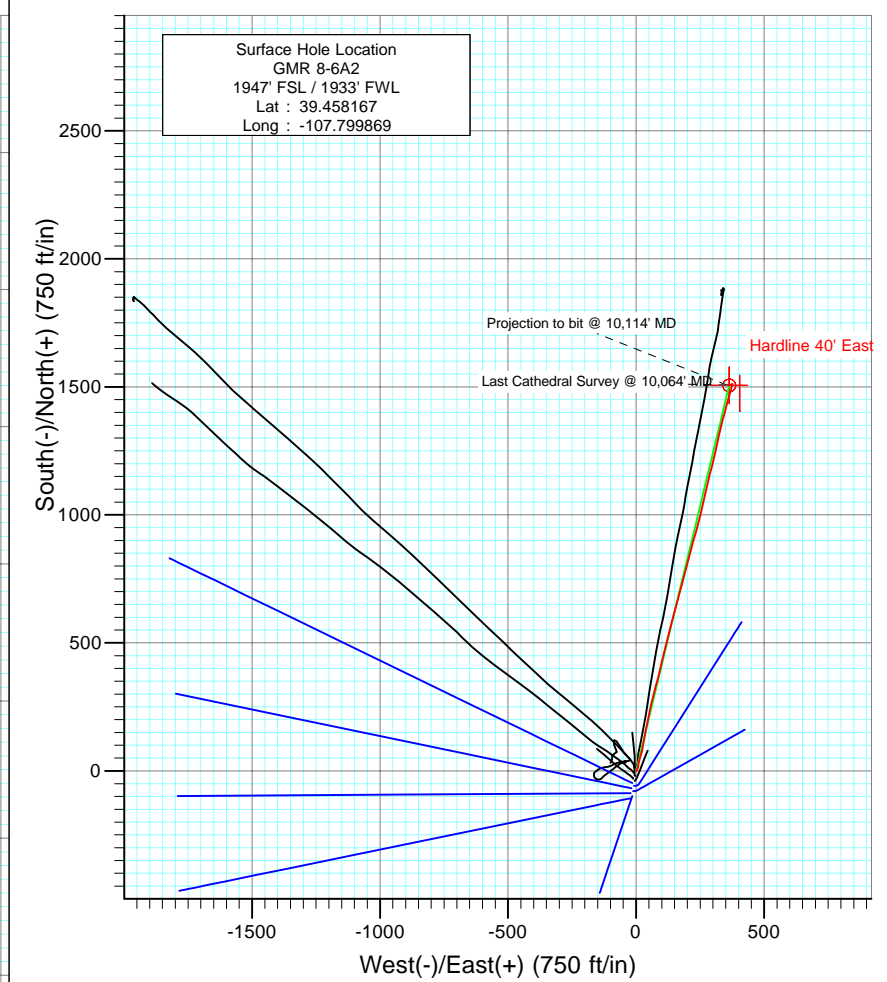
