



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 32A-26 - Slot B-9
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 32A-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 32A-26 - Slot B-9					
Well Position	+N/-S	0.00 usft	Northing:	14,355,995.03 usft	Latitude:	39.498824
	+E/-W	0.00 usft	Easting:	2,435,327.70 usft	Longitude:	-108.182334
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	1/25/2017	9.73	65.83	51,774

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	117.80	

Survey Program	Date	2/16/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
116.00	9,032.00	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		
116.00	0.44	172.61	116.00	-0.44	0.06	0.26	0.38	0.38		
208.00	0.40	186.94	208.00	-1.11	0.06	0.57	0.12	-0.04		
299.00	0.66	39.46	298.99	-1.02	0.36	0.79	1.12	0.29		
390.00	0.97	33.31	389.99	0.03	1.11	0.97	0.35	0.34		
481.00	1.49	56.33	480.96	1.33	2.52	1.61	0.78	0.57		
573.00	2.02	65.65	572.92	2.66	5.00	3.18	0.65	0.58		
668.00	3.25	94.04	667.82	3.16	9.21	6.67	1.85	1.29		
762.00	4.53	105.02	761.61	2.01	15.45	12.73	1.57	1.36		
857.00	4.75	106.25	856.29	-0.06	22.85	20.24	0.25	0.23		
951.00	4.57	111.44	949.98	-2.52	30.07	27.78	0.49	-0.19		
1,046.00	4.18	126.03	1,044.71	-5.94	36.40	34.97	1.24	-0.41		
1,140.00	6.28	129.63	1,138.31	-11.24	43.13	43.39	2.26	2.23		

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Well:	PUCKETT 32A-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
1,235.00	7.78	123.04	1,232.60	-18.06	52.52	54.88	1.79	1.58	
1,329.00	8.61	110.30	1,325.65	-23.97	64.45	68.19	2.12	0.88	
1,424.00	7.87	96.50	1,419.67	-27.17	77.59	81.30	2.22	-0.78	
1,518.00	6.15	95.88	1,512.97	-28.42	88.99	91.97	1.83	-1.83	
1,613.00	5.49	118.91	1,607.49	-31.13	98.03	101.24	2.54	-0.69	
1,707.00	5.98	125.50	1,701.02	-36.15	105.95	110.59	0.87	0.52	
1,802.00	7.08	128.14	1,795.40	-42.64	114.59	121.25	1.20	1.16	
1,897.00	6.68	126.73	1,889.72	-49.56	123.62	132.47	0.46	-0.42	
1,991.00	6.42	124.18	1,983.10	-55.78	132.35	143.09	0.41	-0.28	
2,086.00	6.72	125.15	2,077.48	-61.97	141.29	153.88	0.34	0.32	
2,181.00	7.16	129.46	2,171.79	-68.93	150.40	165.19	0.72	0.46	
2,275.00	7.52	129.90	2,265.01	-76.60	159.65	176.95	0.39	0.38	
2,370.00	8.17	133.06	2,359.13	-85.20	169.35	189.54	0.82	0.68	
2,465.00	8.66	132.71	2,453.10	-94.66	179.53	202.96	0.52	0.52	
2,606.00	9.71	130.69	2,592.29	-109.61	196.35	224.81	0.78	0.74	
2,701.00	8.31	124.36	2,686.12	-118.71	208.09	239.44	1.80	-1.47	
2,795.00	7.52	120.23	2,779.23	-125.64	219.02	252.33	1.04	-0.84	
2,890.00	6.77	112.32	2,873.49	-130.89	229.57	264.12	1.30	-0.79	
2,984.00	6.02	106.17	2,966.90	-134.37	239.43	274.46	1.08	-0.80	
3,079.00	4.83	102.56	3,061.48	-136.63	248.12	283.20	1.30	-1.25	
3,173.00	4.35	110.65	3,155.18	-138.75	255.32	290.56	0.86	-0.51	
3,267.00	4.31	112.49	3,248.91	-141.35	261.91	297.61	0.15	-0.04	
3,362.00	4.97	120.40	3,343.60	-144.80	268.76	305.28	0.97	0.69	
3,456.00	5.19	120.93	3,437.23	-149.05	275.92	313.59	0.24	0.23	
3,551.00	5.01	118.91	3,531.85	-153.26	283.24	322.03	0.27	-0.19	
3,645.00	4.75	121.81	3,625.51	-157.30	290.14	330.01	0.38	-0.28	
3,739.00	6.06	121.64	3,719.09	-161.95	297.67	338.85	1.39	1.39	
3,834.00	5.85	117.24	3,813.58	-166.80	306.24	348.69	0.53	-0.22	
3,928.00	5.71	119.70	3,907.10	-171.31	314.57	358.15	0.30	-0.15	
4,023.00	5.49	120.14	4,001.65	-175.93	322.60	367.42	0.24	-0.23	
4,117.00	5.36	119.61	4,095.23	-180.36	330.31	376.30	0.15	-0.14	
4,212.00	5.63	120.05	4,189.79	-184.89	338.20	385.39	0.29	0.28	
4,306.00	5.67	119.79	4,283.33	-189.50	346.22	394.64	0.05	0.04	
4,400.00	5.76	120.76	4,376.87	-194.22	354.30	403.99	0.14	0.10	
4,495.00	5.45	121.55	4,471.41	-199.02	362.24	413.25	0.34	-0.33	
4,589.00	5.27	118.82	4,565.00	-203.44	369.83	422.02	0.33	-0.19	
4,684.00	5.89	118.47	4,659.55	-207.86	377.94	431.26	0.65	0.65	
4,778.00	5.54	116.45	4,753.08	-212.18	386.24	440.62	0.43	-0.37	
4,873.00	6.02	117.68	4,847.60	-216.54	394.76	450.19	0.52	0.51	
4,967.00	5.76	116.01	4,941.10	-220.90	403.36	459.83	0.33	-0.28	
5,062.00	5.76	114.96	5,035.62	-225.00	411.97	469.36	0.11	0.00	
5,157.00	6.06	120.76	5,130.12	-229.58	420.60	479.12	0.70	0.32	
5,251.00	6.37	117.42	5,223.57	-234.52	429.49	489.29	0.51	0.33	
5,346.00	6.46	123.04	5,317.97	-239.86	438.65	499.89	0.67	0.09	
5,440.00	6.99	123.57	5,411.33	-245.90	447.85	510.84	0.57	0.56	
5,535.00	7.43	123.92	5,505.58	-252.53	457.76	522.70	0.47	0.46	
5,629.00	6.81	121.02	5,598.85	-258.79	467.58	534.31	0.76	-0.66	
5,724.00	6.50	118.47	5,693.21	-264.26	477.13	545.31	0.45	-0.33	
5,818.00	5.49	113.64	5,786.70	-268.60	485.93	555.11	1.20	-1.07	
5,913.00	5.23	115.04	5,881.28	-272.25	494.02	563.97	0.31	-0.27	
6,008.00	5.19	113.73	5,975.89	-275.81	501.87	572.58	0.13	-0.04	
6,102.00	5.05	110.12	6,069.51	-278.95	509.65	580.92	0.37	-0.15	
6,197.00	4.53	112.32	6,164.18	-281.81	517.05	588.80	0.58	-0.55	

