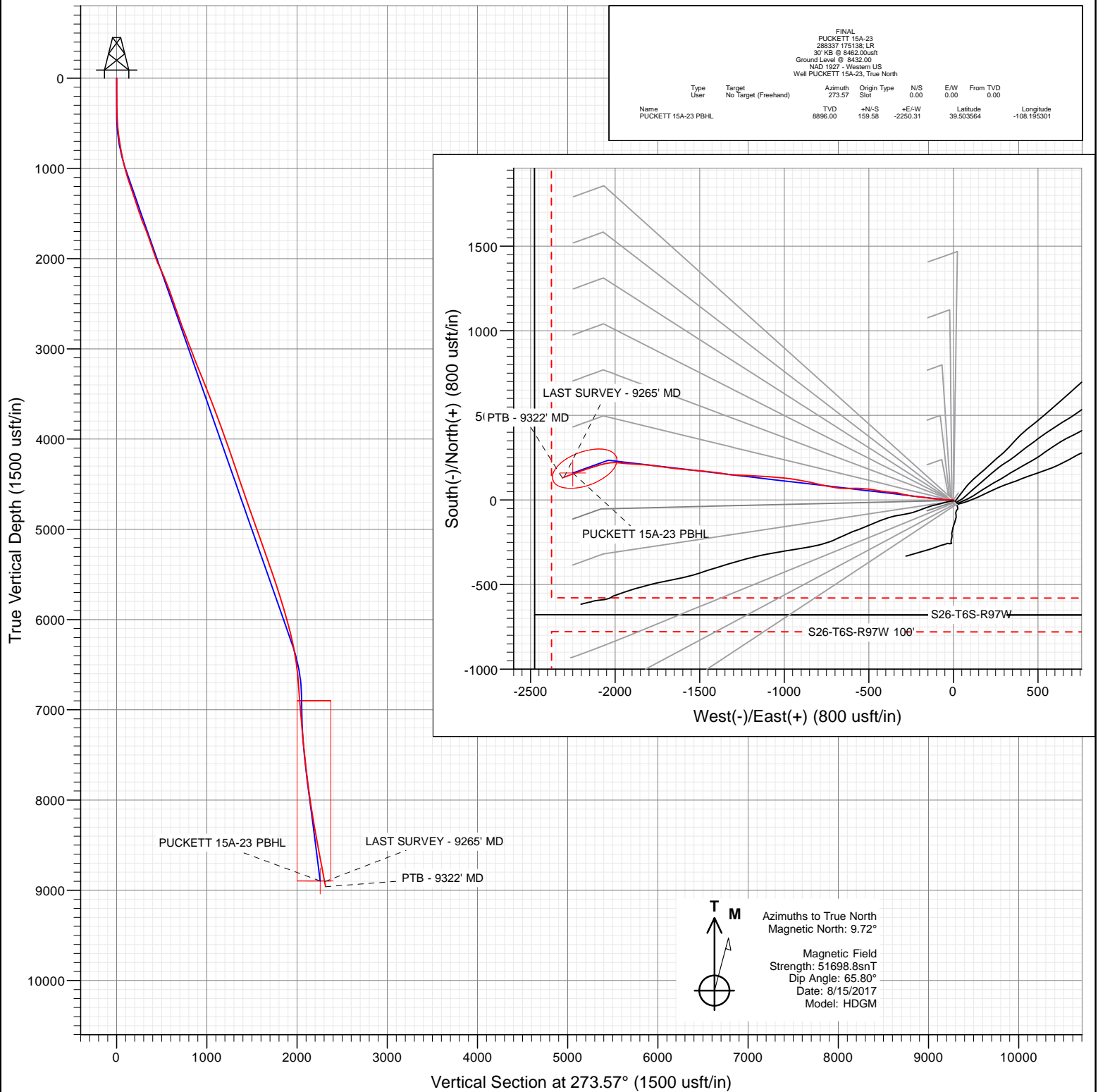




Project: Garfield County, CO (UTM 12N)
Site: S23-T6S-R97W (MESA N23)
Well: PUCKETT 15A-23
Wellbore: OH
Design: FINAL



