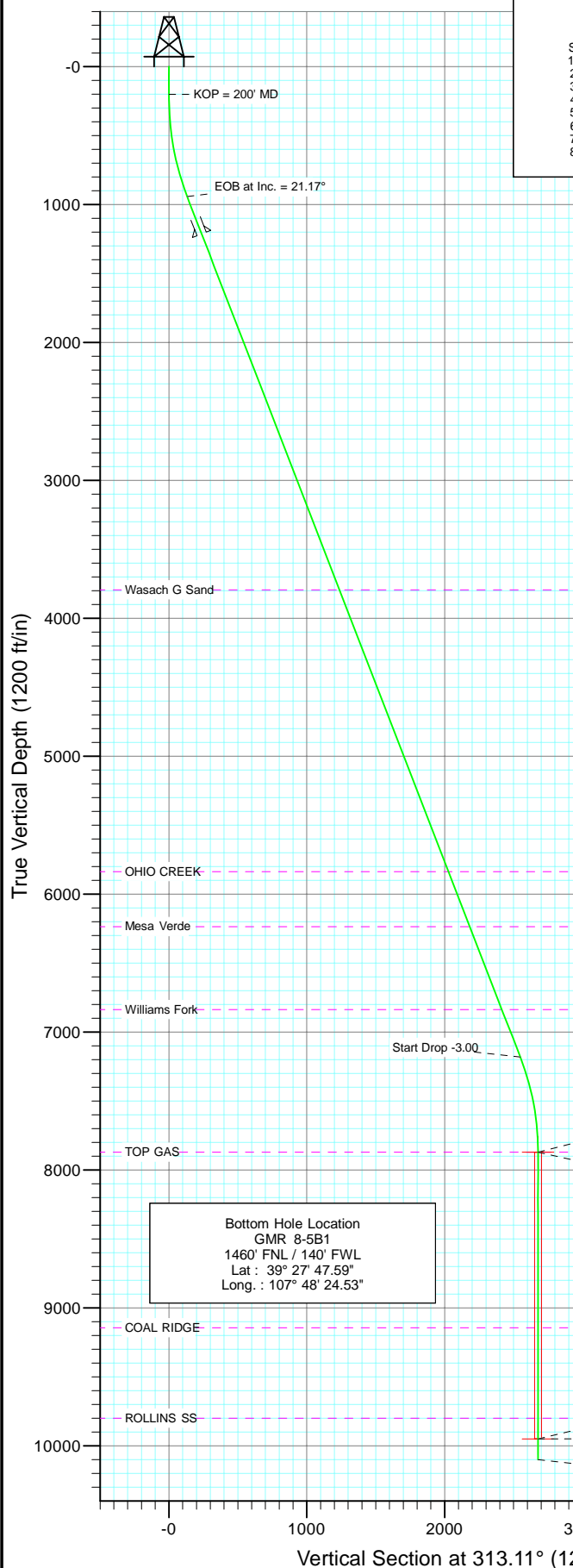
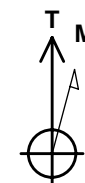
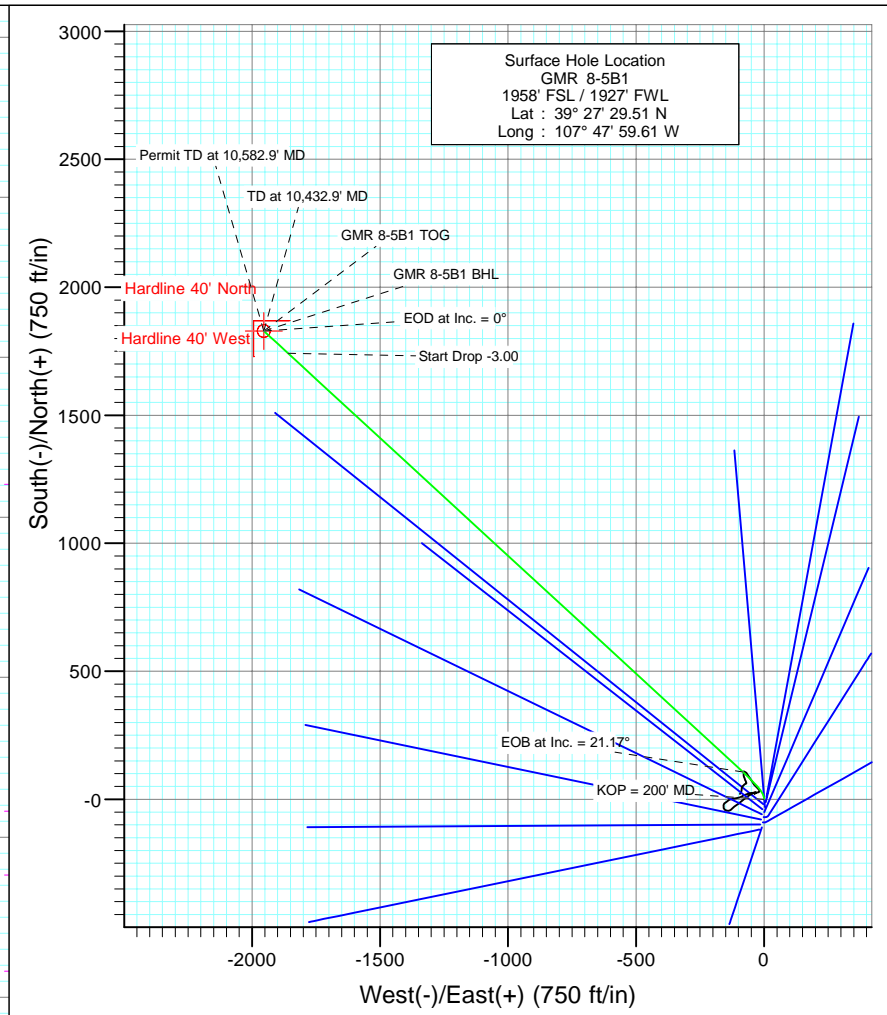




