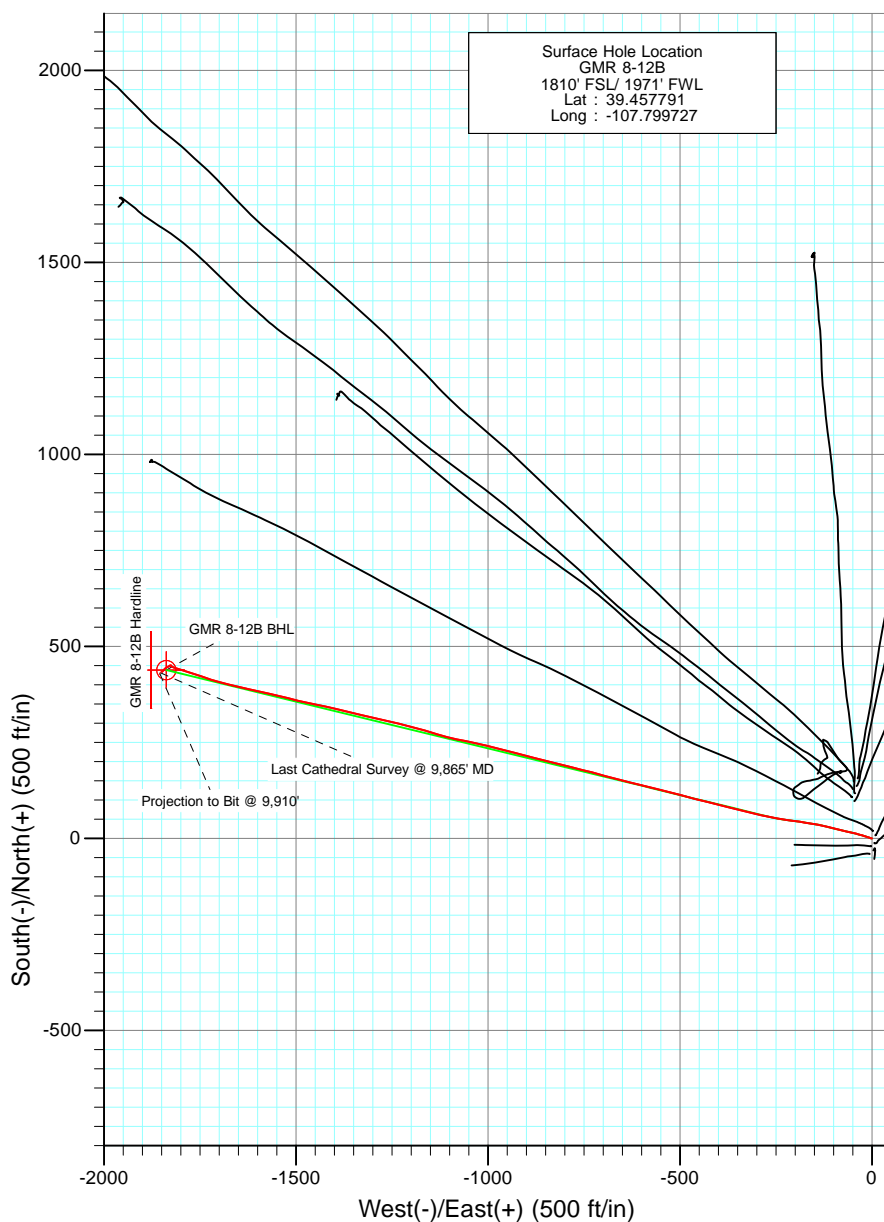
