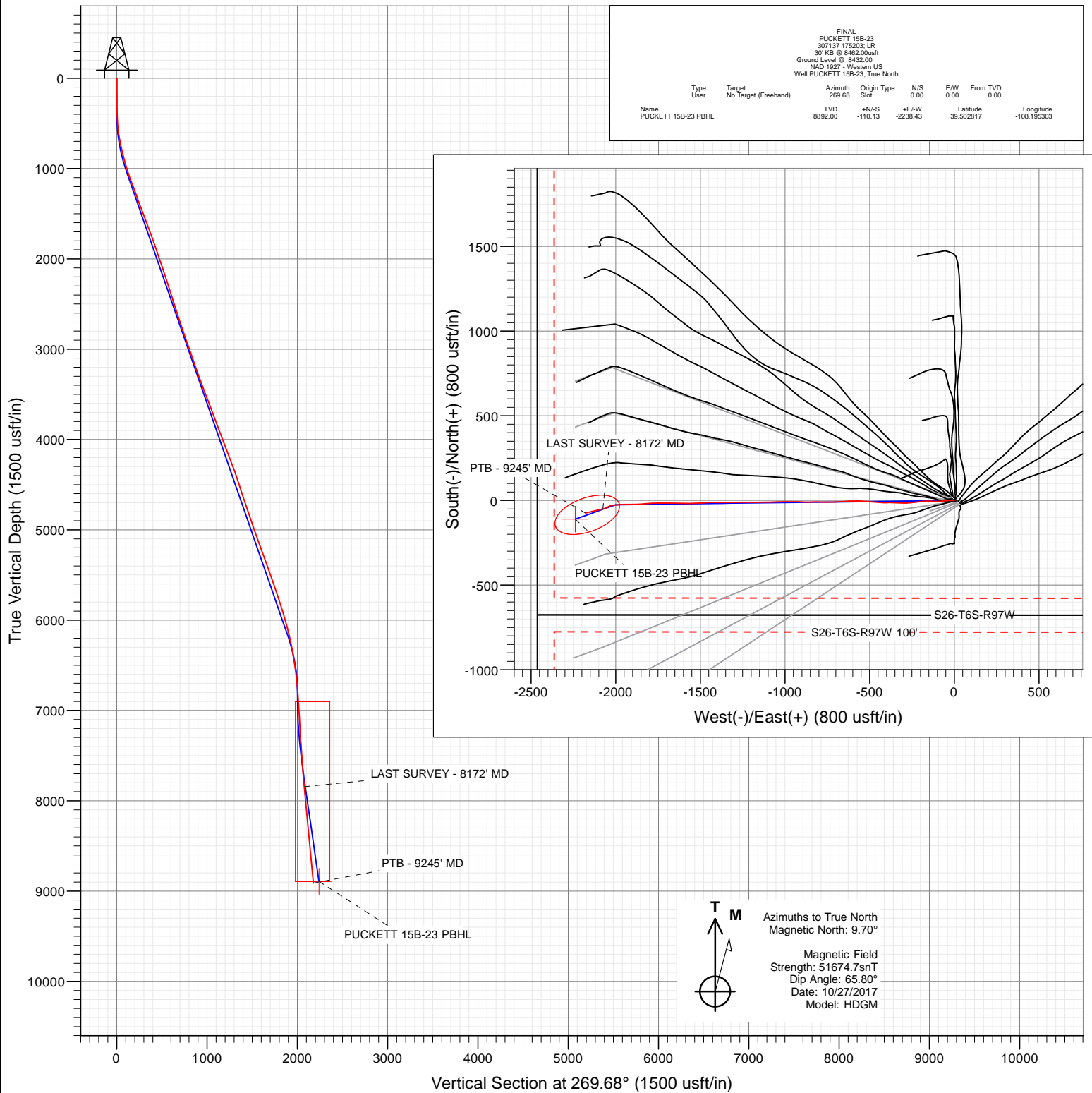




Project: Garfield County, CO (UTM 12N)  
 Site: S23-T6S-R97W (MESA N23)  
 Well: PUCKETT 15B-23  
 Wellbore: OH  
 Design: FINAL



FINAL PUCKETT 15B-23 307137 175203 LR 30' KB @ 8462.00usft Ground Level @ 8432.00 NAD 1927 - Western US Well PUCKETT 15B-23, True North							
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD	
User	No Target (Freehand)	269.68	Slot	0.00	0.00	0.00	
Name		TVD	+N/-S	+E/-W	Latitude	Longitude	
PUCKETT 15B-23 PBHL		8892.00	-110.13	-2238.43	39.502817	-108.195303	



WELL DETAILS: PUCKETT 15B-23

+N/-S	+E/-W	Northing	Ground Level:	8432.00	Latitude	Longitude
0.00	0.00	14357515.00	Easting	2433856.90	39.503119	-108.187373



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 15B-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 15B-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 15B-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,515.00 usft	Latitude:	39.503119
	+E/-W	0.00 usft	Easting:	2,433,856.90 usft	Longitude:	-108.187373
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	10/27/2017	9.70	65.80	51,674.70000000

