



Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 13B-1
Project:	Garfield County, CO	TVD Reference:	KB=20' @ 8349.0usft (Patterson #303)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	KB=20' @ 8349.0usft (Patterson #303)
Well:	PUCKETT 13B-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 13B-1					
Well Position	+N/-S	0.0 usft	Northing:	609,357.46 usft	Latitude:	39.476028
	+E/-W	0.0 usft	Easting:	1,245,642.00 usft	Longitude:	-108.172686
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	7/20/2015	9.87	65.82	51,964

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	226.18	

Survey Program	Date	7/29/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
184.0	8,810.0	Survey #1 (OH)	ISCWSA MWD	MWD - Standard	

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		
184.0	2.50	244.30	183.9	-1.7	-3.6	3.8	1.36	1.36		
214.0	3.00	251.00	213.9	-2.3	-4.9	5.1	1.98	1.67		
244.0	3.70	255.60	243.9	-2.8	-6.6	6.7	2.50	2.33		
275.0	4.50	258.60	274.8	-3.3	-8.8	8.6	2.67	2.58		
305.0	4.90	255.70	304.7	-3.8	-11.2	10.7	1.55	1.33		
397.0	5.40	232.30	396.3	-7.4	-18.4	18.4	2.33	0.54		
488.0	6.00	213.00	486.9	-14.0	-24.4	27.3	2.20	0.66		
579.0	6.60	207.60	577.3	-22.7	-29.4	36.9	0.93	0.66		
674.0	7.60	205.00	671.6	-33.2	-34.6	47.9	1.11	1.05		
768.0	8.40	218.20	764.7	-44.2	-41.5	60.5	2.13	0.85		
863.0	8.50	223.90	858.7	-54.7	-50.6	74.4	0.89	0.11		
957.0	9.10	226.80	951.5	-64.8	-60.9	88.8	0.79	0.64		

