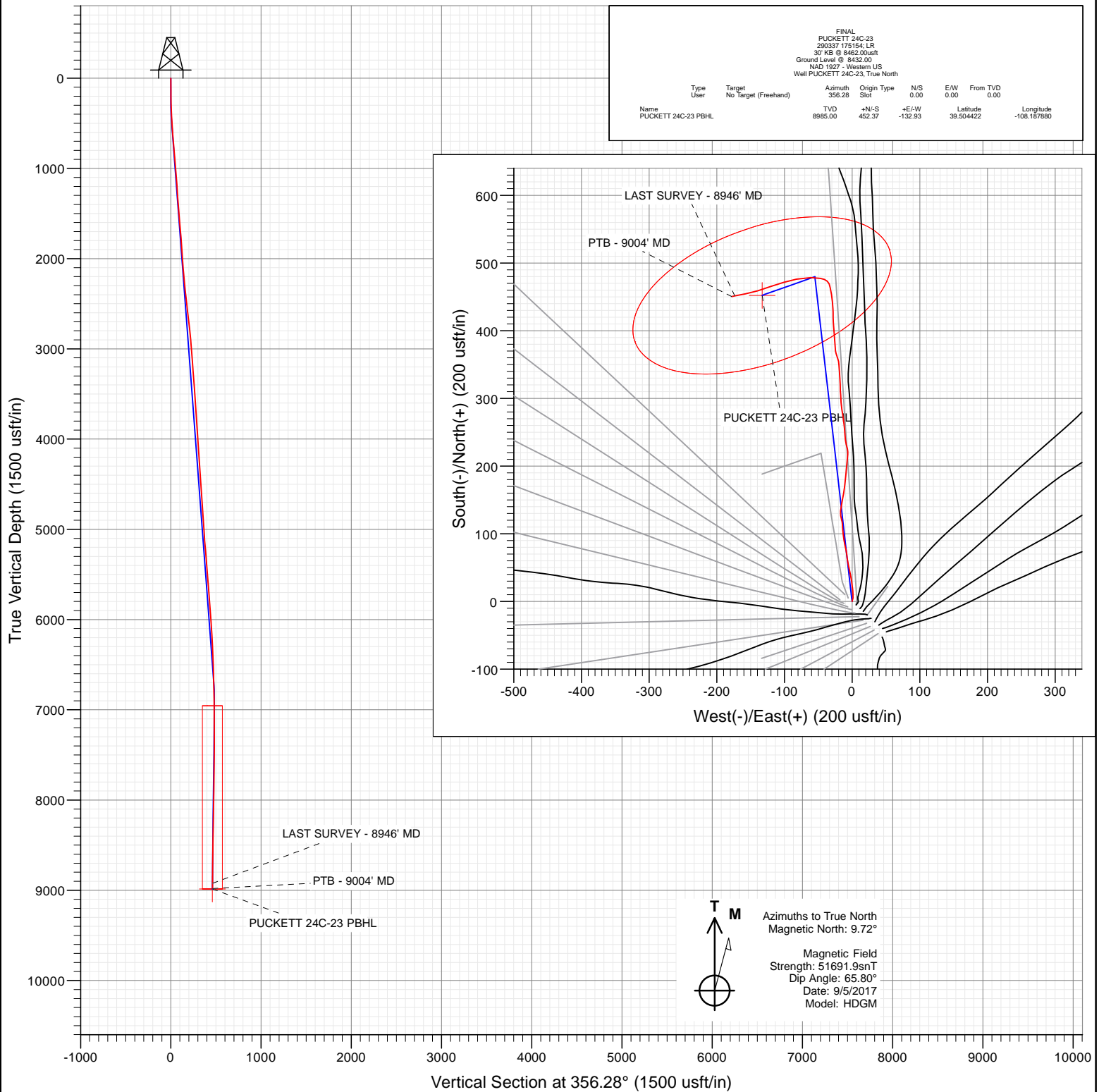




Project: Garfield County, CO (UTM 12N)  
Site: S23-T6S-R97W (MESA N23)  
Well: PUCKETT 24C-23  
Wellbore: OH  
Design: FINAL



WELL DETAILS: PUCKETT 24C-23

+N/-S 0.00 +E/-W 0.00 Northing 14357537.00 Ground Level: 8432.00 Easting 2433846.00 Latitude 39.503181 Longitude -108.187409



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 24C-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 24C-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 24C-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,537.00 usft	Latitude:	39.503181
	+E/-W	0.00 usft	Easting:	2,433,846.00 usft	Longitude:	-108.187409
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	9/5/2017	9.72	65.80	51,691.90000000