Project: Mamm Creek  
Site: NESW S8 T7S R93W (K8W Pad)  
Well: GMR 8-5B1  
Wellbore: DD  
Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	366.7	5.00	355.00	366.5	7.2	-0.6	3.00	355.00	5.4	
4	959.3	21.17	312.63	942.6	106.2	-82.3	3.00	-52.84	132.6	
5	7649.4	21.17	312.63	7181.4	1742.1	-1859.6	0.00	0.00	2548.1	
6	8354.9	0.00	0.00	7871.0	1829.4	-1954.4	3.00	180.00	2677.0	GMR 8-5B1 TOG
7	10432.9	0.00	0.00	9949.0	1829.4	-1954.4	0.00	0.00	2677.0	GMR 8-5B1 BHL
8	10582.9	0.00	0.00	10099.0	1829.4	-1954.4	0.00	0.00	2677.0	



Azimuths to True North  
Magnetic North: 10.45°

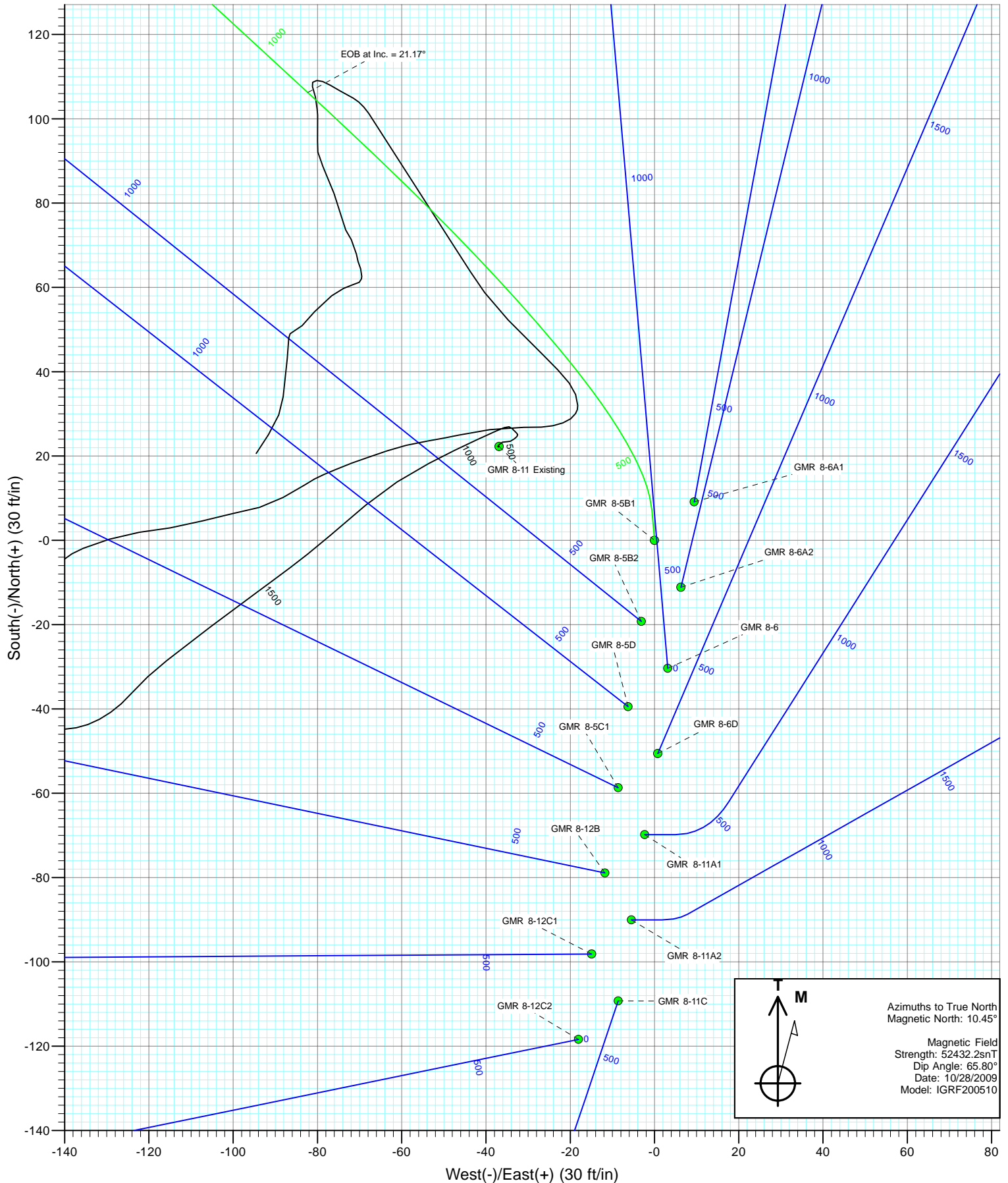
Magnetic Field  
Strength: 52432.2snT  
Dip Angle: 65.80°  
Date: 10/28/2009  
Model: IGRF200510

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3793.0	4015.9	Wasach G Sand
5837.0	6207.8	OHIO CREEK
6235.0	6634.5	Mesa Verde
6836.0	7279.0	Williams Fork
7871.0	8354.9	TOP GAS
9144.0	9627.9	COAL RIDGE
9799.0	10282.9	ROLLINS SS

DESIGN DETAILS: Plan #1					
Job #95xxx: KR					
KBE @ 7848.0ft (Original Well Elev)					
Target	Azimuth	Origin	N/S	E/W	From TVD
GMR 8-5B1 BHL	313.11	Slot	0.0	0.0	0.0



Project: Mamm Creek  
Site: NESW S8 T7S R93W (K8W Pad)  
Well: GMR 8-5B1  
Wellbore: DD  
Design: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	US EDM 2003.21 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well GMR 8-5B1
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7848.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7848.0ft (Original Well Elev)
<b>Site:</b>	NESW S8 T7S R93W (K8W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	GMR 8-5B1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	Mamm Creek		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	NESW S8 T7S R93W (K8W Pad)			
<b>Site Position:</b>		<b>Northing:</b>	1,599,999.23 ft	<b>Latitude:</b> 39° 27' 29.50 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,350,698.86 ft	<b>Longitude:</b> 107° 47' 59.56 W
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	in	<b>Grid Convergence:</b> -1.45 °

<b>Well</b>	GMR 8-5B1			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,600,000.33 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,350,694.97 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	7,826.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF200510	10/28/2009	10.45	65.80	52,432