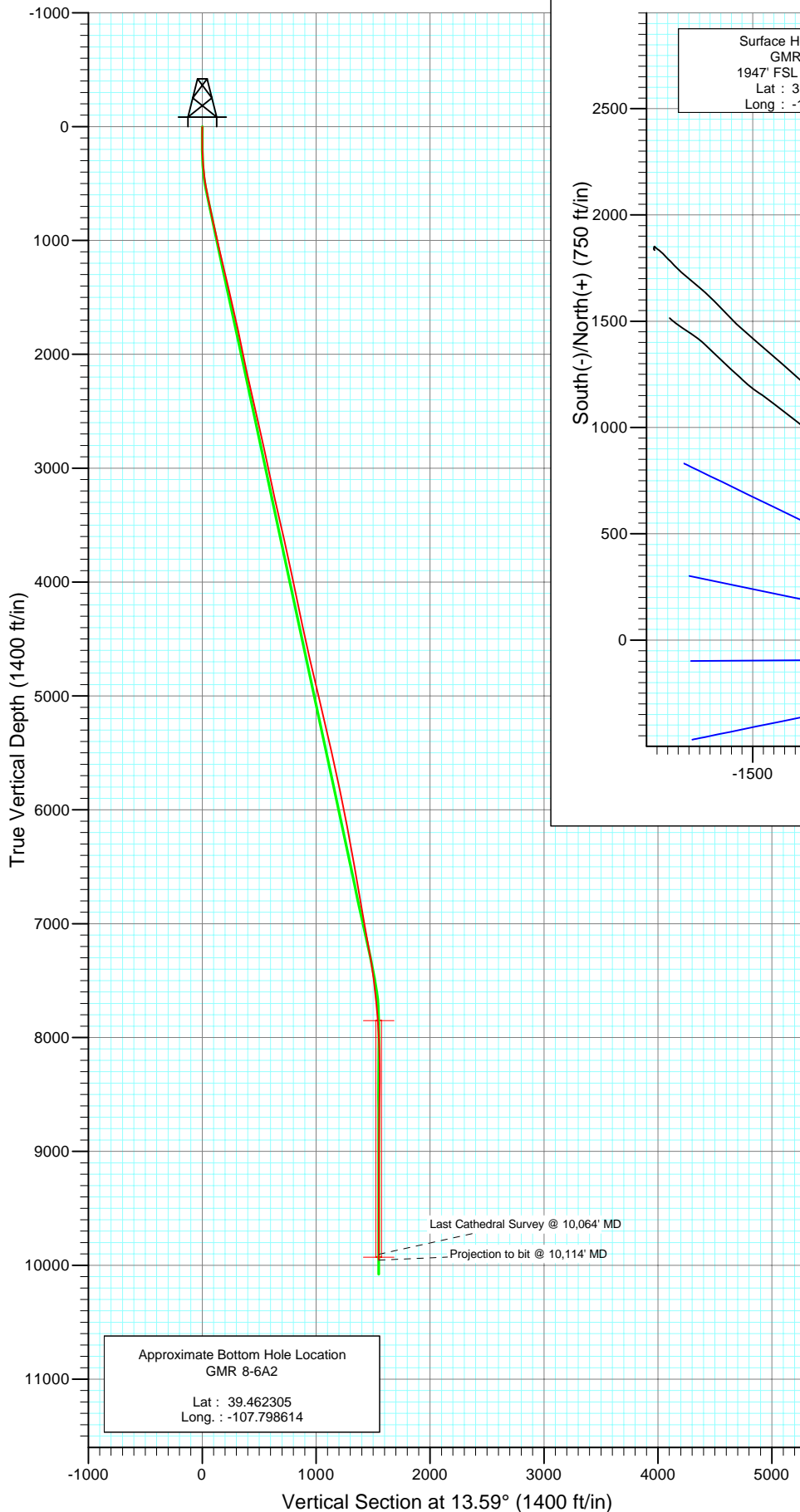