WELL DETAILS: PUCKETT 15A-23

+N/-S	+E/-W	Northing	Ground Level:	8432.00	Latitude	Longitude
0.00	0.00	14357517.80	Easting	2433869.20	39.503126	-108.187329



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 15A-23
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8462.00usft
Site:	S23-T6S-R97W (MESA N23)	MD Reference:	30' KB @ 8462.00usft
Well:	PUCKETT 15A-23	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	S23-T6S-R97W (MESA N23)		
Site Position:		Northing:	14,357,518.00 usft
From:	Map	Easting:	2,433,869.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	39.503127
		Longitude:	-108.187330
		Grid Convergence:	1.79 °

Well	PUCKETT 15A-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,517.80 usft	Latitude:	39.503126
	+E/-W	0.00 usft	Easting:	2,433,869.20 usft	Longitude:	-108.187329
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,432.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/15/2017	9.72	65.80	51,698.80000000

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	273.57	

Survey Program	Date	8/21/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
143.00	9,322.00	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		
143.00	0.22	339.28	143.00	0.26	-0.10	0.11	0.15	0.15		
204.00	0.79	285.75	204.00	0.48	-0.54	0.57	1.12	0.93		
295.00	0.92	289.62	294.99	0.90	-1.84	1.89	0.16	0.14		
386.00	1.45	270.90	385.97	1.16	-3.67	3.74	0.71	0.58		
478.00	3.56	274.07	477.87	1.38	-7.69	7.76	2.30	2.29		
570.00	5.58	270.99	569.58	1.66	-15.01	15.08	2.21	2.20		
665.00	8.04	269.14	663.90	1.64	-26.27	26.32	2.60	2.59		
759.00	9.54	269.50	756.79	1.47	-40.64	40.65	1.60	1.60		
854.00	11.38	275.12	850.21	2.24	-57.84	57.87	2.21	1.94		
948.00	13.58	274.50	941.99	3.94	-78.09	78.18	2.34	2.34		
1,043.00	15.03	275.30	1,034.04	5.95	-101.47	101.64	1.54	1.53		
1,137.00	17.45	277.49	1,124.28	8.91	-127.59	127.89	2.66	2.57		