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	313.11

<b>Plan Sections</b>										
<b>Measured</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg</b>	<b>Build</b>	<b>Turn</b>	<b>TFO</b>	<b>Target</b>
<b>Depth</b>	<b>(°)</b>	<b>(°)</b>	<b>Depth</b>	<b>(ft)</b>	<b>(ft)</b>	<b>Rate</b>	<b>Rate</b>	<b>Rate</b>	<b>(°)</b>	
<b>(ft)</b>			<b>(ft)</b>			<b>(°/100ft)</b>	<b>(°/100ft)</b>	<b>(°/100ft)</b>		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
366.7	5.00	355.00	366.5	7.2	-0.6	3.00	3.00	0.00	355.00	
959.3	21.17	312.63	942.6	106.2	-82.3	3.00	2.73	-7.15	-52.84	
7,649.4	21.17	312.63	7,181.4	1,742.1	-1,859.6	0.00	0.00	0.00	0.00	
8,354.9	0.00	0.00	7,871.0	1,829.4	-1,954.4	3.00	-3.00	0.00	180.00	GMR 8-5B1 TOG
10,432.9	0.00	0.00	9,949.0	1,829.4	-1,954.4	0.00	0.00	0.00	0.00	GMR 8-5B1 BHL
10,582.9	0.00	0.00	10,099.0	1,829.4	-1,954.4	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

**Database:** US EDM 2003.21 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** Mamm Creek  
**Site:** NESW S8 T7S R93W (K8W Pad)  
**Well:** GMR 8-5B1  
**Wellbore:** DD  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well GMR 8-5B1  
**TVD Reference:** KBE @ 7848.0ft (Original Well Elev)  
**MD Reference:** KBE @ 7848.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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	Hardline 40' West - Hardline 40' North
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	KOP = 200' MD
300.0	3.00	355.00	300.0	2.6	-0.2	1.9	3.00	3.00	
366.7	5.00	355.00	366.5	7.2	-0.6	5.4	3.00	3.00	
400.0	5.66	346.89	399.6	10.3	-1.1	7.9	3.00	1.98	
500.0	8.07	331.67	498.9	21.3	-5.6	18.6	3.00	2.41	
600.0	10.78	323.72	597.6	35.0	-14.4	34.5	3.00	2.71	
700.0	13.61	318.98	695.3	51.4	-27.7	55.4	3.00	2.83	
800.0	16.50	315.86	791.9	70.5	-45.3	81.3	3.00	2.89	
900.0	19.42	313.66	887.0	92.2	-67.2	112.1	3.00	2.92	
959.3	21.17	312.63	942.6	106.2	-82.3	132.6	3.00	2.94	EOB at Inc. = 21.17°
1,000.0	21.17	312.63	980.6	116.2	-93.1	147.3	0.00	0.00	
1,100.0	21.17	312.63	1,073.8	140.6	-119.6	183.4	0.00	0.00	
1,200.0	21.17	312.63	1,167.1	165.1	-146.2	219.5	0.00	0.00	
1,250.0	21.17	312.63	1,213.7	177.3	-159.5	237.6	0.00	0.00	Surface Casing
