



Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 31B-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 31B-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 31B-1				
Well Position	+N/-S	0.0 usft	Northing:	609,392.92 usft	Latitude:	39.476128
	+E/-W	0.0 usft	Easting:	1,245,675.24 usft	Longitude:	-108.172572
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	9/15/2015	9.85	65.82	51,946

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	53.52	

Survey Program	Date	9/21/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
255.0	9,415.0	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		
255.0	3.90	71.50	254.8	2.8	8.2	8.3	1.53	1.53		
286.0	5.10	72.80	285.7	3.5	10.5	10.6	3.88	3.87		
316.0	6.00	63.60	315.6	4.6	13.2	13.4	4.21	3.00		
347.0	7.30	59.50	346.4	6.3	16.4	16.9	4.46	4.19		
407.0	9.00	58.90	405.7	10.7	23.7	25.4	2.84	2.83		
499.0	11.10	53.10	496.3	19.7	36.9	41.4	2.53	2.28		
591.0	13.60	49.10	586.2	32.1	52.2	61.0	2.87	2.72		
685.0	16.40	44.00	677.0	48.9	69.8	85.2	3.29	2.98		
780.0	18.10	45.90	767.7	68.8	89.7	113.0	1.88	1.79		
874.0	19.80	49.80	856.6	89.2	112.3	143.4	2.25	1.81		
969.0	21.90	52.00	945.4	110.5	138.6	177.1	2.36	2.21		
1,064.0	22.20	48.60	1,033.5	133.3	166.0	212.7	1.38	0.32		

