



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well UWF04E-04 H04 596
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 8293.0ft (Original Well Elev)
Project:	North Piceance	MD Reference:	KBE @ 8293.0ft (Original Well Elev)
Site:	H04 Pad	North Reference:	True
Well:	UWF04E-04 H04 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project	North Piceance		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	H04 Pad				
Site Position:		Northing:	1,671,070.85 ft	Latitude:	39° 38' 44.37 N
From:	Lat/Long	Easting:	2,249,607.93 ft	Longitude:	108° 9' 54.50 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.68 °

Well	UWF04E-04 H04 596					
Well Position	+N/-S	0.0 ft	Northing:	1,671,252.39 ft	Latitude:	39° 38' 46.18 N
	+E/-W	0.0 ft	Easting:	2,249,664.90 ft	Longitude:	108° 9' 53.84 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,260.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/18/2012	10.34	65.81	52,206

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	278.65

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,458.4	34.75	278.91	1,388.7	52.8	-336.6	3.00	3.00	0.00	278.91	
7,141.8	34.75	278.91	6,058.3	554.5	-3,537.1	0.00	0.00	0.00	0.00	
8,300.2	0.00	0.00	7,147.0	607.3	-3,873.7	3.00	-3.00	0.00	180.00	UWF04E-04 TGT
10,102.0	0.43	239.44	8,948.7	603.9	-3,879.5	0.02	0.02	-6.69	239.44	
11,844.3	0.43	239.44	10,691.0	597.3	-3,890.7	0.00	0.00	0.00	0.00	UWF04E-04 PBHL
13,000.0	0.43	239.44	11,846.7	592.9	-3,898.1	0.00	0.00	0.00	0.00	

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Project:	North Piceance	MD Reference:	KBE @ 8293.0ft (Original Well Elev)
Site:	H04 Pad	North Reference:	True
Well:	UWF04E-04 H04 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	3.00	278.91	400.0	0.4	-2.6	2.6	3.00	3.00	
500.0	6.00	278.91	499.6	1.6	-10.3	10.5	3.00	3.00	
600.0	9.00	278.91	598.8	3.6	-23.2	23.5	3.00	3.00	
700.0	12.00	278.91	697.1	6.5	-41.2	41.7	3.00	3.00	
800.0	15.00	278.91	794.3	10.1	-64.3	65.1	3.00	3.00	
900.0	18.00	278.91	890.2	14.5	-92.3	93.5	3.00	3.00	
1,000.0	21.00	278.91	984.4	19.6	-125.3	126.9	3.00	3.00	
1,098.0	23.94	278.91	1,075.0	25.4	-162.3	164.3	3.00	3.00	A GROOVE
1,100.0	24.00	278.91	1,076.8	25.6	-163.1	165.1	3.00	3.00	
1,200.0	27.00	278.91	1,167.1	32.2	-205.7	208.2	3.00	3.00	
1,274.8	29.24	278.91	1,233.0	37.7	-240.5	243.4	3.00	3.00	B GROOVE
1,300.0	30.00	278.91	1,254.9	39.6	-252.8	255.9	3.00	3.00	
1,320.9	30.63	278.91	1,273.0	41.3	-263.2	266.4	3.00	3.00	B GROOVE BASE