Project: Mamm Creek
 Site: NESW S8 T7S R93W (K8W Pad)
 Well: GMR 8-6A2
 Wellbore: Final
 Design: DD

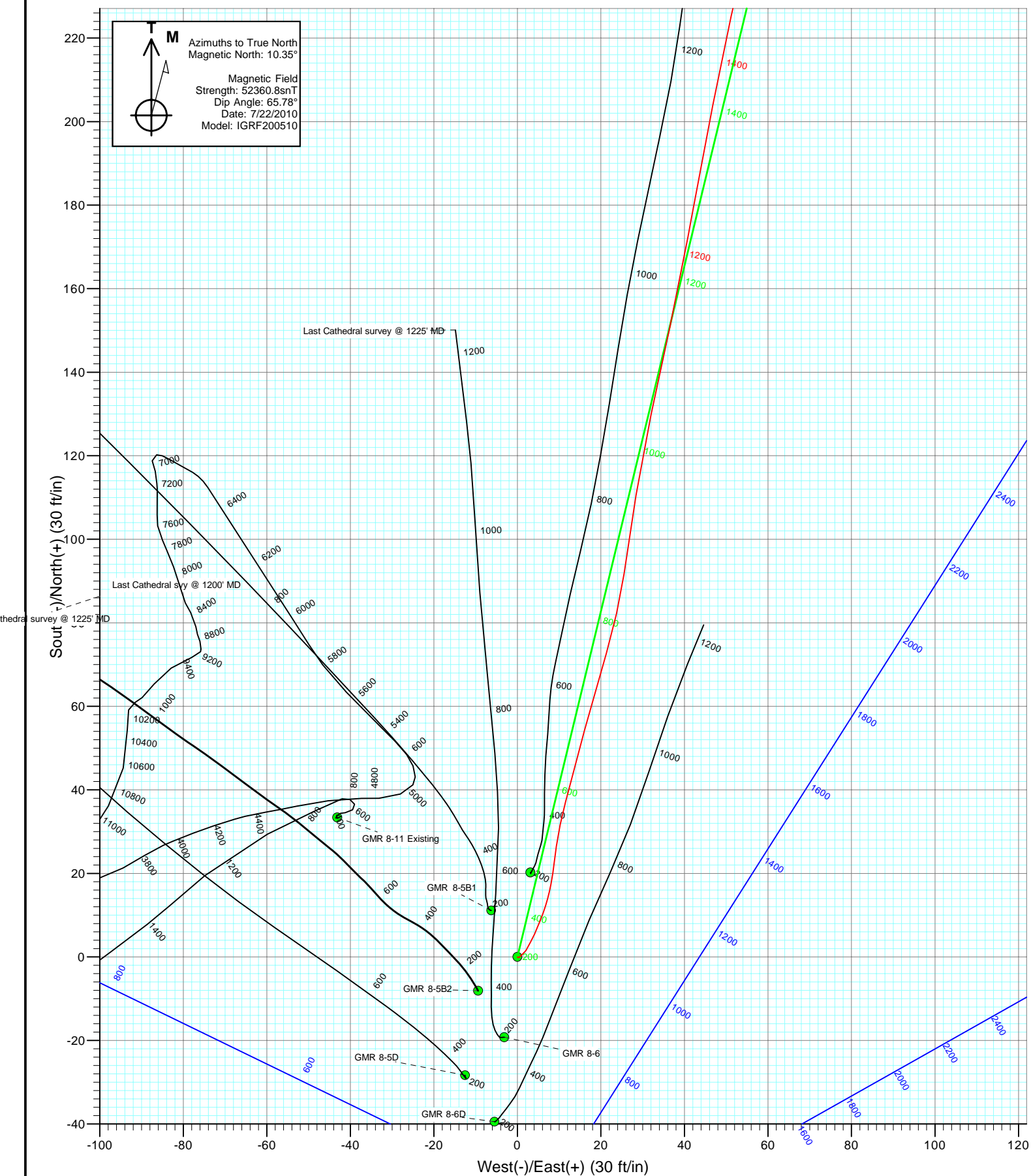


Azimuths to True North
 Magnetic North: 10.35°
 Magnetic Field
 Strength: 52360.8snT
 Dip Angle: 65.78°
 Date: 7/22/2010
 Model: IGRF200510

DESIGN DETAILS: DD				
105289, 105311: KR				
KBE @ 7848.0ft (Nabors M13)				
Target	Azimuth	Origin	N/S	E/W From TVD
GMR 8-6A2 BHL	13.59	Slot	0.0	0.0 0.0

