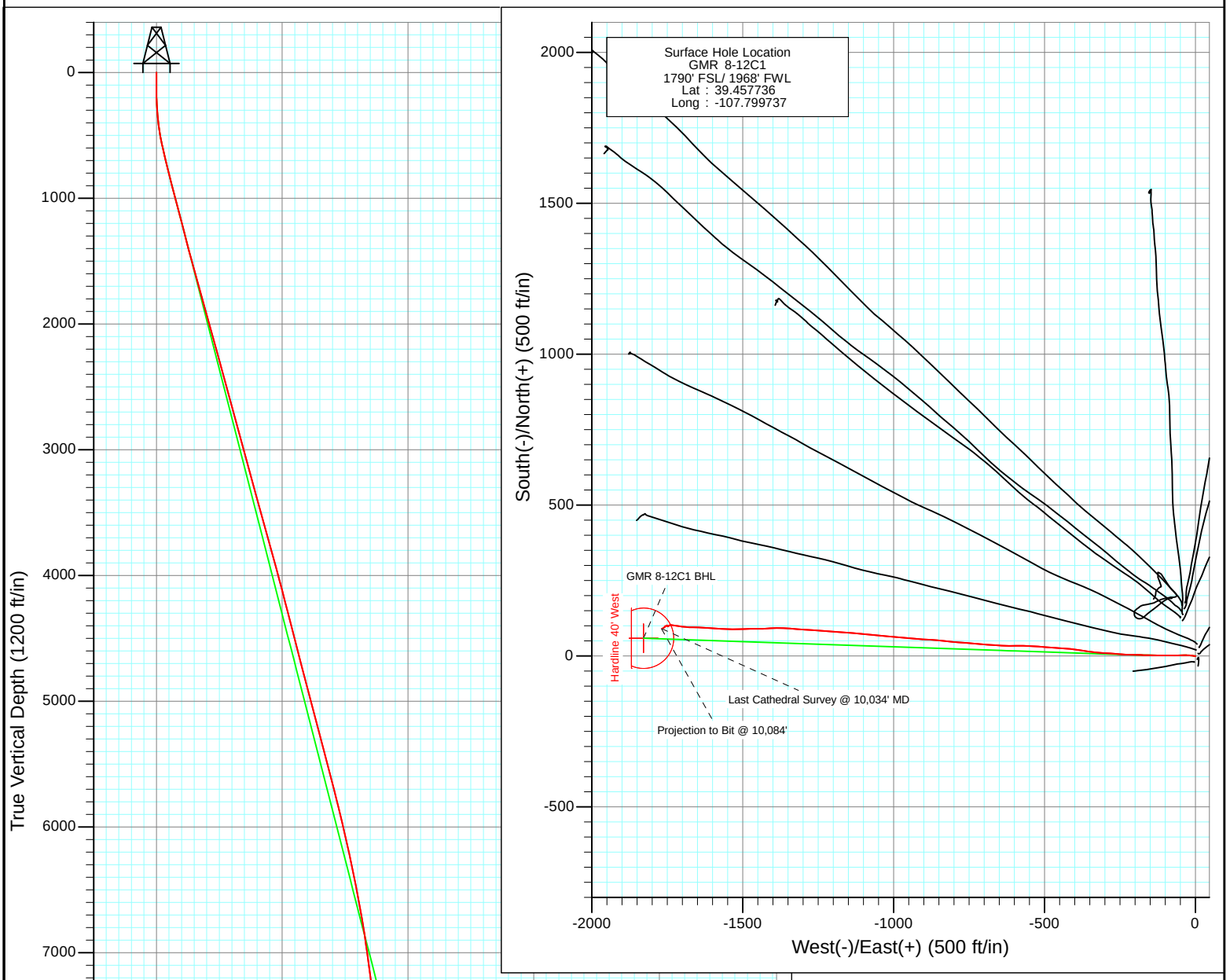
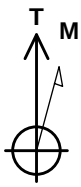
Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12C1
Wellbore: DD
Design: FINAL