1,400.0	33.00	278.91	1,340.2	47.7	-304.4	308.1	3.00	3.00	
1,458.4	34.75	278.91	1,388.7	52.8	-336.6	340.7	3.00	3.00	EOB @ Inc. = 34.75°
1,500.0	34.75	278.91	1,422.8	56.4	-360.0	364.4	0.00	0.00	
1,600.0	34.75	278.91	1,505.0	65.3	-416.3	421.4	0.00	0.00	
1,700.0	34.75	278.91	1,587.2	74.1	-472.6	478.4	0.00	0.00	
1,800.0	34.75	278.91	1,669.3	82.9	-528.9	535.4	0.00	0.00	
1,900.0	34.75	278.91	1,751.5	91.8	-585.2	592.4	0.00	0.00	
2,000.0	34.75	278.91	1,833.7	100.6	-641.6	649.4	0.00	0.00	
2,100.0	34.75	278.91	1,915.8	109.4	-697.9	706.4	0.00	0.00	
2,200.0	34.75	278.91	1,998.0	118.2	-754.2	763.4	0.00	0.00	
2,282.8	34.75	278.91	2,066.0	125.5	-800.8	810.6	0.00	0.00	GARDEN GULCH
2,300.0	34.75	278.91	2,080.2	127.1	-810.5	820.4	0.00	0.00	
2,400.0	34.75	278.91	2,162.3	135.9	-866.8	877.4	0.00	0.00	
2,500.0	34.75	278.91	2,244.5	144.7	-923.1	934.4	0.00	0.00	
2,600.0	34.75	278.91	2,326.6	153.6	-979.4	991.4	0.00	0.00	
2,700.0	34.75	278.91	2,408.8	162.4	-1,035.8	1,048.4	0.00	0.00	
2,800.0	34.75	278.91	2,491.0	171.2	-1,092.1	1,105.4	0.00	0.00	
2,900.0	34.75	278.91	2,573.1	180.0	-1,148.4	1,162.4	0.00	0.00	
3,000.0	34.75	278.91	2,655.3	188.9	-1,204.7	1,219.4	0.00	0.00	
3,100.0	34.75	278.91	2,737.5	197.7	-1,261.0	1,276.4	0.00	0.00	
3,200.0	34.75	278.91	2,819.6	206.5	-1,317.3	1,333.4	0.00	0.00	
3,300.0	34.75	278.91	2,901.8	215.4	-1,373.6	1,390.4	0.00	0.00	
3,400.0	34.75	278.91	2,983.9	224.2	-1,430.0	1,447.4	0.00	0.00	
3,500.0	34.75	278.91	3,066.1	233.0	-1,486.3	1,504.4	0.00	0.00	
3,581.4	34.75	278.91	3,133.0	240.2	-1,532.1	1,550.8	0.00	0.00	WASATCH FM
3,600.0	34.75	278.91	3,148.3	241.8	-1,542.6	1,561.4	0.00	0.00	
3,700.0	34.75	278.91	3,230.4	250.7	-1,598.9	1,618.4	0.00	0.00	
3,800.0	34.75	278.91	3,312.6	259.5	-1,655.2	1,675.4	0.00	0.00	
3,900.0	34.75	278.91	3,394.8	268.3	-1,711.5	1,732.4	0.00	0.00	
4,000.0	34.75	278.91	3,476.9	277.2	-1,767.8	1,789.4	0.00	0.00	
4,100.0	34.75	278.91	3,559.1	286.0	-1,824.2	1,846.4	0.00	0.00	
4,200.0	34.75	278.91	3,641.2	294.8	-1,880.5	1,903.4	0.00	0.00	
4,300.0	34.75	278.91	3,723.4	303.6	-1,936.8	1,960.4	0.00	0.00	
4,400.0	34.75	278.91	3,805.6	312.5	-1,993.1	2,017.4	0.00	0.00	
4,500.0	34.75	278.91	3,887.7	321.3	-2,049.4	2,074.4	0.00	0.00	

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Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,600.0	34.75	278.91	3,969.9	330.1	-2,105.7	2,131.4	0.00	0.00	
4,700.0	34.75	278.91	4,052.1	339.0	-2,162.0	2,188.4	0.00	0.00	
4,800.0	34.75	278.91	4,134.2	347.8	-2,218.4	2,245.4	0.00	0.00	