<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	269.68	

<b>Survey Program</b>	<b>Date</b>	11/2/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
142.00	385.00	Survey #1 (OH)	INC-ONLY_A027Ua	OWSG Inclination Only Surveys	
477.00	9,245.00	Survey #2 (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	
142.00	0.31	255.76	142.00	-0.09	-0.37	0.37	0.22	0.22	
203.00	0.35	284.24	203.00	-0.09	-0.71	0.71	0.27	0.07	
233.00	0.35	260.42	233.00	-0.08	-0.89	0.89	0.48	0.00	
294.00	0.66	246.71	294.00	-0.25	-1.40	1.40	0.54	0.51	
385.00	1.23	276.33	384.98	-0.35	-2.85	2.85	0.81	0.63	
477.00	4.00	270.35	476.88	-0.22	-7.04	7.04	3.02	3.01	
569.00	6.55	273.78	568.48	0.14	-15.49	15.49	2.79	2.77	
664.00	9.76	268.95	662.51	0.35	-28.95	28.95	3.45	3.38	
758.00	12.57	263.67	754.72	-0.92	-47.09	47.09	3.18	2.99	
852.00	14.41	262.36	846.13	-3.60	-68.85	68.87	1.98	1.96	
947.00	15.07	270.09	938.01	-5.16	-92.91	92.94	2.18	0.69	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 15B-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 15B-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
1,042.00	17.31	270.71	1,029.24	-4.96	-119.40	119.43	2.36	2.36	
1,137.00	20.61	270.71	1,119.07	-4.58	-150.26	150.28	3.47	3.47	
1,231.00	21.18	267.54	1,206.89	-5.10	-183.77	183.79	1.35	0.61	
1,325.00	20.22	262.09	1,294.83	-8.07	-216.83	216.87	2.29	-1.02	
1,420.00	19.82	261.92	1,384.09	-12.59	-249.04	249.10	0.43	-0.42	
1,514.00	20.39	267.63	1,472.37	-15.51	-281.18	281.26	2.17	0.61	
1,609.00	21.62	273.69	1,561.06	-15.07	-315.18	315.26	2.63	1.29	
1,703.00	20.83	272.82	1,648.69	-13.13	-349.16	349.23	0.90	-0.84	
1,797.00	19.38	268.77	1,736.96	-12.64	-381.45	381.51	2.14	-1.54	
1,892.00	19.07	270.44	1,826.66	-12.86	-412.72	412.79	0.66	-0.33	
1,986.00	18.81	273.78	1,915.58	-11.74	-443.20	443.26	1.19	-0.28	
2,081.00	19.42	276.07	2,005.34	-9.07	-474.19	474.23	1.02	0.64	
2,175.00	18.59	274.40	2,094.22	-6.26	-504.67	504.70	1.06	-0.88	
2,270.00	18.46	273.17	2,184.29	-4.27	-534.78	534.80	0.43	-0.14	
2,364.00	18.02	271.15	2,273.57	-3.15	-564.18	564.19	0.82	-0.47	
2,459.00	16.83	268.24	2,364.21	-3.28	-592.62	592.63	1.55	-1.25	
2,598.00	17.58	267.37	2,496.99	-4.86	-633.70	633.72	0.57	0.54	
2,692.00	18.55	265.78	2,586.36	-6.62	-662.80	662.82	1.16	1.03	
2,787.00	18.72	266.57	2,676.38	-8.64	-693.08	693.12	0.32	0.18	
2,881.00	18.81	270.27	2,765.38	-9.47	-723.30	723.34	1.27	0.10	
2,976.00	18.72	270.09	2,855.33	-9.37	-753.86	753.90	0.11	-0.09	
3,070.00	18.85	271.67	2,944.33	-8.91	-784.12	784.16	0.56	0.14	
3,164.00	19.82	269.91	3,033.03	-8.49	-815.24	815.27	1.20	1.03	
3,259.00	18.94	268.60	3,122.64	-8.89	-846.76	846.79	1.03	-0.93	
3,353.00	19.38	271.41	3,211.44	-8.88	-877.60	877.63	1.09	0.47	
3,448.00	19.64	271.15	3,300.98	-8.17	-909.32	909.35	0.29	0.27	
3,542.00	20.39	270.53	3,389.30	-7.70	-941.49	941.52	0.83	0.80	
3,637.00	20.74	270.79	3,478.25	-7.32	-974.86	974.88	0.38	0.37	
3,732.00	20.92	268.60	3,567.04	-7.50	-1,008.63	1,008.66	0.84	0.19	
3,826.00	20.44	267.28	3,654.99	-8.69	-1,041.80	1,041.84	0.71	-0.51	
3,920.00	20.61	270.00	3,743.02	-9.47	-1,074.74	1,074.78	1.03	0.18	
4,015.00	20.74	267.10	3,831.90	-10.32	-1,108.26	1,108.30	1.09	0.14	
4,109.00	20.65	269.91	3,919.84	-11.19	-1,141.46	1,141.51	1.06	-0.10	
4,204.00	20.83	270.62	4,008.69	-11.03	-1,175.10	1,175.15	0.33	0.19	