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 15A-23
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8462.00usft
Site:	S23-T6S-R97W (MESA N23)	MD Reference:	30' KB @ 8462.00usft
Well:	PUCKETT 15A-23	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
1,232.00	19.82	279.43	1,214.30	13.41	-157.60	158.13	2.58	2.49	
1,326.00	19.12	276.00	1,302.92	17.63	-188.63	189.36	1.43	-0.74	
1,421.00	18.19	275.38	1,392.93	20.65	-218.87	219.73	1.00	-0.98	
1,515.00	18.46	278.11	1,482.17	24.12	-248.21	249.23	0.96	0.29	
1,610.00	20.65	283.29	1,571.69	30.09	-279.41	280.74	2.94	2.31	
1,704.00	22.63	284.00	1,659.06	38.28	-313.09	314.87	2.12	2.11	
1,799.00	19.38	276.79	1,747.75	44.57	-346.49	348.60	4.37	-3.42	
1,893.00	18.11	272.75	1,836.76	47.11	-376.57	378.78	1.93	-1.35	
1,988.00	19.42	276.97	1,926.72	49.74	-407.00	409.31	1.98	1.38	
2,082.00	22.28	280.57	2,014.56	54.90	-440.04	442.60	3.33	3.04	
2,176.00	23.95	278.20	2,101.01	60.90	-476.44	479.31	2.03	1.78	
2,271.00	24.35	275.82	2,187.70	65.63	-515.01	518.10	1.11	0.42	
2,365.00	21.89	272.92	2,274.14	68.49	-551.80	554.99	2.88	-2.62	
2,460.00	19.60	270.11	2,362.98	69.42	-585.42	588.61	2.63	-2.41	
2,602.00	18.90	268.09	2,497.04	68.70	-632.23	635.28	0.68	-0.49	
2,697.00	19.47	274.94	2,586.78	69.55	-663.38	666.43	2.44	0.60	
2,791.00	19.82	278.72	2,675.31	73.32	-694.74	697.96	1.40	0.37	
2,886.00	21.40	279.95	2,764.23	78.75	-727.74	731.23	1.72	1.66	
2,980.00	20.96	280.92	2,851.88	84.90	-761.14	764.95	0.60	-0.47	
3,074.00	20.92	283.65	2,939.67	92.05	-793.95	798.15	1.04	-0.04	
3,169.00	21.62	283.91	3,028.20	100.26	-827.42	832.06	0.74	0.74	
3,263.00	20.52	280.48	3,115.92	107.42	-860.43	865.46	1.76	-1.17	
3,358.00	22.02	281.01	3,204.44	113.85	-894.29	899.65	1.59	1.58	
3,452.00	22.19	279.34	3,291.53	120.09	-929.10	934.78	0.69	0.18	
3,547.00	22.02	279.08	3,379.55	125.82	-964.39	970.36	0.21	-0.18	
3,641.00	22.10	275.21	3,466.67	130.20	-999.40	1,005.58	1.55	0.09	
3,735.00	21.62	275.47	3,553.91	133.46	-1,034.25	1,040.56	0.52	-0.51	
3,830.00	20.35	273.01	3,642.61	136.00	-1,068.17	1,074.57	1.63	-1.34	
3,924.00	20.74	274.86	3,730.63	138.26	-1,101.08	1,107.55	0.81	0.41	
4,019.00	20.26	273.27	3,819.62	140.63	-1,134.26	1,140.82	0.77	-0.51	
4,113.00	19.91	273.36	3,907.90	142.49	-1,166.49	1,173.10	0.37	-0.37	
4,208.00	19.56	272.92	3,997.32	144.25	-1,198.52	1,205.18	0.40	-0.37	
4,302.00	19.34	272.66	4,085.96	145.78	-1,229.78	1,236.47	0.25	-0.23	
4,396.00	19.16	271.43	4,174.70	146.88	-1,260.75	1,267.45	0.47	-0.19	
4,491.00	19.25	272.31	4,264.42	147.90	-1,291.98	1,298.69	0.32	0.09	
4,585.00	18.55	276.97	4,353.35	150.34	-1,322.31	1,329.11	1.77	-0.74	
4,680.00	18.85	278.55	4,443.34	154.46	-1,352.49	1,359.48	0.62	0.32	
4,774.00	19.16	279.51	4,532.21	159.26	-1,382.72	1,389.95	0.47	0.33	
4,869.00	18.85	278.02	4,622.04	163.98	-1,413.29	1,420.76	0.61	-0.33	
4,964.00	18.55	276.35	4,712.02	167.79	-1,443.50	1,451.16	0.65	-0.32	
5,058.00	19.34	274.86	4,800.93	170.77	-1,473.87	1,481.65	0.99	0.84	
5,153.00	20.08	272.66	4,890.36	172.86	-1,505.84	1,513.69	1.10	0.78	