Azimuths to True North
Magnetic North: 10.28°

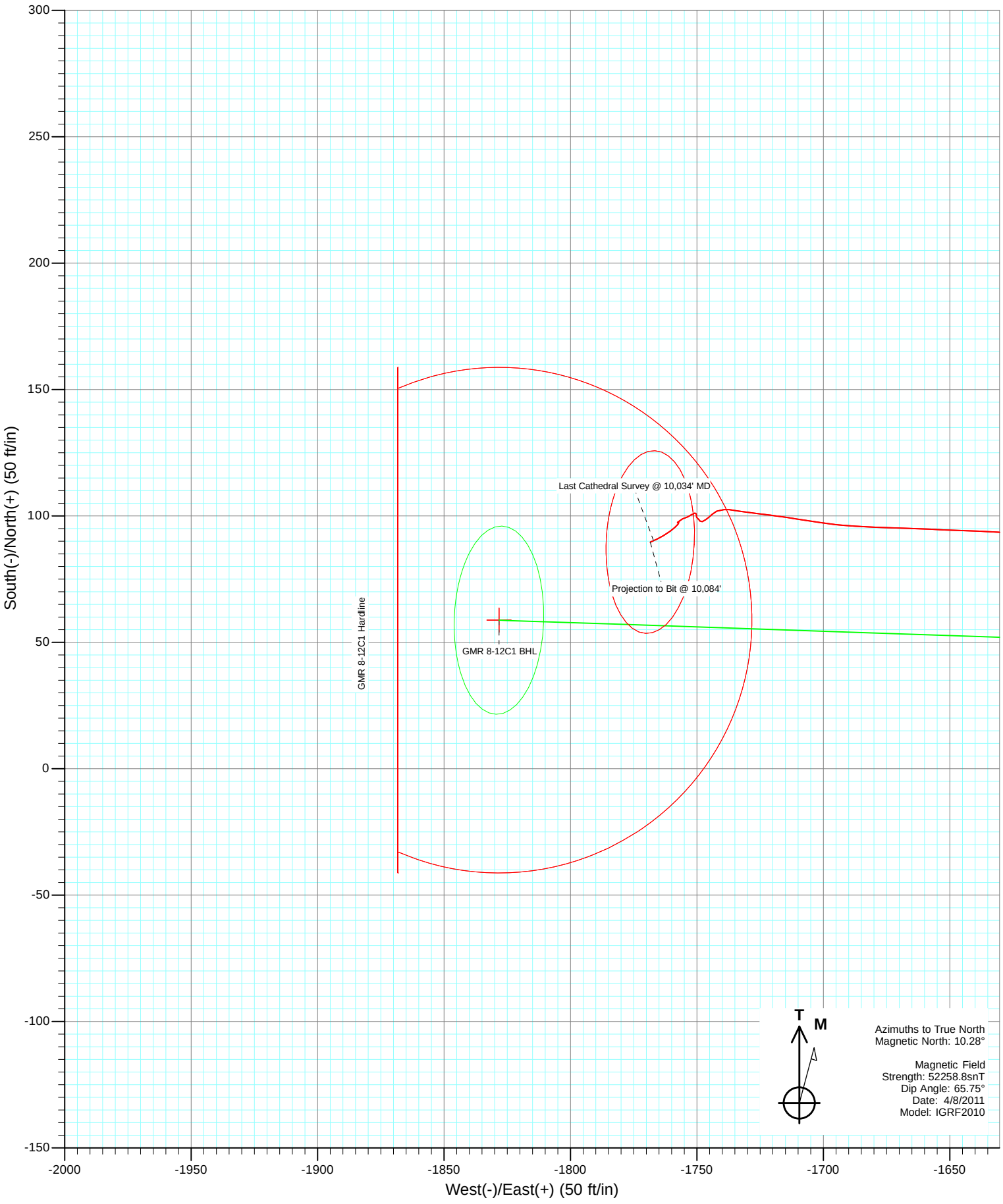
Magnetic Field
Strength: 52258.8snT
Dip Angle: 65.75°
Date: 4/8/2011
Model: IGRF2010