4,900.0	34.75	278.91	4,216.4	356.6	-2,274.7	2,302.4	0.00	0.00	
5,000.0	34.75	278.91	4,298.5	365.4	-2,331.0	2,359.4	0.00	0.00	
5,100.0	34.75	278.91	4,380.7	374.3	-2,387.3	2,416.4	0.00	0.00	
5,200.0	34.75	278.91	4,462.9	383.1	-2,443.6	2,473.4	0.00	0.00	
5,300.0	34.75	278.91	4,545.0	391.9	-2,499.9	2,530.4	0.00	0.00	
5,400.0	34.75	278.91	4,627.2	400.8	-2,556.2	2,587.4	0.00	0.00	
5,500.0	34.75	278.91	4,709.4	409.6	-2,612.6	2,644.4	0.00	0.00	
5,600.0	34.75	278.91	4,791.5	418.4	-2,668.9	2,701.4	0.00	0.00	
5,700.0	34.75	278.91	4,873.7	427.2	-2,725.2	2,758.4	0.00	0.00	
5,800.0	34.75	278.91	4,955.9	436.1	-2,781.5	2,815.4	0.00	0.00	
5,900.0	34.75	278.91	5,038.0	444.9	-2,837.8	2,872.5	0.00	0.00	
6,000.0	34.75	278.91	5,120.2	453.7	-2,894.1	2,929.5	0.00	0.00	
6,032.6	34.75	278.91	5,147.0	456.6	-2,912.5	2,948.1	0.00	0.00	WASATCH G
6,100.0	34.75	278.91	5,202.3	462.6	-2,950.4	2,986.5	0.00	0.00	
6,200.0	34.75	278.91	5,284.5	471.4	-3,006.8	3,043.5	0.00	0.00	
6,300.0	34.75	278.91	5,366.7	480.2	-3,063.1	3,100.5	0.00	0.00	
6,400.0	34.75	278.91	5,448.8	489.0	-3,119.4	3,157.5	0.00	0.00	
6,500.0	34.75	278.91	5,531.0	497.9	-3,175.7	3,214.5	0.00	0.00	
6,600.0	34.75	278.91	5,613.2	506.7	-3,232.0	3,271.5	0.00	0.00	
6,700.0	34.75	278.91	5,695.3	515.5	-3,288.3	3,328.5	0.00	0.00	
6,800.0	34.75	278.91	5,777.5	524.4	-3,344.6	3,385.5	0.00	0.00	
6,900.0	34.75	278.91	5,859.6	533.2	-3,401.0	3,442.5	0.00	0.00	
7,000.0	34.75	278.91	5,941.8	542.0	-3,457.3	3,499.5	0.00	0.00	
7,100.0	34.75	278.91	6,024.0	550.8	-3,513.6	3,556.5	0.00	0.00	
7,141.8	34.75	278.91	6,058.3	554.5	-3,537.1	3,580.3	0.00	0.00	Start 3° Drop
7,200.0	33.01	278.91	6,106.6	559.6	-3,569.2	3,612.7	3.00	-3.00	
7,300.0	30.01	278.91	6,191.9	567.7	-3,620.8	3,665.0	3.00	-3.00	
7,400.0	27.01	278.91	6,279.7	575.0	-3,667.9	3,712.7	3.00	-3.00	
7,500.0	24.01	278.91	6,370.0	581.7	-3,710.5	3,755.8	3.00	-3.00	
7,600.0	21.01	278.91	6,462.4	587.6	-3,748.3	3,794.0	3.00	-3.00	
7,700.0	18.01	278.91	6,556.6	592.8	-3,781.3	3,827.4	3.00	-3.00	
7,800.0	15.01	278.91	6,652.5	597.2	-3,809.4	3,855.8	3.00	-3.00	
7,900.0	12.01	278.91	6,749.7	600.8	-3,832.4	3,879.2	3.00	-3.00	
8,000.0	9.01	278.91	6,848.0	603.7	-3,850.4	3,897.4	3.00	-3.00	
8,100.0	6.01	278.91	6,947.1	605.7	-3,863.3	3,910.5	3.00	-3.00	
8,200.0	3.01	278.91	7,046.8	606.9	-3,871.1	3,918.3	3.00	-3.00	
8,300.2	0.00	0.00	7,147.0	607.3	-3,873.7	3,921.0	3.00	-3.00	EOD @ Inc. = 0° - WILLIAMS FORK
8,400.0	0.02	239.44	7,246.8	607.3	-3,873.7	3,921.0	0.02	0.02	