<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	356.28	

<b>Survey Program</b>	<b>Date</b>	9/15/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
143.00	9,004.00	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	
143.00	0.44	8.99	143.00	0.54	0.09	0.54	0.31	0.31	
174.00	0.70	4.50	174.00	0.85	0.12	0.84	0.85	0.84	
204.00	0.88	12.15	203.99	1.26	0.18	1.24	0.69	0.60	
235.00	1.19	16.02	234.99	1.80	0.32	1.77	1.02	1.00	
266.00	1.67	23.84	265.98	2.52	0.59	2.48	1.67	1.55	
295.00	1.76	21.03	294.97	3.32	0.92	3.26	0.42	0.31	
386.00	2.81	359.85	385.89	6.86	1.42	6.75	1.46	1.15	
417.00	2.81	357.83	416.86	8.38	1.39	8.27	0.32	0.00	
478.00	3.08	358.53	477.78	11.51	1.29	11.40	0.45	0.44	
571.00	3.69	353.34	570.61	16.98	0.88	16.89	0.73	0.66	
665.00	4.83	351.50	664.35	23.90	-0.06	23.85	1.22	1.21	
759.00	5.27	352.82	757.99	32.10	-1.18	32.11	0.48	0.47	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 24C-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 24C-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
854.00	5.49	347.54	852.57	40.86	-2.71	40.95	0.57	0.23	
948.00	4.48	348.33	946.21	48.85	-4.42	49.03	1.08	-1.07	
1,042.00	4.48	348.16	1,039.93	56.04	-5.92	56.30	0.01	0.00	
1,137.00	4.18	353.43	1,134.65	63.11	-7.07	63.43	0.52	-0.32	
1,231.00	3.56	353.34	1,228.44	69.41	-7.80	69.77	0.66	-0.66	
1,326.00	4.09	347.72	1,323.23	75.65	-8.87	76.07	0.68	0.56	
1,420.00	5.05	348.07	1,416.93	82.97	-10.44	83.48	1.02	1.02	
1,515.00	4.97	350.00	1,511.57	91.12	-12.01	91.70	0.20	-0.08	
1,609.00	4.48	352.90	1,605.25	98.77	-13.18	99.42	0.58	-0.52	
1,704.00	4.97	356.42	1,699.92	106.56	-13.89	107.24	0.60	0.52	
1,798.00	4.40	355.98	1,793.61	114.22	-14.40	114.91	0.61	-0.61	
1,893.00	3.74	345.34	1,888.37	120.85	-15.44	121.60	1.05	-0.69	
1,987.00	3.78	348.51	1,982.17	126.85	-16.83	127.68	0.23	0.04	
2,082.00	4.57	4.68	2,076.92	133.70	-17.15	134.53	1.48	0.83	
2,176.00	4.92	12.42	2,170.60	141.36	-15.97	142.10	0.78	0.37	
2,271.00	5.76	9.78	2,265.18	150.04	-14.29	150.65	0.92	0.88	
2,365.00	6.20	10.13	2,358.67	159.69	-12.59	160.17	0.47	0.47	
2,460.00	6.64	6.53	2,453.08	170.19	-11.07	170.55	0.63	0.46	
2,593.00	6.81	5.91	2,585.16	185.68	-9.38	185.89	0.14	0.13	
2,688.00	6.46	4.86	2,679.52	196.60	-8.35	196.73	0.39	-0.37	
2,782.00	6.72	6.44	2,772.90	207.34	-7.28	207.37	0.34	0.28	
2,877.00	5.45	3.80	2,867.37	217.36	-6.36	217.32	1.37	-1.34	
2,971.00	4.35	347.28	2,961.03	225.30	-6.85	225.27	1.89	-1.17	
3,065.00	4.22	343.32	3,054.76	232.09	-8.63	232.16	0.34	-0.14	
3,160.00	4.31	355.72	3,149.50	238.99	-9.90	239.13	0.97	0.09	
3,254.00	4.48	354.05	3,243.23	246.17	-10.54	246.33	0.23	0.18	
3,349.00	4.09	355.63	3,337.96	253.24	-11.18	253.43	0.43	-0.41	
3,443.00	4.09	354.13	3,431.72	259.91	-11.78	260.13	0.11	0.00	
3,537.00	3.96	353.78	3,525.49	266.47	-12.48	266.72	0.14	-0.14	
3,632.00	3.82	351.41	3,620.27	272.86	-13.30	273.15	0.22	-0.15	
3,726.00	3.82	351.59	3,714.06	279.06	-14.23	279.39	0.01	0.00	
3,821.00	3.78	349.30	3,808.85	285.27	-15.27	285.66	0.17	-0.04	