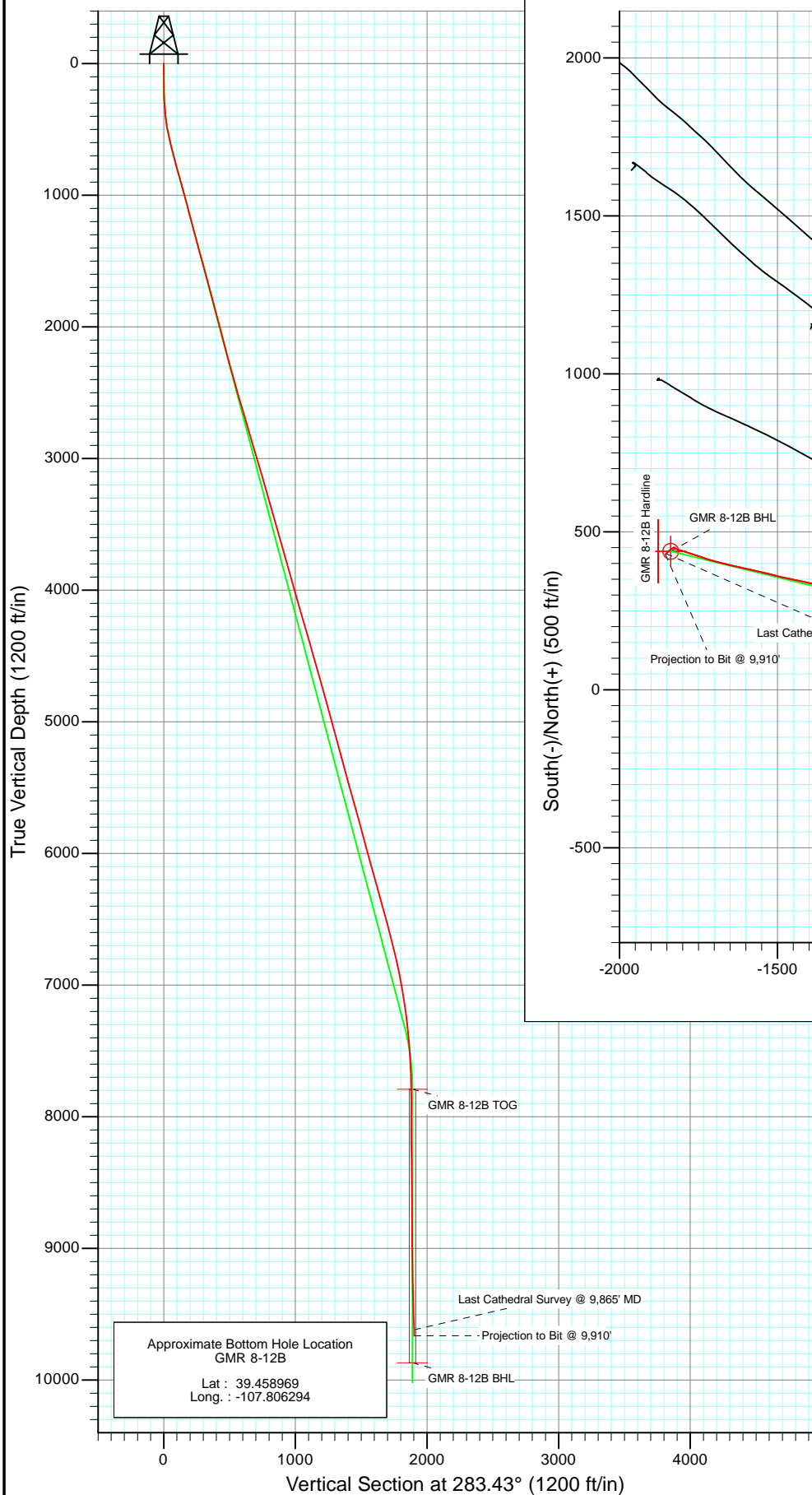




