

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SG 25B-27 - Slot SG 25B-27
Company:	Caerus Oil & Gas	TVD Reference:	KB=30' @ 8136.00usft (Original Well Elev)
Project:	Garfield County, CO (UTM 12N)	MD Reference:	KB=30' @ 8136.00usft (Original Well Elev)
Site:	S27-T4S-R96W(NPR L27)	North Reference:	True
Well:	SG 25B-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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		S27-T4S-R96W(NPR L27)			
Site Position:		Northing:	14,419,012.30 usft	Latitude:	39.671302
From:	Map	Easting:	2,439,764.30 usft	Longitude:	-108.159572
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.81 °

Well	SG 25B-27 - Slot SG 25B-27					
Well Position	+N/-S	0.00 usft	Northing:	14,418,928.80 usft	Latitude:	39.671074
	+E/-W	0.00 usft	Easting:	2,439,752.10 usft	Longitude:	-108.159624
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	8,106.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	1/17/2018	9.67	65.92	51,443.90000000

Design	PLAN #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	109.51

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
450.00	3.00	90.00	449.93	0.00	3.93	2.00	2.00	0.00	90.00	
630.00	3.00	90.00	629.68	0.00	13.35	0.00	0.00	0.00	0.00	
1,424.37	26.67	107.60	1,392.26	-54.72	206.89	3.00	2.98	2.22	19.63	
7,294.83	26.67	107.60	6,637.93	-851.72	2,718.86	0.00	0.00	0.00	0.00	
8,628.55	0.00	0.00	7,924.00	-943.93	3,009.48	2.00	-2.00	0.00	180.00	
8,773.96	2.91	250.00	8,069.34	-945.19	3,006.01	2.00	2.00	-75.65	250.00	
12,267.12	2.91	250.00	11,558.00	-1,005.80	2,839.48	0.00	0.00	0.00	0.00	SG 25B-27_PBHL

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Well:	SG 25B-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
400.00	2.00	90.00	399.98	0.00	1.75	1.65	2.00	2.00	
450.00	3.00	90.00	449.93	0.00	3.93	3.70	2.00	2.00	Start 180.00 hold at 450.00 MD
500.00	3.00	90.00	499.86	0.00	6.54	6.17	0.00	0.00	
600.00	3.00	90.00	599.73	0.00	11.78	11.10	0.00	0.00	
630.00	3.00	90.00	629.68	0.00	13.35	12.58	0.00	0.00	Start DLS 3.00 TFO 19.63
700.00	5.03	98.08	699.51	-0.43	18.22	17.31	3.00	2.90	
800.00	7.99	102.41	798.86	-2.54	29.34	28.51	3.00	2.96	
900.00	10.97	104.40	897.48	-6.40	45.35	44.89	3.00	2.98	
1,000.00	13.96	105.55	995.11	-12.01	66.19	66.40	3.00	2.99	
1,100.00	16.95	106.30	1,091.48	-19.33	91.82	93.00	3.00	2.99	
1,200.00	19.95	106.83	1,186.33	-28.37	122.15	124.61	3.00	3.00	
1,300.00	22.95	107.23	1,279.39	-39.09	157.10	161.14	3.00	3.00	
1,400.00	25.94	107.54	1,370.42	-51.45	196.59	202.49	3.00	3.00	
