



## Survey Report

<b>Company:</b> Caerus Oil & Gas	<b>Local Co-ordinate Reference:</b> Well NPR 24B-3 596
<b>Project:</b> Garfield County, CO (UTM 12N)	<b>TVD Reference:</b> GL+KB @ 8361.00usft (Original Well Elev)
<b>Site:</b> S3-T5S R96W NPR A03 596 PAD (H&P330)	<b>MD Reference:</b> GL+KB @ 8361.00usft (Original Well Elev)
<b>Well:</b> NPR 24B-3 596	<b>North Reference:</b> True
<b>Wellbore:</b> OH	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL (H&P 330)	<b>Database:</b> USA EDM 5000 Multi Users DB

<b>Project</b> Garfield County, CO (UTM 12N)	
<b>Map System:</b> Universal Transverse Mercator (US Survey Fee	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> NAD 1927 - Western US	
<b>Map Zone:</b> Zone 12N (114 W to 108 W)	

<b>Site</b> S3-T5S R96W NPR A03 596 PAD (H&P330)		
<b>Site Position:</b>	<b>Northing:</b> 14,410,524.00 usft	<b>Latitude:</b> 39.647700
<b>From:</b> Map	<b>Easting:</b> 2,443,431.60 usft	<b>Longitude:</b> -108.147513
<b>Position Uncertainty:</b> 3.28 usft	<b>Slot Radius:</b> 13-3/16"	<b>Grid Convergence:</b> 1.82 °

<b>Well</b> NPR 24B-3 596			
<b>Well Position</b>	<b>+N/-S</b> 0.00 usft	<b>Northing:</b> 14,410,470.50 usft	<b>Latitude:</b> 39.647550
	<b>+E/-W</b> 0.00 usft	<b>Easting:</b> 2,443,460.40 usft	<b>Longitude:</b> -108.147417
<b>Position Uncertainty</b>	3.28 usft	<b>Wellhead Elevation:</b> usft	<b>Ground Level:</b> 8,331.00 usft

<b>Wellbore</b> OH					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM_FILE	1/29/2019	9.57	65.87	51,352.80000000

<b>Design</b> FINAL (H&P 330)					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.00			
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	177.80	

<b>Survey Program</b>		<b>Date</b> 2/8/2019		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
144.00	11,665.00	Survey (OH)	MWD+HDGM	OWSG MWD + HDGM

<b>Survey</b>										
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		
144.00	1.06	178.86	143.99	-1.33	0.03	1.33	0.74	0.74		
206.00	1.98	196.26	205.97	-2.93	-0.26	2.92	1.64	1.48		
236.00	2.20	192.74	235.95	-3.99	-0.53	3.97	0.85	0.73		
328.00	4.31	180.53	327.80	-9.17	-0.96	9.13	2.40	2.29		
511.00	6.94	175.25	509.90	-27.07	-0.10	27.05	1.46	1.44		
571.00	7.56	158.29	569.43	-34.35	1.66	34.39	3.70	1.03		
665.00	8.48	161.46	662.51	-46.67	6.15	46.87	1.09	0.98		
759.00	9.54	173.41	755.35	-60.98	9.25	61.29	2.28	1.13		
853.00	11.60	177.36	847.76	-78.16	10.58	78.51	2.32	2.19		
948.00	13.23	179.12	940.53	-98.57	11.18	98.93	1.76	1.72		
1,042.00	13.49	169.54	1,032.00	-120.11	13.34	120.53	2.37	0.28		
1,136.00	14.37	166.55	1,123.24	-142.24	18.04	142.82	1.21	0.94		