Project: Mamm Creek
 Site: NESW S8 T7S R93W (K8W Pad)
 Well: GMR 8-12B
 Wellbore: DD
 Design: FINAL



Azimuths to True North
 Magnetic North: 10.29°

Magnetic Field
 Strength: 52266.9nT
 Dip Angle: 65.75°
 Date: 3/10/2011
 Model: IGRF2010

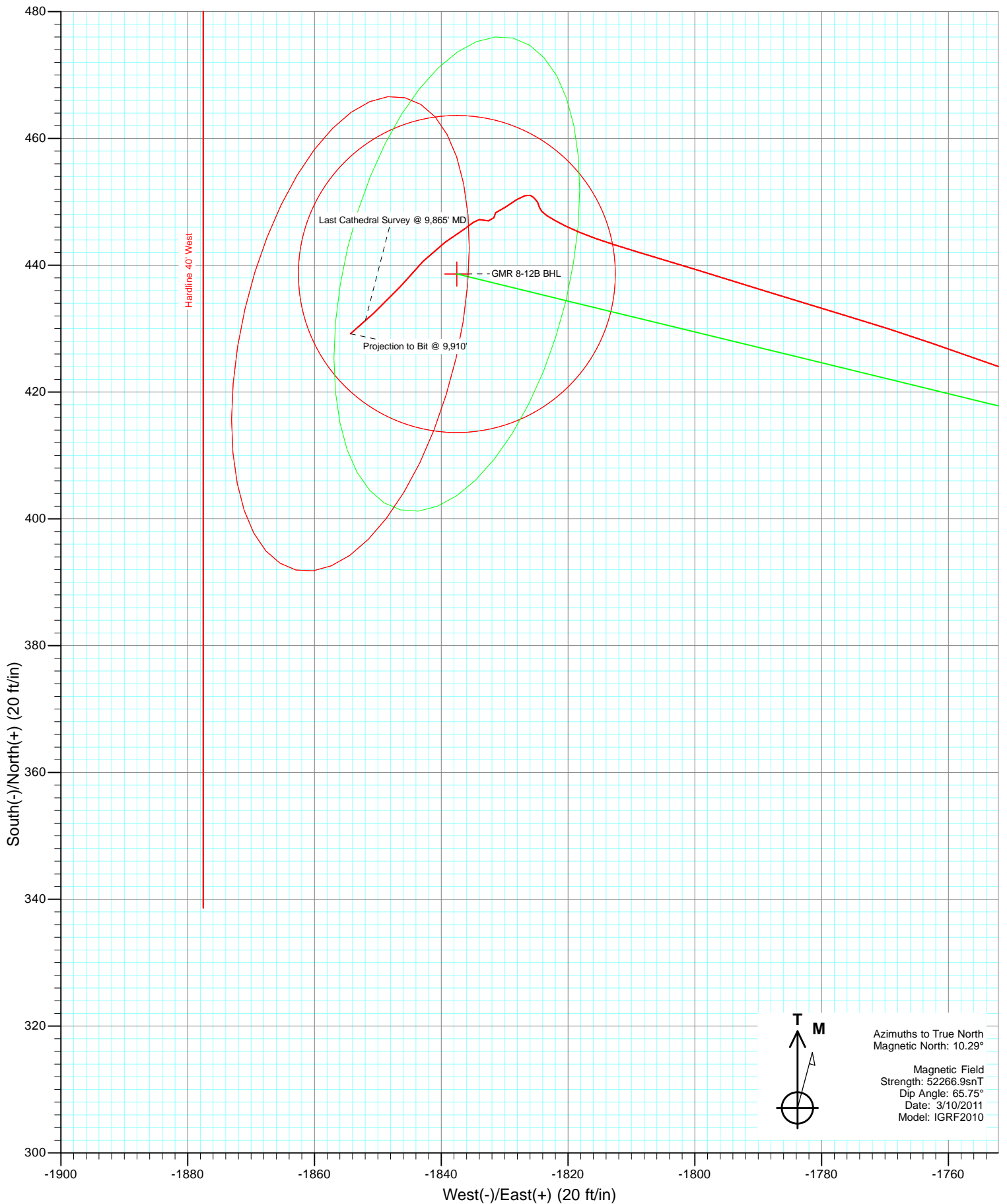
DESIGN DETAILS: DD

Job #115058 (SH), 115124 (MH): KR
 KBE2 @ 7859.0ft (Patterson 330)

