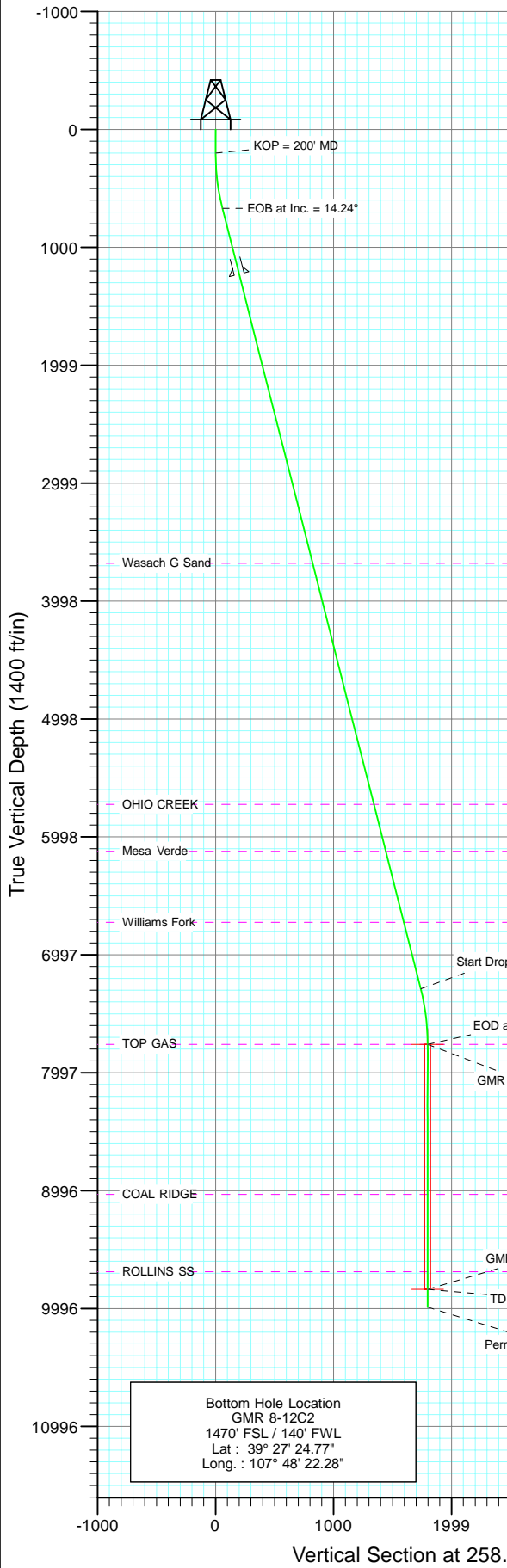
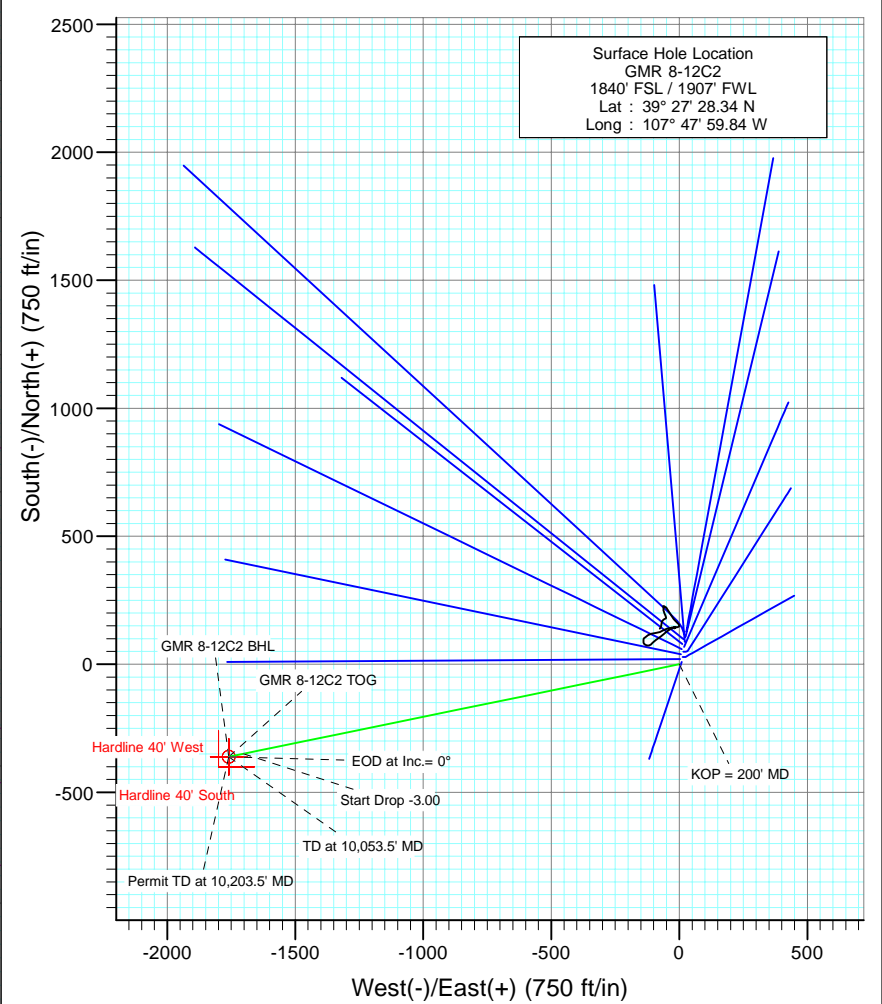