DESIGN DETAILS: DD

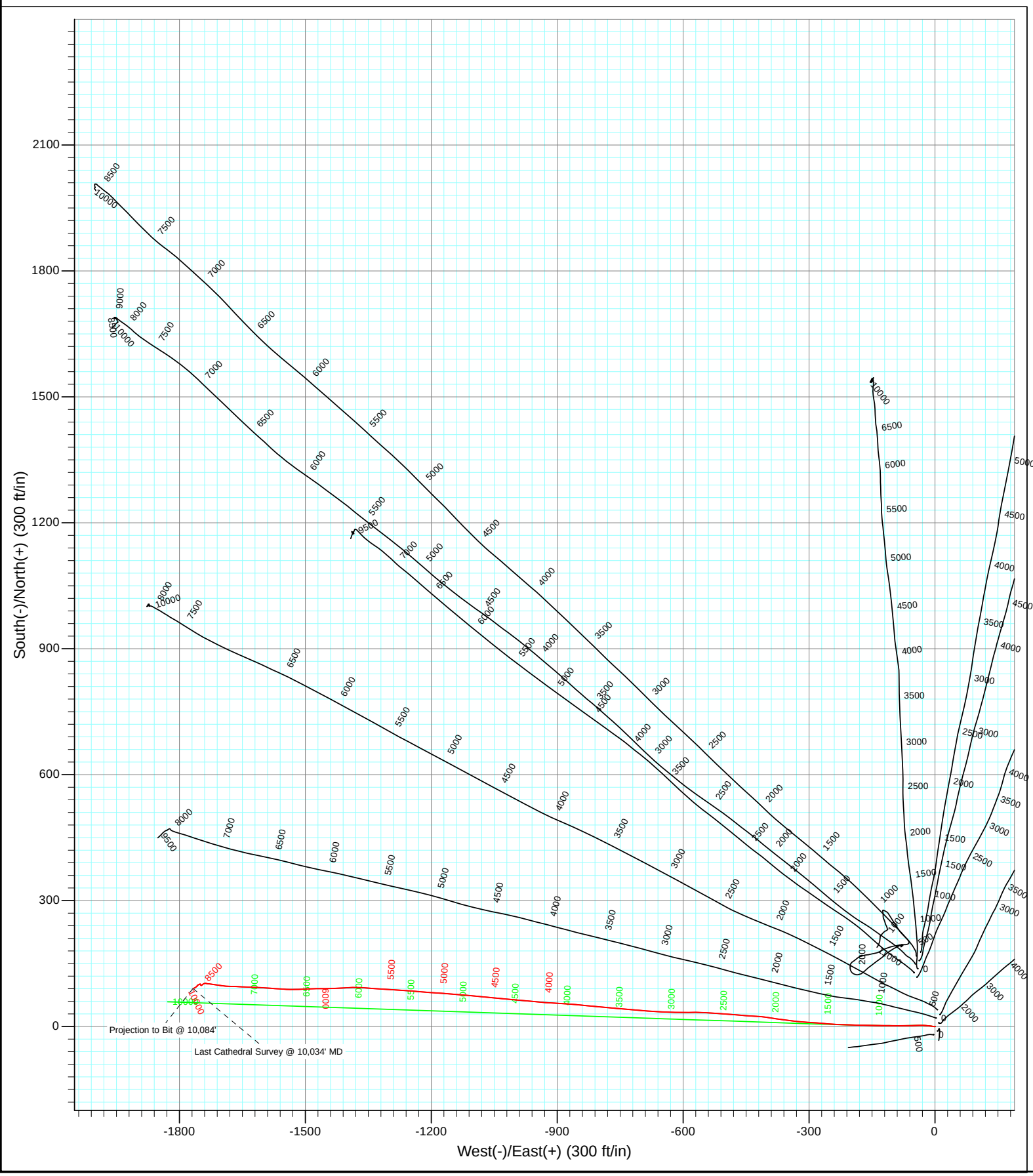
Job #115037(SH), 115157 (MH): KR
KBE @ 7859.0ft (Patterson 330)

Target	Azimuth	Origin	N/S	E/W	From TVD
GMR 8-12C1 BHL	271.84	Slot	0.0	0.0	0.0

Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12C1
Wellbore: DD
Design: FINAL



Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-12C1
Wellbore: DD
Design: FINAL



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well GMR 8-12C1
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	**MD Reference:**	KBE @ 7859.0ft (Patterson 330)
Well:	GMR 8-12C1	**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 8-12C1

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,599,831.28 ft	**Latitude:**	39.457736
	+E/-W	0.0 ft	**Easting:**	2,350,734.37 ft	**Longitude:**	-107.799737
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	4/8/2011	10.28	65.75	52,259

Design DD

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	271.84

Survey Program **Date** 4/27/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
121.0	10,084.0	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	0.40	107.20	121.0	-0.1	0.4	-0.4	0.33	0.33	
181.0	1.10	258.30	181.0	-0.3	0.0	0.0	2.44	1.17	
211.0	2.10	277.50	211.0	-0.3	-0.8	0.8	3.74	3.33	
242.0	2.50	277.00	242.0	-0.1	-2.0	2.0	1.29	1.29	
271.0	3.20	279.10	270.9	0.1	-3.4	3.4	2.44	2.41	
301.0	4.00	272.00	300.9	0.2	-5.3	5.3	3.05	2.67	
332.0	4.90	284.20	331.8	0.6	-7.7	7.7	4.20	2.90	
363.0	5.90	277.00	362.6	1.1	-10.6	10.6	3.89	3.23	
393.0	6.60	274.60	392.5	1.4	-13.8	13.8	2.49	2.33	
424.0	7.30	276.30	423.2	1.8	-17.5	17.6	2.35	2.26	
455.0	8.60	273.30	453.9	2.2	-21.8	21.9	4.40	4.19	
485.0	9.30	274.00	483.6	2.5	-26.5	26.5	2.36	2.33	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well GMR 8-12C1
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	**MD Reference:**	KBE @ 7859.0ft (Patterson 330)
Well:	GMR 8-12C1	**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	10.50	270.80	514.1	2.7	-31.8	31.9	4.26	3.87	
547.0	11.50	268.20	544.5	2.6	-37.7	37.8	3.60	3.23	
578.0	12.20	268.60	574.9	2.4	-44.1	44.1	2.27	2.26	
608.0	13.30	269.90	604.1	2.4	-50.7	50.7	3.79	3.67	
670.0	13.40	266.60	664.5	1.9	-65.0	65.0	1.24	0.16	
731.0	13.80	270.10	723.7	1.5	-79.3	79.3	1.50	0.66	
762.0	13.90	271.60	753.8	1.6	-86.7	86.7	1.20	0.32	
824.0	13.70	270.50	814.1	1.9	-101.5	101.5	0.53	-0.32	
854.0	14.20	270.30	843.2	1.9	-108.8	108.8	1.67	1.67	
916.0	14.10	269.30	903.3	1.9	-123.9	123.9	0.43	-0.16	
947.0	14.30	272.60	933.3	2.0	-131.5	131.5	2.69	0.65	
1,009.0	14.90	271.40	993.3	2.6	-147.1	147.1	1.08	0.97	
1,041.0	14.70	269.60	1,024.3	2.6	-155.3	155.3	1.57	-0.62	
1,104.0	14.90	271.70	1,085.2	2.8	-171.4	171.4	0.91	0.32	
1,135.0	15.20	271.90	1,115.1	3.1	-179.4	179.4	0.98	0.97	
1,210.0	14.70	270.90	1,187.6	3.5	-198.8	198.8	0.75	-0.67	
1,343.0	14.30	273.20	1,316.4	4.7	-232.1	232.1	0.53	-0.30	