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Well:	PUCKETT 13B-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
1,052.0	9.80	225.20	1,045.3	-75.7	-72.1	104.4	0.79	0.74	
1,146.0	10.20	225.30	1,137.8	-87.2	-83.7	120.7	0.43	0.43	
1,241.0	10.00	219.40	1,231.4	-99.5	-94.9	137.3	1.11	-0.21	
1,335.0	9.80	213.50	1,324.0	-112.4	-104.5	153.2	1.10	-0.21	
1,430.0	9.10	217.10	1,417.7	-125.2	-113.5	168.5	0.96	-0.74	
1,525.0	8.60	226.60	1,511.5	-136.0	-123.2	183.1	1.62	-0.53	
1,619.0	8.30	230.50	1,604.5	-145.2	-133.5	196.9	0.69	-0.32	
1,714.0	8.30	230.70	1,698.5	-153.9	-144.1	210.5	0.03	0.00	
1,808.0	8.30	234.30	1,791.6	-162.1	-154.9	224.0	0.55	0.00	
1,903.0	8.60	226.80	1,885.5	-171.0	-165.6	237.9	1.20	0.32	
1,998.0	8.90	222.70	1,979.4	-181.3	-175.8	252.3	0.73	0.32	
2,092.0	9.20	225.50	2,072.2	-191.9	-186.1	267.1	0.57	0.32	
2,187.0	9.40	227.90	2,166.0	-202.4	-197.2	282.5	0.46	0.21	
2,282.0	9.50	223.30	2,259.7	-213.3	-208.4	298.0	0.80	0.11	
2,376.0	10.20	219.60	2,352.3	-225.4	-219.0	314.1	1.00	0.74	
2,468.0	11.10	221.40	2,442.7	-238.3	-230.0	331.0	1.04	0.98	
2,594.0	11.50	215.40	2,566.3	-257.6	-245.3	355.4	0.99	0.32	
2,689.0	11.70	219.10	2,659.4	-272.8	-256.9	374.3	0.81	0.21	
2,783.0	10.90	213.40	2,751.5	-287.6	-267.8	392.4	1.46	-0.85	
2,878.0	10.40	216.70	2,844.9	-302.0	-277.9	409.6	0.83	-0.53	
2,972.0	9.90	213.20	2,937.4	-315.6	-287.4	425.8	0.84	-0.53	
3,067.0	8.80	214.10	3,031.2	-328.4	-295.9	440.9	1.17	-1.16	
3,162.0	8.50	211.50	3,125.1	-340.4	-303.7	454.8	0.52	-0.32	
3,256.0	7.90	209.40	3,218.1	-352.0	-310.5	467.7	0.71	-0.64	
3,350.0	9.10	225.40	3,311.1	-362.8	-318.9	481.3	2.81	1.28	
3,445.0	8.00	220.20	3,405.1	-373.2	-328.5	495.4	1.41	-1.16	
3,539.0	9.60	223.90	3,497.9	-383.8	-338.2	509.8	1.80	1.70	
3,634.0	8.70	226.90	3,591.7	-394.4	-348.9	524.9	1.07	-0.95	
3,728.0	10.40	228.90	3,684.4	-404.9	-360.5	540.4	1.84	1.81	
3,822.0	9.90	224.70	3,777.0	-416.2	-372.6	557.0	0.95	-0.53	
3,917.0	9.20	227.60	3,870.6	-427.1	-384.0	572.8	0.89	-0.74	
4,012.0	9.70	228.30	3,964.4	-437.6	-395.5	588.3	0.54	0.53	
4,106.0	9.40	225.40	4,057.1	-448.2	-406.9	603.9	0.60	-0.32	
4,201.0	10.00	205.80	4,150.7	-461.1	-416.0	619.4	3.52	0.63	
4,295.0	9.60	203.50	4,243.3	-475.6	-422.7	634.3	0.60	-0.43	
4,389.0	9.60	206.70	4,336.0	-489.8	-429.4	648.9	0.57	0.00	
4,484.0	8.70	203.00	4,429.8	-503.5	-435.7	663.0	1.13	-0.95	
4,578.0	7.80	208.00	4,522.9	-515.7	-441.5	675.6	1.22	-0.96	
4,673.0	7.70	201.50	4,617.0	-527.3	-446.9	687.5	0.93	-0.11	
4,767.0	7.70	220.50	4,710.2	-537.9	-453.3	699.5	2.70	0.00	
4,862.0	7.10	219.20	4,804.4	-547.3	-461.1	711.7	0.66	-0.63	
4,956.0	9.10	226.10	4,897.4	-557.0	-470.1	724.9	2.36	2.13	
5,051.0	8.70	223.30	4,991.3	-567.4	-480.5	739.6	0.62	-0.42	
5,146.0	8.60	218.80	5,085.2	-578.2	-489.9	753.8	0.72	-0.11	
5,240.0	8.20	224.80	5,178.2	-588.4	-499.0	767.4	1.02	-0.43	
5,335.0	8.20	213.70	5,272.2	-598.9	-507.5	780.8	1.66	0.00	
5,429.0	8.20	210.20	5,365.3	-610.2	-514.6	793.8	0.53	0.00	
5,524.0	8.40	224.90	5,459.3	-621.0	-522.9	807.3	2.24	0.21	
5,618.0	8.70	224.60	5,552.2	-630.9	-532.7	821.2	0.32	0.32	
5,713.0	7.90	224.40	5,646.2	-640.7	-542.4	835.0	0.84	-0.84	
5,808.0	7.60	219.90	5,740.4	-650.2	-551.0	847.7	0.71	-0.32	
5,902.0	6.70	220.30	5,833.6	-659.2	-558.5	859.4	0.96	-0.96	
5,997.0	6.60	220.30	5,928.0	-667.5	-565.6	870.3	0.11	-0.11	