1,424.37	26.67	107.60	1,392.26	-54.72	206.89	213.28	3.00	3.00	Start 5870.46 hold at 1424.37 MD
1,500.00	26.67	107.60	1,459.84	-64.98	239.25	247.22	0.00	0.00	
1,600.00	26.67	107.60	1,549.20	-78.56	282.04	292.08	0.00	0.00	
1,700.00	26.67	107.60	1,638.56	-92.14	324.83	336.95	0.00	0.00	
1,800.00	26.67	107.60	1,727.92	-105.71	367.62	381.82	0.00	0.00	
1,900.00	26.67	107.60	1,817.27	-119.29	410.41	426.69	0.00	0.00	
2,000.00	26.67	107.60	1,906.63	-132.87	453.20	471.55	0.00	0.00	
2,100.00	26.67	107.60	1,995.99	-146.44	495.99	516.42	0.00	0.00	
2,200.00	26.67	107.60	2,085.34	-160.02	538.78	561.29	0.00	0.00	
2,300.00	26.67	107.60	2,174.70	-173.60	581.57	606.16	0.00	0.00	
2,400.00	26.67	107.60	2,264.06	-187.17	624.36	651.02	0.00	0.00	
2,500.00	26.67	107.60	2,353.42	-200.75	667.15	695.89	0.00	0.00	
2,600.00	26.67	107.60	2,442.77	-214.33	709.94	740.76	0.00	0.00	
2,700.00	26.67	107.60	2,532.13	-227.90	752.73	785.63	0.00	0.00	
2,800.00	26.67	107.60	2,621.49	-241.48	795.52	830.49	0.00	0.00	
2,900.00	26.67	107.60	2,710.84	-255.06	838.31	875.36	0.00	0.00	
3,000.00	26.67	107.60	2,800.20	-268.63	881.10	920.23	0.00	0.00	
3,100.00	26.67	107.60	2,889.56	-282.21	923.89	965.10	0.00	0.00	
3,200.00	26.67	107.60	2,978.91	-295.78	966.68	1,009.96	0.00	0.00	
3,300.00	26.67	107.60	3,068.27	-309.36	1,009.47	1,054.83	0.00	0.00	
3,344.46	26.67	107.60	3,108.00	-315.40	1,028.50	1,074.78	0.00	0.00	WASATCH.NPC (TVD)
3,400.00	26.67	107.60	3,157.63	-322.94	1,052.26	1,099.70	0.00	0.00	
3,500.00	26.67	107.60	3,246.99	-336.51	1,095.05	1,144.57	0.00	0.00	
3,600.00	26.67	107.60	3,336.34	-350.09	1,137.84	1,189.43	0.00	0.00	
3,700.00	26.67	107.60	3,425.70	-363.67	1,180.63	1,234.30	0.00	0.00	
3,800.00	26.67	107.60	3,515.06	-377.24	1,223.42	1,279.17	0.00	0.00	
3,900.00	26.67	107.60	3,604.41	-390.82	1,266.21	1,324.04	0.00	0.00	
4,000.00	26.67	107.60	3,693.77	-404.40	1,309.00	1,368.90	0.00	0.00	
4,100.00	26.67	107.60	3,783.13	-417.97	1,351.79	1,413.77	0.00	0.00	
4,200.00	26.67	107.60	3,872.49	-431.55	1,394.58	1,458.64	0.00	0.00	
4,300.00	26.67	107.60	3,961.84	-445.13	1,437.37	1,503.51	0.00	0.00	
4,400.00	26.67	107.60	4,051.20	-458.70	1,480.16	1,548.37	0.00	0.00	
4,500.00	26.67	107.60	4,140.56	-472.28	1,522.95	1,593.24	0.00	0.00	
4,600.00	26.67	107.60	4,229.91	-485.86	1,565.74	1,638.11	0.00	0.00	
4,700.00	26.67	107.60	4,319.27	-499.43	1,608.53	1,682.98	0.00	0.00	

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Well:	SG 25B-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,800.00	26.67	107.60	4,408.63	-513.01	1,651.32	1,727.84	0.00	0.00	