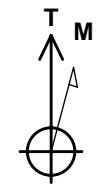
Project: Mamm Creek
 Site: NESW S8 T7S R93W (K8W Pad)
 Well: GMR 8-12C2
 Wellbore: DD
 Design: Plan #1



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	674.7	14.24	258.40	669.8	-11.8	-57.5	3.00	258.40	58.7	
4	7500.8	14.24	258.40	7286.2	-349.3	-1702.5	0.00	0.00	1738.0	
5	7975.5	0.00	0.00	7756.0	-361.1	-1760.0	3.00	180.00	1796.7	GMR 8-12C2 TOG
6	10053.5	0.00	0.00	9834.0	-361.1	-1760.0	0.00	0.00	1796.7	GMR 8-12C2 BHL
7	10203.5	0.00	0.00	9984.0	-361.1	-1760.0	0.00	0.00	1796.7	



Bottom Hole Location
 GMR 8-12C2
 1470' FSL / 140' FWL
 Lat : 39° 27' 24.77"
 Long. : 107° 48' 22.28"



Azimuths to True North
 Magnetic North: 10.45°
 Magnetic Field
 Strength: 52432.0snT
 Dip Angle: 65.80°
 Date: 10/28/2009
 Model: IGRF200510

TVDPath	MDPath	Formation
3678.0	3778.3	Wasach G Sand
5722.0	5887.1	OHIO CREEK
6120.0	6297.7	Mesa Verde
6721.0	6917.7	Williams Fork
7756.0	7975.5	TOP GAS
9029.0	9248.5	COAL RIDGE
9684.0	9903.5	ROLLINS SS

