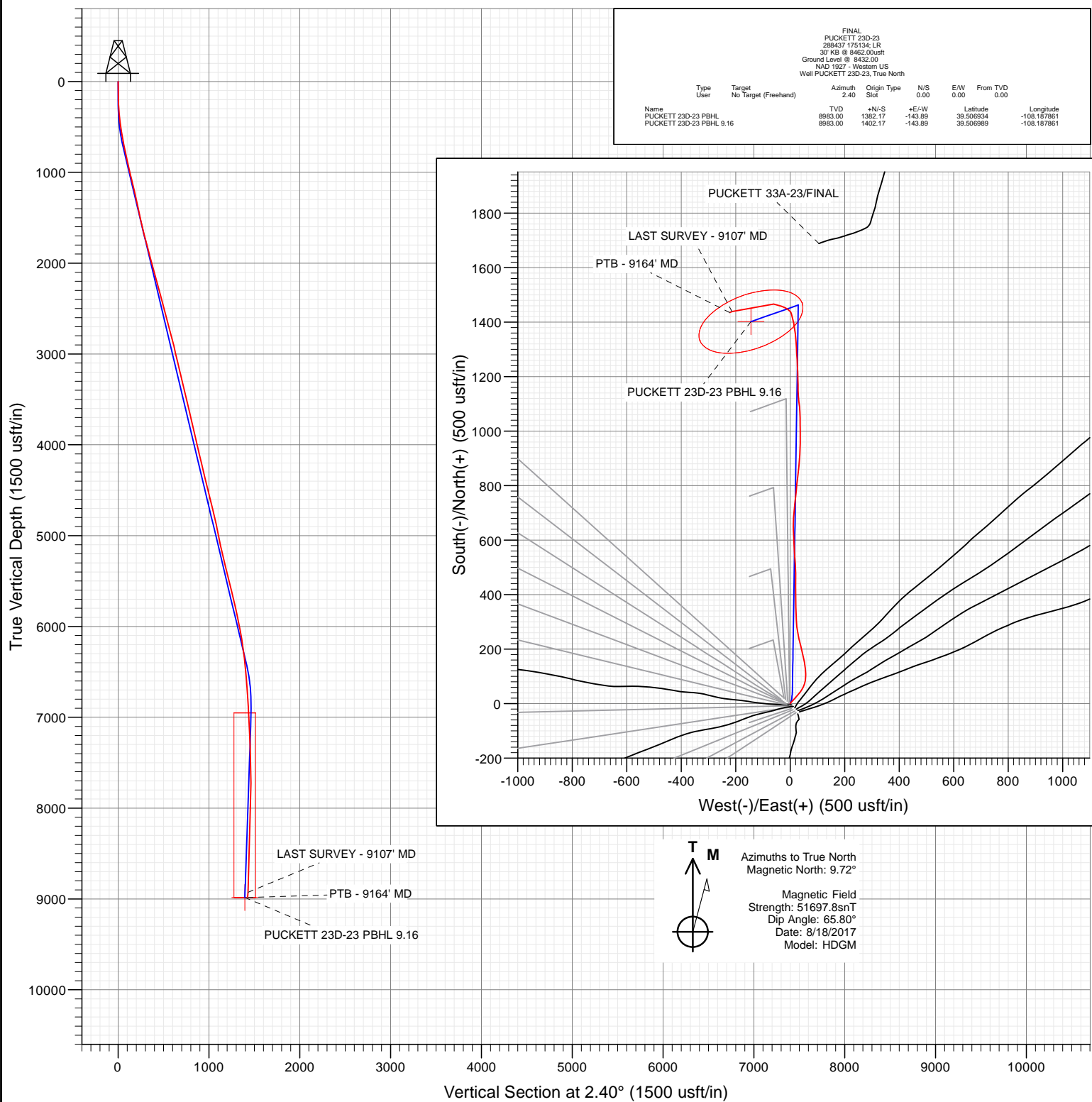




Project: Garfield County, CO (UTM 12N)
 Site: S23-T6S-R97W (MESA N23)
 Well: PUCKETT 23D-23
 Wellbore: OH
 Design: FINAL



FINAL PUCKETT 23D-23 288437 175134 LR 30' KB @ 8462.00usft Ground Level @ 8432.00 NAD 1927 - Western US Well PUCKETT 23D-23, True North									
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD			
User	No. Target (Freehand)	2.40	Spot		0.00	0.00			
Name		TVD	+N/-S	+E/-W	Latitude	Longitude			
PUCKETT 23D-23 PBHL		8983.00	1382.17	-143.89	39.506934	-108.187861			
PUCKETT 23D-23 PBHL 9.16		8983.00	1402.17	-143.89	39.506989	-108.187861			