4,900.00	26.67	107.60	4,497.99	-526.59	1,694.11	1,772.71	0.00	0.00	
5,000.00	26.67	107.60	4,587.34	-540.16	1,736.90	1,817.58	0.00	0.00	
5,100.00	26.67	107.60	4,676.70	-553.74	1,779.69	1,862.45	0.00	0.00	
5,200.00	26.67	107.60	4,766.06	-567.32	1,822.48	1,907.31	0.00	0.00	
5,300.00	26.67	107.60	4,855.41	-580.89	1,865.27	1,952.18	0.00	0.00	
5,400.00	26.67	107.60	4,944.77	-594.47	1,908.06	1,997.05	0.00	0.00	
5,500.00	26.67	107.60	5,034.13	-608.05	1,950.85	2,041.92	0.00	0.00	
5,600.00	26.67	107.60	5,123.48	-621.62	1,993.64	2,086.78	0.00	0.00	
5,700.00	26.67	107.60	5,212.84	-635.20	2,036.43	2,131.65	0.00	0.00	
5,800.00	26.67	107.60	5,302.20	-648.78	2,079.22	2,176.52	0.00	0.00	
5,900.00	26.67	107.60	5,391.56	-662.35	2,122.01	2,221.39	0.00	0.00	
6,000.00	26.67	107.60	5,480.91	-675.93	2,164.80	2,266.25	0.00	0.00	
6,030.31	26.67	107.60	5,508.00	-680.04	2,177.77	2,279.86	0.00	0.00	WASATCH_G.NPC (TVD)
6,100.00	26.67	107.60	5,570.27	-689.50	2,207.59	2,311.12	0.00	0.00	
6,200.00	26.67	107.60	5,659.63	-703.08	2,250.38	2,355.99	0.00	0.00	
6,300.00	26.67	107.60	5,748.98	-716.66	2,293.17	2,400.86	0.00	0.00	
6,350.38	26.67	107.60	5,794.00	-723.50	2,314.73	2,423.46	0.00	0.00	FORT_UNION.NPC (TVD)
6,400.00	26.67	107.60	5,838.34	-730.23	2,335.96	2,445.73	0.00	0.00	
6,500.00	26.67	107.60	5,927.70	-743.81	2,378.75	2,490.59	0.00	0.00	
6,600.00	26.67	107.60	6,017.06	-757.39	2,421.54	2,535.46	0.00	0.00	
6,700.00	26.67	107.60	6,106.41	-770.96	2,464.33	2,580.33	0.00	0.00	
6,800.00	26.67	107.60	6,195.77	-784.54	2,507.12	2,625.20	0.00	0.00	
6,900.00	26.67	107.60	6,285.13	-798.12	2,549.91	2,670.06	0.00	0.00	
7,000.00	26.67	107.60	6,374.48	-811.69	2,592.70	2,714.93	0.00	0.00	
7,100.00	26.67	107.60	6,463.84	-825.27	2,635.49	2,759.80	0.00	0.00	
7,200.00	26.67	107.60	6,553.20	-838.85	2,678.28	2,804.67	0.00	0.00	
7,294.83	26.67	107.60	6,637.93	-851.72	2,718.86	2,847.21	0.00	0.00	Start Drop -2.00
7,300.00	26.57	107.60	6,642.56	-852.42	2,721.07	2,849.53	2.00	-2.00	
7,400.00	24.57	107.60	6,732.76	-865.48	2,762.21	2,892.67	2.00	-2.00	
7,500.00	22.57	107.60	6,824.41	-877.57	2,800.32	2,932.63	2.00	-2.00	
7,600.00	20.57	107.60	6,917.40	-888.69	2,835.37	2,969.37	2.00	-2.00	
7,700.00	18.57	107.60	7,011.62	-898.82	2,867.29	3,002.85	2.00	-2.00	
7,800.00	16.57	107.60	7,106.95	-907.95	2,896.07	3,033.02	2.00	-2.00	
7,900.00	14.57	107.60	7,203.27	-916.06	2,921.65	3,059.85	2.00	-2.00	
8,000.00	12.57	107.60	7,300.48	-923.16	2,944.02	3,083.30	2.00	-2.00	
8,100.00	10.57	107.60	7,398.44	-929.23	2,963.14	3,103.35	2.00	-2.00	
