

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 32B-26 - Slot B-10
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8426.00usft
Site:	S26-T6S-R97W (697 26A)	MD Reference:	30' KB @ 8426.00usft
Well:	PUCKETT 32B-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 (697 26A)		
Site Position:		Northing:	14,356,905.20 usft
From:	Map	Easting:	2,433,730.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	39.501458
		Longitude:	-108.187888
		Grid Convergence:	1.79 °

Well	PUCKETT 32B-26 - Slot B-10					
Well Position	+N/-S	0.00 usft	Northing:	14,355,989.40 usft	Latitude:	39.498808
	+E/-W	0.00 usft	Easting:	2,435,332.66 usft	Longitude:	-108.182317
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,396.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/8/2017	9.73	65.83	51,760

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	101.60	

Survey Program	Date	3/14/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
241.00	9,053.00	Survey #1 (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		
241.00	1.89	100.61	240.96	-0.73	3.91	3.97	0.78	0.78		
271.00	2.11	95.60	270.94	-0.88	4.94	5.02	0.94	0.73		
300.00	2.33	90.41	299.92	-0.93	6.06	6.13	1.03	0.76		
392.00	2.59	92.44	391.83	-1.03	10.01	10.01	0.30	0.28		
484.00	3.52	95.25	483.70	-1.38	14.90	14.87	1.02	1.01		
575.00	4.00	107.64	574.51	-2.60	20.71	20.81	1.03	0.53		
670.00	4.97	119.59	669.22	-5.64	27.44	28.02	1.41	1.02		
764.00	5.80	134.72	762.80	-10.99	34.36	35.87	1.74	0.88		
859.00	6.15	134.01	857.29	-17.90	41.43	44.18	0.38	0.37		
953.00	6.68	134.89	950.70	-25.26	48.92	53.01	0.57	0.56		
1,048.00	7.56	141.48	1,044.97	-34.05	56.73	62.42	1.26	0.93		
1,142.00	7.12	133.57	1,138.20	-42.90	64.80	72.11	1.17	-0.47		

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Site:	S26-T6S-R97W (697 26A)	MD Reference:	30' KB @ 8426.00usft
Well:	PUCKETT 32B-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
1,237.00	6.72	131.11	1,232.51	-50.61	73.26	81.94	0.52	-0.42	
1,331.00	6.59	140.34	1,325.88	-58.38	80.84	90.94	1.15	-0.14	
1,426.00	7.16	135.94	1,420.19	-66.83	88.44	100.08	0.82	0.60	
1,521.00	7.43	134.36	1,514.42	-75.38	96.95	110.13	0.35	0.28	
1,615.00	8.13	136.82	1,607.56	-84.48	105.84	120.67	0.82	0.74	
1,710.00	8.13	138.84	1,701.60	-94.44	114.86	131.51	0.30	0.00	
1,804.00	8.04	139.19	1,794.67	-104.42	123.53	142.01	0.11	-0.10	
1,899.00	8.22	148.86	1,888.72	-115.26	131.39	151.88	1.45	0.19	
1,993.00	8.75	143.85	1,981.69	-126.78	139.08	161.74	0.97	0.56	
2,088.00	9.10	134.27	2,075.55	-137.86	148.72	173.41	1.61	0.37	
2,183.00	9.36	132.34	2,169.32	-148.31	159.81	186.38	0.43	0.27	
2,277.00	9.10	131.63	2,262.10	-158.39	171.02	199.38	0.30	-0.28	
2,372.00	8.97	132.16	2,355.92	-168.36	182.12	212.27	0.16	-0.14	
2,466.00	9.36	128.73	2,448.72	-178.06	193.52	225.38	0.71	0.41	
2,604.00	10.15	128.03	2,584.73	-192.57	211.85	246.26	0.58	0.57	
2,699.00	9.84	134.27	2,678.29	-203.39	224.26	260.59	1.19	-0.33	
2,793.00	10.02	136.91	2,770.88	-214.97	235.59	274.02	0.52	0.19	
2,887.00	8.83	138.23	2,863.61	-226.33	245.99	286.49	1.29	-1.27	
2,982.00	6.77	134.80	2,957.72	-235.71	254.82	297.03	2.22	-2.17	
3,076.00	6.50	136.29	3,051.09	-243.46	262.43	306.04	0.34	-0.29	
3,171.00	5.98	140.86	3,145.53	-251.19	269.27	314.29	0.76	-0.55	
3,265.00	6.72	146.31	3,238.96	-259.56	275.41	321.99	1.01	0.79	
3,359.00	7.52	141.39	3,332.23	-268.94	282.30	330.63	1.07	0.85	
3,454.00	7.69	141.13	3,426.40	-278.75	290.16	340.31	0.18	0.18	
3,548.00	7.47	141.92	3,519.57	-288.46	297.88	349.82	0.26	-0.23	
3,643.00	6.86	140.07	3,613.83	-297.67	305.33	358.97	0.69	-0.64	
3,737.00	8.61	141.74	3,706.97	-307.50	313.29	368.74	1.88	1.86	
3,832.00	8.26	142.71	3,800.95	-318.51	321.83	379.32	0.40	-0.37	
3,926.00	8.13	140.25	3,893.99	-328.99	330.17	389.60	0.40	-0.14	
4,020.00	7.56	144.38	3,987.11	-339.13	338.02	399.33	0.85	-0.61	
4,115.00	8.04	140.07	4,081.23	-349.30	345.93	409.12	0.80	0.51	
4,209.00	8.31	135.24	4,174.27	-359.17	354.93	419.92	0.78	0.29	
4,304.00	7.82	135.68	4,268.33	-368.67	364.28	430.99	0.52	-0.52	
4,398.00	7.69	135.77	4,361.47	-377.75	373.13	441.49	0.14	-0.14	
4,493.00	6.94	135.41	4,455.70	-386.39	381.60	451.52	0.79	-0.79	
4,587.00	7.47	136.56	4,548.96	-394.87	389.78	461.25	0.58	0.56	
4,682.00	6.90	135.15	4,643.21	-403.40	398.06	471.07	0.63	-0.60	
4,776.00	6.90	138.49	4,736.53	-411.63	405.78	480.29	0.43	0.00	
4,871.00	7.03	140.95	4,830.83	-420.42	413.22	489.35	0.34	0.14	
4,965.00	7.12	142.88	4,924.11	-429.53	420.36	498.18	0.27	0.10	
5,060.00	7.03	140.95	5,018.39	-438.74	427.58	507.10	0.27	-0.09	
5,155.00	7.73	140.86	5,112.60	-448.21	435.27	516.54	0.74	0.74	
5,249.00	8.66	144.12	5,205.64	-458.85	443.41	526.65	1.11	0.99	
5,344.00	8.26	141.74	5,299.61	-470.00	451.83	537.14	0.56	-0.42	
5,438.00	8.53	140.25	5,392.60	-480.67	460.47	547.75	0.37	0.29	
5,533.00	8.48	139.90	5,486.56	-491.44	469.49	558.75	0.08	-0.05	
5,627.00	8.09	139.54	5,579.58	-501.77	478.24	569.40	0.42	-0.41	
5,722.00	7.38	140.86	5,673.71	-511.59	486.43	579.40	0.77	-0.75	
5,816.00	7.21	138.84	5,766.95	-520.72	494.12	588.77	0.33	-0.18	
5,911.00	6.42	140.78	5,861.28	-529.32	501.41	597.64	0.87	-0.83	
6,005.00	6.24	142.09	5,954.71	-537.42	507.87	605.60	0.25	-0.19	
6,100.00	5.41	130.49	6,049.22	-544.40	514.45	613.44	1.51	-0.87	
6,194.00	4.04	122.93	6,142.90	-549.08	520.60	620.41	1.60	-1.46	

