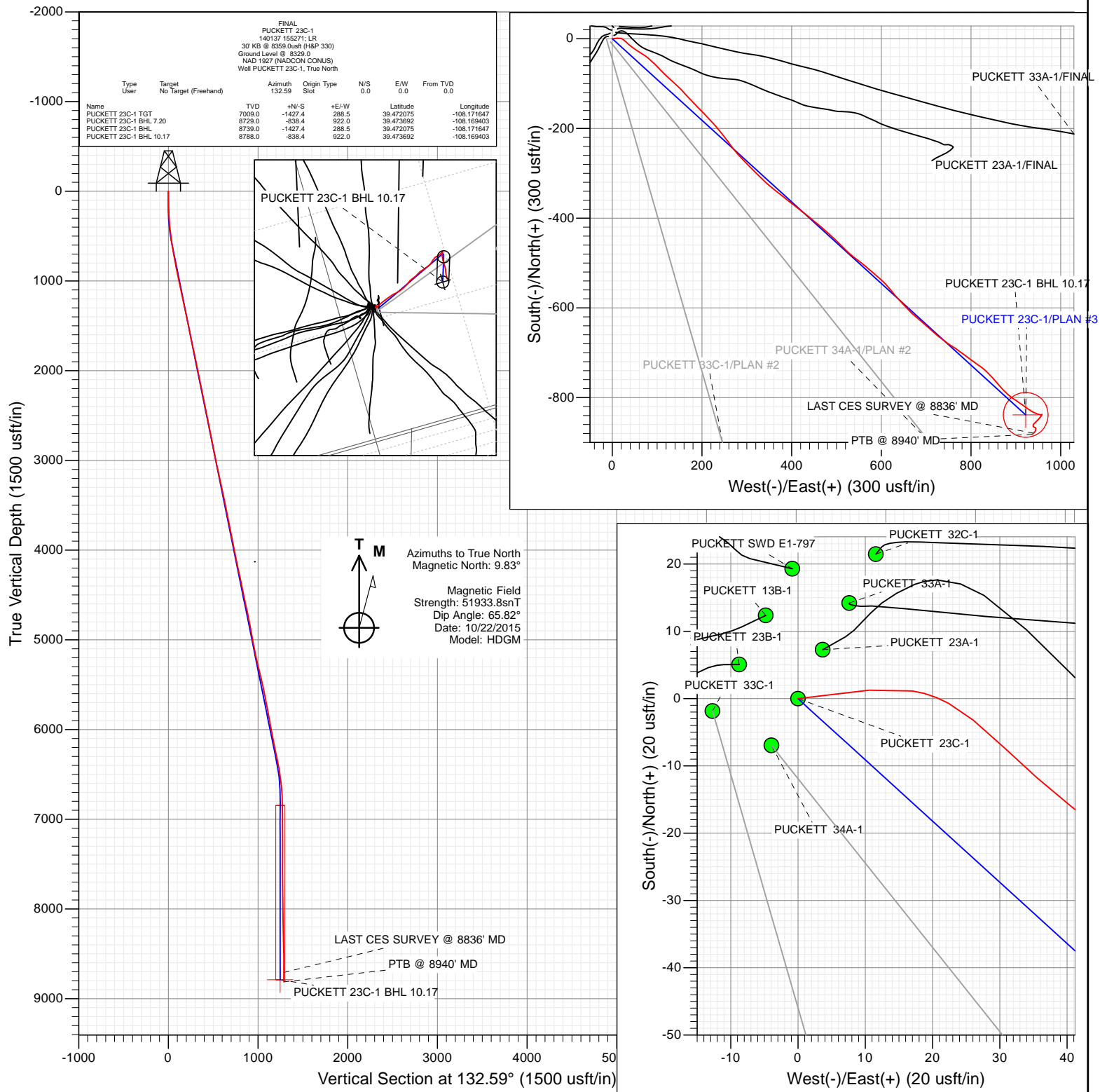




Project: Garfield County, CO
Site: S1-T7S-R97W (Mesa E1 797)
Well: PUCKETT 23C-1
Wellbore: OH
Design: FINAL



WELL DETAILS: PUCKETT 23C-1

+N/-S	+E/-W	Ground Level:	8329.0
0.0	0.0	Northing	609344.94
		Easting	1245646.43
		Latitude	39.475994
		Longitude	-108.172669



Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 23C-1
Project:	Garfield County, CO	TVD Reference:	30' KB @ 8359.0usft (H&P 330)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	30' KB @ 8359.0usft (H&P 330)
Well:	PUCKETT 23C-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Garfield County, CO		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site		S1-T7S-R97W (Mesa E1 797)			
Site Position:		Northing:	609,370.34 usft	Latitude:	39.476064
From:	Lat/Long	Easting:	1,245,650.28 usft	Longitude:	-108.172658
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.69 °

Well	PUCKETT 23C-1					
Well Position	+N/-S	0.0 usft	Northing:	609,344.94 usft	Latitude:	39.475994
	+E/-W	0.0 usft	Easting:	1,245,646.43 usft	Longitude:	-108.172669
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,329.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/22/2015	9.83	65.82	51,934

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	132.59	

Survey Program	Date	10/28/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
284.0	8,940.0	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	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
284.0	4.30	83.10	283.7	1.3	10.6	6.9	1.51	1.51		
359.0	5.60	97.30	358.5	1.2	17.0	11.7	2.37	1.73		
450.0	7.50	129.10	448.9	-3.2	26.0	21.3	4.42	2.09		
497.0	7.90	133.90	495.5	-7.3	30.7	27.6	1.61	0.85		
589.0	8.70	128.80	586.5	-16.1	40.7	40.8	1.18	0.87		
683.0	9.90	123.70	679.3	-25.0	53.0	55.9	1.55	1.28		
778.0	10.20	121.70	772.8	-34.0	66.9	72.3	0.48	0.32		
872.0	10.80	129.20	865.2	-43.9	80.8	89.2	1.59	0.64		
967.0	11.60	135.20	958.4	-56.3	94.4	107.6	1.49	0.84		
1,062.0	12.70	135.80	1,051.3	-70.6	108.5	127.6	1.17	1.16		
1,156.0	13.40	132.50	1,142.9	-85.3	123.7	148.8	1.09	0.74		
1,251.0	12.30	132.40	1,235.5	-99.6	139.3	170.0	1.16	-1.16		

Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 23C-1
Project:	Garfield County, CO	TVD Reference:	30' KB @ 8359.0usft (H&P 330)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	30' KB @ 8359.0usft (H&P 330)
Well:	PUCKETT 23C-1	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
1,345.0	10.90	135.90	1,327.6	-112.7	152.9	188.8	1.67	-1.49	
1,440.0	10.60	138.20	1,420.9	-125.7	164.9	206.5	0.55	-0.32	
1,535.0	11.60	135.60	1,514.1	-139.0	177.4	224.7	1.18	1.05	
1,629.0	12.10	136.30	1,606.1	-152.9	190.9	244.0	0.55	0.53	
1,724.0	12.30	135.60	1,699.0	-167.3	204.8	264.0	0.26	0.21	
1,819.0	12.10	137.30	1,791.8	-181.9	218.7	284.1	0.43	-0.21	
1,913.0	12.10	138.40	1,883.7	-196.5	231.9	303.7	0.25	0.00	
2,008.0	11.90	141.60	1,976.7	-211.6	244.6	323.3	0.73	-0.21	
2,103.0	11.60	144.30	2,069.7	-227.1	256.2	342.3	0.66	-0.32	
2,197.0	11.70	142.70	2,161.7	-242.3	267.5	360.9	0.36	0.11	
2,291.0	11.30	138.50	2,253.9	-256.8	279.4	379.5	0.99	-0.43	
2,386.0	11.60	135.70	2,347.0	-270.6	292.2	398.3	0.66	0.32	
2,480.0	11.70	135.70	2,439.0	-284.2	305.5	417.2	0.11	0.11	
2,596.0	11.00	134.10	2,552.8	-300.3	321.7	440.0	0.66	-0.60	
2,690.0	10.80	134.50	2,645.1	-312.7	334.4	457.8	0.23	-0.21	
2,784.0	11.80	131.20	2,737.2	-325.2	347.9	476.2	1.27	1.06	
2,879.0	11.30	128.40	2,830.3	-337.4	362.5	495.2	0.79	-0.53	
2,974.0	11.00	128.00	2,923.5	-348.8	376.9	513.5	0.33	-0.32	
3,069.0	11.60	128.80	3,016.7	-360.3	391.5	532.1	0.65	0.63	
3,163.0	12.90	128.50	3,108.5	-372.8	407.1	552.0	1.38	1.38	
3,258.0	12.70	127.10	3,201.2	-385.7	423.7	573.0	0.39	-0.21	
3,353.0	11.80	128.80	3,294.0	-398.1	439.6	593.0	1.02	-0.95	
3,447.0	12.00	129.80	3,386.0	-410.3	454.6	612.4	0.31	0.21	
3,542.0	11.60	131.50	3,479.0	-423.0	469.4	631.8	0.56	-0.42	
3,636.0	10.60	129.80	3,571.2	-434.8	483.1	649.9	1.12	-1.06	
3,731.0	12.00	134.90	3,664.4	-447.4	496.8	668.5	1.81	1.47	
3,825.0	11.40	134.30	3,756.4	-460.7	510.4	687.5	0.65	-0.64	
3,920.0	10.60	135.80	3,849.7	-473.6	523.2	705.7	0.89	-0.84	
4,014.0	11.50	128.20	3,942.0	-485.6	536.6	723.6	1.82	0.96	
4,109.0	10.90	126.60	4,035.1	-496.8	551.2	742.0	0.71	-0.63	
4,204.0	11.50	129.50	4,128.3	-508.1	565.7	760.4	0.87	0.63	
4,298.0	12.70	131.60	4,220.2	-521.0	580.7	780.1	1.36	1.28	
4,392.0	12.00	129.90	4,312.1	-534.1	595.9	800.2	0.84	-0.74	
4,487.0	12.00	137.70	4,405.0	-547.7	610.1	819.9	1.71	0.00	
4,581.0	11.10	141.60	4,497.1	-562.1	622.3	838.5	1.27	-0.96	
4,676.0	13.10	138.10	4,590.0	-577.2	635.2	858.3	2.24	2.11	
4,770.0	12.50	136.30	4,681.6	-592.5	649.4	879.1	0.77	-0.64	
4,865.0	10.50	136.80	4,774.7	-606.3	662.4	897.9	2.11	-2.11	
4,959.0	10.60	129.20	4,867.1	-618.0	674.9	915.1	1.48	0.11	
5,054.0	9.80	130.20	4,960.6	-628.7	687.9	931.9	0.86	-0.84	
5,149.0	11.30	134.10	5,054.0	-640.4	700.8	949.3	1.75	1.58	
5,243.0	12.70	130.50	5,146.0	-653.5	715.2	968.8	1.69	1.49	
5,338.0	12.00	127.80	5,238.8	-666.4	731.0	989.1	0.96	-0.74	
5,432.0	13.10	124.20	5,330.5	-678.3	747.5	1,009.4	1.44	1.17	
5,527.0	13.90	124.60	5,422.9	-690.9	765.8	1,031.3	0.85	0.84	
5,621.0	12.90	125.90	5,514.4	-703.4	783.6	1,052.9	1.11	-1.06	
5,716.0	12.00	126.50	5,607.1	-715.5	800.1	1,073.3	0.96	-0.95	
5,811.0	10.60	127.20	5,700.3	-726.7	815.0	1,091.8	1.48	-1.47	
5,905.0	9.80	126.60	5,792.8	-736.7	828.3	1,108.4	0.86	-0.85	
6,000.0	10.00	136.80	5,886.4	-747.5	840.5	1,124.7	1.86	0.21	
6,094.0	10.80	139.50	5,978.8	-760.2	851.8	1,141.5	1.00	0.85	
6,189.0	11.50	139.60	6,072.0	-774.1	863.7	1,159.8	0.74	0.74	
6,283.0	11.90	134.00	6,164.1	-788.0	876.7	1,178.8	1.28	0.43	

Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 23C-1
Project:	Garfield County, CO	TVD Reference:	30' KB @ 8359.0usft (H&P 330)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	30' KB @ 8359.0usft (H&P 330)
Well:	PUCKETT 23C-1	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
6,378.0	12.10	125.20	6,257.0	-800.6	891.9	1,198.4	1.94	0.21	
6,473.0	10.90	123.30	6,350.1	-811.2	907.6	1,217.2	1.32	-1.26	
6,567.0	9.60	127.60	6,442.6	-820.9	921.2	1,233.7	1.60	-1.38	
6,662.0	8.10	121.50	6,536.5	-829.2	933.2	1,248.2	1.86	-1.58	
6,756.0	6.40	112.50	6,629.7	-834.7	943.7	1,259.6	2.17	-1.81	
6,851.0	3.60	106.30	6,724.4	-837.6	951.4	1,267.3	3.00	-2.95	
6,945.0	1.20	84.10	6,818.3	-838.3	955.2	1,270.6	2.69	-2.55	
7,040.0	0.90	59.60	6,913.3	-837.8	956.9	1,271.5	0.56	-0.32	
7,135.0	0.30	106.40	7,008.3	-837.5	957.8	1,271.9	0.77	-0.63	
7,229.0	0.50	185.40	7,102.3	-838.0	958.0	1,272.4	0.57	0.21	
7,324.0	0.90	216.80	7,197.2	-839.0	957.5	1,272.7	0.57	0.42	
7,418.0	1.40	209.30	7,291.2	-840.6	956.5	1,273.0	0.55	0.53	
7,513.0	1.80	217.60	7,386.2	-842.8	955.0	1,273.4	0.49	0.42	
7,607.0	2.30	219.10	7,480.1	-845.4	952.9	1,273.7	0.53	0.53	
7,702.0	2.60	217.30	7,575.0	-848.6	950.4	1,274.0	0.33	0.32	
7,796.0	3.20	231.40	7,668.9	-851.9	947.0	1,273.8	0.99	0.64	
7,891.0	3.50	228.30	7,763.8	-855.5	942.8	1,273.1	0.37	0.32	
7,985.0	3.00	215.00	7,857.6	-859.4	939.3	1,273.1	0.96	-0.53	
8,080.0	2.40	162.90	7,952.5	-863.4	938.4	1,275.2	2.56	-0.63	
8,175.0	1.30	113.00	8,047.5	-865.7	940.0	1,277.9	1.95	-1.16	
8,269.0	1.50	102.80	8,141.4	-866.4	942.2	1,280.0	0.34	0.21	
8,364.0	1.10	139.60	8,236.4	-867.4	944.0	1,282.0	0.95	-0.42	
8,458.0	1.40	193.50	8,330.4	-869.2	944.3	1,283.4	1.24	0.32	
8,553.0	1.30	173.60	8,425.4	-871.4	944.1	1,284.8	0.50	-0.11	
8,647.0	2.10	198.70	8,519.3	-874.1	943.7	1,286.3	1.14	0.85	
8,742.0	2.00	226.90	8,614.3	-876.8	941.9	1,286.9	1.06	-0.11	
8,836.0	2.20	226.00	8,708.2	-879.2	939.4	1,286.6	0.22	0.21	LAST CES SURVEY @ 8836' MD
8,940.0	2.20	226.00	8,812.1	-882.0	936.6	1,286.4	0.00	0.00	PTB @ 8940' MD

Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 23C-1
Project:	Garfield County, CO	TVD Reference:	30' KB @ 8359.0usft (H&P 330)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	30' KB @ 8359.0usft (H&P 330)
Well:	PUCKETT 23C-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
PUCKETT 23C-1 BHL 1 ¹	0.00	0.00	8,788.0	-838.4	922.0	608,479.75	1,246,543.35	39.473692	-108.169403
- actual wellpath misses target center by 45.5usft at 8915.1usft MD (8787.3 TVD, -881.3 N, 937.3 E)									
- Circle (radius 50.0)									
PUCKETT 23C-1 BHL	0.00	0.00	8,739.0	-1,427.4	288.5	607,909.66	1,245,892.83	39.472075	-108.171647
- actual wellpath misses target center by 849.2usft at 8899.4usft MD (8771.5 TVD, -880.9 N, 937.7 E)									
- Circle (radius 50.0)									
PUCKETT 23C-1 BHL 7	0.00	0.00	8,729.0	-838.4	922.0	608,479.75	1,246,543.35	39.473692	-108.169403
- actual wellpath misses target center by 49.0usft at 8836.0usft MD (8708.2 TVD, -879.2 N, 939.4 E)									
- Circle (radius 50.0)									
PUCKETT 23C-1 TGT	0.00	0.00	7,009.0	-1,427.4	288.5	607,909.66	1,245,892.83	39.472075	-108.171647
- actual wellpath misses target center by 892.1usft at 7127.6usft MD (7000.9 TVD, -837.5 N, 957.7 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W	Comment	
(usft)	(usft)	(usft)	(usft)		
8,836.0	8,708.2	-879.2	939.4	LAST CES SURVEY @ 8836' MD	
8,940.0	8,812.1	-882.0	936.6	PTB @ 8940' MD	

Checked By: _____ Approved By: _____ Date: _____