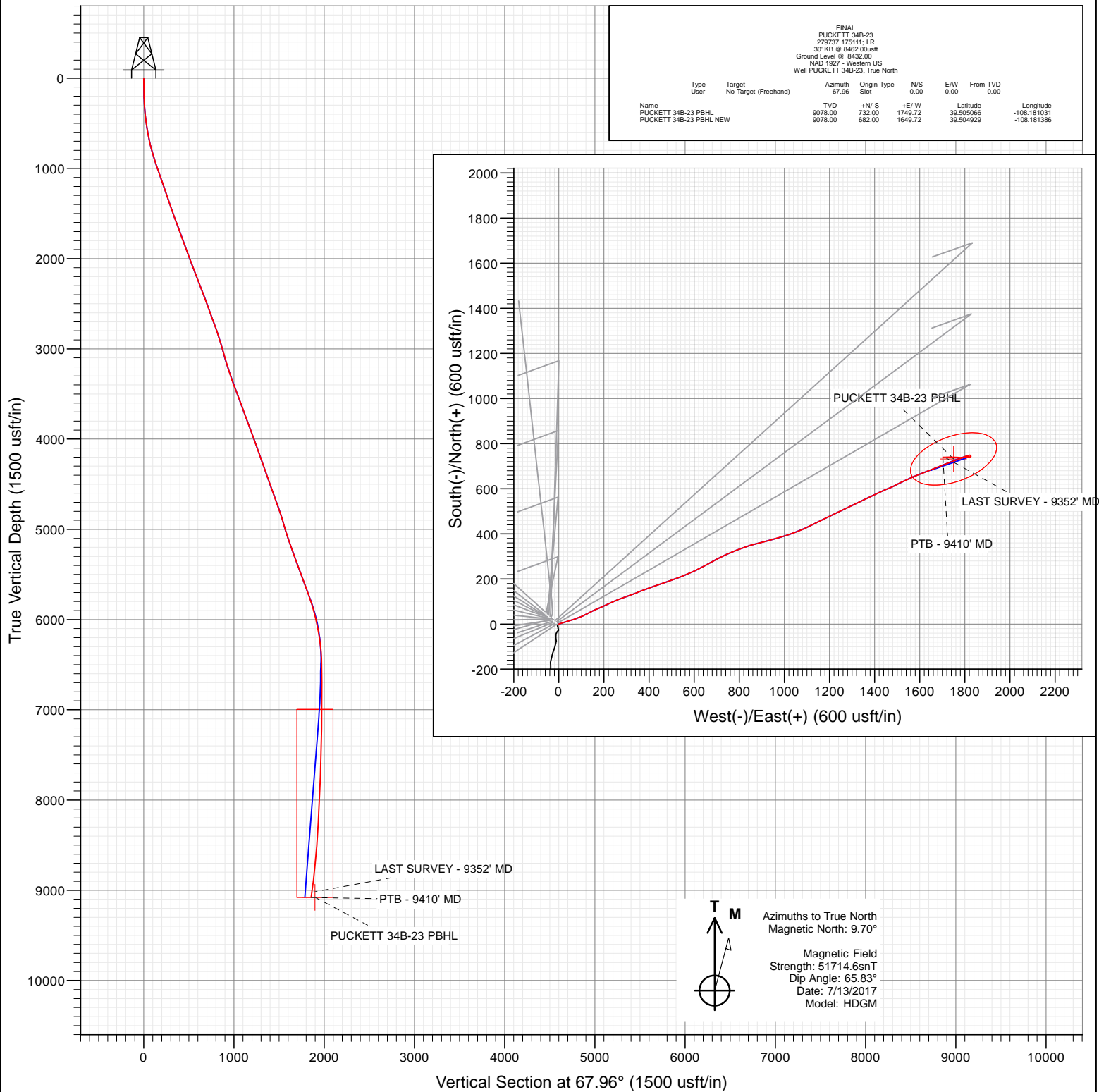




Project: Garfield County, CO (UTM 12N)  
Site: S23-T6S-R97W (MESA N23)  
Well: PUCKETT 34B-23  
Wellbore: OH  
Design: FINAL