8,200.00	8.57	107.60	7,497.04	-934.25	2,978.98	3,119.96	2.00	-2.00	
8,300.00	6.57	107.60	7,596.17	-938.24	2,991.54	3,133.13	2.00	-2.00	
8,400.00	4.57	107.60	7,695.69	-941.17	3,000.79	3,142.83	2.00	-2.00	
8,490.50	2.76	107.60	7,786.00	-942.92	3,006.31	3,148.62	2.00	-2.00	OHIO_CREEK.NPC
8,500.00	2.57	107.60	7,795.49	-943.06	3,006.73	3,149.06	2.00	-2.00	
8,600.00	0.57	107.60	7,895.45	-943.89	3,009.34	3,151.80	2.00	-2.00	
8,628.55	0.00	0.00	7,924.00	-943.93	3,009.48	3,151.94	2.00	-2.00	Start DLS 2.00 TFO 250.00
8,700.00	1.43	250.00	7,995.44	-944.23	3,008.64	3,151.25	2.00	2.00	
8,728.58	2.00	250.00	8,024.00	-944.53	3,007.84	3,150.59	2.00	2.00	WILLIAMS_FORK.NPC (TVD)
8,773.96	2.91	250.00	8,069.34	-945.19	3,006.01	3,149.09	2.00	2.00	Start 3493.16 hold at 8773.96 MD
8,778.62	2.91	250.00	8,074.00	-945.27	3,005.79	3,148.91	0.00	0.00	TOP_GAS.NPC (TVD)
8,800.00	2.91	250.00	8,095.35	-945.64	3,004.77	3,148.07	0.00	0.00	
8,900.00	2.91	250.00	8,195.22	-947.38	3,000.00	3,144.16	0.00	0.00	
9,000.00	2.91	250.00	8,295.09	-949.11	2,995.24	3,140.25	0.00	0.00	
9,100.00	2.91	250.00	8,394.96	-950.85	2,990.47	3,136.33	0.00	0.00	

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Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,200.00	2.91	250.00	8,494.83	-952.58	2,985.70	3,132.42	0.00	0.00	
9,300.00	2.91	250.00	8,594.71	-954.32	2,980.93	3,128.50	0.00	0.00	
9,400.00	2.91	250.00	8,694.58	-956.05	2,976.17	3,124.59	0.00	0.00	
9,500.00	2.91	250.00	8,794.45	-957.79	2,971.40	3,120.67	0.00	0.00	
9,600.00	2.91	250.00	8,894.32	-959.52	2,966.63	3,116.76	0.00	0.00	
9,700.00	2.91	250.00	8,994.19	-961.26	2,961.87	3,112.84	0.00	0.00	
9,800.00	2.91	250.00	9,094.06	-962.99	2,957.10	3,108.93	0.00	0.00	
9,900.00	2.91	250.00	9,193.93	-964.73	2,952.33	3,105.02	0.00	0.00	
10,000.00	2.91	250.00	9,293.80	-966.46	2,947.56	3,101.10	0.00	0.00	
10,100.00	2.91	250.00	9,393.68	-968.20	2,942.80	3,097.19	0.00	0.00	
10,200.00	2.91	250.00	9,493.55	-969.93	2,938.03	3,093.27	0.00	0.00	
10,300.00	2.91	250.00	9,593.42	-971.67	2,933.26	3,089.36	0.00	0.00	
10,400.00	2.91	250.00	9,693.29	-973.40	2,928.49	3,085.44	0.00	0.00	
10,500.00	2.91	250.00	9,793.16	-975.14	2,923.73	3,081.53	0.00	0.00	
10,600.00	2.91	250.00	9,893.03	-976.87	2,918.96	3,077.61	0.00	0.00	
10,700.00	2.91	250.00	9,992.90	-978.61	2,914.19	3,073.70	0.00	0.00	
10,800.00	2.91	250.00	10,092.77	-980.34	2,909.42	3,069.79	0.00	0.00	
10,900.00	2.91	250.00	10,192.64	-982.08	2,904.66	3,065.87	0.00	0.00	
11,000.00	2.91	250.00	10,292.52	-983.81	2,899.89	3,061.96	0.00	0.00	
11,100.00	2.91	250.00	10,392.39	-985.55	2,895.12	3,058.04	0.00	0.00	