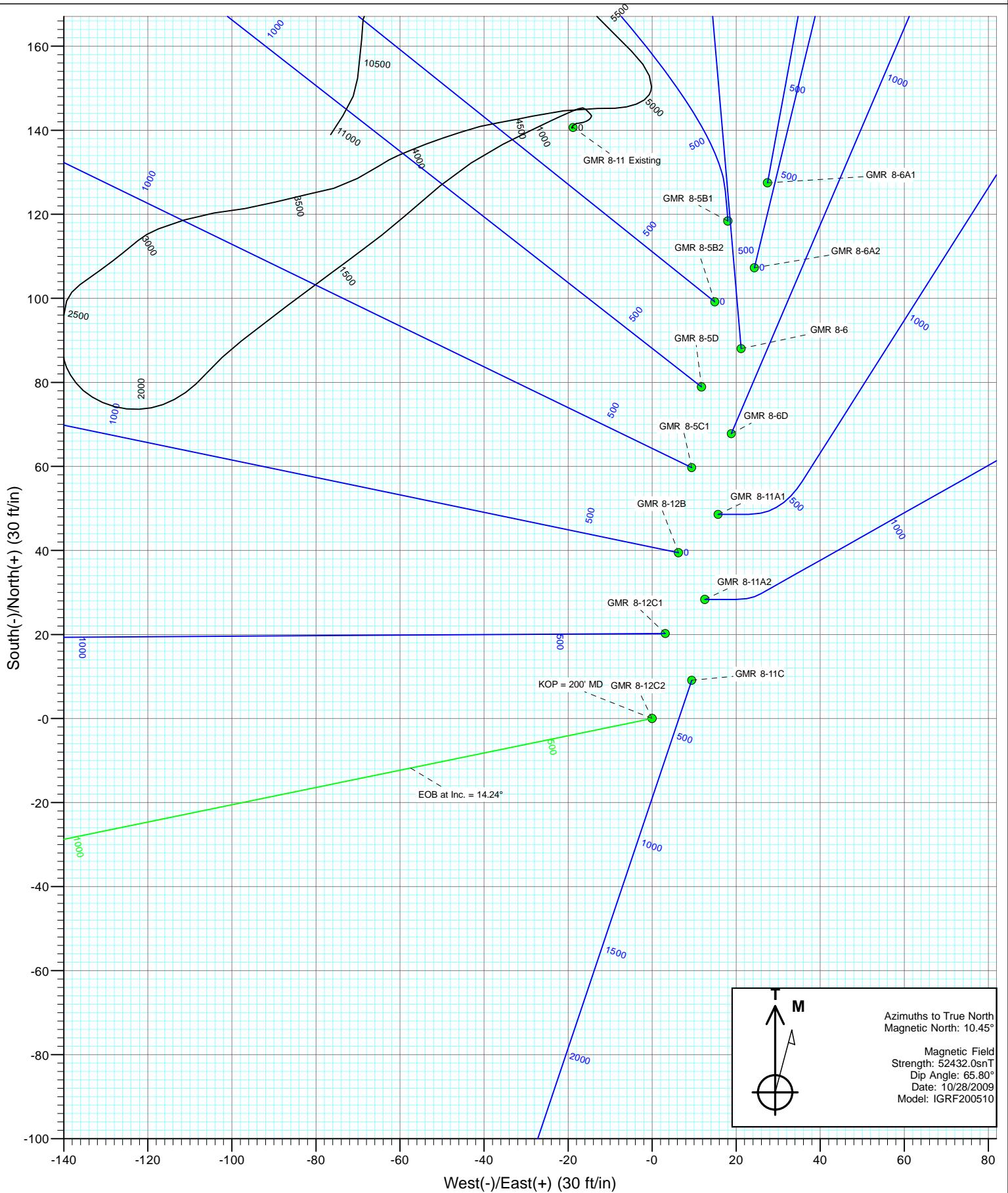
DESIGN DETAILS: Plan #1

Job #95xxx: KR
 KBE @ 7848.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
GMR 8-12C2 BHL	258.40	Slot	0.0	0.0	0.0



Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12C2
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database: US EDM 2003.21 Multi Users DB	Local Co-ordinate Reference: Well GMR 8-12C2	
Company: EnCana Oil & Gas (USA) Inc	TVD Reference: KBE @ 7848.0ft (Original Well Elev)	
Project: Mamm Creek	MD Reference: KBE @ 7848.0ft (Original Well Elev)	
Site: NESW S8 T7S R93W (K8W Pad)	North Reference: True	
Well: GMR 8-12C2	Survey Calculation Method: Minimum Curvature	
Wellbore: DD		
Design: Plan #1		