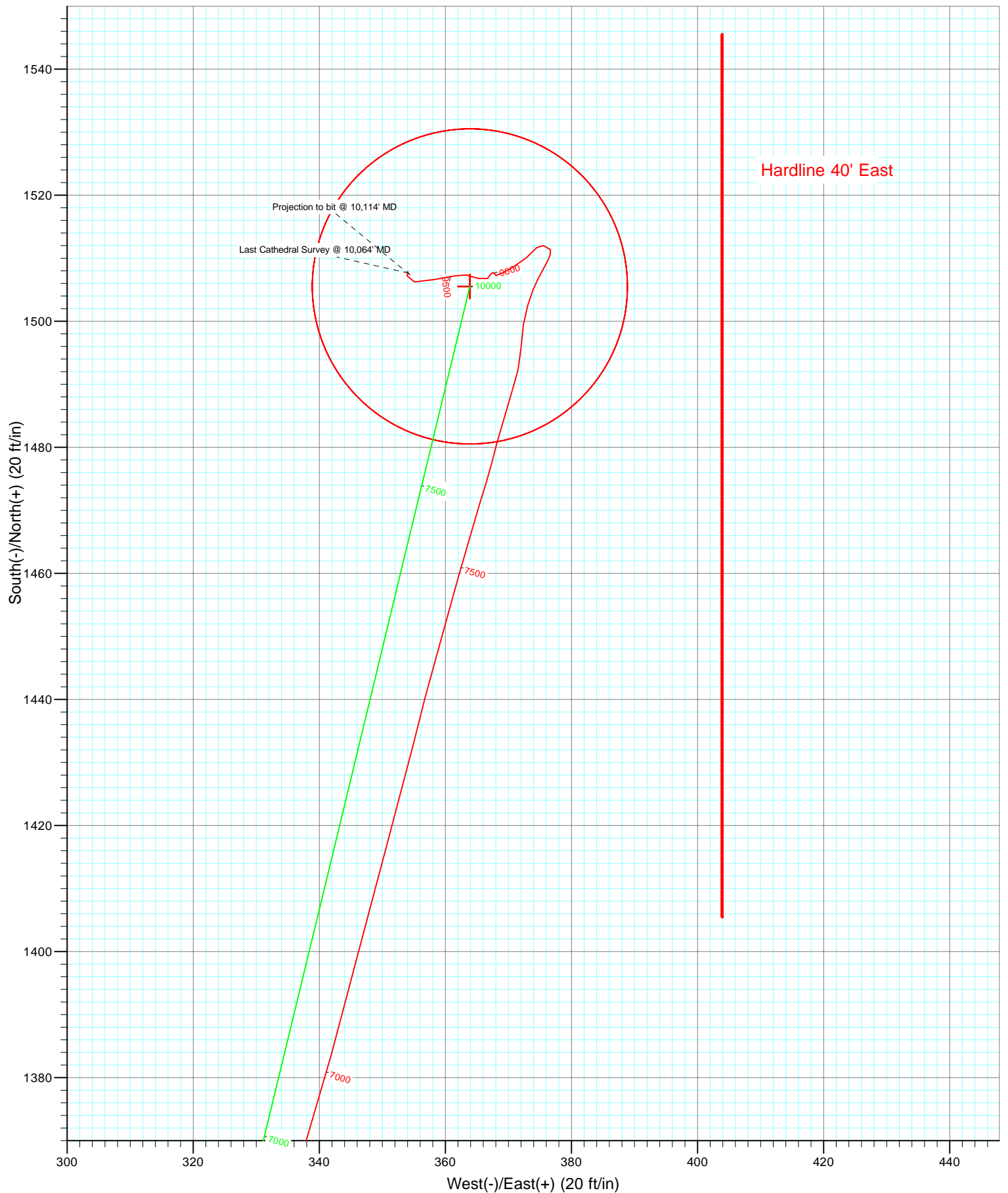


Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-6A2
Wellbore: Final
Design: DD





Project: Mamm Creek
Site: NESW S8 T7S R93W (K8W Pad)
Well: GMR 8-6A2
Wellbore: Final
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-6A2
Project:	Mamm Creek	TVD Reference:	KBE @ 7848.0ft (Nabors M13)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE @ 7848.0ft (Nabors M13)
Well:	GMR 8-6A2	North Reference:	True
Wellbore:	Final	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 8-6A2					
Well Position	+N/-S	0.0 ft	Northing:	1,599,989.04 ft	Latitude:	39.458167
	+E/-W	0.0 ft	Easting:	2,350,700.96 ft	Longitude:	-107.799869
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,826.0 ft

Wellbore	Final				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/22/2010	10.35	65.78	52,361