Target	Azimuth	Origin	N/S	E/W	From TVD
GMR 8-12B BHL	283.43	Slot	0.0	0.0	0.0

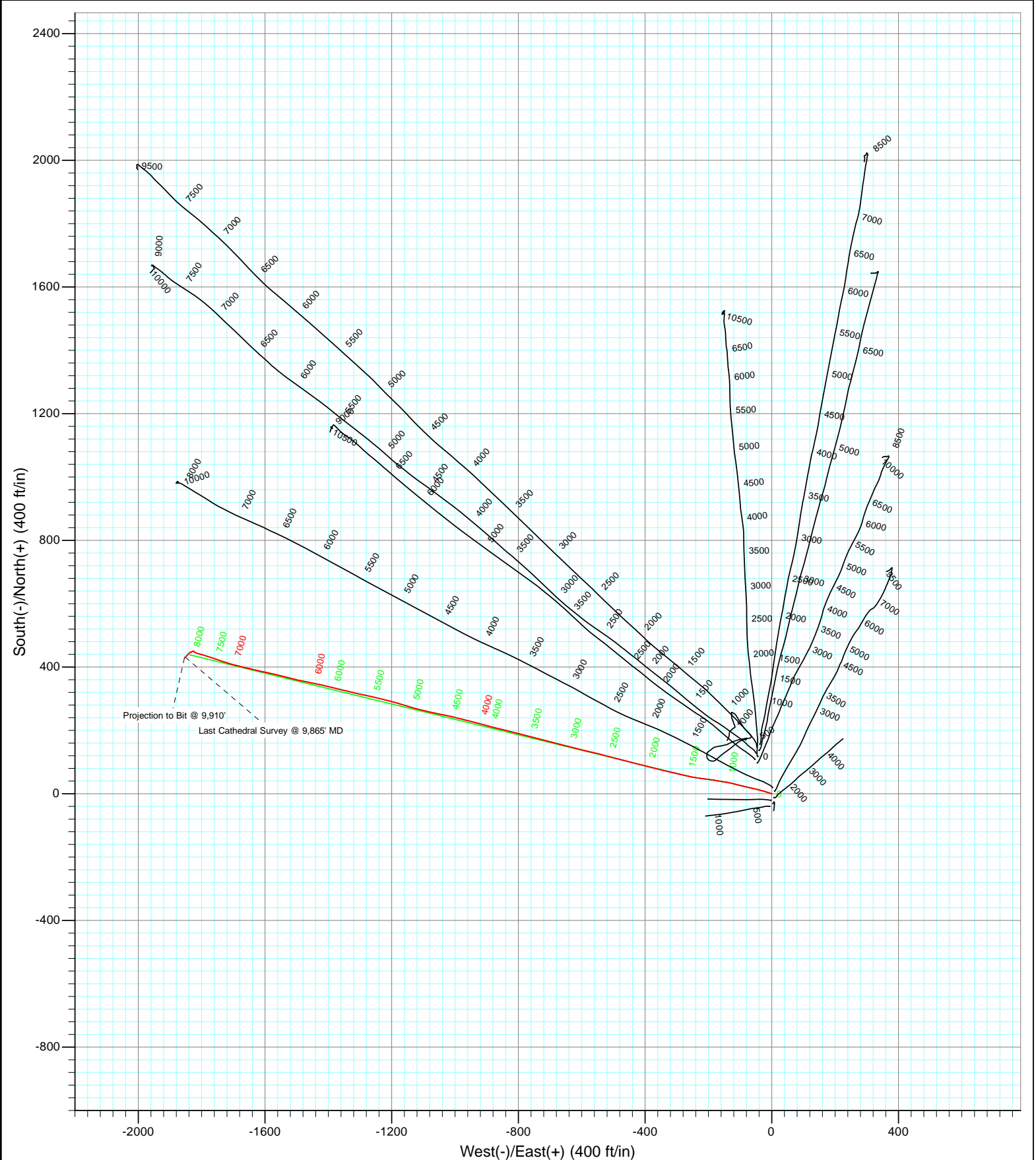


Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12B
Wellbore: DD
Design: FINAL





Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12B
Wellbore: DD
Design: FINAL



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-12B
Project:	Mamm Creek	TVD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Well:	GMR 8-12B	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US Multi Users DB

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:	39.458194
From:	Lat/Long	Easting:	2,350,698.86 ft	Longitude:	-107.799878
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.45 °

Well	GMR 8-12B					
Well Position	+N/-S	0.0 ft	Northing:	1,599,851.23 ft	Latitude:	39.457791
	+E/-W	0.0 ft	Easting:	2,350,737.70 ft	Longitude:	-107.799727
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,826.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/10/2011	10.29	65.75	52,267

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	283.43	

Survey Program	Date	4/6/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
121.0	9,910.0	Survey #1 (DD)	MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
121.0	0.20	312.00	121.0	0.1	-0.2	0.2	0.17	0.17		
181.0	0.30	263.00	181.0	0.2	-0.4	0.4	0.38	0.17		
211.0	1.70	280.30	211.0	0.3	-0.9	0.9	4.72	4.67		
242.0	2.30	284.40	242.0	0.5	-2.0	2.0	1.99	1.94		
271.0	2.70	294.90	270.9	0.9	-3.1	3.3	2.09	1.38		
301.0	3.10	285.30	300.9	1.4	-4.6	4.8	2.09	1.33		
332.0	3.80	291.90	331.9	2.0	-6.3	6.6	2.59	2.26		
363.0	5.10	288.00	362.8	2.9	-8.6	9.0	4.30	4.19		
393.0	6.30	288.60	392.6	3.8	-11.4	12.0	4.00	4.00		
424.0	7.70	287.70	423.4	5.0	-15.0	15.8	4.53	4.52		
455.0	8.90	287.60	454.1	6.3	-19.3	20.2	3.87	3.87		
485.0	9.70	288.60	483.7	7.8	-23.9	25.0	2.72	2.67		

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-12B
Project:	Mamm Creek	TVD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Well:	GMR 8-12B	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US Multi Users DB