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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
6,289.00	2.55	101.22	6,237.74	-551.31	525.48	625.64	2.02	-1.57	
6,383.00	2.11	89.36	6,331.66	-551.70	529.26	629.42	0.69	-0.47	
6,478.00	1.54	97.36	6,426.61	-551.84	532.28	632.40	0.66	-0.60	
6,572.00	1.27	124.96	6,520.59	-552.60	534.38	634.62	0.77	-0.29	
6,667.00	1.32	196.32	6,615.57	-554.26	534.94	635.50	1.59	0.05	
6,856.00	1.49	198.43	6,804.51	-558.68	533.55	635.03	0.09	0.09	
7,045.00	2.07	231.83	6,993.42	-563.12	530.09	632.53	0.62	0.31	
7,234.00	2.55	264.17	7,182.28	-565.65	523.22	626.31	0.72	0.25	
7,423.00	3.08	239.21	7,371.06	-568.68	514.68	618.55	0.70	0.28	
7,612.00	3.87	247.04	7,559.71	-573.77	504.44	609.55	0.49	0.42	
7,801.00	3.69	240.18	7,748.30	-579.28	493.29	599.74	0.26	-0.10	
7,989.00	4.04	238.42	7,935.87	-585.76	482.40	590.37	0.20	0.19	
8,179.00	4.04	237.98	8,125.40	-592.81	471.03	580.65	0.02	0.00	
8,368.00	5.32	237.28	8,313.76	-601.08	458.01	569.56	0.68	0.68	
8,557.00	6.24	236.22	8,501.80	-611.52	442.10	556.08	0.49	0.49	
8,746.00	6.06	243.70	8,689.72	-621.66	424.62	540.99	0.43	-0.10	
8,904.00	6.42	240.88	8,846.78	-629.65	409.42	527.72	0.30	0.23	
8,989.00	6.81	239.65	8,931.22	-634.51	400.92	520.37	0.49	0.46	LAST SURVEY @ 8989' MD
9,053.00	6.81	239.65	8,994.76	-638.34	394.37	514.72	0.00	0.00	PTB @ 9053' 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 32B-26 PBHI	0.00	0.00	8,986.00	-626.53	377.92	14,355,375.00	2,435,730.00	39.497088	-108.180978
- actual wellpath misses target center by 20.67usft at 9045.27usft MD (8987.09 TVD, -637.88 N, 395.17 E)									
- Ellipse (radii L200.00 W100.00 on 240.00 azi)									

Design Annotations

	Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
			+N/-S (usft)	+E/-W (usft)	
	8,989.00	8,931.22	-634.51	400.92	LAST SURVEY @ 8989' MD
	9,053.00	8,994.76	-638.34	394.37	PTB @ 9053' MD

Checked By: _____ Approved By: _____ Date: _____