1,300.0	21.17	312.63	1,260.3	189.5	-172.8	255.7	0.00	0.00	
1,400.0	21.17	312.63	1,353.6	214.0	-199.3	291.8	0.00	0.00	
1,500.0	21.17	312.63	1,446.8	238.4	-225.9	327.9	0.00	0.00	
1,600.0	21.17	312.63	1,540.1	262.9	-252.5	364.0	0.00	0.00	
1,700.0	21.17	312.63	1,633.3	287.3	-279.0	400.1	0.00	0.00	
1,800.0	21.17	312.63	1,726.6	311.8	-305.6	436.2	0.00	0.00	
1,900.0	21.17	312.63	1,819.8	336.2	-332.2	472.3	0.00	0.00	
2,000.0	21.17	312.63	1,913.1	360.7	-358.7	508.4	0.00	0.00	
2,100.0	21.17	312.63	2,006.4	385.1	-385.3	544.5	0.00	0.00	
2,200.0	21.17	312.63	2,099.6	409.6	-411.9	580.6	0.00	0.00	
2,300.0	21.17	312.63	2,192.9	434.1	-438.4	616.7	0.00	0.00	
2,400.0	21.17	312.63	2,286.1	458.5	-465.0	652.8	0.00	0.00	
2,500.0	21.17	312.63	2,379.4	483.0	-491.6	688.9	0.00	0.00	
2,600.0	21.17	312.63	2,472.6	507.4	-518.1	725.0	0.00	0.00	
2,700.0	21.17	312.63	2,565.9	531.9	-544.7	761.1	0.00	0.00	
2,800.0	21.17	312.63	2,659.1	556.3	-571.3	797.2	0.00	0.00	
2,900.0	21.17	312.63	2,752.4	580.8	-597.8	833.3	0.00	0.00	
3,000.0	21.17	312.63	2,845.6	605.2	-624.4	869.4	0.00	0.00	
3,100.0	21.17	312.63	2,938.9	629.7	-651.0	905.5	0.00	0.00	
3,200.0	21.17	312.63	3,032.1	654.1	-677.5	941.7	0.00	0.00	
3,300.0	21.17	312.63	3,125.4	678.6	-704.1	977.8	0.00	0.00	
3,400.0	21.17	312.63	3,218.7	703.0	-730.7	1,013.9	0.00	0.00	
3,500.0	21.17	312.63	3,311.9	727.5	-757.2	1,050.0	0.00	0.00	
3,600.0	21.17	312.63	3,405.2	751.9	-783.8	1,086.1	0.00	0.00	
3,700.0	21.17	312.63	3,498.4	776.4	-810.4	1,122.2	0.00	0.00	
3,800.0	21.17	312.63	3,591.7	800.8	-836.9	1,158.3	0.00	0.00	
3,900.0	21.17	312.63	3,684.9	825.3	-863.5	1,194.4	0.00	0.00	
4,000.0	21.17	312.63	3,778.2	849.7	-890.1	1,230.5	0.00	0.00	
4,015.9	21.17	312.63	3,793.0	853.6	-894.3	1,236.2	0.00	0.00	Wasach G Sand
4,100.0	21.17	312.63	3,871.4	874.2	-916.6	1,266.6	0.00	0.00	
4,200.0	21.17	312.63	3,964.7	898.6	-943.2	1,302.7	0.00	0.00	
4,300.0	21.17	312.63	4,057.9	923.1	-969.8	1,338.8	0.00	0.00	
4,400.0	21.17	312.63	4,151.2	947.5	-996.3	1,374.9	0.00	0.00	
4,500.0	21.17	312.63	4,244.4	972.0	-1,022.9	1,411.0	0.00	0.00	
4,600.0	21.17	312.63	4,337.7	996.5	-1,049.5	1,447.1	0.00	0.00	
4,700.0	21.17	312.63	4,431.0	1,020.9	-1,076.0	1,483.2	0.00	0.00	