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	13.59	

Survey Program	Date	8/11/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
103.0	10,114.0	Survey #1 (Final)	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		
103.0	0.20	137.20	103.0	-0.1	0.1	-0.1	0.19	0.19		
134.0	0.40	82.00	134.0	-0.2	0.3	-0.1	1.06	0.65		
165.0	1.00	45.90	165.0	0.0	0.6	0.2	2.31	1.94		
196.0	1.40	46.70	196.0	0.5	1.0	0.7	1.29	1.29		
226.0	2.00	44.20	226.0	1.1	1.7	1.5	2.01	2.00		
257.0	2.70	25.70	257.0	2.2	2.4	2.7	3.30	2.26		
287.0	3.50	31.60	286.9	3.6	3.1	4.2	2.87	2.67		
318.0	4.30	23.50	317.8	5.5	4.1	6.3	3.13	2.58		
349.0	5.10	21.00	348.7	7.8	5.1	8.8	2.66	2.58		
380.0	6.10	21.80	379.6	10.6	6.2	11.8	3.24	3.23		
410.0	7.10	14.80	409.4	13.9	7.2	15.2	4.27	3.33		
440.0	7.80	10.50	439.1	17.7	8.1	19.1	2.98	2.33		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-6A2
Project:	Mamm Creek	TVD Reference:	KBE @ 7848.0ft (Nabors M13)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE @ 7848.0ft (Nabors M13)
Well:	GMR 8-6A2	North Reference:	True
Wellbore:	Final	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
471.0	8.30	7.00	469.8	22.0	8.7	23.4	2.26	1.61	
501.0	9.20	8.30	499.5	26.5	9.3	28.0	3.07	3.00	
563.0	10.80	14.30	560.5	37.0	11.5	38.7	3.08	2.58	
747.0	12.40	16.30	740.8	72.7	21.3	75.7	0.90	0.87	
839.0	12.00	8.70	830.7	91.6	25.5	95.1	1.80	-0.43	
931.0	12.00	8.70	920.7	110.5	28.4	114.1	0.00	0.00	
1,024.0	12.40	12.40	1,011.6	129.9	32.0	133.7	0.94	0.43	
1,120.0	13.20	11.90	1,105.2	150.7	36.5	155.0	0.84	0.83	
1,215.0	13.70	10.80	1,197.6	172.3	40.8	177.1	0.59	0.53	
1,235.0	13.50	10.00	1,217.0	176.9	41.7	181.8	1.37	-1.00	
1,352.0	13.60	11.40	1,330.8	203.9	46.8	209.2	0.29	0.09	
1,447.0	13.10	12.00	1,423.2	225.4	51.2	231.1	0.55	-0.53	
1,542.0	13.10	12.30	1,515.7	246.4	55.8	252.6	0.07	0.00	
1,637.0	13.00	11.50	1,608.3	267.4	60.2	274.0	0.22	-0.11	
1,733.0	12.30	16.70	1,702.0	287.8	65.3	295.0	1.39	-0.73	
1,829.0	11.70	14.20	1,795.9	307.0	70.6	315.0	0.83	-0.62	
1,924.0	11.60	15.60	1,888.9	325.5	75.5	334.2	0.32	-0.11	
2,019.0	12.50	16.00	1,981.8	344.6	80.9	354.0	0.95	0.95	
2,115.0	11.60	12.90	2,075.7	364.0	85.9	374.0	1.15	-0.94	
2,211.0	12.60	10.70	2,169.6	383.7	90.0	394.1	1.15	1.04	
2,306.0	13.00	14.40	2,262.2	404.2	94.6	415.2	0.96	0.42	
2,402.0	12.20	12.80	2,355.9	424.6	99.6	436.1	0.91	-0.83	
2,497.0	12.90	16.00	2,448.6	444.6	104.7	456.7	1.04	0.74	
2,592.0	13.10	14.60	2,541.2	465.2	110.3	478.1	0.39	0.21	
2,686.0	12.50	13.90	2,632.8	485.4	115.5	498.9	0.66	-0.64	
2,782.0	11.90	11.80	2,726.7	505.1	120.0	519.2	0.78	-0.62	
2,877.0	12.80	14.20	2,819.5	524.9	124.6	539.5	1.09	0.95	
2,973.0	12.60	13.00	2,913.1	545.4	129.5	560.6	0.34	-0.21	
3,068.0	12.00	17.50	3,006.0	565.0	134.8	580.8	1.19	-0.63	
3,163.0	11.80	16.40	3,098.9	583.7	140.6	600.4	0.32	-0.21	
3,258.0	12.00	13.80	3,191.9	602.6	145.7	620.0	0.60	0.21	
3,354.0	12.80	16.20	3,285.6	622.5	151.0	640.6	0.99	0.83	
3,450.0	12.90	13.60	3,379.2	643.1	156.5	661.9	0.61	0.10	