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<b>Project:</b>	Garfield County, CO (UTM 12N)	<b>TVD Reference:</b>	GL+KB @ 8361.00usft (Original Well Elev)
<b>Site:</b>	S3-T5S R96W NPR A03 596 PAD (H&P330)	<b>MD Reference:</b>	GL+KB @ 8361.00usft (Original Well Elev)
<b>Well:</b>	NPR 24B-3 596	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL (H&P 330)	<b>Database:</b>	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
1,230.00	15.95	170.60	1,213.96	-166.33	22.87	167.08	2.02	1.68	
1,323.00	16.48	169.01	1,303.26	-191.88	27.47	192.79	0.74	0.57	
1,418.00	16.66	166.11	1,394.32	-218.33	33.31	219.45	0.89	0.19	
1,512.00	16.08	168.93	1,484.51	-244.19	39.04	245.50	1.05	-0.62	
1,606.00	16.48	173.32	1,574.75	-270.21	43.09	271.66	1.38	0.43	
1,700.00	17.31	173.23	1,664.69	-297.34	46.29	298.89	0.88	0.88	
1,795.00	16.04	174.02	1,755.69	-324.43	49.32	326.08	1.36	-1.34	
1,889.00	15.25	174.55	1,846.21	-349.65	51.85	351.38	0.85	-0.84	
1,983.00	14.94	182.20	1,936.97	-374.07	52.56	375.80	2.14	-0.33	
2,077.00	15.34	181.76	2,027.71	-398.60	51.71	400.29	0.44	0.43	
2,172.00	15.51	175.87	2,119.29	-423.83	52.24	425.52	1.66	0.18	
2,265.00	16.04	177.36	2,208.79	-449.07	53.73	450.80	0.72	0.57	
2,359.00	14.72	176.13	2,299.42	-473.96	55.13	475.72	1.45	-1.40	
2,453.00	13.01	171.65	2,390.68	-496.34	57.48	498.18	2.15	-1.82	
2,547.00	13.32	171.39	2,482.21	-517.52	60.63	519.46	0.34	0.33	
2,642.00	13.01	172.62	2,574.72	-538.94	63.65	540.99	0.44	-0.33	
2,736.00	13.01	181.06	2,666.31	-560.02	64.81	562.09	2.02	0.00	
2,830.00	14.94	184.13	2,757.53	-582.68	63.74	584.70	2.20	2.05	
2,925.00	14.41	183.69	2,849.43	-606.69	62.10	608.63	0.57	-0.56	
3,001.00	12.44	183.69	2,923.35	-624.30	60.96	626.18	2.59	-2.59	
3,096.00	13.36	183.60	3,015.95	-645.47	59.61	647.28	0.97	0.97	
3,190.00	15.51	184.04	3,106.98	-668.85	58.05	670.58	2.29	2.29	
3,284.00	16.26	187.91	3,197.39	-694.42	55.35	696.03	1.38	0.80	
3,379.00	17.71	186.06	3,288.24	-721.96	51.99	723.43	1.63	1.53	
3,473.00	17.27	178.15	3,377.91	-750.13	50.94	751.53	2.57	-0.47	
3,567.00	16.70	176.05	3,467.81	-777.55	52.32	778.98	0.89	-0.61	
3,662.00	17.40	174.38	3,558.63	-805.30	54.65	806.81	0.90	0.74	
3,756.00	18.15	179.91	3,648.15	-833.94	56.05	835.47	1.96	0.80	
3,851.00	18.24	172.09	3,738.42	-863.46	58.12	865.06	2.57	0.09	
3,945.00	17.01	172.79	3,828.00	-891.67	61.87	893.39	1.33	-1.31	
4,039.00	19.20	168.84	3,917.35	-920.48	66.58	922.36	2.67	2.33	
4,133.00	18.85	168.93	4,006.21	-950.55	72.49	952.63	0.37	-0.37	
4,228.00	18.37	169.37	4,096.24	-980.33	78.20	982.60	0.53	-0.51	
4,322.00	18.33	174.29	4,185.47	-1,009.59	82.40	1,012.01	1.65	-0.04	
4,417.00	17.58	171.04	4,275.84	-1,038.63	86.12	1,041.17	1.32	-0.79	
4,511.00	16.88	171.48	4,365.63	-1,066.15	90.36	1,068.83	0.76	-0.74	
4,606.00	18.85	179.74	4,456.05	-1,095.14	92.47	1,097.88	3.37	2.07	
4,700.00	18.68	178.86	4,545.06	-1,125.38	92.84	1,128.11	0.35	-0.18	
4,795.00	18.50	183.34	4,635.11	-1,155.64	92.26	1,158.33	1.51	-0.19	
4,889.00	17.62	182.99	4,724.47	-1,184.73	90.65	1,187.34	0.94	-0.94	
4,984.00	17.18	183.34	4,815.13	-1,213.10	89.09	1,215.62	0.48	-0.46	
5,078.00	16.92	183.08	4,905.00	-1,240.62	87.54	1,243.06	0.29	-0.28	
5,173.00	17.97	177.89	4,995.63	-1,269.07	87.34	1,271.48	1.97	1.11	
5,267.00	17.84	173.58	5,085.08	-1,297.87	89.48	1,300.35	1.42	-0.14	
5,362.00	17.27	177.89	5,175.66	-1,326.42	91.63	1,328.96	1.49	-0.60	
5,456.00	15.60	177.10	5,265.82	-1,352.99	92.78	1,355.55	1.79	-1.78	
5,550.00	14.50	176.66	5,356.59	-1,377.36	94.11	1,379.96	1.18	-1.17	
5,644.00	16.52	168.57	5,447.17	-1,402.22	97.44	1,404.92	3.14	2.15	
5,739.00	16.61	169.37	5,538.23	-1,428.80	102.62	1,431.68	0.26	0.09	
5,834.00	15.78	171.48	5,629.46	-1,454.92	107.04	1,457.96	1.07	-0.87	
5,928.00	14.41	173.14	5,720.22	-1,479.18	110.33	1,482.32	1.53	-1.46	
6,022.00	15.78	172.79	5,810.97	-1,503.47	113.33	1,506.71	1.46	1.46	
6,117.00	15.91	175.43	5,902.36	-1,529.27	115.99	1,532.59	0.77	0.14	