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
516.0	10.90	283.80	514.2	9.4	-29.2	30.6	4.76	3.87	
578.0	12.50	285.20	574.9	12.5	-41.4	43.2	2.62	2.58	
608.0	13.00	282.50	604.1	14.1	-47.8	49.8	2.59	1.67	
670.0	14.60	283.60	664.3	17.5	-62.2	64.6	2.62	2.58	
731.0	15.20	283.50	723.3	21.1	-77.5	80.2	0.98	0.98	
762.0	15.00	282.90	753.2	23.0	-85.3	88.3	0.82	-0.65	
824.0	15.40	283.70	813.0	26.7	-101.1	104.6	0.73	0.65	
854.0	16.00	284.40	841.9	28.7	-109.0	112.7	2.10	2.00	
916.0	16.00	283.80	901.5	32.8	-125.6	129.8	0.27	0.00	
947.0	15.80	282.60	931.3	34.8	-133.9	138.3	1.24	-0.65	
978.0	14.90	279.10	961.2	36.3	-141.9	146.5	4.17	-2.90	
1,041.0	14.60	278.10	1,022.2	38.7	-157.8	162.4	0.62	-0.48	
1,104.0	15.00	281.40	1,083.1	41.5	-173.6	178.5	1.48	0.63	
1,166.0	14.90	277.80	1,143.0	44.1	-189.4	194.5	1.51	-0.16	
1,220.0	15.20	277.20	1,195.1	46.0	-203.3	208.4	0.63	0.56	
1,354.0	15.00	277.80	1,324.5	50.5	-237.9	243.1	0.19	-0.15	
1,448.0	15.20	283.50	1,415.3	55.0	-261.9	267.6	1.59	0.21	
1,542.0	15.50	282.00	1,505.9	60.5	-286.2	292.4	0.53	0.32	
1,636.0	15.10	281.80	1,596.6	65.6	-310.5	317.2	0.43	-0.43	
1,731.0	15.30	284.80	1,688.2	71.4	-334.7	342.1	0.85	0.21	
1,825.0	14.50	283.70	1,779.1	77.3	-358.1	366.3	0.90	-0.85	
1,920.0	15.00	285.70	1,871.0	83.5	-381.5	390.5	0.75	0.53	
2,014.0	14.30	283.90	1,961.9	89.6	-404.5	414.2	0.89	-0.74	
2,109.0	15.30	284.00	2,053.7	95.4	-428.0	438.5	1.05	1.05	
2,203.0	14.40	282.60	2,144.6	101.0	-451.5	462.6	1.03	-0.96	
2,298.0	15.30	285.50	2,236.4	106.9	-475.1	486.9	1.23	0.95	
2,393.0	15.00	285.00	2,328.1	113.4	-499.0	511.7	0.34	-0.32	
2,486.0	16.40	284.90	2,417.7	119.9	-523.4	536.9	1.51	1.51	
2,581.0	15.70	284.10	2,509.0	126.5	-548.8	563.2	0.77	-0.74	
2,676.0	16.30	283.80	2,600.3	132.8	-574.2	589.3	0.64	0.63	
2,770.0	16.70	282.80	2,690.4	138.9	-600.2	616.0	0.52	0.43	
2,865.0	16.20	282.90	2,781.5	144.9	-626.4	642.9	0.53	-0.53	
2,959.0	16.70	285.10	2,871.7	151.4	-652.2	669.6	0.85	0.53	
3,054.0	16.50	286.00	2,962.7	158.6	-678.4	696.7	0.34	-0.21	
3,148.0	15.90	284.90	3,053.0	165.6	-703.7	722.9	0.72	-0.64	
3,242.0	16.30	284.90	3,143.3	172.3	-728.8	748.9	0.43	0.43	
3,335.0	15.80	282.70	3,232.7	178.5	-753.8	774.6	0.85	-0.54	
3,430.0	16.20	284.70	3,324.0	184.7	-779.2	800.8	0.72	0.42	
3,524.0	16.00	284.00	3,414.3	191.1	-804.5	826.9	0.30	-0.21	
3,618.0	16.10	283.50	3,504.6	197.3	-829.7	852.9	0.18	0.11	
3,713.0	15.50	284.40	3,596.0	203.6	-854.8	878.7	0.68	-0.63	
3,807.0	16.10	284.60	3,686.5	210.0	-879.6	904.3	0.64	0.64	
3,902.0	14.90	285.00	3,778.0	216.4	-904.2	929.7	1.27	-1.26	
3,996.0	15.90	284.90	3,868.7	222.9	-928.3	954.7	1.06	1.06	
4,090.0	16.50	283.30	3,958.9	229.3	-953.7	980.9	0.80	0.64	
4,185.0	15.60	285.40	4,050.2	235.8	-979.2	1,007.1	1.13	-0.95	
4,280.0	16.40	283.10	4,141.5	242.2	-1,004.5	1,033.3	1.07	0.84	
4,374.0	15.80	281.60	4,231.9	247.8	-1,030.0	1,059.4	0.78	-0.64	
4,468.0	16.40	281.10	4,322.2	252.9	-1,055.6	1,085.4	0.66	0.64	
4,562.0	16.10	283.50	4,412.4	258.5	-1,081.3	1,111.7	0.78	-0.32	
4,656.0	15.60	283.50	4,502.8	264.5	-1,106.2	1,137.4	0.53	-0.53	
4,751.0	16.20	286.10	4,594.2	271.1	-1,131.4	1,163.4	0.98	0.63	
4,845.0	15.90	287.20	4,684.5	278.6	-1,156.3	1,189.4	0.45	-0.32	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-12B
Project:	Mamm Creek	TVD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Well:	GMR 8-12B	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US Multi Users DB