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

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

Well GMR 8-12C2		
Well Position	+N/-S 0.0 ft	Northing: 1,599,882.45 ft
	+E/-W 0.0 ft	Easting: 2,350,673.94 ft
Position Uncertainty 0.0 ft	Wellhead Elevation: ft	Ground Level: 7,826.0 ft
		Latitude: 39° 27' 28.34 N
		Longitude: 107° 47' 59.84 W

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

Design Plan #1		
Audit Notes:		
Version:	Phase: PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	Direction
	(ft)	(°)
	0.0	258.40
	+N/-S (ft)	+E/-W (ft)
	0.0	0.0

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
674.7	14.24	258.40	669.8	-11.8	-57.5	3.00	3.00	0.00	258.40	
7,500.8	14.24	258.40	7,286.2	-349.3	-1,702.5	0.00	0.00	0.00	0.00	
7,975.5	0.00	0.00	7,756.0	-361.1	-1,760.0	3.00	-3.00	0.00	180.00	GMR 8-12C2 TOG
10,053.5	0.00	0.00	9,834.0	-361.1	-1,760.0	0.00	0.00	0.00	0.00	GMR 8-12C2 BHL
10,203.5	0.00	0.00	9,984.0	-361.1	-1,760.0	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	US EDM 2003.21 Multi Users DB	Local Co-ordinate Reference:	Well GMR 8-12C2
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7848.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7848.0ft (Original Well Elev)
Site:	NESW S8 T7S R93W (K8W Pad)	North Reference:	True
Well:	GMR 8-12C2	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	Hardline 40' West - Hardline 40' South
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	258.40	300.0	-0.5	-2.6	2.6	3.00	3.00	
400.0	6.00	258.40	399.6	-2.1	-10.2	10.5	3.00	3.00	
500.0	9.00	258.40	498.8	-4.7	-23.0	23.5	3.00	3.00	
600.0	12.00	258.40	597.1	-8.4	-40.9	41.7	3.00	3.00	
674.7	14.24	258.40	669.8	-11.8	-57.5	58.7	3.00	3.00	EOB at Inc. = 14.24°
700.0	14.24	258.40	694.3	-13.0	-63.6	64.9	0.00	0.00	
800.0	14.24	258.40	791.3	-18.0	-87.7	89.5	0.00	0.00	
900.0	14.24	258.40	888.2	-22.9	-111.8	114.1	0.00	0.00	
1,000.0	14.24	258.40	985.1	-27.9	-135.9	138.7	0.00	0.00	
1,100.0	14.24	258.40	1,082.1	-32.8	-160.0	163.3	0.00	0.00	
1,200.0	14.24	258.40	1,179.0	-37.8	-184.1	187.9	0.00	0.00	
1,250.0	14.24	258.40	1,227.4	-40.2	-196.1	200.2	0.00	0.00	Surface Casing
1,300.0	14.24	258.40	1,275.9	-42.7	-208.2	212.5	0.00	0.00	
1,400.0	14.24	258.40	1,372.8	-47.7	-232.3	237.1	0.00	0.00	
1,500.0	14.24	258.40	1,469.8	-52.6	-256.4	261.7	0.00	0.00	
1,600.0	14.24	258.40	1,566.7	-57.6	-280.5	286.3	0.00	0.00	
1,700.0	14.24	258.40	1,663.6	-62.5	-304.6	310.9	0.00	0.00	
1,800.0	14.24	258.40	1,760.5	-67.4	-328.7	335.5	0.00	0.00	
1,900.0	14.24	258.40	1,857.5	-72.4	-352.8	360.1	0.00	0.00	
2,000.0	14.24	258.40	1,954.4	-77.3	-376.9	384.7	0.00	0.00	
2,100.0	14.24	258.40	2,051.3	-82.3	-401.0	409.3	0.00	0.00	
2,200.0	14.24	258.40	2,148.2	-87.2	-425.1	433.9	0.00	0.00	
2,300.0	14.24	258.40	2,245.2	-92.2	-449.2	458.5	0.00	0.00	
2,400.0	14.24	258.40	2,342.1	-97.1	-473.3	483.1	0.00	0.00	
2,500.0	14.24	258.40	2,439.0	-102.1	-497.4	507.7	0.00	0.00	
