



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well 11D-35-795
<b>Company:</b>	Caerus Oil & Gas	<b>TVD Reference:</b>	30' KB @ 9266.0usft
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 9266.0usft
<b>Site:</b>	S35-T7S-R95W (35C)	<b>North Reference:</b>	True
<b>Well:</b>	11D-35-795	<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		S35-T7S-R95W (35C)			
Site Position:		Northing:	14,321,562.10 usft	Latitude:	39.398831
From:	Map	Easting:	2,497,589.70 usft	Longitude:	-107.966023
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.93 °

Well	11D-35-795					
Well Position	+N/-S	0.0 usft	Northing:	14,321,624.60 usft	Latitude:	39.399000
	+E/-W	0.0 usft	Easting:	2,497,619.30 usft	Longitude:	-107.965911
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	9,236.0 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	1/18/2016	9.43	65.62	51,875

<b>Design</b>	PLAN #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	259.62

<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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.00	0.00	
516.7	8.00	280.00	515.8	3.2	-18.3	3.00	3.00	0.00	280.00	
823.4	16.24	259.20	815.6	-1.1	-81.6	3.00	2.69	-6.78	-38.40	
7,186.3	16.24	259.20	6,924.5	-334.6	-1,829.9	0.00	0.00	0.00	0.00	
7,727.8	0.00	0.00	7,458.7	-348.8	-1,904.8	3.00	-3.00	0.00	180.00	
10,428.1	0.00	0.00	10,159.0	-348.8	-1,904.8	0.00	0.00	0.00	0.00	11D-35-795 PBHL

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<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 9266.0usft
<b>Site:</b>	S35-T7S-R95W (35C)	<b>North Reference:</b>	True
<b>Well:</b>	11D-35-795	<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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	Start Build 3.00
300.0	1.50	280.00	300.0	0.1	-0.6	0.6	3.00	3.00	
400.0	4.50	280.00	399.8	1.0	-5.8	5.5	3.00	3.00	
500.0	7.50	280.00	499.3	2.8	-16.1	15.3	3.00	3.00	
516.7	8.00	280.00	515.8	3.2	-18.3	17.4	3.00	3.00	Start DLS 3.00 TFO -38.40
600.0	10.08	271.09	598.1	4.4	-31.3	30.0	3.00	2.49	
700.0	12.77	264.38	696.1	3.5	-51.1	49.6	3.00	2.69	
800.0	15.58	260.01	793.1	0.0	-75.3	74.1	3.00	2.80	
823.4	16.24	259.20	815.6	-1.1	-81.6	80.5	3.00	2.85	Start 6362.9 hold at 823.4 MD
900.0	16.24	259.20	889.1	-5.1	-102.6	101.9	0.00	0.00	
1,000.0	16.24	259.20	985.1	-10.4	-130.1	129.9	0.00	0.00	
1,100.0	16.24	259.20	1,081.1	-15.6	-157.6	157.8	0.00	0.00	
1,200.0	16.24	259.20	1,177.1	-20.8	-185.1	185.8	0.00	0.00	
1,300.0	16.24	259.20	1,273.1	-26.1	-212.6	213.8	0.00	0.00	
1,400.0	16.24	259.20	1,369.1	-31.3	-240.0	241.7	0.00	0.00	
1,500.0	16.24	259.20	1,465.2	-36.6	-267.5	269.7	0.00	0.00	
1,600.0	16.24	259.20	1,561.2	-41.8	-295.0	297.7	0.00	0.00	
1,700.0	16.24	259.20	1,657.2	-47.1	-322.5	325.7	0.00	0.00	
1,800.0	16.24	259.20	1,753.2	-52.3	-349.9	353.6	0.00	0.00	
1,900.0	16.24	259.20	1,849.2	-57.5	-377.4	381.6	0.00	0.00	
2,000.0	16.24	259.20	1,945.2	-62.8	-404.9	409.6	0.00	0.00	
2,100.0	16.24	259.20	2,041.2	-68.0	-432.4	437.5	0.00	0.00	
2,200.0	16.24	259.20	2,137.2	-73.3	-459.8	465.5	0.00	0.00	
2,300.0	16.24	259.20	2,233.2	-78.5	-487.3	493.5	0.00	0.00	
2,400.0	16.24	259.20	2,329.2	-83.7	-514.8	521.5	0.00	0.00	
2,500.0	16.24	259.20	2,425.2	-89.0	-542.3	549.4	0.00	0.00	
2,600.0	16.24	259.20	2,521.2	-94.2	-569.8	577.4	0.00	0.00	
2,700.0	16.24	259.20	2,617.3	-99.5	-597.2	605.4	0.00	0.00	
2,800.0	16.24	259.20	2,713.3	-104.7	-624.7	633.3	0.00	0.00	
2,900.0	16.24	259.20	2,809.3	-109.9	-652.2	661.3	0.00	0.00	
3,000.0	16.24	259.20	2,905.3	-115.2	-679.7	689.3	0.00	0.00	
3,100.0	16.24	259.20	3,001.3	-120.4	-707.1	717.3	0.00	0.00	
3,200.0	16.24	259.20	3,097.3	-125.7	-734.6	745.2	0.00	0.00	
3,300.0	16.24	259.20	3,193.3	-130.9	-762.1	773.2	0.00	0.00	
3,400.0	16.24	259.20	3,289.3	-136.1	-789.6	801.2	0.00	0.00	
3,500.0	16.24	259.20	3,385.3	-141.4	-817.0	829.1	0.00	0.00	
3,600.0	16.24	259.20	3,481.3	-146.6	-844.5	857.1	0.00	0.00	
3,700.0	16.24	259.20	3,577.3	-151.9	-872.0	885.1	0.00	0.00	
3,800.0	16.24	259.20	3,673.3	-157.1	-899.5	913.1	0.00	0.00	
3,900.0	16.24	259.20	3,769.4	-162.3	-927.0	941.0	0.00	0.00	
4,000.0	16.24	259.20	3,865.4	-167.6	-954.4	969.0	0.00	0.00	
4,100.0	16.24	259.20	3,961.4	-172.8	-981.9	997.0	0.00	0.00	
4,200.0	16.24	259.20	4,057.4	-178.1	-1,009.4	1,024.9	0.00	0.00	
4,300.0	16.24	259.20	4,153.4	-183.3	-1,036.9	1,052.9	0.00	0.00	
4,400.0	16.24	259.20	4,249.4	-188.5	-1,064.3	1,080.9	0.00	0.00	
4,500.0	16.24	259.20	4,345.4	-193.8	-1,091.8	1,108.9	0.00	0.00	
4,600.0	16.24	259.20	4,441.4	-199.0	-1,119.3	1,136.8	0.00	0.00	
4,700.0	16.24	259.20	4,537.4	-204.3	-1,146.8	1,164.8	0.00	0.00	
4,800.0	16.24	259.20	4,633.4	-209.5	-1,174.2	1,192.8	0.00	0.00	

