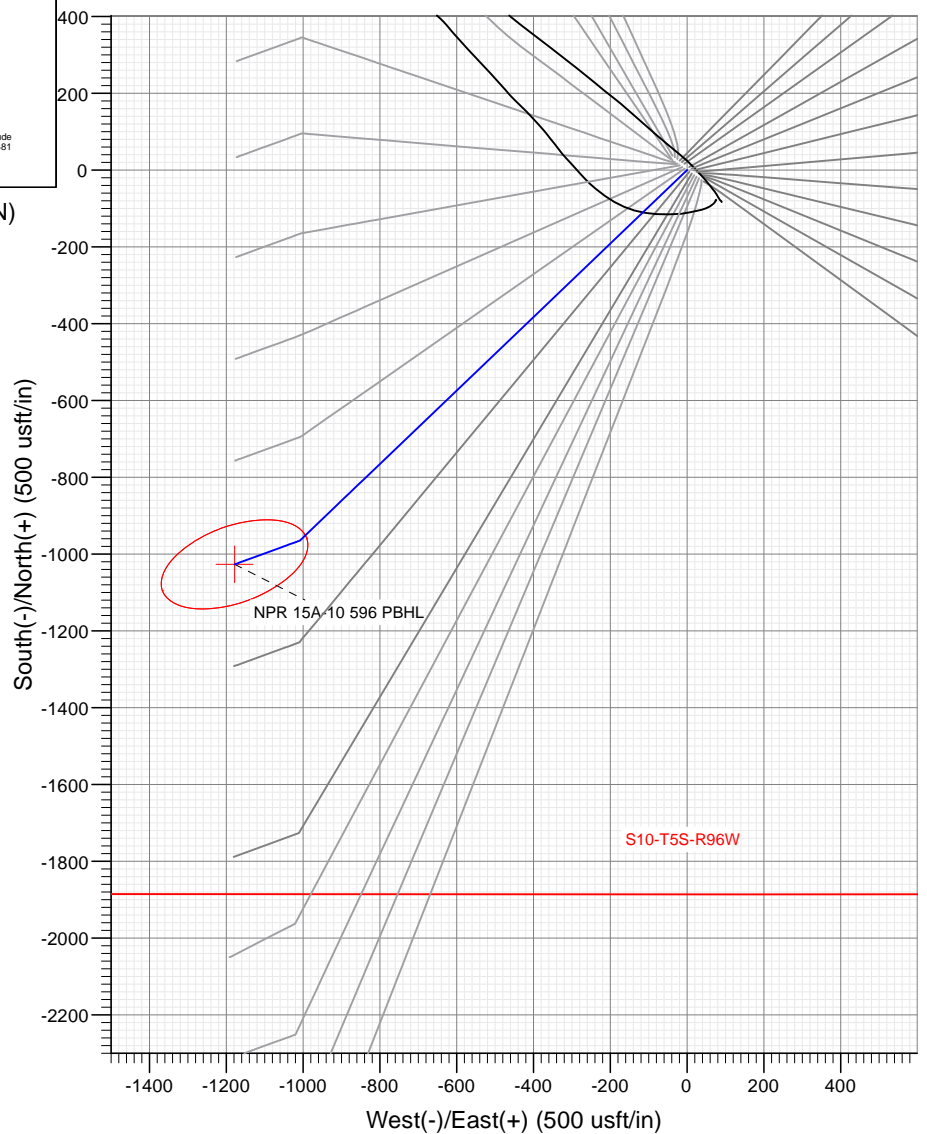
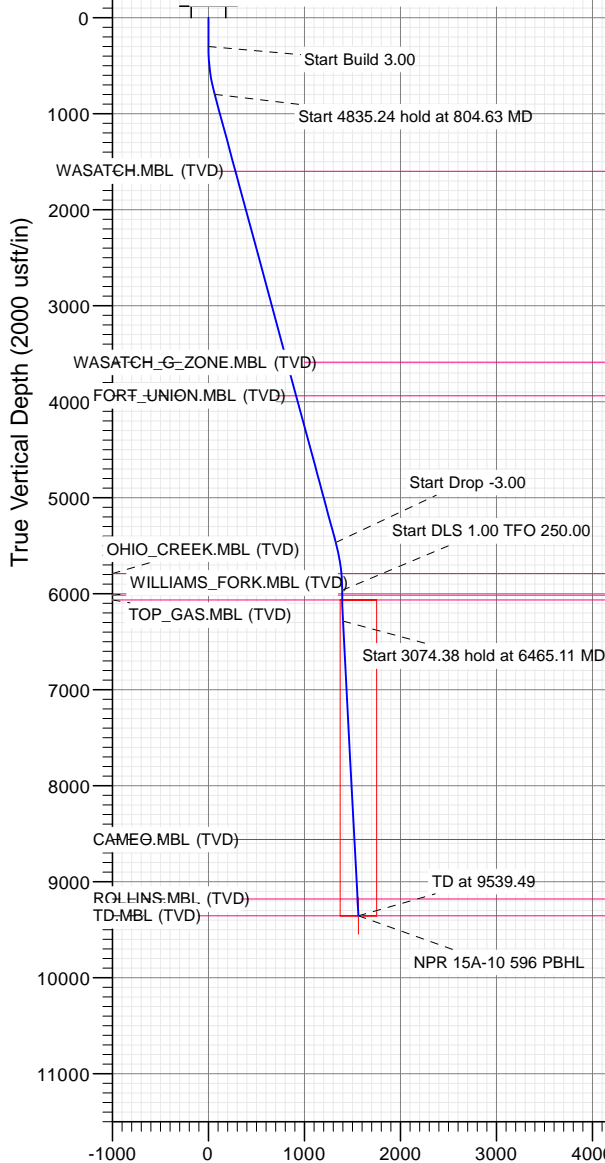
PLAN #1
NPR 15A-10 596
30' K5 @ 6750.00ft
Ground Level @ 6709.00
NAD 1983 - Western US
Well NPR 15A-10 596 - Slot NPR 15A-10 596, True North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
TD	No Target (Freehand)	228.94	Slot	0.00	0.00	0.00