5,247.00	20.39	275.74	4,978.57	175.24	-1,538.25	1,546.18	1.18	0.33	
5,342.00	20.35	276.88	5,067.62	178.88	-1,571.12	1,579.21	0.42	-0.04	
5,436.00	19.64	276.44	5,155.96	182.61	-1,603.04	1,611.31	0.77	-0.76	
5,531.00	18.98	276.09	5,245.61	186.04	-1,634.27	1,642.69	0.71	-0.69	
5,625.00	18.11	275.30	5,334.73	189.01	-1,664.02	1,672.56	0.96	-0.93	
5,720.00	18.72	276.61	5,424.87	192.13	-1,693.86	1,702.54	0.78	0.64	
5,814.00	19.51	278.46	5,513.68	196.17	-1,724.37	1,733.25	1.06	0.84	
5,909.00	18.98	277.58	5,603.38	200.54	-1,755.38	1,764.47	0.64	-0.56	
6,003.00	17.97	278.20	5,692.53	204.63	-1,784.88	1,794.17	1.09	-1.07	
6,098.00	16.66	274.94	5,783.22	207.89	-1,812.96	1,822.39	1.72	-1.38	
6,192.00	15.86	272.75	5,873.46	209.67	-1,839.21	1,848.71	1.07	-0.85	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 15A-23
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8462.00usft
Site:	S23-T6S-R97W (MESA N23)	MD Reference:	30' KB @ 8462.00usft
Well:	PUCKETT 15A-23	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
6,287.00	15.86	273.45	5,964.85	211.07	-1,865.14	1,874.67	0.20	0.00	
6,381.00	15.95	272.66	6,055.25	212.44	-1,890.86	1,900.43	0.25	0.10	
6,476.00	15.12	274.86	6,146.78	214.10	-1,916.25	1,925.86	1.07	-0.87	
6,570.00	12.17	274.68	6,238.12	215.95	-1,938.34	1,948.03	3.14	-3.14	
6,665.00	10.28	277.76	6,331.30	217.91	-1,956.72	1,966.50	2.09	-1.99	
6,759.00	8.66	273.19	6,424.01	219.44	-1,972.10	1,981.94	1.90	-1.72	
6,854.00	7.34	275.65	6,518.09	220.43	-1,985.28	1,995.16	1.44	-1.39	
6,949.00	6.33	272.57	6,612.41	221.26	-1,996.55	2,006.46	1.13	-1.06	
7,043.00	4.92	270.73	6,705.96	221.55	-2,005.76	2,015.67	1.51	-1.50	
7,137.00	3.65	268.26	6,799.69	221.51	-2,012.78	2,022.67	1.36	-1.35	
7,232.00	3.96	265.63	6,894.48	221.17	-2,019.07	2,028.93	0.37	0.33	
7,421.00	4.66	260.00	7,082.95	219.34	-2,033.14	2,042.86	0.43	0.37	
7,610.00	5.58	260.44	7,271.19	216.48	-2,049.77	2,059.27	0.49	0.49	
7,799.00	6.37	256.66	7,459.16	212.53	-2,069.03	2,078.25	0.47	0.42	
7,988.00	6.81	254.03	7,646.91	207.03	-2,090.00	2,098.84	0.28	0.23	
8,177.00	8.17	252.53	7,834.30	199.91	-2,113.59	2,121.94	0.73	0.72	
8,366.00	9.27	252.80	8,021.11	191.38	-2,140.94	2,148.71	0.58	0.58	
8,555.00	9.98	252.44	8,207.45	181.94	-2,171.10	2,178.22	0.38	0.38	
8,744.00	10.94	249.19	8,393.31	170.63	-2,203.48	2,209.83	0.60	0.51	
8,933.00	11.43	249.98	8,578.72	157.84	-2,237.84	2,243.32	0.27	0.26	
9,122.00	12.09	250.60	8,763.75	144.86	-2,274.10	2,278.71	0.36	0.35	
9,265.00	11.34	249.37	8,903.77	134.93	-2,301.38	2,305.32	0.55	-0.52	LAST SURVEY - 9265' MD
9,322.00	11.34	249.37	8,959.66	130.98	-2,311.87	2,315.54	0.00	0.00	PTB - 9322' 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 15A-23 PBHL	0.00	0.00	8,896.00	159.58	-2,250.31	14,357,607.00	2,431,615.00	39.503564	-108.195301
- actual wellpath misses target center by 54.07usft at 9245.94usft MD (8885.08 TVD, 136.25 N, -2297.86 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)	
9,265.00	8,903.77	134.93	-2,301.38	LAST SURVEY - 9265' MD
9,322.00	8,959.66	130.98	-2,311.87	PTB - 9322' MD

Checked By: _____ Approved By: _____ Date: _____