3,915.00	4.31	356.59	3,902.62	291.84	-16.06	292.26	0.78	0.56	
4,010.00	4.18	356.77	3,997.36	298.86	-16.47	299.30	0.14	-0.14	
4,104.00	3.91	356.24	4,091.12	305.48	-16.87	305.93	0.29	-0.29	
4,199.00	3.82	356.16	4,185.91	311.86	-17.29	312.33	0.09	-0.09	
4,293.00	3.78	358.70	4,279.70	318.09	-17.57	318.56	0.18	-0.04	
4,387.00	3.43	357.83	4,373.52	323.99	-17.75	324.46	0.38	-0.37	
4,482.00	3.65	356.59	4,468.33	329.85	-18.04	330.33	0.25	0.23	
4,576.00	4.13	356.16	4,562.12	336.22	-18.44	336.71	0.51	0.51	
4,671.00	4.04	356.16	4,656.88	342.97	-18.90	343.47	0.09	-0.09	
4,765.00	3.52	356.68	4,750.67	349.15	-19.29	349.67	0.55	-0.55	
4,860.00	3.52	348.42	4,845.49	354.92	-20.04	355.47	0.53	0.00	
4,954.00	3.69	339.90	4,939.31	360.59	-21.66	361.24	0.60	0.18	
5,049.00	4.18	344.55	5,034.08	366.80	-23.63	367.56	0.62	0.52	
5,144.00	5.27	354.13	5,128.76	374.48	-25.00	375.31	1.41	1.15	
5,238.00	5.01	358.26	5,222.38	382.87	-25.57	383.72	0.48	-0.28	
5,333.00	4.75	355.10	5,317.04	390.94	-26.03	391.80	0.39	-0.27	
5,427.00	4.00	354.57	5,410.76	398.08	-26.67	398.97	0.80	-0.80	
5,522.00	4.31	357.74	5,505.51	404.95	-27.12	405.85	0.41	0.33	
5,616.00	4.40	352.55	5,599.24	412.05	-27.73	412.98	0.43	0.10	
5,711.00	4.79	1.52	5,693.94	419.63	-28.10	420.57	0.86	0.41	
5,805.00	4.66	358.88	5,787.62	427.37	-28.07	428.29	0.27	-0.14	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 24C-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 24C-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
5,900.00	4.31	357.56	5,882.33	434.79	-28.30	435.71	0.38	-0.37	
5,994.00	4.00	352.11	5,976.08	441.57	-28.90	442.52	0.53	-0.33	
6,089.00	3.38	352.64	6,070.88	447.63	-29.71	448.61	0.65	-0.65	
6,183.00	3.43	351.85	6,164.72	453.16	-30.46	454.18	0.07	0.05	
6,278.00	3.30	350.88	6,259.55	458.68	-31.30	459.74	0.15	-0.14	
6,372.00	2.68	350.27	6,353.43	463.51	-32.10	464.62	0.66	-0.66	
6,656.00	1.93	311.86	6,637.21	473.25	-36.79	474.64	0.59	-0.26	
6,939.00	2.59	279.78	6,920.00	477.52	-46.64	479.53	0.49	0.23	
7,223.00	3.21	270.64	7,203.64	478.69	-60.91	481.64	0.27	0.22	
7,601.00	3.38	256.75	7,581.02	476.26	-82.34	480.60	0.22	0.04	
7,885.00	4.40	255.70	7,864.36	471.65	-101.05	477.21	0.36	0.36	
8,168.00	4.13	249.02	8,146.58	465.32	-121.08	472.19	0.20	-0.10	
8,451.00	3.65	253.41	8,428.92	459.10	-139.23	467.16	0.20	-0.17	
8,735.00	4.04	259.39	8,712.29	454.67	-157.73	463.95	0.20	0.14	
8,946.00	4.61	258.68	8,922.68	451.64	-173.35	461.94	0.27	0.27	LAST SURVEY - 8946' MD
9,004.00	4.61	258.68	8,980.50	450.73	-177.92	461.32	0.00	0.00	PTB - 9004' 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 24C-23 PBHI	0.00	0.00	8,985.00	452.37	-132.93	14,357,985.00	2,433,699.00	39.504422	-108.187880
- actual wellpath misses target center by 45.24usft at 9004.00usft MD (8980.50 TVD, 450.73 N, -177.92 E)									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
8,946.00	8,922.68	451.64	-173.35	LAST SURVEY - 8946' MD
9,004.00	8,980.50	450.73	-177.92	PTB - 9004' MD

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