Name: NPR 15A-10 596 PBHL

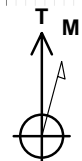
TVD	+N/-S	+E/-W	Latitude	Longitude
9355.00	-1026.39	-1178.31	39.624712	-108.159481

Project: Garfield County, CO (UTM 12N)
Site: S10-T5S-R96W K10
Well: NPR 15A-10 596
Wellbore: OH
Design: PLAN #1



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1600.00	1634.66	WASATCH.MBL (TVD)
3588.00	3694.13	WASATCH_G_ZONE.MBL (TVD)
3938.00	4056.71	FORT UNION.MBL (TVD)
5791.00	5970.27	OHIO_CREEK.MBL (TVD)
6015.00	6194.51	WILLIAMS_FORK.MBL (TVD)
6065.00	6244.52	TOP_GAS.MBL (TVD)
8560.00	8743.24	CAMEO.MBL (TVD)
9180.00	9364.21	ROLLINS.MBL (TVD)
9355.00	9539.49	TD.MBL (TVD)



Azimuths to True North
Magnetic North: 9.72°

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

Vertical Section at 228.94° (2000 usft/in)

WELL DETAILS: NPR 15A-10 596

6709.00
+N/-S 0.00 +E/-W 0.00 Northing 14403108.20 Easting 2441472.30 Latitude 39.627529 Longitude -108.155299 NPR 15A-10 596

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NPR 15A-10 596 - Slot NPR 15A-10 596
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 6739.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 6739.00usft
Site:	S10-T5S-R96W K10)	North Reference:	True
Well:	NPR 15A-10 596	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		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 15A-10 596 - Slot NPR 15A-10 596					
Well Position	+N/-S	0.00 usft	Northing:	14,403,108.20 usft	Latitude:	39.627529
	+E/-W	0.00 usft	Easting:	2,441,472.30 usft	Longitude:	-108.155299
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,709.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	9/12/2017	9.72	65.93	51,531.50000000

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	228.94

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
804.63	15.14	226.27	798.78	-45.82	-47.90	3.00	3.00	0.00	226.27	
5,639.88	15.14	226.27	5,466.22	-918.70	-960.41	0.00	0.00	0.00	0.00	
6,144.51	0.00	0.00	5,965.00	-964.52	-1,008.31	3.00	-3.00	0.00	180.00	
6,465.11	3.21	250.00	6,285.43	-967.59	-1,016.74	1.00	1.00	-34.31	250.00	
9,539.49	3.21	250.00	9,355.00	-1,026.39	-1,178.31	0.00	0.00	0.00	0.00	NPR 15A-10 596 PB+

