



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 12D-26
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8352.00usft
Site:	S26-T6S-R97W (MESA F26)	MD Reference:	30' KB @ 8352.00usft
Well:	PUCKETT 12D-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

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		S26-T6S-R97W (MESA F26), GRAVITY = 0.9987g			
Site Position:		Northing:	14,354,512.70 usft	Latitude:	39.494943
From:	Map	Easting:	2,433,169.20 usft	Longitude:	-108.190140
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.79 °

Well	PUCKETT 12D-26					
Well Position	+N/-S	0.00 usft	Northing:	14,354,551.10 usft	Latitude:	39.495050
	+E/-W	0.00 usft	Easting:	2,433,145.80 usft	Longitude:	-108.190219
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,322.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/27/2017	9.68	65.78	51,665.60000000

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	278.77	

Survey Program	Date	1/2/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
176.00	572.00	Survey #1 (OH)	INC+TREND	Inclinometer + known azi trend	
666.00	8,868.00	Survey #2 (OH)	MWD+HDGM	OWSG MWD + HDGM	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
176.00	1.14	273.77	175.99	0.12	-1.75	1.74	0.65	0.65	
206.00	1.01	292.93	205.98	0.24	-2.29	2.30	1.27	-0.43	
297.00	0.26	183.24	296.98	0.34	-3.04	3.06	1.24	-0.82	
390.00	1.76	268.15	389.96	0.09	-4.48	4.44	1.89	1.61	
481.00	3.03	278.87	480.88	0.41	-8.25	8.22	1.47	1.40	
572.00	5.93	288.71	571.60	2.29	-15.08	15.25	3.29	3.19	
666.00	8.92	282.65	664.80	5.45	-26.79	27.31	3.28	3.18	
761.00	9.45	274.65	758.58	7.69	-41.75	42.44	1.45	0.56	
855.00	10.72	272.89	851.13	8.76	-58.18	58.83	1.39	1.35	
950.00	12.17	270.08	944.24	9.22	-77.02	77.52	1.63	1.53	
1,044.00	10.85	276.06	1,036.35	10.17	-95.72	96.16	1.89	-1.40	