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<b>Site:</b>	S3-T5S R96W NPR A03 596 PAD (H&P330)	<b>MD Reference:</b>	GL+KB @ 8361.00usft (Original Well Elev)
<b>Well:</b>	NPR 24B-3 596	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL (H&P 330)	<b>Database:</b>	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 (°/100usft)	Build Rate (°/100u)	Formations / Comments
6,211.00	14.68	176.13	5,993.03	-1,553.99	117.82	1,557.37	1.32	-1.31	
6,305.00	15.29	173.14	6,083.84	-1,578.18	120.11	1,581.63	1.05	0.65	
6,400.00	13.98	170.60	6,175.75	-1,601.94	123.48	1,605.50	1.54	-1.38	
6,494.00	14.46	173.23	6,266.87	-1,624.80	126.72	1,628.46	0.86	0.51	
6,588.00	15.91	180.35	6,357.60	-1,649.34	128.02	1,653.03	2.51	1.54	
6,682.00	15.86	177.45	6,448.01	-1,675.06	128.51	1,678.75	0.85	-0.05	
6,777.00	15.25	181.58	6,539.53	-1,700.51	128.75	1,704.20	1.33	-0.64	
6,871.00	16.88	173.85	6,629.87	-1,726.45	129.87	1,730.15	2.86	1.73	
6,966.00	17.01	176.22	6,720.74	-1,754.02	132.26	1,757.80	0.74	0.14	
7,060.00	16.08	174.90	6,810.85	-1,780.71	134.33	1,784.55	1.07	-0.99	
7,154.00	16.48	176.75	6,901.08	-1,806.99	136.24	1,810.88	0.70	0.43	
7,249.00	15.47	176.31	6,992.41	-1,833.09	137.82	1,837.02	1.07	-1.06	
7,343.00	16.22	173.76	7,082.84	-1,858.65	140.05	1,862.65	1.09	0.80	
7,437.00	15.51	173.67	7,173.26	-1,884.19	142.86	1,888.28	0.76	-0.76	
7,532.00	12.57	178.77	7,265.42	-1,907.16	144.49	1,911.29	3.35	-3.09	
7,627.00	10.90	180.97	7,358.43	-1,926.47	144.56	1,930.60	1.82	-1.76	
7,721.00	9.84	184.13	7,450.89	-1,943.37	143.83	1,947.46	1.28	-1.13	
7,815.00	9.23	184.39	7,543.59	-1,958.90	142.67	1,962.93	0.65	-0.65	
7,910.00	7.87	182.90	7,637.54	-1,972.99	141.76	1,976.98	1.45	-1.43	
8,004.00	6.02	178.51	7,730.84	-1,984.35	141.56	1,988.32	2.05	-1.97	
8,099.00	4.26	163.83	7,825.46	-1,992.72	142.68	1,996.72	2.30	-1.85	
8,193.00	2.11	164.09	7,919.31	-1,997.74	144.12	2,001.79	2.29	-2.29	
8,287.00	0.62	111.45	8,013.28	-1,999.59	145.07	2,003.68	1.92	-1.59	
8,382.00	0.70	237.04	8,108.28	-2,000.09	145.06	2,004.18	1.24	0.08	
8,476.00	1.10	199.78	8,202.27	-2,001.25	144.27	2,005.31	0.73	0.43	
8,665.00	1.36	235.90	8,391.23	-2,004.22	141.80	2,008.18	0.42	0.14	
8,853.00	2.02	234.49	8,579.15	-2,007.39	137.26	2,011.18	0.35	0.35	
8,948.00	1.67	235.90	8,674.10	-2,009.14	134.75	2,012.83	0.37	-0.37	
9,042.00	1.01	248.73	8,768.07	-2,010.21	132.84	2,013.82	0.77	-0.70	