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NPR 15A-10 596 - Slot NPR 15A-10 596
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 6739.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 6739.00usft
Site:	S10-T5S-R96W K10)	North Reference:	True
Well:	NPR 15A-10 596	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	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	3.00	226.27	399.95	-1.81	-1.89	2.61	3.00	3.00	
500.00	6.00	226.27	499.63	-7.23	-7.56	10.45	3.00	3.00	
600.00	9.00	226.27	598.77	-16.25	-16.99	23.49	3.00	3.00	
700.00	12.00	226.27	697.08	-28.85	-30.16	41.69	3.00	3.00	
800.00	15.00	226.27	794.31	-44.98	-47.03	65.01	3.00	3.00	
804.63	15.14	226.27	798.78	-45.82	-47.90	66.21	3.00	3.00	
900.00	15.14	226.27	890.84	-63.03	-65.89	91.09	0.00	0.00	
1,000.00	15.14	226.27	987.37	-81.09	-84.77	117.18	0.00	0.00	
1,100.00	15.14	226.27	1,083.90	-99.14	-103.64	143.26	0.00	0.00	
1,200.00	15.14	226.27	1,180.43	-117.19	-122.51	169.35	0.00	0.00	
1,300.00	15.14	226.27	1,276.96	-135.24	-141.38	195.44	0.00	0.00	
1,400.00	15.14	226.27	1,373.49	-153.30	-160.26	221.53	0.00	0.00	
1,500.00	15.14	226.27	1,470.02	-171.35	-179.13	247.62	0.00	0.00	
1,600.00	15.14	226.27	1,566.55	-189.40	-198.00	273.70	0.00	0.00	
1,634.66	15.14	226.27	1,600.00	-195.66	-204.54	282.74	0.00	0.00	WASATCH.MBL (TVD)
1,700.00	15.14	226.27	1,663.07	-207.45	-216.87	299.79	0.00	0.00	
1,800.00	15.14	226.27	1,759.60	-225.51	-235.74	325.88	0.00	0.00	
1,900.00	15.14	226.27	1,856.13	-243.56	-254.62	351.97	0.00	0.00	
2,000.00	15.14	226.27	1,952.66	-261.61	-273.49	378.05	0.00	0.00	
2,100.00	15.14	226.27	2,049.19	-279.66	-292.36	404.14	0.00	0.00	
2,200.00	15.14	226.27	2,145.72	-297.72	-311.23	430.23	0.00	0.00	
2,300.00	15.14	226.27	2,242.25	-315.77	-330.11	456.32	0.00	0.00	
2,400.00	15.14	226.27	2,338.78	-333.82	-348.98	482.41	0.00	0.00	
2,500.00	15.14	226.27	2,435.31	-351.87	-367.85	508.49	0.00	0.00	
2,600.00	15.14	226.27	2,531.84	-369.93	-386.72	534.58	0.00	0.00	
2,700.00	15.14	226.27	2,628.37	-387.98	-405.59	560.67	0.00	0.00	
2,800.00	15.14	226.27	2,724.90	-406.03	-424.47	586.76	0.00	0.00	
2,900.00	15.14	226.27	2,821.43	-424.08	-443.34	612.85	0.00	0.00	
3,000.00	15.14	226.27	2,917.96	-442.14	-462.21	638.93	0.00	0.00	
3,100.00	15.14	226.27	3,014.49	-460.19	-481.08	665.02	0.00	0.00	
3,200.00	15.14	226.27	3,111.02	-478.24	-499.95	691.11	0.00	0.00	
3,300.00	15.14	226.27	3,207.55	-496.29	-518.83	717.20	0.00	0.00	
3,400.00	15.14	226.27	3,304.08	-514.35	-537.70	743.28	0.00	0.00	
3,500.00	15.14	226.27	3,400.61	-532.40	-556.57	769.37	0.00	0.00	
3,600.00	15.14	226.27	3,497.14	-550.45	-575.44	795.46	0.00	0.00	
3,694.13	15.14	226.27	3,588.00	-567.45	-593.21	820.02	0.00	0.00	WASATCH_G_ZONE.MBL (TVD)
3,700.00	15.14	226.27	3,593.66	-568.51	-594.32	821.55	0.00	0.00	
3,800.00	15.14	226.27	3,690.19	-586.56	-613.19	847.64	0.00	0.00	
3,900.00	15.14	226.27	3,786.72	-604.61	-632.06	873.72	0.00	0.00	
4,000.00	15.14	226.27	3,883.25	-622.66	-650.93	899.81	0.00	0.00	