1,433.0	14.80	274.50	1,403.5	6.2	-254.6	254.7	0.66	0.56	
1,532.0	15.60	274.30	1,499.0	8.2	-280.5	280.6	0.81	0.81	
1,623.0	15.30	273.60	1,586.7	9.9	-304.7	304.8	0.39	-0.33	
1,714.0	15.50	276.10	1,674.4	12.0	-328.7	329.0	0.76	0.22	
1,804.0	16.20	277.70	1,761.0	14.9	-353.1	353.4	0.92	0.78	
1,895.0	15.20	278.20	1,848.6	18.3	-377.5	377.9	1.11	-1.10	
1,986.0	16.20	277.80	1,936.2	21.7	-401.9	402.4	1.11	1.10	
2,076.0	15.50	273.80	2,022.8	24.2	-426.4	426.9	1.44	-0.78	
2,167.0	14.40	273.90	2,110.7	25.8	-449.8	450.4	1.21	-1.21	
2,258.0	15.00	274.90	2,198.8	27.6	-472.8	473.4	0.72	0.66	
2,349.0	15.30	273.80	2,286.6	29.4	-496.5	497.2	0.46	0.33	
2,439.0	15.30	274.00	2,373.4	31.0	-520.2	520.9	0.06	0.00	
2,530.0	16.40	273.00	2,460.9	32.5	-545.0	545.8	1.25	1.21	
2,621.0	15.70	271.60	2,548.4	33.5	-570.2	570.9	0.88	-0.77	
2,711.0	14.90	268.80	2,635.2	33.6	-593.9	594.7	1.21	-0.89	
2,802.0	15.00	269.90	2,723.1	33.4	-617.4	618.1	0.33	0.11	
2,893.0	15.50	273.70	2,810.9	34.1	-641.3	642.0	1.23	0.55	
2,984.0	14.50	273.70	2,898.8	35.7	-664.8	665.6	1.10	-1.10	
3,074.0	15.10	274.10	2,985.8	37.2	-687.7	688.6	0.68	0.67	
3,165.0	15.60	274.70	3,073.6	39.1	-711.7	712.6	0.58	0.55	
3,256.0	14.80	275.10	3,161.4	41.1	-735.5	736.4	0.89	-0.88	
3,347.0	16.40	275.10	3,249.0	43.3	-759.9	760.9	1.76	1.76	
3,437.0	15.50	274.70	3,335.6	45.4	-784.5	785.6	1.01	-1.00	
3,528.0	14.60	275.50	3,423.5	47.5	-808.1	809.2	1.01	-0.99	
3,616.0	15.80	275.70	3,508.4	49.7	-831.0	832.2	1.36	1.36	
3,710.0	14.70	274.90	3,599.1	52.0	-855.6	856.9	1.19	-1.17	
3,800.0	16.00	274.00	3,685.9	53.9	-879.4	880.7	1.47	1.44	
3,891.0	15.00	273.30	3,773.5	55.4	-903.7	905.0	1.12	-1.10	
3,982.0	16.20	274.30	3,861.2	57.1	-928.1	929.4	1.35	1.32	
4,072.0	15.20	274.90	3,947.8	59.0	-952.3	953.8	1.13	-1.11	
4,163.0	14.50	274.70	4,035.8	61.0	-975.6	977.0	0.77	-0.77	
4,254.0	15.20	275.60	4,123.8	63.1	-998.8	1,000.3	0.81	0.77	
4,345.0	14.30	275.40	4,211.8	65.3	-1,021.9	1,023.4	0.99	-0.99	
4,435.0	15.00	276.40	4,298.8	67.6	-1,044.5	1,046.2	0.83	0.78	
4,526.0	14.50	275.70	4,386.8	70.1	-1,067.6	1,069.3	0.58	-0.55	
4,617.0	14.00	274.10	4,475.0	72.0	-1,089.9	1,091.6	0.70	-0.55	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well GMR 8-12C1
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	**MD Reference:**	KBE @ 7859.0ft (Patterson 330)
Well:	GMR 8-12C1	**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
4,708.0	14.30	275.40	4,563.3	73.8	-1,112.0	1,113.8	0.48	0.33	
4,798.0	14.60	275.20	4,650.4	75.9	-1,134.4	1,136.3	0.34	0.33	