8,500.0	0.05	239.44	7,346.8	607.3	-3,873.8	3,921.0	0.02	0.02	
8,600.0	0.07	239.44	7,446.8	607.2	-3,873.9	3,921.1	0.02	0.02	
8,700.0	0.09	239.44	7,546.8	607.1	-3,874.0	3,921.2	0.02	0.02	
8,800.0	0.12	239.44	7,646.8	607.0	-3,874.1	3,921.4	0.02	0.02	
8,900.0	0.14	239.44	7,746.8	606.9	-3,874.3	3,921.6	0.02	0.02	
9,000.0	0.17	239.44	7,846.8	606.8	-3,874.6	3,921.8	0.02	0.02	
9,100.0	0.19	239.44	7,946.8	606.6	-3,874.8	3,922.0	0.02	0.02	
9,200.0	0.21	239.44	8,046.8	606.4	-3,875.1	3,922.3	0.02	0.02	
9,300.0	0.24	239.44	8,146.8	606.2	-3,875.5	3,922.6	0.02	0.02	
9,400.0	0.26	239.44	8,246.8	606.0	-3,875.9	3,922.9	0.02	0.02	
9,500.0	0.28	239.44	8,346.8	605.8	-3,876.3	3,923.3	0.02	0.02	

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 8293.0ft (Original Well Elev)
Project:	North Piceance	MD Reference:	KBE @ 8293.0ft (Original Well Elev)
Site:	H04 Pad	North Reference:	True
Well:	UWF04E-04 H04 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,600.0	0.31	239.44	8,446.8	605.5	-3,876.7	3,923.7	0.02	0.02	
9,700.0	0.33	239.44	8,546.8	605.2	-3,877.2	3,924.1	0.02	0.02	
9,800.0	0.36	239.44	8,646.8	604.9	-3,877.7	3,924.6	0.02	0.02	
9,900.0	0.38	239.44	8,746.8	604.6	-3,878.3	3,925.1	0.02	0.02	
10,000.0	0.40	239.44	8,846.8	604.3	-3,878.8	3,925.6	0.02	0.02	
10,102.0	0.43	239.44	8,948.7	603.9	-3,879.5	3,926.2	0.02	0.02	
10,200.0	0.43	239.44	9,046.8	603.5	-3,880.1	3,926.7	0.00	0.00	
10,300.0	0.43	239.44	9,146.8	603.1	-3,880.8	3,927.3	0.00	0.00	
10,400.0	0.43	239.44	9,246.8	602.8	-3,881.4	3,927.9	0.00	0.00	
10,500.0	0.43	239.44	9,346.7	602.4	-3,882.0	3,928.5	0.00	0.00	
10,600.0	0.43	239.44	9,446.7	602.0	-3,882.7	3,929.1	0.00	0.00	
10,700.0	0.43	239.44	9,546.7	601.6	-3,883.3	3,929.6	0.00	0.00	
10,800.0	0.43	239.44	9,646.7	601.2	-3,884.0	3,930.2	0.00	0.00	
10,900.0	0.43	239.44	9,746.7	600.9	-3,884.6	3,930.8	0.00	0.00	
11,000.0	0.43	239.44	9,846.7	600.5	-3,885.2	3,931.4	0.00	0.00	
11,100.0	0.43	239.44	9,946.7	600.1	-3,885.9	3,931.9	0.00	0.00	
11,200.0	0.43	239.44	10,046.7	599.7	-3,886.5	3,932.5	0.00	0.00	
11,300.0	0.43	239.44	10,146.7	599.3	-3,887.2	3,933.1	0.00	0.00	
11,400.0	0.43	239.44	10,246.7	599.0	-3,887.8	3,933.7	0.00	0.00	
11,500.0	0.43	239.44	10,346.7	598.6	-3,888.5	3,934.3	0.00	0.00	
11,600.0	0.43	239.44	10,446.7	598.2	-3,889.1	3,934.8	0.00	0.00	
11,700.0	0.43	239.44	10,546.7	597.8	-3,889.7	3,935.4	0.00	0.00	
11,800.0	0.43	239.44	10,646.7	597.5	-3,890.4	3,936.0	0.00	0.00	