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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
6,291.00	3.30	106.96	6,257.96	-284.01	523.07	595.15	1.36	-1.31	
6,385.00	2.81	122.51	6,351.83	-286.04	527.60	600.11	1.02	-0.52	
6,480.00	1.45	141.41	6,446.76	-288.23	530.31	603.53	1.59	-1.43	
6,575.00	1.49	157.06	6,541.73	-290.30	531.54	605.59	0.42	0.04	
6,669.00	1.23	174.11	6,635.70	-292.43	532.12	607.09	0.51	-0.28	
6,764.00	1.19	174.98	6,730.68	-294.43	532.32	608.19	0.05	-0.04	
6,858.00	1.10	163.65	6,824.66	-296.27	532.66	609.35	0.26	-0.10	
7,047.00	1.01	186.85	7,013.63	-299.66	532.97	611.21	0.23	-0.05	
7,236.00	1.01	226.23	7,202.61	-302.47	531.57	611.28	0.36	0.00	
7,425.00	2.20	250.57	7,391.53	-304.83	526.94	608.29	0.71	0.63	
7,519.00	2.29	253.12	7,485.46	-305.97	523.44	605.73	0.14	0.10	
7,614.00	1.71	229.65	7,580.40	-307.44	520.55	603.85	1.04	-0.61	
7,803.00	3.47	250.22	7,769.20	-311.20	513.01	598.94	1.04	0.93	
7,897.00	3.74	247.67	7,863.02	-313.33	507.50	595.06	0.33	0.29	
7,992.00	3.16	252.33	7,957.85	-315.30	502.14	591.24	0.68	-0.61	
8,086.00	2.46	253.30	8,051.73	-316.67	497.74	587.98	0.75	-0.74	
8,181.00	1.80	231.41	8,146.67	-318.19	494.62	585.93	1.09	-0.69	
8,275.00	2.15	220.60	8,240.61	-320.45	492.32	584.95	0.54	0.37	
8,370.00	2.64	223.59	8,335.53	-323.38	489.65	583.96	0.53	0.52	
8,465.00	2.86	219.55	8,430.42	-326.80	486.63	582.88	0.31	0.23	
8,654.00	4.31	228.95	8,619.05	-335.10	478.27	579.36	0.83	0.77	
8,843.00	5.54	236.60	8,807.35	-344.78	465.30	572.40	0.74	0.65	
8,975.00	6.33	236.95	8,938.64	-352.26	453.88	565.78	0.60	0.60	LAST CES SURVEY - 8975' MD
9,032.00	6.33	236.95	8,995.29	-355.69	448.62	562.72	0.00	0.00	PTB - 9032' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PUCKETT 32A-26 PBHL	0.00	0.00	8,992.00	-357.08	379.41	14,355,650.00	2,435,718.10	39.497844	-108.180990
- actual wellpath misses target center by 69.30usft at 9032.00usft MD (8995.29 TVD, -355.69 N, 448.62 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	
8,975.00	8,938.64	-352.26	453.88	LAST CES SURVEY - 8975' MD	
9,032.00	8,995.29	-355.69	448.62	PTB - 9032' MD	

Checked By: _____ Approved By: _____ Date: _____