4,889.0	15.10	273.60	4,738.4	77.7	-1,157.7	1,159.6	0.71	0.55	
4,980.0	14.90	273.60	4,826.3	79.2	-1,181.2	1,183.1	0.22	-0.22	
5,071.0	14.10	275.30	4,914.4	80.9	-1,203.9	1,205.9	1.00	-0.88	
5,161.0	14.40	274.40	5,001.6	82.8	-1,225.9	1,228.0	0.41	0.33	
5,252.0	14.80	273.90	5,089.7	84.5	-1,248.8	1,250.9	0.46	0.44	
5,343.0	14.30	273.70	5,177.8	86.0	-1,271.6	1,273.7	0.55	-0.55	
5,434.0	15.30	273.50	5,265.7	87.4	-1,294.8	1,297.0	1.10	1.10	
5,525.0	15.00	273.80	5,353.6	88.9	-1,318.6	1,320.7	0.34	-0.33	
5,615.0	14.80	274.30	5,440.5	90.6	-1,341.7	1,343.9	0.26	-0.22	
5,704.0	14.80	275.30	5,526.6	92.5	-1,364.3	1,366.6	0.29	0.00	
5,795.0	14.40	266.90	5,614.7	92.9	-1,387.2	1,389.5	2.37	-0.44	
5,886.0	14.20	266.60	5,702.8	91.7	-1,409.6	1,411.8	0.23	-0.22	
5,977.0	14.30	267.30	5,791.0	90.5	-1,432.0	1,434.2	0.22	0.11	
6,067.0	12.60	271.20	5,878.6	90.2	-1,452.9	1,455.1	2.14	-1.89	
6,158.0	13.60	268.80	5,967.2	90.1	-1,473.5	1,475.7	1.25	1.10	
6,249.0	13.40	267.50	6,055.7	89.5	-1,494.8	1,496.9	0.40	-0.22	
6,340.0	12.60	267.60	6,144.4	88.6	-1,515.2	1,517.3	0.88	-0.88	
6,430.0	12.90	270.20	6,232.1	88.2	-1,535.1	1,537.1	0.72	0.33	
6,521.0	11.80	274.60	6,321.0	89.0	-1,554.5	1,556.6	1.59	-1.21	
6,612.0	11.30	274.10	6,410.2	90.4	-1,572.7	1,574.8	0.56	-0.55	
6,703.0	10.00	272.70	6,499.6	91.4	-1,589.5	1,591.6	1.46	-1.43	
6,793.0	10.30	273.60	6,588.2	92.2	-1,605.3	1,607.4	0.38	0.33	
6,884.0	10.70	273.00	6,677.7	93.2	-1,621.8	1,624.0	0.46	0.44	
6,976.0	9.80	272.30	6,768.2	94.0	-1,638.2	1,640.4	0.99	-0.98	
7,066.0	8.00	271.80	6,857.1	94.5	-1,652.1	1,654.3	2.00	-2.00	
7,156.0	8.40	273.00	6,946.2	95.0	-1,664.9	1,667.1	0.48	0.44	
7,245.0	7.40	271.10	7,034.4	95.5	-1,677.2	1,679.4	1.16	-1.12	
7,336.0	7.90	274.60	7,124.6	96.1	-1,689.3	1,691.5	0.75	0.55	
7,427.0	6.90	278.20	7,214.8	97.4	-1,700.9	1,703.1	1.21	-1.10	
7,517.0	6.00	279.20	7,304.2	98.9	-1,710.9	1,713.2	1.01	-1.00	
7,608.0	5.90	277.50	7,394.7	100.2	-1,720.2	1,722.6	0.22	-0.11	
7,699.0	4.70	276.70	7,485.3	101.3	-1,728.6	1,730.9	1.32	-1.32	
7,790.0	3.30	280.30	7,576.1	102.2	-1,734.8	1,737.2	1.56	-1.54	
7,880.0	2.40	265.80	7,666.0	102.5	-1,739.3	1,741.7	1.27	-1.00	
7,971.0	1.40	246.80	7,757.0	101.9	-1,742.2	1,744.6	1.28	-1.10	
8,062.0	1.40	222.20	7,847.9	100.7	-1,744.0	1,746.3	0.66	0.00	
8,153.0	1.00	238.60	7,938.9	99.4	-1,745.4	1,747.7	0.58	-0.44	
8,243.0	1.00	222.60	8,028.9	98.5	-1,746.6	1,748.9	0.31	0.00	
8,332.0	1.00	262.50	8,117.9	97.8	-1,747.9	1,750.1	0.77	0.00	
8,423.0	0.50	336.80	8,208.9	98.0	-1,748.8	1,751.1	1.09	-0.55	
8,513.0	0.40	308.80	8,298.9	98.6	-1,749.2	1,751.5	0.26	-0.11	