3,545.0	13.30	14.00	3,471.8	664.1	161.6	683.4	0.43	0.42	
3,640.0	12.40	15.00	3,564.4	684.5	166.9	704.6	0.98	-0.95	
3,736.0	12.60	12.00	3,658.1	704.7	171.8	725.3	0.71	0.21	
3,831.0	12.70	15.90	3,750.8	724.9	176.8	746.1	0.91	0.11	
3,926.0	12.40	14.60	3,843.5	744.8	182.2	766.8	0.43	-0.32	
4,022.0	11.20	16.80	3,937.5	763.7	187.5	786.4	1.33	-1.25	
4,117.0	11.80	13.90	4,030.6	782.0	192.5	805.3	0.88	0.63	
4,212.0	11.80	17.80	4,123.6	800.6	197.8	824.7	0.84	0.00	
4,308.0	12.50	16.00	4,217.4	820.0	203.7	844.9	0.83	0.73	
4,403.0	11.50	13.50	4,310.4	839.1	208.7	864.6	1.19	-1.05	
4,499.0	12.20	12.30	4,404.3	858.3	213.1	884.3	0.77	0.73	
4,594.0	12.90	16.00	4,497.0	878.3	218.2	905.0	1.12	0.74	
4,690.0	11.70	15.20	4,590.8	898.0	223.7	925.4	1.26	-1.25	
4,785.0	13.00	14.30	4,683.6	917.6	228.8	945.7	1.38	1.37	
4,880.0	12.60	16.30	4,776.3	937.9	234.4	966.7	0.63	-0.42	
4,975.0	14.10	14.90	4,868.7	959.1	240.3	988.7	1.62	1.58	
5,071.0	12.80	16.30	4,962.1	980.6	246.3	1,011.0	1.40	-1.35	
5,166.0	13.40	13.50	5,054.6	1,001.4	251.8	1,032.5	0.92	0.63	
5,261.0	14.30	13.90	5,146.8	1,023.5	257.2	1,055.2	0.95	0.95	
5,357.0	13.70	12.00	5,240.0	1,046.1	262.4	1,078.5	0.79	-0.62	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-6A2
Project:	Mamm Creek	TVD Reference:	KBE @ 7848.0ft (Nabors M13)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE @ 7848.0ft (Nabors M13)
Well:	GMR 8-6A2	North Reference:	True
Wellbore:	Final	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
5,452.0	12.20	12.70	5,332.6	1,066.9	266.9	1,099.7	1.59	-1.58	
5,547.0	12.40	13.20	5,425.4	1,086.6	271.5	1,120.0	0.24	0.21	
5,642.0	12.60	11.00	5,518.1	1,106.7	275.8	1,140.5	0.54	0.21	
5,738.0	12.30	9.90	5,611.9	1,127.1	279.5	1,161.2	0.40	-0.31	
5,833.0	12.00	15.90	5,704.8	1,146.5	284.0	1,181.2	1.37	-0.32	
5,929.0	11.70	14.20	5,798.7	1,165.6	289.1	1,200.9	0.48	-0.31	
6,024.0	12.10	15.00	5,891.7	1,184.5	294.0	1,220.4	0.46	0.42	
6,119.0	11.30	13.90	5,984.7	1,203.2	298.8	1,239.7	0.87	-0.84	
6,214.0	11.30	15.10	6,077.8	1,221.2	303.5	1,258.3	0.25	0.00	
6,309.0	10.70	13.40	6,171.1	1,238.8	308.0	1,276.4	0.72	-0.63	
6,405.0	10.00	14.20	6,265.5	1,255.5	312.1	1,293.7	0.74	-0.73	
6,500.0	10.80	10.30	6,359.0	1,272.3	315.7	1,310.8	1.12	0.84	
6,596.0	9.90	11.20	6,453.4	1,289.2	318.9	1,328.1	0.95	-0.94	
6,691.0	9.20	10.60	6,547.1	1,304.7	321.9	1,343.8	0.74	-0.74	
6,787.0	10.50	14.20	6,641.7	1,320.7	325.5	1,360.2	1.50	1.35	
6,882.0	10.50	14.10	6,735.1	1,337.5	329.7	1,377.5	0.02	0.00	
6,978.0	9.40	12.90	6,829.6	1,353.6	333.6	1,394.1	1.17	-1.15	
7,073.0	9.40	16.70	6,923.4	1,368.6	337.5	1,409.6	0.65	0.00	
7,169.0	9.60	15.90	7,018.1	1,383.8	342.0	1,425.4	0.25	0.21	
7,264.0	10.20	13.70	7,111.6	1,399.6	346.1	1,441.8	0.75	0.63	
7,360.0	10.60	16.00	7,206.1	1,416.4	350.6	1,459.1	0.60	0.42	
7,455.0	9.90	13.50	7,299.5	1,432.7	354.9	1,476.0	0.87	-0.74	
7,550.0	8.00	16.00	7,393.4	1,447.0	358.6	1,490.8	2.04	-2.00	
7,646.0	7.50	15.00	7,488.5	1,459.5	362.1	1,503.7	0.54	-0.52	