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Well:	PUCKETT 31B-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
1,158.0	22.30	49.50	1,120.5	156.6	192.9	248.2	0.38	0.11	
1,253.0	22.30	48.10	1,208.3	180.4	220.0	284.1	0.56	0.00	
1,347.0	22.50	50.80	1,295.3	203.7	247.2	319.9	1.11	0.21	
1,442.0	22.50	54.50	1,383.0	225.7	276.1	356.2	1.49	0.00	
1,537.0	23.00	55.00	1,470.6	246.9	306.1	392.9	0.56	0.53	
1,631.0	24.00	53.50	1,556.8	268.8	336.5	430.4	1.24	1.06	
1,726.0	24.60	51.70	1,643.4	292.6	367.6	469.5	1.00	0.63	
1,821.0	22.20	52.50	1,730.6	315.8	397.3	507.2	2.55	-2.53	
1,915.0	20.00	56.00	1,818.3	335.6	424.7	541.0	2.70	-2.34	
2,010.0	19.80	58.70	1,907.6	353.0	452.0	573.3	0.99	-0.21	
2,105.0	20.00	59.00	1,997.0	369.7	479.6	605.5	0.24	0.21	
2,199.0	20.80	59.00	2,085.1	386.6	507.7	638.1	0.85	0.85	
2,293.0	21.10	59.50	2,172.9	403.8	536.6	671.5	0.37	0.32	
2,388.0	21.60	58.10	2,261.3	421.7	566.2	706.0	0.75	0.53	
2,482.0	21.80	57.10	2,348.7	440.3	595.5	740.6	0.45	0.21	
2,594.0	22.40	57.40	2,452.4	463.1	631.0	782.7	0.55	0.54	
2,688.0	22.30	56.50	2,539.4	482.6	660.9	818.4	0.38	-0.11	
2,783.0	24.10	55.90	2,626.7	503.4	692.0	855.7	1.91	1.89	
2,878.0	22.80	55.20	2,713.8	524.8	723.2	893.5	1.40	-1.37	
2,972.0	23.20	52.50	2,800.4	546.5	752.8	930.2	1.20	0.43	
3,067.0	23.50	50.80	2,887.6	569.8	782.4	967.9	0.78	0.32	
3,161.0	23.70	48.10	2,973.7	594.3	811.0	1,005.4	1.17	0.21	
3,256.0	22.10	46.20	3,061.2	619.4	838.1	1,042.1	1.86	-1.68	
3,351.0	22.50	50.60	3,149.1	643.3	865.0	1,078.0	1.81	0.42	
3,445.0	24.10	52.50	3,235.5	666.4	894.1	1,115.2	1.88	1.70	
3,540.0	24.00	52.90	3,322.2	689.9	924.9	1,153.9	0.20	-0.11	
3,635.0	23.10	52.50	3,409.3	712.9	955.1	1,191.8	0.96	-0.95	
3,729.0	24.10	54.60	3,495.5	735.2	985.4	1,229.5	1.39	1.06	
3,823.0	24.80	53.60	3,581.0	758.1	1,016.9	1,268.4	0.87	0.74	
3,918.0	23.90	54.10	3,667.6	781.2	1,048.5	1,307.5	0.97	-0.95	
4,013.0	22.70	54.10	3,754.8	803.2	1,079.0	1,345.1	1.26	-1.26	
4,107.0	22.90	58.50	3,841.5	823.4	1,109.3	1,381.5	1.83	0.21	
4,202.0	25.00	59.70	3,928.3	843.2	1,142.4	1,419.8	2.27	2.21	
4,296.0	24.40	57.40	4,013.7	863.7	1,175.9	1,459.0	1.21	-0.64	
4,391.0	22.60	59.50	4,100.8	883.5	1,208.1	1,496.7	2.09	-1.89	
4,485.0	23.80	57.30	4,187.2	902.9	1,239.7	1,533.6	1.57	1.28	
4,579.0	23.20	56.90	4,273.4	923.3	1,271.1	1,571.0	0.66	-0.64	
4,674.0	24.50	54.40	4,360.3	945.0	1,302.8	1,609.4	1.73	1.37	
4,768.0	23.20	54.60	4,446.3	967.0	1,333.8	1,647.4	1.39	-1.38	
4,863.0	23.60	53.90	4,533.5	989.1	1,364.4	1,685.1	0.51	0.42	
4,958.0	23.10	53.50	4,620.7	1,011.4	1,394.7	1,722.8	0.55	-0.53	
5,052.0	22.10	52.80	4,707.5	1,033.0	1,423.6	1,758.9	1.10	-1.06	
5,147.0	21.50	50.50	4,795.7	1,054.9	1,451.3	1,794.1	1.10	-0.63	
5,242.0	20.50	52.90	4,884.4	1,076.0	1,478.0	1,828.2	1.39	-1.05	
5,336.0	21.70	52.90	4,972.1	1,096.4	1,505.0	1,862.0	1.28	1.28	
5,431.0	23.90	50.90	5,059.6	1,119.2	1,533.9	1,898.8	2.45	2.32	
5,525.0	22.00	49.90	5,146.2	1,142.5	1,562.2	1,935.4	2.06	-2.02	
5,620.0	24.10	50.30	5,233.6	1,166.4	1,590.7	1,972.5	2.22	2.21	
5,714.0	23.10	50.20	5,319.7	1,190.4	1,619.7	2,010.1	1.06	-1.06	
5,809.0	23.80	52.00	5,406.9	1,214.2	1,649.1	2,047.8	1.05	0.74	
5,903.0	22.60	51.60	5,493.3	1,237.1	1,678.2	2,084.9	1.29	-1.28	
5,998.0	24.60	52.20	5,580.3	1,260.5	1,708.1	2,122.9	2.12	2.11	
6,093.0	23.50	51.90	5,667.1	1,284.3	1,738.7	2,161.6	1.17	-1.16	