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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
6,091.0	4.90	222.00	6,021.5	-674.6	-571.8	879.7	1.82	-1.81	
6,186.0	3.60	216.70	6,116.3	-680.1	-576.3	886.7	1.43	-1.37	
6,280.0	2.60	208.00	6,210.1	-684.3	-579.1	891.6	1.17	-1.06	
6,375.0	1.00	269.50	6,305.1	-686.2	-580.9	894.3	2.42	-1.68	
6,470.0	0.90	313.40	6,400.1	-685.7	-582.3	894.9	0.75	-0.11	
6,564.0	0.60	134.30	6,494.1	-685.5	-582.4	894.9	1.60	-0.32	
6,659.0	0.70	188.60	6,589.1	-686.5	-582.2	895.4	0.63	0.11	
6,753.0	0.40	218.20	6,683.1	-687.3	-582.5	896.1	0.43	-0.32	
6,848.0	0.90	171.20	6,778.1	-688.3	-582.6	896.9	0.73	0.53	
6,942.0	0.40	234.10	6,872.0	-689.2	-582.7	897.6	0.85	-0.53	
7,037.0	0.40	167.60	6,967.0	-689.7	-582.9	898.1	0.46	0.00	
7,132.0	0.30	215.60	7,062.0	-690.3	-583.0	898.6	0.31	-0.11	
7,226.0	0.80	277.10	7,156.0	-690.4	-583.8	899.2	0.75	0.53	
7,321.0	1.40	245.20	7,251.0	-690.8	-585.5	900.7	0.88	0.63	
7,415.0	1.90	232.10	7,345.0	-692.2	-587.8	903.4	0.66	0.53	
7,510.0	2.70	254.30	7,439.9	-693.8	-591.2	906.9	1.25	0.84	
7,604.0	2.30	243.20	7,533.8	-695.2	-595.0	910.7	0.67	-0.43	
7,699.0	1.00	281.80	7,628.8	-695.9	-597.5	913.0	1.73	-1.37	
7,793.0	1.40	323.00	7,722.8	-694.8	-599.0	913.3	0.98	0.43	
7,888.0	1.10	292.90	7,817.7	-693.6	-600.5	913.5	0.75	-0.32	
7,982.0	1.60	295.10	7,911.7	-692.7	-602.5	914.3	0.53	0.53	
8,077.0	2.50	271.30	8,006.7	-692.0	-605.8	916.3	1.28	0.95	
8,172.0	2.50	283.40	8,101.6	-691.5	-609.9	918.9	0.55	0.00	
8,266.0	2.90	276.30	8,195.5	-690.8	-614.3	921.5	0.55	0.43	
8,361.0	3.30	293.40	8,290.3	-689.4	-619.2	924.1	1.06	0.42	
8,456.0	1.50	259.20	8,385.2	-688.6	-622.9	926.2	2.34	-1.89	
8,550.0	2.10	221.10	8,479.2	-690.1	-625.2	928.9	1.39	0.64	
8,644.0	2.30	227.20	8,573.1	-692.7	-627.7	932.5	0.33	0.21	
8,739.0	2.70	225.60	8,668.0	-695.6	-630.7	936.7	0.43	0.42	LAST CES SURVEY @ 8739' MD
8,810.0	2.70	225.60	8,739.0	-697.9	-633.1	940.0	0.00	0.00	PTB @ 8810' MD

Survey Report

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Project:	Garfield County, CO	TVD Reference:	KB=20' @ 8349.0usft (Patterson #303)
Site:	S1-T7S-R97W (Mesa E1 797)	MD Reference:	KB=20' @ 8349.0usft (Patterson #303)
Well:	PUCKETT 13B-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 13B-1 PBHL	0.00	0.00	8,714.0	-1,026.0	-430.5	608,344.54	1,245,181.50	39.473211	-108.174211
- actual wellpath misses target center by 385.9usft at 8789.1usft MD (8718.0 TVD, -697.2 N, -632.4 E)									
- Circle (radius 50.0)									
PUCKETT 13B-1 PBHL	0.00	0.00	8,704.0	-717.5	-614.0	608,658.32	1,245,007.16	39.474058	-108.174861
- actual wellpath misses target center by 27.5usft at 8775.1usft MD (8704.1 TVD, -696.7 N, -632.0 E)									
- Circle (radius 50.0)									
PUCKETT 13B-1 TOG	0.00	0.00	6,929.0	-1,026.0	-430.5	608,344.54	1,245,181.50	39.473211	-108.174211
- actual wellpath misses target center by 369.4usft at 7000.5usft MD (6930.5 TVD, -689.5 N, -582.9 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W	Comment	
		(usft)	(usft)		
8,739.0	8,668.0	-695.6	-630.7	LAST CES SURVEY @ 8739' MD	
8,810.0	8,739.0	-697.9	-633.1	PTB @ 8810' MD	

Checked By: _____ Approved By: _____ Date: _____