WELL DETAILS: PUCKETT 23D-23

+N/-S 0.00 +E/-W 0.00 Northing 14357523.00 Ground Level: 8432.00 Easting 2433863.00 Latitude 39.503141 Longitude -108.187351



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 23D-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 23D-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 23D-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,523.00 usft	Latitude:	39.503141
	+E/-W	0.00 usft	Easting:	2,433,863.00 usft	Longitude:	-108.187351
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	8/18/2017	9.72	65.80	51,697.80000000

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	2.40	

Survey Program	Date	8/24/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
173.00	9,164.00	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	
173.00	1.80	35.88	172.97	2.20	1.59	2.27	1.04	1.04	
204.00	2.02	30.96	203.95	3.06	2.16	3.15	0.88	0.71	
295.00	4.31	39.66	294.81	7.07	5.17	7.28	2.56	2.52	
386.00	7.38	46.96	385.33	13.70	11.62	14.17	3.46	3.37	
570.00	11.87	38.52	566.70	36.58	32.06	37.89	2.55	2.44	
665.00	13.27	31.84	659.42	53.49	43.89	55.28	2.12	1.47	
759.00	12.09	17.25	751.15	72.06	52.51	74.19	3.62	-1.26	
854.00	12.17	5.30	844.05	91.54	56.38	93.81	2.64	0.08	
948.00	12.57	358.53	935.87	111.63	57.04	113.92	1.60	0.43	
1,043.00	13.62	353.17	1,028.40	133.07	55.44	135.27	1.69	1.11	
1,137.00	14.63	349.39	1,119.56	155.73	51.94	157.76	1.45	1.07	
1,232.00	13.54	347.37	1,211.70	178.37	47.30	180.19	1.26	-1.15	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 23D-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 23D-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
1,326.00	12.92	346.05	1,303.21	199.31	42.36	200.91	0.73	-0.66	
1,421.00	12.44	345.52	1,395.89	219.52	37.24	220.89	0.52	-0.51	
1,515.00	12.26	346.40	1,487.72	239.03	32.36	240.17	0.28	-0.19	
1,610.00	13.49	350.00	1,580.33	259.74	28.06	260.69	1.55	1.29	
1,704.00	14.19	353.52	1,671.60	281.99	24.86	282.78	1.16	0.74	
1,799.00	15.07	356.33	1,763.52	305.89	22.76	306.57	1.19	0.93	
1,893.00	15.38	359.06	1,854.22	330.54	21.77	331.17	0.83	0.33	
1,988.00	14.50	358.70	1,946.01	355.03	21.29	355.61	0.93	-0.93	
2,082.00	14.55	357.56	2,037.01	378.59	20.52	379.12	0.31	0.05	
2,176.00	15.34	359.58	2,127.83	402.82	19.93	403.30	1.01	0.84	
2,271.00	15.47	1.60	2,219.41	428.05	20.19	428.52	0.58	0.14	
2,365.00	15.38	359.67	2,310.03	453.05	20.47	453.51	0.55	-0.10	
2,460.00	14.99	358.18	2,401.71	477.93	20.01	478.35	0.58	-0.41	
2,603.00	15.56	357.30	2,539.66	515.57	18.52	515.89	0.43	0.40	
2,697.00	14.63	354.75	2,630.42	539.99	16.84	540.22	1.22	-0.99	
2,792.00	14.50	356.51	2,722.36	563.81	15.01	563.94	0.49	-0.14	
2,886.00	15.21	359.06	2,813.22	587.88	14.09	587.96	1.03	0.76	
2,981.00	13.45	356.86	2,905.26	611.38	13.29	611.40	1.94	-1.85	
3,075.00	13.71	357.65	2,996.64	633.42	12.23	633.38	0.34	0.28	
3,170.00	12.83	359.67	3,089.10	655.22	11.71	655.13	1.05	-0.93	
3,264.00	12.70	2.57	3,180.78	675.98	12.11	675.89	0.70	-0.14	
3,359.00	13.76	5.56	3,273.25	697.65	13.67	697.62	1.33	1.12	
3,453.00	14.02	6.09	3,364.51	720.10	15.96	720.14	0.31	0.28	
3,547.00	13.98	6.53	3,455.71	742.71	18.46	742.83	0.12	-0.04	
3,736.00	12.31	5.21	3,639.75	785.46	22.89	785.73	0.90	-0.88	