WELL DETAILS: PUCKETT 34B-23

+N/-S	+E/-W	Northing	Ground Level:	8432.00	Latitude	Longitude
0.00	0.00	14357493.70	Easting	2433898.00	39.503058	-108.187230



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 34B-23
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>TVD Reference:</b>	30' KB @ 8462.00usft
<b>Site:</b>	S23-T6S-R97W (MESA N23)	<b>MD Reference:</b>	30' KB @ 8462.00usft
<b>Well:</b>	PUCKETT 34B-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<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)		

<b>Site</b>	S23-T6S-R97W (MESA N23)		
<b>Site Position:</b>		<b>Northing:</b>	14,357,518.00 usft
<b>From:</b>	Map	<b>Easting:</b>	2,433,869.00 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16"
		<b>Latitude:</b>	39.503127
		<b>Longitude:</b>	-108.187330
		<b>Grid Convergence:</b>	1.79 °

Well	PUCKETT 34B-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,493.70 usft	Latitude:	39.503058
	+E/-W	0.00 usft	Easting:	2,433,898.00 usft	Longitude:	-108.187230
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,432.00 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 (nT)</b>
	HDGM	7/13/2017	9.70	65.83	51,714.60000000

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	67.96	

<b>Survey Program</b>	<b>Date</b>	7/19/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
178.00	9,410.00	Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usf)</b>	<b>Build Rate (°/100u)</b>	<b>Formations / Comments</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
178.00	1.54	66.92	177.98	0.94	2.20	2.39	0.87	0.87		
209.00	1.63	63.75	208.97	1.30	2.98	3.25	0.41	0.29		
300.00	3.56	78.69	299.87	2.42	6.91	7.31	2.23	2.12		
391.00	5.58	71.05	390.58	4.41	13.87	14.51	2.31	2.22		
483.00	7.65	71.05	481.96	7.86	23.89	25.09	2.25	2.25		
575.00	9.71	73.25	572.90	12.08	37.11	38.93	2.27	2.24		
670.00	11.65	74.12	666.25	17.01	54.01	56.45	2.05	2.04		
763.00	14.06	69.91	756.92	23.46	73.65	77.08	2.78	2.59		
859.00	16.61	67.88	849.49	32.64	97.32	102.46	2.71	2.66		
953.00	18.46	63.23	939.12	44.40	123.06	130.73	2.47	1.97		
1,048.00	18.94	63.31	1,029.11	58.10	150.26	161.08	0.51	0.51		
1,142.00	19.29	66.74	1,117.93	71.09	178.16	191.81	1.25	0.37		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 34B-23
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>TVD Reference:</b>	30' KB @ 8462.00usft
<b>Site:</b>	S23-T6S-R97W (MESA N23)	<b>MD Reference:</b>	30' KB @ 8462.00usft
<b>Well:</b>	PUCKETT 34B-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,236.00	19.20	65.60	1,206.68	83.60	206.50	222.78	0.41	-0.10	
1,331.00	19.38	65.69	1,296.34	96.54	235.09	254.14	0.19	0.19	
1,425.00	19.03	68.06	1,385.11	108.69	263.52	285.05	0.91	-0.37	
1,520.00	19.16	70.52	1,474.89	119.68	292.58	316.11	0.86	0.14	
1,614.00	19.95	70.87	1,563.46	130.08	322.28	347.54	0.85	0.84	
1,709.00	21.18	69.38	1,652.41	141.43	353.65	380.88	1.41	1.29	