2,600.0	14.24	258.40	2,536.0	-107.0	-521.5	532.3	0.00	0.00	
2,700.0	14.24	258.40	2,632.9	-111.9	-545.6	556.9	0.00	0.00	
2,800.0	14.24	258.40	2,729.8	-116.9	-569.7	581.5	0.00	0.00	
2,900.0	14.24	258.40	2,826.7	-121.8	-593.8	606.1	0.00	0.00	
3,000.0	14.24	258.40	2,923.7	-126.8	-617.9	630.7	0.00	0.00	
3,100.0	14.24	258.40	3,020.6	-131.7	-642.0	655.3	0.00	0.00	
3,200.0	14.24	258.40	3,117.5	-136.7	-666.1	679.9	0.00	0.00	
3,300.0	14.24	258.40	3,214.4	-141.6	-690.2	704.5	0.00	0.00	
3,400.0	14.24	258.40	3,311.4	-146.6	-714.3	729.1	0.00	0.00	
3,500.0	14.24	258.40	3,408.3	-151.5	-738.4	753.8	0.00	0.00	
3,600.0	14.24	258.40	3,505.2	-156.4	-762.5	778.4	0.00	0.00	
3,700.0	14.24	258.40	3,602.1	-161.4	-786.6	803.0	0.00	0.00	
3,778.3	14.24	258.40	3,678.0	-165.3	-805.4	822.2	0.00	0.00	Wasach G Sand
3,800.0	14.24	258.40	3,699.1	-166.3	-810.7	827.6	0.00	0.00	
3,900.0	14.24	258.40	3,796.0	-171.3	-834.8	852.2	0.00	0.00	
4,000.0	14.24	258.40	3,892.9	-176.2	-858.9	876.8	0.00	0.00	
4,100.0	14.24	258.40	3,989.9	-181.2	-883.0	901.4	0.00	0.00	
4,200.0	14.24	258.40	4,086.8	-186.1	-907.1	926.0	0.00	0.00	
4,300.0	14.24	258.40	4,183.7	-191.1	-931.2	950.6	0.00	0.00	
4,400.0	14.24	258.40	4,280.6	-196.0	-955.3	975.2	0.00	0.00	
4,500.0	14.24	258.40	4,377.6	-200.9	-979.4	999.8	0.00	0.00	
4,600.0	14.24	258.40	4,474.5	-205.9	-1,003.5	1,024.4	0.00	0.00	
4,700.0	14.24	258.40	4,571.4	-210.8	-1,027.6	1,049.0	0.00	0.00	
4,800.0	14.24	258.40	4,668.3	-215.8	-1,051.7	1,073.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	US EDM 2003.21 Multi Users DB	Local Co-ordinate Reference:	Well GMR 8-12C2
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7848.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7848.0ft (Original Well Elev)
Site:	NESW S8 T7S R93W (K8W Pad)	North Reference:	True
Well:	GMR 8-12C2	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
4,900.0	14.24	258.40	4,765.3	-220.7	-1,075.8	1,098.2	0.00	0.00	
5,000.0	14.24	258.40	4,862.2	-225.7	-1,099.9	1,122.8	0.00	0.00	
5,100.0	14.24	258.40	4,959.1	-230.6	-1,124.0	1,147.4	0.00	0.00	
5,200.0	14.24	258.40	5,056.0	-235.6	-1,148.1	1,172.0	0.00	0.00	
5,300.0	14.24	258.40	5,153.0	-240.5	-1,172.2	1,196.6	0.00	0.00	
5,400.0	14.24	258.40	5,249.9	-245.5	-1,196.3	1,221.2	0.00	0.00	
5,500.0	14.24	258.40	5,346.8	-250.4	-1,220.4	1,245.8	0.00	0.00	
5,600.0	14.24	258.40	5,443.8	-255.3	-1,244.5	1,270.4	0.00	0.00	
5,700.0	14.24	258.40	5,540.7	-260.3	-1,268.6	1,295.0	0.00	0.00	
5,800.0	14.24	258.40	5,637.6	-265.2	-1,292.6	1,319.6	0.00	0.00	
5,887.1	14.24	258.40	5,722.0	-269.5	-1,313.6	1,341.0	0.00	0.00	OHIO CREEK
5,900.0	14.24	258.40	5,734.5	-270.2	-1,316.7	1,344.2	0.00	0.00	
6,000.0	14.24	258.40	5,831.5	-275.1	-1,340.8	1,368.8	0.00	0.00	
6,100.0	14.24	258.40	5,928.4	-280.1	-1,364.9	1,393.4	0.00	0.00	
6,200.0	14.24	258.40	6,025.3	-285.0	-1,389.0	1,418.0	0.00	0.00	
6,297.7	14.24	258.40	6,120.0	-289.8	-1,412.6	1,442.0	0.00	0.00	Mesa Verde