4,298.00	21.31	270.09	4,096.40	-10.83	-1,208.90	1,208.94	0.55	0.51	
4,393.00	20.22	269.21	4,185.23	-11.02	-1,242.58	1,242.62	1.19	-1.15	
4,487.00	20.92	269.12	4,273.24	-11.51	-1,275.60	1,275.64	0.75	0.74	
4,582.00	19.56	269.83	4,362.37	-11.81	-1,308.46	1,308.51	1.45	-1.43	
4,676.00	18.50	268.68	4,451.23	-12.20	-1,339.11	1,339.15	1.20	-1.13	
4,771.00	17.93	270.44	4,541.47	-12.44	-1,368.80	1,368.85	0.83	-0.60	
4,865.00	18.33	270.44	4,630.80	-12.21	-1,398.05	1,398.09	0.43	0.43	
4,960.00	18.28	270.53	4,720.99	-11.96	-1,427.88	1,427.93	0.06	-0.05	
5,054.00	18.72	267.81	4,810.14	-12.40	-1,457.70	1,457.75	1.03	0.47	
5,149.00	18.90	266.40	4,900.07	-13.95	-1,488.29	1,488.34	0.51	0.19	
5,243.00	19.20	265.43	4,988.92	-16.14	-1,518.89	1,518.96	0.46	0.32	
5,337.00	19.64	270.79	5,077.58	-17.15	-1,550.10	1,550.17	1.95	0.47	
5,432.00	20.04	270.00	5,166.94	-16.93	-1,582.34	1,582.41	0.51	0.42	
5,526.00	19.69	269.04	5,255.34	-17.20	-1,614.28	1,614.35	0.51	-0.37	
5,621.00	20.17	273.08	5,344.66	-16.59	-1,646.64	1,646.70	1.53	0.51	
5,715.00	19.82	271.06	5,432.99	-15.42	-1,678.75	1,678.81	0.82	-0.37	
5,809.00	19.20	269.04	5,521.60	-15.38	-1,710.14	1,710.20	0.97	-0.66	
5,904.00	19.16	270.09	5,611.32	-15.62	-1,741.35	1,741.41	0.37	-0.04	
5,998.00	18.59	268.24	5,700.27	-16.06	-1,771.75	1,771.81	0.88	-0.61	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well PUCKETT 15B-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 15B-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
6,093.00	17.71	265.78	5,790.54	-17.59	-1,801.30	1,801.37	1.23	-0.93	
6,187.00	17.10	264.99	5,880.24	-19.84	-1,829.32	1,829.41	0.70	-0.65	
6,282.00	16.22	267.28	5,971.25	-21.69	-1,856.49	1,856.58	1.16	-0.93	
6,376.00	15.21	268.77	6,061.74	-22.58	-1,881.93	1,882.03	1.16	-1.07	
6,471.00	13.54	268.33	6,153.76	-23.17	-1,905.51	1,905.61	1.76	-1.76	
6,565.00	12.00	268.51	6,245.43	-23.75	-1,926.28	1,926.38	1.64	-1.64	
6,660.00	10.06	270.44	6,338.67	-23.94	-1,944.45	1,944.55	2.08	-2.04	
6,754.00	9.32	269.91	6,431.33	-23.89	-1,960.27	1,960.38	0.79	-0.79	
6,849.00	8.22	266.49	6,525.22	-24.32	-1,974.74	1,974.85	1.28	-1.16	
6,943.00	6.86	265.26	6,618.40	-25.19	-1,987.05	1,987.16	1.46	-1.45	
7,038.00	5.71	260.69	6,712.83	-26.43	-1,997.37	1,997.48	1.32	-1.21	
7,132.00	4.40	264.38	6,806.46	-27.54	-2,005.57	2,005.69	1.44	-1.39	
7,227.00	3.52	276.15	6,901.24	-27.58	-2,012.10	2,012.22	1.26	-0.93	
7,322.00	3.16	268.33	6,996.08	-27.34	-2,017.61	2,017.73	0.61	-0.38	
7,605.00	3.96	241.70	7,278.55	-32.20	-2,034.01	2,034.16	0.64	0.28	
7,889.00	4.35	244.60	7,561.80	-41.47	-2,052.38	2,052.58	0.16	0.14	
8,172.00	5.63	256.56	7,843.73	-49.30	-2,075.58	2,075.82	0.58	0.45	LAST SURVEY - 8172' MD
9,245.00	5.63	256.56	8,911.55	-73.77	-2,177.96	2,178.33	0.00	0.00	PTB - 9245' 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 15B-23 PBHL	0.00	0.00	8,892.00	-110.13	-2,238.43	14,357,335.00	2,431,623.00	39.502817	-108.195303
- actual wellpath misses target center by 72.08usft at 9232.14usft MD (8898.76 TVD, -73.48 N, -2176.73 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)	
8,172.00	7,843.73	-49.30	-2,075.58	LAST SURVEY - 8172' MD
9,245.00	8,911.55	-73.77	-2,177.96	PTB - 9245' MD

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