3,830.00	13.01	6.17	3,731.47	805.95	24.94	806.29	0.78	0.74	
3,925.00	12.88	7.05	3,824.05	827.09	27.39	827.51	0.25	-0.14	
4,019.00	13.32	6.70	3,915.61	848.25	29.94	848.76	0.48	0.47	
4,114.00	13.45	6.35	4,008.03	870.09	32.43	870.69	0.16	0.14	
4,208.00	13.49	4.33	4,099.44	891.89	34.47	892.55	0.50	0.04	
4,303.00	13.58	2.13	4,191.80	914.09	35.72	914.78	0.55	0.09	
4,398.00	12.92	1.43	4,284.28	935.85	36.40	936.55	0.71	-0.69	
4,491.00	13.18	0.64	4,374.87	956.85	36.78	957.55	0.34	0.28	
4,586.00	13.98	1.69	4,467.22	979.15	37.24	979.85	0.88	0.84	
4,680.00	14.50	359.06	4,558.33	1,002.26	37.38	1,002.95	0.88	0.55	
4,775.00	13.89	358.79	4,650.43	1,025.55	36.94	1,026.20	0.65	-0.64	
4,870.00	13.93	359.23	4,742.64	1,048.39	36.55	1,049.00	0.12	0.04	
4,964.00	12.70	357.66	4,834.11	1,070.03	35.98	1,070.60	1.36	-1.31	
5,059.00	11.12	354.05	4,927.07	1,089.57	34.60	1,090.07	1.84	-1.66	
5,153.00	11.65	352.11	5,019.22	1,107.99	32.36	1,108.37	0.70	0.56	
5,248.00	12.22	356.33	5,112.17	1,127.53	30.40	1,127.81	1.10	0.60	
5,342.00	13.40	358.44	5,203.82	1,148.34	29.46	1,148.57	1.35	1.26	
5,437.00	13.93	359.23	5,296.14	1,170.78	29.01	1,170.97	0.59	0.56	
5,532.00	13.80	358.18	5,388.37	1,193.54	28.50	1,193.69	0.30	-0.14	
5,626.00	14.06	357.83	5,479.60	1,216.15	27.71	1,216.25	0.29	0.28	
5,721.00	13.71	357.39	5,571.83	1,238.93	26.76	1,238.97	0.38	-0.37	
5,815.00	13.71	356.77	5,663.15	1,261.18	25.62	1,261.15	0.16	0.00	
5,910.00	13.14	357.30	5,755.55	1,283.21	24.48	1,283.11	0.61	-0.60	
6,004.00	12.48	356.95	5,847.21	1,304.02	23.44	1,303.86	0.71	-0.70	
6,098.00	10.99	356.16	5,939.25	1,323.11	22.30	1,322.88	1.59	-1.59	
6,287.00	9.98	352.99	6,125.09	1,357.34	19.09	1,356.95	0.62	-0.53	
6,382.00	8.97	349.48	6,218.79	1,372.79	16.73	1,372.29	1.22	-1.06	
6,476.00	7.16	351.85	6,311.86	1,385.80	14.57	1,385.19	1.96	-1.93	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 23D-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 23D-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
6,571.00	5.49	355.54	6,406.28	1,396.19	13.37	1,395.52	1.81	-1.76	
7,044.00	3.82	333.13	6,877.74	1,432.81	4.49	1,431.74	0.52	-0.35	
7,327.00	4.61	304.74	7,160.00	1,447.70	-9.12	1,446.05	0.78	0.28	
7,611.00	5.89	289.01	7,442.82	1,458.95	-32.27	1,456.32	0.67	0.45	
7,894.00	5.98	281.71	7,724.31	1,466.67	-60.44	1,462.86	0.27	0.03	
9,107.00	9.45	246.03	8,926.79	1,439.02	-213.43	1,428.83	0.47	0.29	LAST SURVEY - 9107' MD
9,164.00	9.45	246.03	8,983.01	1,435.21	-221.98	1,424.67	0.00	0.00	PTB - 9164' MD

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
PUCKETT 23D-23 PBHI	0.00	0.00	8,983.00	1,382.17	-143.89	14,358,900.00	2,433,676.00	39.506934	-108.187861
- actual wellpath misses target center by 94.05usft at 9155.81usft MD (8974.93 TVD, 1435.76 N, -220.75 E)									
- Point									
PUCKETT 23D-23 PBHI	0.00	0.00	8,983.00	1,402.17	-143.89	14,358,919.99	2,433,675.38	39.506989	-108.187861
- actual wellpath misses target center by 84.26usft at 9154.48usft MD (8973.62 TVD, 1435.85 N, -220.55 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)	
	9,107.00	8,926.79	1,439.02	-213.43	LAST SURVEY - 9107' MD
	9,164.00	8,983.01	1,435.21	-221.98	PTB - 9164' MD

Checked By: _____ Approved By: _____ Date: _____