1,804.00	20.74	67.88	1,741.12	153.81	385.30	414.86	0.73	-0.46	
1,898.00	19.86	69.20	1,829.28	165.75	415.64	447.47	1.06	-0.94	
1,992.00	19.38	72.01	1,917.83	176.23	445.40	478.99	1.13	-0.51	
2,087.00	20.13	71.40	2,007.24	186.32	475.89	511.03	0.82	0.79	
2,181.00	21.18	69.47	2,095.19	197.43	507.12	544.15	1.33	1.12	
2,276.00	21.97	69.29	2,183.54	209.74	539.82	579.07	0.83	0.83	
2,370.00	21.31	67.18	2,270.91	222.58	572.01	613.73	1.09	-0.70	
2,465.00	20.52	64.72	2,359.65	236.38	602.98	647.62	1.24	-0.83	
2,601.00	20.52	61.73	2,487.03	257.85	645.53	695.11	0.77	0.00	
2,695.00	19.73	59.27	2,575.29	273.76	673.68	727.18	1.23	-0.84	
2,790.00	20.08	63.14	2,664.62	289.33	702.01	759.28	1.43	0.37	
2,884.00	20.39	67.01	2,752.82	303.01	731.48	791.73	1.46	0.33	
2,979.00	18.63	65.42	2,842.36	315.79	760.52	823.44	1.93	-1.85	
3,073.00	15.78	67.97	2,932.15	326.83	786.03	851.23	3.14	-3.03	
3,168.00	16.08	70.78	3,023.50	336.01	810.42	877.29	0.87	0.32	
3,262.00	16.00	71.31	3,113.84	344.45	834.99	903.22	0.18	-0.09	
3,357.00	17.71	74.48	3,204.76	352.51	861.31	930.65	2.04	1.80	
3,451.00	19.64	75.53	3,293.81	360.28	890.39	960.52	2.08	2.05	
3,545.00	20.96	75.27	3,381.97	368.51	921.95	992.86	1.41	1.40	
3,640.00	20.35	75.00	3,470.86	377.10	954.34	1,026.10	0.65	-0.64	
3,734.00	20.44	74.12	3,558.97	385.82	985.91	1,058.64	0.34	0.10	
3,829.00	19.78	71.66	3,648.18	395.42	1,017.12	1,091.18	1.13	-0.69	
3,923.00	20.08	67.36	3,736.55	406.64	1,047.12	1,123.19	1.59	0.32	
4,017.00	20.70	67.62	3,824.66	419.17	1,077.37	1,155.94	0.67	0.66	
4,112.00	20.44	64.72	3,913.61	432.65	1,107.90	1,189.29	1.11	-0.27	
4,207.00	19.86	63.75	4,002.79	446.87	1,137.37	1,221.94	0.70	-0.61	
4,301.00	20.22	64.02	4,091.10	461.05	1,166.29	1,254.07	0.40	0.38	
4,395.00	18.94	63.23	4,179.66	475.04	1,194.52	1,285.49	1.39	-1.36	
4,490.00	19.34	63.31	4,269.41	489.05	1,222.34	1,316.53	0.42	0.42	
4,584.00	19.47	64.72	4,358.07	502.73	1,250.41	1,347.68	0.52	0.14	
4,679.00	19.78	65.25	4,447.55	516.22	1,279.32	1,379.55	0.38	0.33	
4,773.00	19.91	64.46	4,535.97	529.78	1,308.21	1,411.41	0.32	0.14	
4,868.00	19.73	64.72	4,625.34	543.60	1,337.31	1,443.57	0.21	-0.19	
4,962.00	20.26	64.02	4,713.68	557.51	1,366.28	1,475.64	0.62	0.56	
5,057.00	18.72	64.72	4,803.23	571.22	1,394.86	1,507.28	1.64	-1.62	
5,152.00	16.96	64.46	4,893.66	583.71	1,421.15	1,536.33	1.85	-1.85	
5,246.00	16.17	67.62	4,983.76	594.60	1,445.62	1,563.10	1.27	-0.84	
5,341.00	17.80	66.13	5,074.61	605.52	1,471.13	1,590.85	1.78	1.72	
5,435.00	19.51	63.23	5,163.67	618.40	1,498.29	1,620.85	2.07	1.82	
5,530.00	20.00	64.63	5,253.08	632.51	1,527.13	1,652.88	0.72	0.52	
5,624.00	20.39	65.42	5,341.30	646.21	1,556.55	1,685.29	0.51	0.41	
5,719.00	20.30	67.09	5,430.38	659.51	1,586.78	1,718.30	0.62	-0.09	
5,813.00	20.08	69.38	5,518.60	671.54	1,616.90	1,750.74	0.87	-0.23	