11,200.00	2.91	250.00	10,492.26	-987.28	2,890.35	3,054.13	0.00	0.00	
11,300.00	2.91	250.00	10,592.13	-989.02	2,885.59	3,050.21	0.00	0.00	
11,400.00	2.91	250.00	10,692.00	-990.75	2,880.82	3,046.30	0.00	0.00	
11,466.08	2.91	250.00	10,758.00	-991.90	2,877.67	3,043.71	0.00	0.00	CAMEO.NPC (TVD)
11,500.00	2.91	250.00	10,791.87	-992.49	2,876.05	3,042.38	0.00	0.00	
11,600.00	2.91	250.00	10,891.74	-994.22	2,871.28	3,038.47	0.00	0.00	
11,700.00	2.91	250.00	10,991.61	-995.96	2,866.52	3,034.55	0.00	0.00	
11,800.00	2.91	250.00	11,091.49	-997.69	2,861.75	3,030.64	0.00	0.00	
11,900.00	2.91	250.00	11,191.36	-999.43	2,856.98	3,026.73	0.00	0.00	
12,000.00	2.91	250.00	11,291.23	-1,001.17	2,852.22	3,022.81	0.00	0.00	
12,091.89	2.91	250.00	11,383.00	-1,002.76	2,847.83	3,019.21	0.00	0.00	ROLLINS.NPC (TVD)
12,100.00	2.91	250.00	11,391.10	-1,002.90	2,847.45	3,018.90	0.00	0.00	
12,200.00	2.91	250.00	11,490.97	-1,004.64	2,842.68	3,014.98	0.00	0.00	
12,267.12	2.91	250.00	11,558.00	-1,005.80	2,839.48	3,012.36	0.00	0.00	TD at 12267.12 - TD.MBL (TVD) - SG 25B-27_f

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SG 25B-27_PBHL	0.00	0.00	11,558.00	-1,005.80	2,839.48	14,418,013.40	2,442,622.00	39.668314	-108.149542
- hit/miss target									
- Shape									
- plan hits target center									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SG 25B-27 - Slot SG 25B-27
Company:	Caerus Oil & Gas	TVD Reference:	KB=30' @ 8136.00usft (Original Well Elev)
Project:	Garfield County, CO (UTM 12N)	MD Reference:	KB=30' @ 8136.00usft (Original Well Elev)
Site:	S27-T4S-R96W(NPR L27)	North Reference:	True
Well:	SG 25B-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,344.46	3,108.00	WASATCH.NPC (TVD)			
6,030.31	5,508.00	WASATCH_G.NPC (TVD)			
6,350.38	5,794.00	FORT_UNION.NPC (TVD)			
8,490.50	7,786.00	OHIO_CREEK.NPC			
8,728.58	8,024.00	WILLIAMS_FORK.NPC (TVD)			
8,778.62	8,074.00	TOP_GAS.NPC (TVD)			
11,466.08	10,758.00	CAMEO.NPC (TVD)			
12,091.89	11,383.00	ROLLINS.NPC (TVD)			
12,267.12	11,558.00	TD.MBL (TVD)			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Start Build 2.00
450.00	449.93	0.00	3.93	Start 180.00 hold at 450.00 MD
630.00	629.68	0.00	13.35	Start DLS 3.00 TFO 19.63
1,424.37	1,392.26	-54.72	206.89	Start 5870.46 hold at 1424.37 MD
7,294.83	6,637.93	-851.72	2,718.86	Start Drop -2.00
8,628.55	7,924.00	-943.93	3,009.48	Start DLS 2.00 TFO 250.00
8,773.96	8,069.34	-945.19	3,006.01	Start 3493.16 hold at 8773.96 MD
12,267.12	11,558.00	-1,005.80	2,839.48	TD at 12267.12