11,844.3	0.43	239.44	10,691.0	597.3	-3,890.7	3,936.2	0.00	0.00	TD @ 11,844.3' MD - ROLLINS
11,900.0	0.43	239.44	10,746.7	597.1	-3,891.0	3,936.6	0.00	0.00	
12,000.0	0.43	239.44	10,846.7	596.7	-3,891.7	3,937.1	0.00	0.00	
12,077.3	0.43	239.44	10,924.0	596.4	-3,892.2	3,937.6	0.00	0.00	COZZETTE
12,100.0	0.43	239.44	10,946.7	596.3	-3,892.3	3,937.7	0.00	0.00	
12,200.0	0.43	239.44	11,046.7	595.9	-3,893.0	3,938.3	0.00	0.00	
12,246.3	0.43	239.44	11,093.0	595.8	-3,893.2	3,938.6	0.00	0.00	CORCORAN
12,300.0	0.43	239.44	11,146.7	595.6	-3,893.6	3,938.9	0.00	0.00	
12,400.0	0.43	239.44	11,246.7	595.2	-3,894.2	3,939.5	0.00	0.00	
12,500.0	0.43	239.44	11,346.7	594.8	-3,894.9	3,940.0	0.00	0.00	
12,550.3	0.43	239.44	11,397.0	594.6	-3,895.2	3,940.3	0.00	0.00	UPPER SEGO
12,600.0	0.43	239.44	11,446.7	594.4	-3,895.5	3,940.6	0.00	0.00	
12,700.0	0.43	239.44	11,546.7	594.0	-3,896.2	3,941.2	0.00	0.00	
12,800.0	0.43	239.44	11,646.7	593.7	-3,896.8	3,941.8	0.00	0.00	
12,900.0	0.43	239.44	11,746.7	593.3	-3,897.4	3,942.3	0.00	0.00	
13,000.0	0.43	239.44	11,846.7	592.9	-3,898.1	3,942.9	0.00	0.00	Permit TD @ 13,000' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well UWF04E-04 H04 596
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 8293.0ft (Original Well Elev)
Project:	North Piceance	MD Reference:	KBE @ 8293.0ft (Original Well Elev)
Site:	H04 Pad	North Reference:	True
Well:	UWF04E-04 H04 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
UWF04E-04 PBHL	0.00	0.00	10,691.0	597.3	-3,890.7	1,671,963.53	2,245,793.43	39° 38' 52.08 N	108° 10' 43.58 W
- plan hits target center									
- Rectangle (sides W30.0 H50.0 D0.0)									
UWF04E-04 TGT	0.00	0.00	7,147.0	607.3	-3,873.7	1,671,973.05	2,245,810.68	39° 38' 52.18 N	108° 10' 43.36 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
1,098.0	1,075.0	A GROOVE				
1,274.8	1,233.0	B GROOVE				
1,320.9	1,273.0	B GROOVE BASE				
2,282.8	2,066.0	GARDEN GULCH				
3,581.4	3,133.0	WASATCH FM				
6,032.6	5,147.0	WASATCH G				
8,300.2	7,147.0	WILLIAMS FORK				
11,844.3	10,691.0	ROLLINS				
12,077.3	10,924.0	COZZETTE				
12,246.3	11,093.0	CORCORAN				
12,550.3	11,397.0	UPPER SEGO				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
300.0	300.0	0.0	0.0	KOP @ 300'
1,458.4	1,388.7	52.8	-336.6	EOB @ Inc. = 34.75°
7,141.8	6,058.3	554.5	-3,537.1	Start 3° Drop
8,300.2	7,147.0	607.3	-3,873.7	EOD @ Inc. = 0°
11,844.3	10,691.0	597.3	-3,890.7	TD @ 11,844.3' MD
13,000.0	11,846.7	592.9	-3,898.1	Permit TD @ 13,000' MD