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<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 9266.0usft
<b>Site:</b>	S35-T7S-R95W (35C)	<b>North Reference:</b>	True
<b>Well:</b>	11D-35-795	<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
4,900.0	16.24	259.20	4,729.4	-214.7	-1,201.7	1,220.7	0.00	0.00	
5,000.0	16.24	259.20	4,825.4	-220.0	-1,229.2	1,248.7	0.00	0.00	
5,100.0	16.24	259.20	4,921.4	-225.2	-1,256.7	1,276.7	0.00	0.00	
5,200.0	16.24	259.20	5,017.5	-230.5	-1,284.1	1,304.7	0.00	0.00	
5,300.0	16.24	259.20	5,113.5	-235.7	-1,311.6	1,332.6	0.00	0.00	
5,400.0	16.24	259.20	5,209.5	-241.0	-1,339.1	1,360.6	0.00	0.00	
5,500.0	16.24	259.20	5,305.5	-246.2	-1,366.6	1,388.6	0.00	0.00	
5,600.0	16.24	259.20	5,401.5	-251.4	-1,394.1	1,416.5	0.00	0.00	
5,700.0	16.24	259.20	5,497.5	-256.7	-1,421.5	1,444.5	0.00	0.00	
5,800.0	16.24	259.20	5,593.5	-261.9	-1,449.0	1,472.5	0.00	0.00	
5,900.0	16.24	259.20	5,689.5	-267.2	-1,476.5	1,500.5	0.00	0.00	
6,000.0	16.24	259.20	5,785.5	-272.4	-1,504.0	1,528.4	0.00	0.00	
6,100.0	16.24	259.20	5,881.5	-277.6	-1,531.4	1,556.4	0.00	0.00	
6,200.0	16.24	259.20	5,977.5	-282.9	-1,558.9	1,584.4	0.00	0.00	
6,300.0	16.24	259.20	6,073.5	-288.1	-1,586.4	1,612.3	0.00	0.00	
6,400.0	16.24	259.20	6,169.6	-293.4	-1,613.9	1,640.3	0.00	0.00	
6,500.0	16.24	259.20	6,265.6	-298.6	-1,641.3	1,668.3	0.00	0.00	
6,600.0	16.24	259.20	6,361.6	-303.8	-1,668.8	1,696.3	0.00	0.00	
6,700.0	16.24	259.20	6,457.6	-309.1	-1,696.3	1,724.2	0.00	0.00	
6,800.0	16.24	259.20	6,553.6	-314.3	-1,723.8	1,752.2	0.00	0.00	
6,900.0	16.24	259.20	6,649.6	-319.6	-1,751.3	1,780.2	0.00	0.00	
7,000.0	16.24	259.20	6,745.6	-324.8	-1,778.7	1,808.1	0.00	0.00	
7,100.0	16.24	259.20	6,841.6	-330.0	-1,806.2	1,836.1	0.00	0.00	
7,186.3	16.24	259.20	6,924.5	-334.6	-1,829.9	1,860.3	0.00	0.00	Start Drop -3.00
7,200.0	15.83	259.20	6,937.6	-335.3	-1,833.6	1,864.0	3.00	-3.00	
7,300.0	12.83	259.20	7,034.5	-339.9	-1,858.0	1,888.8	3.00	-3.00	
7,343.5	11.53	259.20	7,077.0	-341.6	-1,867.0	1,898.0	3.00	-3.00	OHIO_CREEK
7,400.0	9.83	259.20	7,132.5	-343.6	-1,877.3	1,908.4	3.00	-3.00	
7,500.0	6.83	259.20	7,231.5	-346.3	-1,891.5	1,922.9	3.00	-3.00	
7,600.0	3.83	259.20	7,331.0	-348.0	-1,900.6	1,932.2	3.00	-3.00	
7,689.1	1.16	259.20	7,420.0	-348.8	-1,904.4	1,936.1	3.00	-3.00	WILLIAMS_FORK
7,700.0	0.83	259.20	7,430.9	-348.8	-1,904.6	1,936.3	3.00	-3.00	
7,727.8	0.00	0.00	7,458.7	-348.8	-1,904.8	1,936.5	3.00	-3.00	Start 2700.3 hold at 7727.8 MD
7,800.0	0.00	0.00	7,530.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
7,900.0	0.00	0.00	7,630.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,000.0	0.00	0.00	7,730.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,100.0	0.00	0.00	7,830.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,200.0	0.00	0.00	7,930.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,300.0	0.00	0.00	8,030.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,400.0	0.00	0.00	8,130.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,413.1	0.00	0.00	8,144.0	-348.8	-1,904.8	1,936.5	0.00	0.00	TOP_GAS
8,500.0	0.00	0.00	8,230.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,600.0	0.00	0.00	8,330.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,700.0	0.00	0.00	8,430.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,800.0	0.00	0.00	8,530.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
8,900.0	0.00	0.00	8,630.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,000.0	0.00	0.00	8,730.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,100.0	0.00	0.00	8,830.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,200.0	0.00	0.00	8,930.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,300.0	0.00	0.00	9,030.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,400.0	0.00	0.00	9,130.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,500.0	0.00	0.00	9,230.9	-348.8	-1,904.8	1,936.5	0.00	0.00	