6,300.0	14.24	258.40	6,122.2	-290.0	-1,413.1	1,442.6	0.00	0.00	
6,400.0	14.24	258.40	6,219.2	-294.9	-1,437.2	1,467.2	0.00	0.00	
6,500.0	14.24	258.40	6,316.1	-299.8	-1,461.3	1,491.8	0.00	0.00	
6,600.0	14.24	258.40	6,413.0	-304.8	-1,485.4	1,516.4	0.00	0.00	
6,700.0	14.24	258.40	6,509.9	-309.7	-1,509.5	1,541.0	0.00	0.00	
6,800.0	14.24	258.40	6,606.9	-314.7	-1,533.6	1,565.6	0.00	0.00	
6,900.0	14.24	258.40	6,703.8	-319.6	-1,557.7	1,590.2	0.00	0.00	
6,917.7	14.24	258.40	6,721.0	-320.5	-1,562.0	1,594.6	0.00	0.00	Williams Fork
7,000.0	14.24	258.40	6,800.7	-324.6	-1,581.8	1,614.8	0.00	0.00	
7,100.0	14.24	258.40	6,897.7	-329.5	-1,605.9	1,639.4	0.00	0.00	
7,200.0	14.24	258.40	6,994.6	-334.5	-1,630.0	1,664.0	0.00	0.00	
7,300.0	14.24	258.40	7,091.5	-339.4	-1,654.1	1,688.6	0.00	0.00	
7,400.0	14.24	258.40	7,188.4	-344.3	-1,678.2	1,713.2	0.00	0.00	
7,500.0	14.24	258.40	7,285.4	-349.3	-1,702.3	1,737.8	0.00	0.00	
7,500.8	14.24	258.40	7,286.2	-349.3	-1,702.5	1,738.0	0.00	0.00	Start Drop -3.00
7,600.0	11.27	258.40	7,382.9	-353.7	-1,724.0	1,759.9	3.00	-3.00	
7,700.0	8.27	258.40	7,481.4	-357.1	-1,740.6	1,776.9	3.00	-3.00	
7,800.0	5.27	258.40	7,580.7	-359.5	-1,752.1	1,788.6	3.00	-3.00	
7,900.0	2.27	258.40	7,680.5	-360.8	-1,758.6	1,795.2	3.00	-3.00	
7,975.5	0.00	0.00	7,756.0	-361.1	-1,760.0	1,796.7	3.00	-3.00	EOD at Inc.= 0° - TOP GAS - GMR 8-12C2 TO
8,000.0	0.00	0.00	7,780.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,100.0	0.00	0.00	7,880.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,200.0	0.00	0.00	7,980.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,300.0	0.00	0.00	8,080.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,400.0	0.00	0.00	8,180.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,500.0	0.00	0.00	8,280.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,600.0	0.00	0.00	8,380.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,700.0	0.00	0.00	8,480.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,800.0	0.00	0.00	8,580.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
8,900.0	0.00	0.00	8,680.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,000.0	0.00	0.00	8,780.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,100.0	0.00	0.00	8,880.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,200.0	0.00	0.00	8,980.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,248.5	0.00	0.00	9,029.0	-361.1	-1,760.0	1,796.7	0.00	0.00	COAL RIDGE
9,300.0	0.00	0.00	9,080.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,400.0	0.00	0.00	9,180.5	-361.1	-1,760.0	1,796.7	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	US EDM 2003.21 Multi Users DB	Local Co-ordinate Reference:	Well GMR 8-12C2
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7848.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7848.0ft (Original Well Elev)
Site:	NESW S8 T7S R93W (K8W Pad)	North Reference:	True