# Cathedral Energy Services

## Planning Report

**Database:** US EDM 2003.21 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** Mamm Creek  
**Site:** NESW S8 T7S R93W (K8W Pad)  
**Well:** GMR 8-5B1  
**Wellbore:** DD  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well GMR 8-5B1  
**TVD Reference:** KBE @ 7848.0ft (Original Well Elev)  
**MD Reference:** KBE @ 7848.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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
4,800.0	21.17	312.63	4,524.2	1,045.4	-1,102.6	1,519.3	0.00	0.00	
4,900.0	21.17	312.63	4,617.5	1,069.8	-1,129.2	1,555.4	0.00	0.00	
5,000.0	21.17	312.63	4,710.7	1,094.3	-1,155.7	1,591.5	0.00	0.00	
5,100.0	21.17	312.63	4,804.0	1,118.7	-1,182.3	1,627.7	0.00	0.00	
5,200.0	21.17	312.63	4,897.2	1,143.2	-1,208.9	1,663.8	0.00	0.00	
5,300.0	21.17	312.63	4,990.5	1,167.6	-1,235.4	1,699.9	0.00	0.00	
5,400.0	21.17	312.63	5,083.7	1,192.1	-1,262.0	1,736.0	0.00	0.00	
5,500.0	21.17	312.63	5,177.0	1,216.5	-1,288.6	1,772.1	0.00	0.00	
5,600.0	21.17	312.63	5,270.2	1,241.0	-1,315.1	1,808.2	0.00	0.00	
5,700.0	21.17	312.63	5,363.5	1,265.4	-1,341.7	1,844.3	0.00	0.00	
5,800.0	21.17	312.63	5,456.8	1,289.9	-1,368.3	1,880.4	0.00	0.00	
5,900.0	21.17	312.63	5,550.0	1,314.3	-1,394.8	1,916.5	0.00	0.00	
6,000.0	21.17	312.63	5,643.3	1,338.8	-1,421.4	1,952.6	0.00	0.00	
6,100.0	21.17	312.63	5,736.5	1,363.2	-1,447.9	1,988.7	0.00	0.00	
6,200.0	21.17	312.63	5,829.8	1,387.7	-1,474.5	2,024.8	0.00	0.00	
6,207.8	21.17	312.63	5,837.0	1,389.6	-1,476.6	2,027.6	0.00	0.00	OHIO CREEK
6,300.0	21.17	312.63	5,923.0	1,412.1	-1,501.1	2,060.9	0.00	0.00	
6,400.0	21.17	312.63	6,016.3	1,436.6	-1,527.6	2,097.0	0.00	0.00	
6,500.0	21.17	312.63	6,109.5	1,461.0	-1,554.2	2,133.1	0.00	0.00	
6,600.0	21.17	312.63	6,202.8	1,485.5	-1,580.8	2,169.2	0.00	0.00	
6,634.5	21.17	312.63	6,235.0	1,493.9	-1,590.0	2,181.7	0.00	0.00	Mesa Verde
6,700.0	21.17	312.63	6,296.0	1,510.0	-1,607.3	2,205.3	0.00	0.00	
6,800.0	21.17	312.63	6,389.3	1,534.4	-1,633.9	2,241.4	0.00	0.00	
6,900.0	21.17	312.63	6,482.5	1,558.9	-1,660.5	2,277.5	0.00	0.00	
7,000.0	21.17	312.63	6,575.8	1,583.3	-1,687.0	2,313.7	0.00	0.00	
7,100.0	21.17	312.63	6,669.1	1,607.8	-1,713.6	2,349.8	0.00	0.00	
7,200.0	21.17	312.63	6,762.3	1,632.2	-1,740.2	2,385.9	0.00	0.00	
7,279.0	21.17	312.63	6,836.0	1,651.5	-1,761.2	2,414.4	0.00	0.00	Williams Fork
7,300.0	21.17	312.63	6,855.6	1,656.7	-1,766.7	2,422.0	0.00	0.00	
7,400.0	21.17	312.63	6,948.8	1,681.1	-1,793.3	2,458.1	0.00	0.00	
7,500.0	21.17	312.63	7,042.1	1,705.6	-1,819.9	2,494.2	0.00	0.00	
7,600.0	21.17	312.63	7,135.3	1,730.0	-1,846.4	2,530.3	0.00	0.00	
7,649.4	21.17	312.63	7,181.4	1,742.1	-1,859.6	2,548.1	0.00	0.00	Start Drop -3.00
7,700.0	19.65	312.63	7,228.8	1,754.1	-1,872.5	2,565.8	3.00	-3.00	
7,800.0	16.65	312.63	7,323.8	1,775.1	-1,895.5	2,596.9	3.00	-3.00	
7,900.0	13.65	312.63	7,420.3	1,792.8	-1,914.7	2,623.0	3.00	-3.00	
8,000.0	10.65	312.63	7,518.1	1,807.1	-1,930.2	2,644.1	3.00	-3.00	
8,100.0	7.65	312.63	7,616.8	1,817.9	-1,941.9	2,660.0	3.00	-3.00	
8,200.0	4.65	312.63	7,716.2	1,825.1	-1,949.7	2,670.7	3.00	-3.00	
8,300.0	1.65	312.63	7,816.1	1,828.8	-1,953.8	2,676.2	3.00	-3.00	
8,354.9	0.00	0.00	7,871.0	1,829.4	-1,954.4	2,677.0	3.00	-3.00	EOD at Inc. = 0° - TOP GAS - GMR 8-5B1 TOC
8,400.0	0.00	0.00	7,916.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
8,500.0	0.00	0.00	8,016.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