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
4,939.0	15.70	285.40	4,775.0	285.8	-1,180.8	1,214.9	0.56	-0.21	
5,034.0	15.30	285.20	4,866.5	292.5	-1,205.3	1,240.3	0.42	-0.42	
5,128.0	15.10	283.70	4,957.2	298.6	-1,229.2	1,264.9	0.47	-0.21	
5,223.0	14.50	282.60	5,049.1	304.2	-1,252.8	1,289.2	0.70	-0.63	
5,316.0	15.00	282.90	5,139.0	309.4	-1,275.9	1,312.9	0.54	0.54	
5,410.0	15.20	282.30	5,229.8	314.7	-1,299.8	1,337.4	0.27	0.21	
5,503.0	16.00	283.50	5,319.4	320.3	-1,324.2	1,362.4	0.93	0.86	
5,597.0	15.90	283.50	5,409.7	326.3	-1,349.3	1,388.2	0.11	-0.11	
5,691.0	15.50	283.60	5,500.2	332.3	-1,374.0	1,413.6	0.43	-0.43	
5,786.0	15.40	283.40	5,591.8	338.2	-1,398.6	1,438.9	0.12	-0.11	
5,880.0	15.30	282.40	5,682.4	343.8	-1,422.9	1,463.8	0.30	-0.11	
5,974.0	15.20	281.30	5,773.1	348.8	-1,447.1	1,488.5	0.33	-0.11	
6,068.0	14.60	281.70	5,864.0	353.7	-1,470.8	1,512.7	0.65	-0.64	
6,163.0	14.90	282.30	5,955.8	358.7	-1,494.4	1,536.9	0.35	0.32	
6,257.0	16.00	284.80	6,046.4	364.6	-1,518.8	1,561.9	1.37	1.17	
6,351.0	15.70	285.00	6,136.9	371.2	-1,543.6	1,587.6	0.32	-0.32	
6,445.0	15.70	282.10	6,227.4	377.1	-1,568.3	1,613.0	0.83	0.00	
6,539.0	16.20	281.50	6,317.8	382.4	-1,593.6	1,638.8	0.56	0.53	
6,633.0	15.40	283.00	6,408.2	387.8	-1,618.6	1,664.4	0.96	-0.85	
6,727.0	14.50	283.40	6,499.0	393.4	-1,642.2	1,688.7	0.96	-0.96	
6,821.0	14.30	283.50	6,590.1	398.8	-1,664.9	1,712.0	0.21	-0.21	
6,916.0	14.60	283.80	6,682.1	404.4	-1,688.0	1,735.7	0.33	0.32	
7,010.0	13.30	286.40	6,773.3	410.3	-1,709.9	1,758.4	1.54	-1.38	
7,105.0	11.90	288.20	6,866.0	416.4	-1,729.6	1,779.1	1.53	-1.47	
7,199.0	10.70	289.20	6,958.2	422.3	-1,747.1	1,797.4	1.29	-1.28	
7,293.0	9.30	289.00	7,050.7	427.7	-1,762.5	1,813.6	1.49	-1.49	
7,388.0	8.30	286.50	7,144.6	432.1	-1,776.3	1,828.1	1.13	-1.05	
7,482.0	7.20	287.40	7,237.8	435.8	-1,788.5	1,840.8	1.18	-1.17	
7,577.0	6.70	287.00	7,332.1	439.2	-1,799.5	1,852.3	0.53	-0.53	
7,671.0	5.20	286.60	7,425.6	442.0	-1,808.8	1,862.0	1.60	-1.60	
7,765.0	3.60	289.70	7,519.3	444.2	-1,815.6	1,869.2	1.72	-1.70	
7,860.0	2.60	296.10	7,614.1	446.2	-1,820.4	1,874.2	1.11	-1.05	
7,954.0	1.50	304.50	7,708.1	447.8	-1,823.3	1,877.5	1.21	-1.17	
8,049.0	0.70	344.50	7,803.1	449.1	-1,824.5	1,878.9	1.12	-0.84	
8,143.0	0.40	333.50	7,897.1	449.9	-1,824.8	1,879.4	0.34	-0.32	
8,236.0	0.30	309.80	7,990.0	450.4	-1,825.1	1,879.8	0.19	-0.11	
8,329.0	0.30	320.30	8,083.0	450.7	-1,825.5	1,880.2	0.06	0.00	