9,230.00	1.06	242.93	8,956.04	-2,011.60	129.75	2,015.10	0.06	0.03	
9,418.00	2.24	248.12	9,143.96	-2,013.76	124.79	2,017.06	0.63	0.63	
9,512.00	2.02	243.37	9,237.89	-2,015.19	121.61	2,018.37	0.30	-0.23	
9,701.00	3.25	248.20	9,426.69	-2,018.67	113.65	2,021.54	0.66	0.65	
9,795.00	3.08	218.85	9,520.55	-2,021.63	109.60	2,024.34	1.71	-0.18	
9,889.00	2.77	193.10	9,614.43	-2,025.81	107.50	2,028.44	1.42	-0.33	
9,984.00	3.43	184.48	9,709.29	-2,030.88	106.76	2,033.48	0.85	0.69	
10,078.00	2.73	191.16	9,803.16	-2,035.88	106.10	2,038.45	0.84	-0.74	
10,172.00	1.32	144.84	9,897.10	-2,038.96	106.29	2,041.53	2.18	-1.50	
10,267.00	1.19	203.20	9,992.08	-2,040.76	106.53	2,043.34	1.29	-0.14	
10,455.00	1.45	175.96	10,180.04	-2,044.93	105.93	2,047.48	0.36	0.14	
10,549.00	1.71	185.71	10,274.00	-2,047.51	105.88	2,050.06	0.40	0.28	
10,661.00	0.62	202.41	10,385.98	-2,049.73	105.48	2,052.27	1.01	-0.97	
10,738.00	1.10	204.17	10,462.97	-2,050.79	105.02	2,053.31	0.62	0.62	
10,832.00	1.54	214.19	10,556.94	-2,052.66	103.94	2,055.13	0.53	0.47	
11,020.00	1.19	255.06	10,744.89	-2,055.25	100.63	2,057.60	0.54	-0.19	
11,303.00	2.15	221.40	11,027.77	-2,059.99	94.28	2,062.09	0.47	0.34	
11,585.00	4.40	221.01	11,309.30	-2,072.12	83.68	2,073.81	0.80	0.80	<b>FINAL SURVEY; 11585'</b>
11,665.00	4.40	221.01	11,389.06	-2,076.75	79.66	2,078.28	0.00	0.00	<b>PROJECTION TO TD; 11665'</b>

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<b>Project:</b> Garfield County, CO (UTM 12N)	<b>TVD Reference:</b> GL+KB @ 8361.00usft (Original Well Elev)
<b>Site:</b> S3-T5S R96W NPR A03 596 PAD (H&P330)	<b>MD Reference:</b> GL+KB @ 8361.00usft (Original Well Elev)
<b>Well:</b> NPR 24B-3 596	<b>North Reference:</b> True
<b>Wellbore:</b> OH	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL (H&P 330)	<b>Database:</b> USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
NPR 24B-3 596_PBH	0.00	0.00	11,367.00	-2,038.91	74.94	14,408,435.00	2,443,600.10	39.641955	-108.147151
- actual wellpath misses target center by 36.98usft at 11641.05usft MD (11365.18 TVD, -2075.37 N, 80.86 E)									
- Ellipse (radii L100.00 W50.00 on 250.00 azi)									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
11,585.00	11,309.30	-2,072.12	83.68	FINAL SURVEY; 11585'	
11,665.00	11,389.06	-2,076.75	79.66	PROJECTION TO TD; 11665'	

Checked By: _____	Approved By: _____	Date: _____
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