4,056.71	15.14	226.27	3,938.00	-632.90	-661.64	914.61	0.00	0.00	FORT_UNION.MBL (TVD)
4,100.00	15.14	226.27	3,979.78	-640.72	-669.80	925.90	0.00	0.00	
4,200.00	15.14	226.27	4,076.31	-658.77	-688.68	951.99	0.00	0.00	
4,300.00	15.14	226.27	4,172.84	-676.82	-707.55	978.08	0.00	0.00	
4,400.00	15.14	226.27	4,269.37	-694.87	-726.42	1,004.16	0.00	0.00	
4,500.00	15.14	226.27	4,365.90	-712.93	-745.29	1,030.25	0.00	0.00	
4,600.00	15.14	226.27	4,462.43	-730.98	-764.17	1,056.34	0.00	0.00	
4,700.00	15.14	226.27	4,558.96	-749.03	-783.04	1,082.43	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NPR 15A-10 596 - Slot NPR 15A-10 596
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 6739.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 6739.00usft
Site:	S10-T5S-R96W K10)	North Reference:	True
Well:	NPR 15A-10 596	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
4,800.00	15.14	226.27	4,655.49	-767.08	-801.91	1,108.51	0.00	0.00	
4,900.00	15.14	226.27	4,752.02	-785.14	-820.78	1,134.60	0.00	0.00	
5,000.00	15.14	226.27	4,848.55	-803.19	-839.65	1,160.69	0.00	0.00	
5,100.00	15.14	226.27	4,945.08	-821.24	-858.53	1,186.78	0.00	0.00	
5,200.00	15.14	226.27	5,041.61	-839.29	-877.40	1,212.87	0.00	0.00	
5,300.00	15.14	226.27	5,138.14	-857.35	-896.27	1,238.95	0.00	0.00	
5,400.00	15.14	226.27	5,234.67	-875.40	-915.14	1,265.04	0.00	0.00	
5,500.00	15.14	226.27	5,331.20	-893.45	-934.02	1,291.13	0.00	0.00	
5,600.00	15.14	226.27	5,427.73	-911.50	-952.89	1,317.22	0.00	0.00	
5,639.88	15.14	226.27	5,466.22	-918.70	-960.41	1,327.62	0.00	0.00	
5,700.00	13.34	226.27	5,524.49	-928.92	-971.10	1,342.39	3.00	-3.00	
5,800.00	10.34	226.27	5,622.36	-943.10	-985.92	1,362.88	3.00	-3.00	
5,900.00	7.34	226.27	5,721.16	-953.72	-997.02	1,378.22	3.00	-3.00	
5,970.27	5.23	226.27	5,791.00	-959.03	-1,002.57	1,385.90	3.00	-3.00	OHIO_CREEK.MBL (TVD)
6,000.00	4.34	226.27	5,820.63	-960.74	-1,004.36	1,388.37	3.00	-3.00	
6,100.00	1.34	226.27	5,920.49	-964.16	-1,007.94	1,393.31	3.00	-3.00	
6,144.51	0.00	0.00	5,965.00	-964.52	-1,008.31	1,393.83	3.00	-3.00	
6,194.51	0.50	250.00	6,015.00	-964.59	-1,008.52	1,394.03	1.00	1.00	WILLIAMS_FORK.MBL (TVD)
6,200.00	0.55	250.00	6,020.49	-964.61	-1,008.56	1,394.08	1.00	1.00	
6,244.52	1.00	250.00	6,065.00	-964.82	-1,009.13	1,394.64	1.00	1.00	TOP_GAS.MBL (TVD)
6,300.00	1.55	250.00	6,120.47	-965.24	-1,010.29	1,395.80	1.00	1.00	
6,400.00	2.55	250.00	6,220.41	-966.47	-1,013.66	1,399.14	1.00	1.00	
6,465.11	3.21	250.00	6,285.43	-967.59	-1,016.74	1,402.20	1.00	1.00	
6,500.00	3.21	250.00	6,320.27	-968.25	-1,018.57	1,404.02	0.00	0.00	
6,600.00	3.21	250.00	6,420.11	-970.17	-1,023.83	1,409.24	0.00	0.00	
6,700.00	3.21	250.00	6,519.96	-972.08	-1,029.08	1,414.46	0.00	0.00	
6,800.00	3.21	250.00	6,619.80	-973.99	-1,034.34	1,419.68	0.00	0.00	
6,900.00	3.21	250.00	6,719.64	-975.90	-1,039.59	1,424.90	0.00	0.00	
7,000.00	3.21	250.00	6,819.49	-977.82	-1,044.85	1,430.11	0.00	0.00	