8,604.0	0.40	316.10	8,389.9	99.0	-1,749.7	1,752.0	0.06	0.00	
8,695.0	0.40	331.90	8,480.9	99.5	-1,750.1	1,752.4	0.12	0.00	
8,786.0	0.90	358.80	8,571.9	100.5	-1,750.2	1,752.6	0.63	0.55	
8,876.0	0.80	261.30	8,661.9	101.1	-1,750.9	1,753.2	1.42	-0.11	
8,967.0	1.10	230.60	8,752.9	100.5	-1,752.2	1,754.5	0.64	0.33	
9,058.0	1.20	249.00	8,843.8	99.6	-1,753.7	1,756.0	0.42	0.11	
9,149.0	1.40	248.90	8,934.8	98.9	-1,755.7	1,757.9	0.22	0.22	
9,240.0	1.00	216.60	9,025.8	97.8	-1,757.2	1,759.4	0.85	-0.44	
9,330.0	0.20	350.30	9,115.8	97.3	-1,757.7	1,759.9	1.27	-0.89	
9,421.0	0.40	59.80	9,206.8	97.7	-1,757.4	1,759.6	0.42	0.22	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well GMR 8-12C1
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7859.0ft (Patterson 330)
Site:	NESW S8 T7S R93W (K8W Pad)	**MD Reference:**	KBE @ 7859.0ft (Patterson 330)
Well:	GMR 8-12C1	**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
9,512.0	0.30	187.50	9,297.8	97.6	-1,757.2	1,759.4	0.69	-0.11	
9,602.0	0.50	192.70	9,387.8	97.0	-1,757.3	1,759.5	0.23	0.22	
9,693.0	1.00	232.30	9,478.8	96.1	-1,758.0	1,760.2	0.76	0.55	
9,784.0	2.10	229.70	9,569.7	94.5	-1,759.9	1,762.0	1.21	1.21	
9,875.0	2.00	239.30	9,660.7	92.6	-1,762.5	1,764.6	0.39	-0.11	
9,966.0	1.90	242.70	9,751.6	91.1	-1,765.3	1,767.3	0.17	-0.11	
10,034.0	1.60	246.70	9,819.6	90.2	-1,767.1	1,769.1	0.48	-0.44	**Last Cathedral Survey @ 10,034' MD**
10,084.0	1.60	246.70	9,869.6	89.7	-1,768.4	1,770.4	0.00	0.00	**Projection to Bit @ 10,084'**

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 8-12C1 BHL	0.00	0.00	9,859.0	58.8	-1,828.2	1,599,936.34	2,348,908.21	39.457897	-107.806212
- survey misses target center by 67.6ft at 10075.3ft MD (9860.9 TVD, 89.8 N, -1768.2 E)									
- Circle (radius 100.0)									
GMR 8-12C1 TOG	0.00	0.00	7,781.0	58.8	-1,828.2	1,599,936.34	2,348,908.21	39.457897	-107.806212
- survey misses target center by 95.6ft at 7997.3ft MD (7783.3 TVD, 101.7 N, -1742.8 E)									
- Point									
GMR 8-12C1 Hardline	0.00	0.00	-9,859.0	58.8	-1,828.2	1,599,936.34	2,348,908.21	39.457897	-107.806212
- survey misses target center by 10027.3ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			-9,859.0	100.0	-40.0	1,600,037.32	2,348,870.75		
Point 2			-9,859.0	-100.0	-40.0	1,599,837.38	2,348,865.69		

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
10,034.0	9,819.6	90.2	-1,767.1	Last Cathedral Survey @ 10,034' MD
10,084.0	9,869.6	89.7	-1,768.4	Projection to Bit @ 10,084'

Checked By: _____ Approved By: _____ Date: _____