7,741.0	7.00	17.50	7,582.8	1,471.0	365.4	1,515.7	0.62	-0.53	
7,837.0	5.00	13.40	7,678.2	1,480.6	368.2	1,525.7	2.13	-2.08	
7,932.0	4.90	19.40	7,772.9	1,488.5	370.5	1,533.9	0.55	-0.11	
8,027.0	4.40	3.30	7,867.6	1,496.0	372.0	1,541.5	1.47	-0.53	
8,123.0	3.60	16.30	7,963.3	1,502.5	373.1	1,548.1	1.25	-0.83	
8,218.0	1.80	31.10	8,058.2	1,506.7	374.7	1,552.5	2.02	-1.89	
8,313.0	2.20	25.10	8,153.2	1,509.6	376.2	1,555.7	0.47	0.42	
8,409.0	0.40	285.70	8,249.1	1,511.3	376.7	1,557.5	2.40	-1.87	
8,504.0	1.20	305.40	8,344.1	1,512.0	375.6	1,557.9	0.88	0.84	
8,599.0	1.10	194.60	8,439.1	1,511.7	374.5	1,557.4	1.99	-0.11	
8,695.0	1.90	242.80	8,535.1	1,510.1	372.9	1,555.4	1.49	0.83	
8,790.0	1.30	223.40	8,630.0	1,508.6	370.7	1,553.5	0.84	-0.63	
8,885.0	1.00	264.10	8,725.0	1,507.7	369.2	1,552.3	0.89	-0.32	
8,980.0	0.30	179.20	8,820.0	1,507.4	368.4	1,551.7	1.07	-0.74	
9,070.0	0.40	287.60	8,910.0	1,507.2	368.1	1,551.5	0.63	0.11	
9,164.0	0.40	346.80	9,004.0	1,507.7	367.7	1,551.8	0.42	0.00	
9,259.0	0.40	213.90	9,099.0	1,507.7	367.4	1,551.8	0.77	0.00	
9,355.0	1.00	219.40	9,195.0	1,506.8	366.7	1,550.8	0.63	0.62	
9,450.0	1.40	304.10	9,290.0	1,506.8	365.2	1,550.4	1.73	0.42	
9,545.0	1.10	263.80	9,385.0	1,507.3	363.3	1,550.5	0.95	-0.32	
9,638.0	1.30	266.80	9,478.0	1,507.2	361.4	1,549.9	0.23	0.22	
9,734.0	2.40	255.80	9,573.9	1,506.6	358.4	1,548.7	1.20	1.15	
9,829.0	1.60	273.50	9,668.8	1,506.2	355.1	1,547.5	1.05	-0.84	
9,924.0	1.10	9.00	9,763.8	1,507.2	353.9	1,548.2	2.13	-0.53	
10,020.0	0.30	187.80	9,859.8	1,507.9	354.0	1,548.8	1.46	-0.83	
10,064.0	0.40	137.90	9,903.8	1,507.6	354.1	1,548.6	0.70	0.23	
10,114.0	0.40	137.90	9,953.8	1,507.4	354.4	1,548.4	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GMR 8-6A2
Project:	Mamm Creek	TVD Reference:	KBE @ 7848.0ft (Nabors M13)
Site:	NESW S8 T7S R93W (K8W Pad)	MD Reference:	KBE @ 7848.0ft (Nabors M13)
Well:	GMR 8-6A2	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US Multi Users DB

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 8-6A2 BHL - actual wellpath misses target center by 9.9ft at 10089.2ft MD (9929.1 TVD, 1507.5 N, 354.2 E) - Circle (radius 25.0)	0.00	0.00	9,929.0	1,505.5	363.9	1,601,484.88	2,351,102.85	39.462300	-107.798581
GMR 8-6A2 TOG - actual wellpath misses target center by 13.5ft at 8011.1ft MD (7851.7 TVD, 1494.7 N, 371.9 E) - Point	0.00	0.00	7,851.0	1,505.5	363.9	1,601,484.88	2,351,102.85	39.462300	-107.798581
Hardline 40' East - actual wellpath misses target center by 10019.4ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon Point 1 Point 2	0.00	0.00	-9,899.0 -9,899.0	1,505.5 40.0 -100.0	363.9 40.0 40.0	1,601,484.85 1,601,523.82 1,601,383.87	2,351,102.85 2,351,143.85 2,351,140.31	39.462300	-107.798581

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
10,064.0	9,903.8	1,507.6	354.1	Last Cathedral Survey @ 10,064' MD	
10,114.0	9,953.8	1,507.4	354.4	Projection to bit @ 10,114' MD	

Checked By: _____ Approved By: _____ Date: _____