8,424.0	0.40	290.30	8,178.0	451.0	-1,825.9	1,880.8	0.22	0.11	
8,518.0	0.70	252.70	8,272.0	451.0	-1,826.8	1,881.6	0.48	0.32	
8,613.0	1.00	238.00	8,367.0	450.4	-1,828.0	1,882.7	0.39	0.32	
8,707.0	1.70	236.20	8,461.0	449.1	-1,829.9	1,884.2	0.75	0.74	
8,802.0	0.20	280.30	8,556.0	448.4	-1,831.2	1,885.3	1.64	-1.58	
8,896.0	0.20	184.80	8,650.0	448.3	-1,831.4	1,885.4	0.31	0.00	
8,990.0	0.80	204.60	8,744.0	447.5	-1,831.7	1,885.5	0.65	0.64	
9,084.0	0.70	280.30	8,838.0	447.0	-1,832.5	1,886.2	0.98	-0.11	
9,178.0	0.40	274.50	8,932.0	447.1	-1,833.4	1,887.1	0.32	-0.32	
9,272.0	0.30	280.30	9,026.0	447.2	-1,834.0	1,887.7	0.11	-0.11	
9,367.0	1.00	234.80	9,121.0	446.8	-1,834.9	1,888.5	0.86	0.74	
9,461.0	1.60	233.00	9,214.9	445.5	-1,836.6	1,889.9	0.64	0.64	
9,556.0	2.40	237.70	9,309.9	443.6	-1,839.4	1,892.1	0.86	0.84	
9,651.0	3.20	222.50	9,404.8	440.6	-1,842.9	1,894.8	1.14	0.84	
9,745.0	3.40	221.30	9,498.6	436.6	-1,846.5	1,897.4	0.23	0.21	
9,839.0	3.80	228.60	9,592.4	432.4	-1,850.6	1,900.5	0.65	0.43	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-12B
Project:	Mamm Creek	TVD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE2 @ 7859.0ft (Patterson 330)
Well:	GMR 8-12B	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
9,865.0	4.00	228.40	9,618.4	431.3	-1,852.0	1,901.5	0.77	0.77	Last Cathedral Survey @ 9,865' MD
9,910.0	4.00	228.40	9,663.3	429.2	-1,854.3	1,903.3	0.00	0.00	Projection to Bit @ 9,910'

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
GMR 8-12B Hardline	0.00	0.00	-9,869.0	438.6	-1,837.5	1,600,336.23	2,348,911.86	39.458995	-107.806235
- survey misses target center by 10048.2ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			-9,869.0	100.0	-40.0	1,600,437.21	2,348,874.41		
Point 2			-9,869.0	-100.0	-40.0	1,600,237.27	2,348,869.35		
GMR 8-12B BHL	0.00	0.00	9,869.0	438.6	-1,837.5	1,600,336.23	2,348,911.86	39.458995	-107.806235
- survey misses target center by 206.6ft at 9910.0ft MD (9663.3 TVD, 429.2 N, -1854.3 E)									
- Circle (radius 25.0)									
GMR 8-12B TOG	0.00	0.00	7,791.0	438.6	-1,837.5	1,600,336.23	2,348,911.86	39.458995	-107.806235
- survey misses target center by 16.7ft at 8037.0ft MD (7791.0 TVD, 448.9 N, -1824.4 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
9,865.0	9,618.4	431.3	-1,852.0	Last Cathedral Survey @ 9,865' MD	
9,910.0	9,663.3	429.2	-1,854.3	Projection to Bit @ 9,910'	

Checked By: _____ Approved By: _____ Date: _____