Well:	GMR 8-12C2	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
9,500.0	0.00	0.00	9,280.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,600.0	0.00	0.00	9,380.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,700.0	0.00	0.00	9,480.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,800.0	0.00	0.00	9,580.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,900.0	0.00	0.00	9,680.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
9,903.5	0.00	0.00	9,684.0	-361.1	-1,760.0	1,796.7	0.00	0.00	ROLLINS SS
10,000.0	0.00	0.00	9,780.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
10,053.5	0.00	0.00	9,834.0	-361.1	-1,760.0	1,796.7	0.00	0.00	TD at 10,053.5' MD - GMR 8-12C2 BHL
10,100.0	0.00	0.00	9,880.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
10,200.0	0.00	0.00	9,980.5	-361.1	-1,760.0	1,796.7	0.00	0.00	
10,203.5	0.00	0.00	9,984.0	-361.1	-1,760.0	1,796.7	0.00	0.00	Permit TD at 10,203.5' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
GMR 8-12C2 TOG - plan hits target center - Point	0.00	0.00	7,756.0	-361.1	-1,760.0	1,599,565.99	2,348,905.33	39° 27' 24.77 N	107° 48' 22.28 W
GMR 8-12C2 BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,834.0	-361.1	-1,760.0	1,599,565.99	2,348,905.33	39° 27' 24.77 N	107° 48' 22.28 W
Hardline 40' West - plan misses target center by 10958.0ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon	0.00	0.00	-10,857.0	1,481.2	-98.0	1,601,365.70	2,350,613.43	39° 27' 42.98 N	107° 48' 1.09 W
Point 1			-10,857.0	100.0	-40.0	1,601,466.68	2,350,575.98		
Point 2			-10,857.0	-100.0	-40.0	1,601,266.74	2,350,570.91		
Hardline 40' South - plan misses target center by 9996.8ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon	0.00	0.00	-9,834.0	-361.1	-1,760.0	1,599,565.99	2,348,905.33	39° 27' 24.77 N	107° 48' 22.28 W
Point 1			-9,834.0	-40.0	100.0	1,599,523.47	2,349,004.29		
Point 2			-9,834.0	-40.0	-40.0	1,599,527.01	2,348,864.33		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,250.0	1,227.4	Surface Casing	5.500	6.000	

Cathedral Energy Services

Planning Report

Database:	US EDM 2003.21 Multi Users DB	Local Co-ordinate Reference:	Well GMR 8-12C2
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7848.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7848.0ft (Original Well Elev)
Site:	NESW S8 T7S R93W (K8W Pad)	North Reference:	True
Well:	GMR 8-12C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,778.3	3,678.0	Wasach G Sand				
5,887.1	5,722.0	OHIO CREEK				
6,297.7	6,120.0	Mesa Verde				
6,917.7	6,721.0	Williams Fork				
7,975.5	7,756.0	TOP GAS				
9,248.5	9,029.0	COAL RIDGE				
9,903.5	9,684.0	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	
674.7	669.8	-11.8	-57.5	EOB at Inc. = 14.24°	
7,500.8	7,286.2	-349.3	-1,702.5	Start Drop -3.00	
7,975.5	7,756.0	-361.1	-1,760.0	EOD at Inc.= 0°	
10,053.5	9,834.0	-361.1	-1,760.0	TD at 10,053.5' MD	
10,203.5	9,984.0	-361.1	-1,760.0	Permit TD at 10,203.5' MD	