8,600.0	0.00	0.00	8,116.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
8,700.0	0.00	0.00	8,216.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
8,800.0	0.00	0.00	8,316.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
8,900.0	0.00	0.00	8,416.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,000.0	0.00	0.00	8,516.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,100.0	0.00	0.00	8,616.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,200.0	0.00	0.00	8,716.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,300.0	0.00	0.00	8,816.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,400.0	0.00	0.00	8,916.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	US EDM 2003.21 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well GMR 8-5B1
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7848.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7848.0ft (Original Well Elev)
<b>Site:</b>	NESW S8 T7S R93W (K8W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	GMR 8-5B1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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
9,500.0	0.00	0.00	9,016.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,600.0	0.00	0.00	9,116.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,627.9	0.00	0.00	9,144.0	1,829.4	-1,954.4	2,677.0	0.00	0.00	COAL RIDGE
9,700.0	0.00	0.00	9,216.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,800.0	0.00	0.00	9,316.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
9,900.0	0.00	0.00	9,416.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,000.0	0.00	0.00	9,516.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,100.0	0.00	0.00	9,616.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,200.0	0.00	0.00	9,716.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,282.9	0.00	0.00	9,799.0	1,829.4	-1,954.4	2,677.0	0.00	0.00	ROLLINS SS
10,300.0	0.00	0.00	9,816.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,400.0	0.00	0.00	9,916.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,432.9	0.00	0.00	9,949.0	1,829.4	-1,954.4	2,677.0	0.00	0.00	TD at 10,432.9' MD - GMR 8-5B1 BHL
10,500.0	0.00	0.00	10,016.1	1,829.4	-1,954.4	2,677.0	0.00	0.00	
10,582.9	0.00	0.00	10,099.0	1,829.4	-1,954.4	2,677.0	0.00	0.00	Permit TD at 10,582.9' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
GMR 8-5B1 BHL	0.00	0.00	9,949.0	1,829.4	-1,954.4	1,601,878.58	2,348,787.53	39° 27' 47.59 N	107° 48' 24.53 W
- plan hits target center									
- Circle (radius 25.0)									
Hardline 40' West	0.00	0.00	-10,857.0	1,829.4	-1,954.4	1,601,878.58	2,348,787.53	39° 27' 47.59 N	107° 48' 24.53 W
- plan misses target center by 11182.2ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			-10,857.0	40.0	-40.0	1,601,919.58	2,348,748.56		
Point 2			-10,857.0	-100.0	-40.0	1,601,779.62	2,348,745.02		
Hardline 40' North	0.00	0.00	-9,954.0	1,829.4	-1,954.4	1,601,878.58	2,348,787.53	39° 27' 47.59 N	107° 48' 24.53 W
- plan misses target center by 10307.7ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			-9,954.0	40.0	-100.0	1,601,921.10	2,348,688.58		
Point 2			-9,954.0	40.0	40.0	1,601,917.55	2,348,828.53		
GMR 8-5B1 TOG	0.00	0.00	7,871.0	1,829.4	-1,954.4	1,601,878.58	2,348,787.53	39° 27' 47.59 N	107° 48' 24.53 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,250.0	1,213.7	Surface Casing	5.500	6.000	