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Well:	PUCKETT 12D-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
1,139.00	10.90	282.91	1,129.65	13.12	-113.37	114.05	1.36	0.05	
1,233.00	11.12	286.87	1,221.92	17.73	-130.71	131.88	0.84	0.23	
1,328.00	12.00	289.50	1,314.99	23.69	-148.79	150.66	1.08	0.93	
1,422.00	12.70	280.36	1,406.82	28.81	-168.16	170.59	2.21	0.74	
1,516.00	11.95	271.22	1,498.67	30.87	-188.06	190.57	2.22	-0.80	
1,611.00	11.91	275.53	1,591.62	32.03	-207.65	210.11	0.94	-0.04	
1,705.00	11.51	277.73	1,683.66	34.22	-226.60	229.17	0.64	-0.43	
1,800.00	10.46	276.32	1,776.92	36.45	-244.56	247.26	1.14	-1.11	
1,894.00	9.54	284.41	1,869.49	39.33	-260.59	263.54	1.78	-0.98	
1,989.00	10.90	291.79	1,962.99	44.62	-276.55	280.12	1.98	1.43	
2,083.00	12.61	291.97	2,055.01	51.76	-294.32	298.77	1.82	1.82	
2,178.00	12.66	280.01	2,147.73	57.45	-314.20	319.28	2.75	0.05	
2,272.00	13.27	278.78	2,239.33	60.89	-335.00	340.37	0.71	0.65	
2,367.00	11.78	277.55	2,332.07	63.82	-355.39	360.97	1.59	-1.57	
2,461.00	13.18	282.74	2,423.85	67.45	-375.36	381.25	1.91	1.49	
2,628.00	13.98	286.08	2,586.18	77.24	-413.31	420.26	0.67	0.48	
2,723.00	13.93	280.54	2,678.38	82.51	-435.58	443.07	1.41	-0.05	
2,817.00	12.79	269.73	2,769.85	84.53	-457.11	464.66	2.92	-1.21	
2,911.00	12.39	272.81	2,861.59	84.97	-477.59	484.96	0.83	-0.43	
3,006.00	11.60	274.47	2,954.52	86.22	-497.29	504.63	0.91	-0.83	
3,100.00	10.94	266.56	3,046.71	86.42	-515.62	522.77	1.79	-0.70	
3,195.00	12.57	259.62	3,139.72	84.01	-534.79	541.35	2.27	1.72	
3,289.00	13.89	258.30	3,231.22	79.88	-555.90	561.58	1.44	1.40	
3,383.00	15.69	258.83	3,322.10	75.13	-579.42	584.10	1.92	1.91	
3,478.00	15.69	264.28	3,413.57	71.36	-604.81	608.62	1.55	0.00	
3,572.00	15.65	271.49	3,504.08	70.43	-630.13	633.50	2.07	-0.04	
3,667.00	14.81	279.92	3,595.76	72.85	-654.90	658.35	2.49	-0.88	
3,761.00	14.15	287.75	3,686.78	78.42	-677.68	681.72	2.20	-0.70	
3,856.00	14.24	288.63	3,778.88	85.70	-699.81	704.70	0.25	0.09	
3,951.00	14.11	288.19	3,870.99	93.04	-721.89	727.63	0.18	-0.14	
4,045.00	13.71	285.20	3,962.23	99.54	-743.52	750.01	0.87	-0.43	
4,139.00	12.92	289.24	4,053.71	105.93	-764.19	771.41	1.30	-0.84	
4,234.00	12.88	288.36	4,146.31	112.76	-784.27	792.29	0.21	-0.04	
4,328.00	12.96	285.90	4,237.93	118.95	-804.35	813.08	0.59	0.09	
4,423.00	13.01	276.85	4,330.51	123.14	-825.22	834.34	2.14	0.05	
4,517.00	11.87	274.74	4,422.30	125.20	-845.36	854.56	1.31	-1.21	
4,612.00	11.73	278.87	4,515.30	127.50	-864.63	873.97	0.90	-0.15	
4,706.00	12.09	286.96	4,607.28	131.85	-883.49	893.27	1.82	0.38	
4,801.00	10.99	285.29	4,700.36	137.14	-901.74	912.11	1.21	-1.16	
4,895.00	10.15	280.80	4,792.76	141.05	-918.52	929.29	1.25	-0.89	
5,084.00	11.16	285.11	4,978.50	148.94	-952.54	964.11	0.68	0.53	
5,178.00	10.20	285.29	5,070.88	153.51	-969.35	981.42	1.02	-1.02	
5,273.00	11.78	285.55	5,164.13	158.32	-986.81	999.41	1.66	1.66	
5,367.00	11.34	281.51	5,256.22	162.74	-1,005.11	1,018.17	0.98	-0.47	
5,462.00	11.51	286.69	5,349.34	167.33	-1,023.34	1,036.89	1.09	0.18	
5,556.00	11.56	286.60	5,441.45	172.71	-1,041.35	1,055.51	0.06	0.05	
5,651.00	10.02	276.94	5,534.77	176.43	-1,058.68	1,073.20	2.50	-1.62	
5,745.00	9.93	269.99	5,627.35	177.41	-1,074.90	1,089.39	1.28	-0.10	
5,840.00	8.92	272.10	5,721.07	177.68	-1,090.45	1,104.80	1.12	-1.06	
5,934.00	8.39	269.03	5,814.00	177.83	-1,104.59	1,118.79	0.75	-0.56	
6,029.00	8.09	272.10	5,908.02	177.96	-1,118.20	1,132.26	0.56	-0.32	
6,123.00	8.39	269.64	6,001.05	178.16	-1,131.67	1,145.60	0.49	0.32	
6,217.00	6.46	280.01	6,094.26	179.04	-1,143.74	1,157.66	2.49	-2.05	

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Survey

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6,312.00	6.77	274.65	6,188.63	180.42	-1,154.58	1,168.59	0.73	0.33	
6,406.00	5.58	285.29	6,282.09	182.07	-1,164.51	1,178.66	1.75	-1.27	
6,501.00	3.38	275.18	6,376.79	183.55	-1,171.76	1,186.04	2.45	-2.32	
6,784.00	4.26	275.97	6,659.16	185.39	-1,190.52	1,204.87	0.31	0.31	
7,067.00	4.26	272.98	6,941.38	187.03	-1,211.47	1,225.82	0.08	0.00	
7,351.00	4.00	262.52	7,224.64	186.29	-1,231.83	1,245.83	0.28	-0.09	
7,634.00	3.91	257.25	7,506.97	182.88	-1,251.03	1,264.28	0.13	-0.03	
7,918.00	5.80	266.04	7,789.94	179.75	-1,274.79	1,287.29	0.71	0.67	
8,173.00	6.15	265.95	8,043.56	177.89	-1,301.27	1,313.18	0.14	0.14	
8,456.00	6.33	268.67	8,324.88	176.46	-1,331.99	1,343.32	0.12	0.06	
8,737.00	5.71	265.60	8,604.33	175.03	-1,361.41	1,372.18	0.25	-0.22	
8,814.00	5.89	264.98	8,680.94	174.39	-1,369.16	1,379.75	0.25	0.23	LAST SURVEY - 8814' MD
8,868.00	5.89	264.98	8,734.65	173.90	-1,374.68	1,385.13	0.00	0.00	PTB - 8868' 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 12D-26 BHL	0.00	0.00	8,732.00	104.77	-1,436.53	14,354,611.00	2,431,706.70	39.495337	-108.195307
- actual wellpath misses target center by 92.80usft at 8868.00usft MD (8734.65 TVD, 173.90 N, -1374.68 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
8,814.00	8,680.94	174.39	-1,369.16	LAST SURVEY - 8814' MD
8,868.00	8,734.65	173.90	-1,374.68	PTB - 8868' MD

Checked By: _____ Approved By: _____ Date: _____