7,100.00	3.21	250.00	6,919.33	-979.73	-1,050.10	1,435.33	0.00	0.00	
7,200.00	3.21	250.00	7,019.17	-981.64	-1,055.36	1,440.55	0.00	0.00	
7,300.00	3.21	250.00	7,119.02	-983.56	-1,060.61	1,445.77	0.00	0.00	
7,400.00	3.21	250.00	7,218.86	-985.47	-1,065.87	1,450.99	0.00	0.00	
7,500.00	3.21	250.00	7,318.70	-987.38	-1,071.12	1,456.21	0.00	0.00	
7,600.00	3.21	250.00	7,418.55	-989.29	-1,076.38	1,461.43	0.00	0.00	
7,700.00	3.21	250.00	7,518.39	-991.21	-1,081.63	1,466.65	0.00	0.00	
7,800.00	3.21	250.00	7,618.23	-993.12	-1,086.89	1,471.87	0.00	0.00	
7,900.00	3.21	250.00	7,718.08	-995.03	-1,092.14	1,477.09	0.00	0.00	
8,000.00	3.21	250.00	7,817.92	-996.94	-1,097.40	1,482.30	0.00	0.00	
8,100.00	3.21	250.00	7,917.76	-998.86	-1,102.66	1,487.52	0.00	0.00	
8,200.00	3.21	250.00	8,017.61	-1,000.77	-1,107.91	1,492.74	0.00	0.00	
8,300.00	3.21	250.00	8,117.45	-1,002.68	-1,113.17	1,497.96	0.00	0.00	
8,400.00	3.21	250.00	8,217.29	-1,004.59	-1,118.42	1,503.18	0.00	0.00	
8,500.00	3.21	250.00	8,317.14	-1,006.51	-1,123.68	1,508.40	0.00	0.00	
8,600.00	3.21	250.00	8,416.98	-1,008.42	-1,128.93	1,513.62	0.00	0.00	
8,700.00	3.21	250.00	8,516.82	-1,010.33	-1,134.19	1,518.84	0.00	0.00	
8,743.24	3.21	250.00	8,560.00	-1,011.16	-1,136.46	1,521.09	0.00	0.00	CAMEO.MBL (TVD)
8,800.00	3.21	250.00	8,616.67	-1,012.24	-1,139.44	1,524.06	0.00	0.00	
8,900.00	3.21	250.00	8,716.51	-1,014.16	-1,144.70	1,529.28	0.00	0.00	
9,000.00	3.21	250.00	8,816.36	-1,016.07	-1,149.95	1,534.49	0.00	0.00	
9,100.00	3.21	250.00	8,916.20	-1,017.98	-1,155.21	1,539.71	0.00	0.00	
9,200.00	3.21	250.00	9,016.04	-1,019.90	-1,160.46	1,544.93	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NPR 15A-10 596 - Slot NPR 15A-10 596
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 6739.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 6739.00usft
Site:	S10-T5S-R96W K10)	North Reference:	True
Well:	NPR 15A-10 596	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
9,300.00	3.21	250.00	9,115.89	-1,021.81	-1,165.72	1,550.15	0.00	0.00	
9,364.21	3.21	250.00	9,180.00	-1,023.04	-1,169.09	1,553.50	0.00	0.00	ROLLINS.MBL (TVD)
9,400.00	3.21	250.00	9,215.73	-1,023.72	-1,170.98	1,555.37	0.00	0.00	
9,500.00	3.21	250.00	9,315.57	-1,025.63	-1,176.23	1,560.59	0.00	0.00	
9,539.49	3.21	250.00	9,355.00	-1,026.39	-1,178.31	1,562.65	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 15A-10 596 PBHL	- plan hits target center - Ellipse (radii L200.00 W100.00 on 250.00 azi)	0.00	0.00	9,355.00	-1,026.39	-1,178.31	14,402,045.00	2,440,327.10	39.624712 -108.159481

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,634.66	1,600.00	WASATCH.MBL (TVD)				
3,694.13	3,588.00	WASATCH_G_ZONE.MBL (TVD)				
4,056.71	3,938.00	FORT_UNION.MBL (TVD)				
5,970.27	5,791.00	OHIO_CREEK.MBL (TVD)				
6,194.51	6,015.00	WILLIAMS_FORK.MBL (TVD)				
6,244.52	6,065.00	TOP_GAS.MBL (TVD)				
8,743.24	8,560.00	CAMEO.MBL (TVD)				
9,364.21	9,180.00	ROLLINS.MBL (TVD)				
9,539.49	9,355.00	TD.MBL (TVD)				