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Well:	PUCKETT 31B-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
6,187.0	22.50	54.80	5,753.6	1,306.3	1,768.1	2,198.3	1.61	-1.06	
6,281.0	20.80	56.00	5,841.0	1,326.0	1,796.6	2,233.0	1.87	-1.81	
6,376.0	20.80	52.90	5,929.8	1,345.6	1,824.1	2,266.7	1.16	0.00	
6,471.0	20.70	53.20	6,018.6	1,365.8	1,851.0	2,300.3	0.15	-0.11	
6,565.0	19.60	54.90	6,106.9	1,384.8	1,877.2	2,332.7	1.33	-1.17	
6,660.0	17.80	55.70	6,196.9	1,402.2	1,902.2	2,363.1	1.91	-1.89	
6,754.0	15.60	55.80	6,286.9	1,417.4	1,924.5	2,390.1	2.34	-2.34	
6,849.0	14.50	58.60	6,378.6	1,430.7	1,945.3	2,414.7	1.39	-1.16	
6,944.0	13.00	57.00	6,470.9	1,442.8	1,964.4	2,437.3	1.63	-1.58	
7,038.0	10.90	57.70	6,562.9	1,453.3	1,980.7	2,456.7	2.24	-2.23	
7,133.0	9.60	60.40	6,656.4	1,462.0	1,995.2	2,473.5	1.46	-1.37	
7,227.0	9.00	59.80	6,749.1	1,469.6	2,008.4	2,488.6	0.65	-0.64	
7,322.0	7.00	62.20	6,843.2	1,476.0	2,019.9	2,501.7	2.13	-2.11	
7,416.0	7.20	54.70	6,936.5	1,482.1	2,029.8	2,513.3	1.01	0.21	
7,511.0	5.80	44.40	7,030.9	1,488.9	2,038.0	2,523.9	1.91	-1.47	
7,605.0	5.20	49.10	7,124.4	1,495.1	2,044.6	2,532.9	0.80	-0.64	
7,700.0	4.50	60.40	7,219.1	1,499.8	2,051.1	2,540.9	1.24	-0.74	
7,794.0	3.10	41.40	7,312.9	1,503.5	2,056.0	2,547.0	1.98	-1.49	
7,889.0	2.10	48.10	7,407.8	1,506.6	2,059.0	2,551.3	1.10	-1.05	
7,984.0	2.10	66.30	7,502.7	1,508.5	2,061.8	2,554.7	0.70	0.00	
8,078.0	2.10	132.40	7,596.7	1,508.0	2,064.7	2,556.7	2.44	0.00	
8,268.0	3.30	7.40	7,786.6	1,511.1	2,068.0	2,561.2	2.54	0.63	
8,362.0	5.10	20.00	7,880.3	1,517.7	2,069.7	2,566.5	2.14	1.91	
8,457.0	4.50	18.10	7,975.0	1,525.2	2,072.3	2,573.1	0.65	-0.63	
8,551.0	3.70	13.90	8,068.7	1,531.6	2,074.2	2,578.4	0.91	-0.85	
8,646.0	2.90	7.80	8,163.6	1,537.0	2,075.3	2,582.5	0.92	-0.84	
8,740.0	2.50	358.20	8,257.5	1,541.4	2,075.5	2,585.3	0.64	-0.43	
8,834.0	2.40	345.60	8,351.4	1,545.4	2,075.0	2,587.2	0.58	-0.11	
8,929.0	1.80	324.70	8,446.3	1,548.5	2,073.6	2,588.0	1.01	-0.63	
9,024.0	2.50	280.70	8,541.3	1,550.1	2,070.7	2,586.6	1.83	0.74	
9,118.0	4.00	267.90	8,635.1	1,550.4	2,065.4	2,582.5	1.76	1.60	
9,213.0	4.20	263.50	8,729.9	1,549.8	2,058.7	2,576.8	0.39	0.21	
9,357.0	4.60	270.00	8,873.4	1,549.3	2,047.7	2,567.5	0.44	0.28	LAST CES SURVEY @ 9357' MD
9,415.0	4.60	270.00	8,931.3	1,549.3	2,043.0	2,563.8	0.00	0.00	PTB @ 9415' MD

Survey Report

Company:	Caerus Oil & Gas (NAD 27)	Local Co-ordinate Reference:	Well PUCKETT 31B-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 31B-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PUCKETT 31B-1 BHL - survey misses target center by 162.6usft at 9357.0usft MD (8873.4 TVD, 1549.3 N, 2047.7 E) - Circle (radius 50.0)	0.00	0.00	8,891.0	1,449.0	1,920.9	610,784.79	1,247,637.88	39.480106	-108.165767
PUCKETT 31B-1 TGT - survey misses target center by 120.6usft at 7471.3usft MD (6991.4 TVD, 1486.1 N, 2035.0 E) - Point	0.00	0.00	7,004.0	1,449.0	1,920.9	610,784.79	1,247,637.88	39.480106	-108.165767
PUCKETT 31B-1 BHL 7. - survey misses target center by 35.7usft at 9357.0usft MD (8873.4 TVD, 1549.3 N, 2047.7 E) - Circle (radius 50.0)	0.00	0.00	8,881.0	1,514.6	2,043.9	610,846.71	1,247,762.82	39.480286	-108.165331

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,357.0	8,873.4	1,549.3	2,047.7	LAST CES SURVEY @ 9357' MD
9,415.0	8,931.3	1,549.3	2,043.0	PTB @ 9415' MD

Checked By: _____	Approved By: _____	Date: _____
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