5,908.00	20.30	69.29	5,607.77	683.11	1,647.58	1,783.51	0.23	0.23	
6,002.00	20.26	67.61	5,695.94	695.07	1,677.88	1,816.09	0.62	-0.04	
6,097.00	18.37	68.32	5,785.59	706.87	1,707.00	1,847.51	2.00	-1.99	
6,191.00	16.39	69.91	5,875.29	716.90	1,733.22	1,875.58	2.17	-2.11	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 34B-23
<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>TVD Reference:</b>	30' KB @ 8462.00usft
<b>Site:</b>	S23-T6S-R97W (MESA N23)	<b>MD Reference:</b>	30' KB @ 8462.00usft
<b>Well:</b>	PUCKETT 34B-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,286.00	13.76	69.03	5,967.02	725.55	1,756.36	1,900.28	2.78	-2.77	
6,380.00	11.69	67.80	6,058.70	733.15	1,775.62	1,920.98	2.22	-2.20	
6,475.00	9.84	69.82	6,152.03	739.58	1,792.15	1,938.72	1.99	-1.95	
6,569.00	7.56	68.59	6,244.94	744.61	1,805.45	1,952.93	2.43	-2.43	
6,664.00	5.05	77.90	6,339.36	747.77	1,815.36	1,963.30	2.84	-2.64	
6,758.00	2.15	87.57	6,433.17	748.71	1,821.17	1,969.04	3.14	-3.09	
6,853.00	1.10	121.59	6,528.13	748.31	1,823.72	1,971.26	1.46	-1.11	
6,947.00	0.84	124.05	6,622.11	747.45	1,825.06	1,972.18	0.28	-0.28	
7,136.00	0.88	158.68	6,811.09	745.33	1,826.74	1,972.93	0.27	0.02	
7,326.00	0.62	192.69	7,001.08	742.96	1,827.04	1,972.33	0.27	-0.14	
7,515.00	0.62	249.03	7,190.07	741.60	1,825.86	1,970.72	0.31	0.00	
7,704.00	1.45	273.90	7,379.04	741.40	1,822.52	1,967.55	0.49	0.44	
7,893.00	1.76	270.47	7,567.96	741.58	1,817.24	1,962.72	0.17	0.16	
8,082.00	2.24	260.19	7,756.85	740.98	1,810.69	1,956.43	0.32	0.25	
8,271.00	2.94	258.34	7,945.65	739.37	1,802.31	1,948.05	0.37	0.37	
8,459.00	3.08	268.63	8,133.40	738.27	1,792.54	1,938.58	0.30	0.07	
8,648.00	3.56	270.91	8,322.08	738.25	1,781.59	1,928.43	0.26	0.25	
8,837.00	4.44	271.97	8,510.62	738.59	1,768.41	1,916.34	0.47	0.47	
9,026.00	6.06	273.28	8,698.82	739.41	1,751.14	1,900.64	0.86	0.86	
9,215.00	7.43	269.68	8,886.51	739.91	1,728.96	1,880.27	0.76	0.72	
9,352.00	8.09	268.27	9,022.25	739.57	1,710.47	1,863.00	0.50	0.48	LAST SURVEY - 9352' MD
9,410.00	8.09	268.27	9,079.67	739.33	1,702.31	1,855.34	0.00	0.00	PTB - 9410' MD

### 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									
PUCKETT 34B-23 PBHL	0.00	0.00	9,078.00	682.00	1,649.72	14,358,226.90	2,435,525.61	39.504929	-108.181386
- actual wellpath misses target center by 77.81usft at 9410.00usft MD (9079.67 TVD, 739.33 N, 1702.31 E)									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									
PUCKETT 34B-23 PBHL	0.00	0.00	9,078.00	732.00	1,749.72	14,358,280.00	2,435,624.00	39.505066	-108.181031
- actual wellpath misses target center by 47.28usft at 9401.71usft MD (9071.46 TVD, 739.36 N, 1703.48 E)									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,352.00	9,022.25	739.57	1,710.47	LAST SURVEY - 9352' MD
9,410.00	9,079.67	739.33	1,702.31	PTB - 9410' MD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_