# Cathedral Energy Services

## Planning Report

**Database:** US EDM 2003.21 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** Mamm Creek  
**Site:** NESW S8 T7S R93W (K8W Pad)  
**Well:** GMR 8-5B1  
**Wellbore:** DD  
**Design:** Plan #1

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**

Well GMR 8-5B1  
 KBE @ 7848.0ft (Original Well Elev)  
 KBE @ 7848.0ft (Original Well Elev)  
 True  
 Minimum Curvature

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,015.9	3,793.0	Wasach G Sand			
6,207.8	5,837.0	OHIO CREEK			
6,634.5	6,235.0	Mesa Verde			
7,279.0	6,836.0	Williams Fork			
8,354.9	7,871.0	TOP GAS			
9,627.9	9,144.0	COAL RIDGE			
10,282.9	9,799.0	ROLLINS SS			

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP = 200' MD
959.3	942.6	106.2	-82.3	EOB at Inc. = 21.17°
7,649.4	7,181.4	1,742.1	-1,859.6	Start Drop -3.00
8,354.9	7,871.0	1,829.4	-1,954.4	EOD at Inc. = 0°
10,432.9	9,949.0	1,829.4	-1,954.4	TD at 10,432.9' MD
10,582.9	10,099.0	1,829.4	-1,954.4	Permit TD at 10,582.9' MD