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<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>MD Reference:</b>	30' KB @ 9266.0usft
<b>Site:</b>	S35-T7S-R95W (35C)	<b>North Reference:</b>	True
<b>Well:</b>	11D-35-795	<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
9,600.0	0.00	0.00	9,330.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,700.0	0.00	0.00	9,430.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,738.1	0.00	0.00	9,469.0	-348.8	-1,904.8	1,936.5	0.00	0.00	CAMEO
9,800.0	0.00	0.00	9,530.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
9,900.0	0.00	0.00	9,630.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,000.0	0.00	0.00	9,730.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,100.0	0.00	0.00	9,830.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,200.0	0.00	0.00	9,930.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,278.1	0.00	0.00	10,009.0	-348.8	-1,904.8	1,936.5	0.00	0.00	ROLLINS
10,300.0	0.00	0.00	10,030.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,400.0	0.00	0.00	10,130.9	-348.8	-1,904.8	1,936.5	0.00	0.00	
10,428.1	0.00	0.00	10,159.0	-348.8	-1,904.8	1,936.5	0.00	0.00	TD at 10428.1 - TD

### 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									
11D-35-795 PBHL	0.00	0.00	10,159.0	-348.8	-1,904.8	14,321,211.90	2,495,727.30	39.398042	-107.972648
- plan hits target center									
- Circle (radius 50.0)									

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,343.5	7,077.0	OHIO_CREEK			
7,689.1	7,420.0	WILLIAMS_FORK			
8,413.1	8,144.0	TOP_GAS			
9,738.1	9,469.0	CAMEO		0.00	
10,278.1	10,009.0	ROLLINS			
10,428.1	10,159.0	TD			

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
250.0	250.0	0.0	0.0	Start Build 3.00
516.7	515.8	3.2	-18.3	Start DLS 3.00 TFO -38.40
823.4	815.6	-1.1	-81.6	Start 6362.9 hold at 823.4 MD
7,186.3	6,924.5	-334.6	-1,829.9	Start Drop -3.00
7,727.8	7,458.7	-348.8	-1,904.8	Start 2700.3 hold at 7727.8 MD
10,428.1	10,159.0	-348.8	-1,904.8	TD at 10428.1