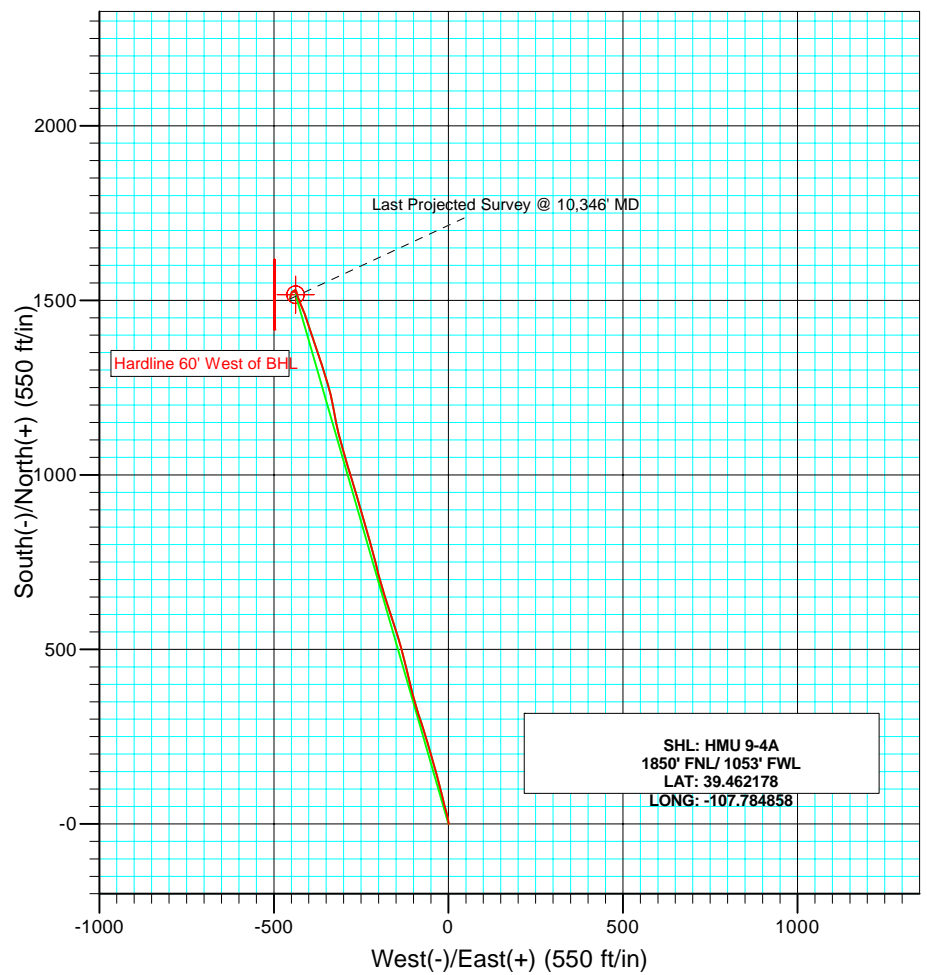
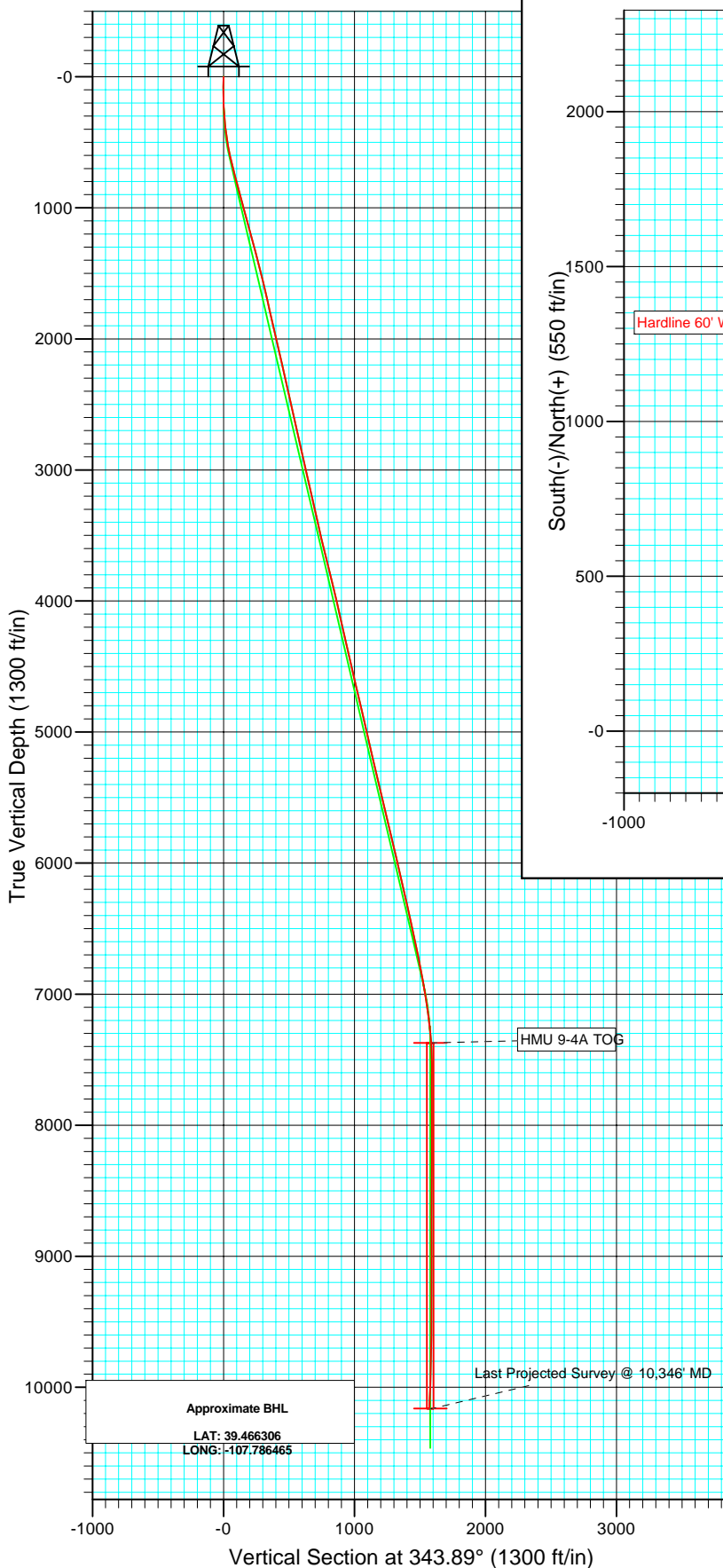




Project: Mamm Creek
 Site: SWNW S9-T7S-R93W (E9W Pad)
 Well: HMU 9-4A
 Wellbore: Final
 DD



Azimuths to True North
 Magnetic North: 10.52°

Magnetic Field
 Strength: 52502.6snT
 Dip Angle: 65.82°
 Date: 3/16/2009
 Model: IGRF200510

DESIGN DETAILS: Final

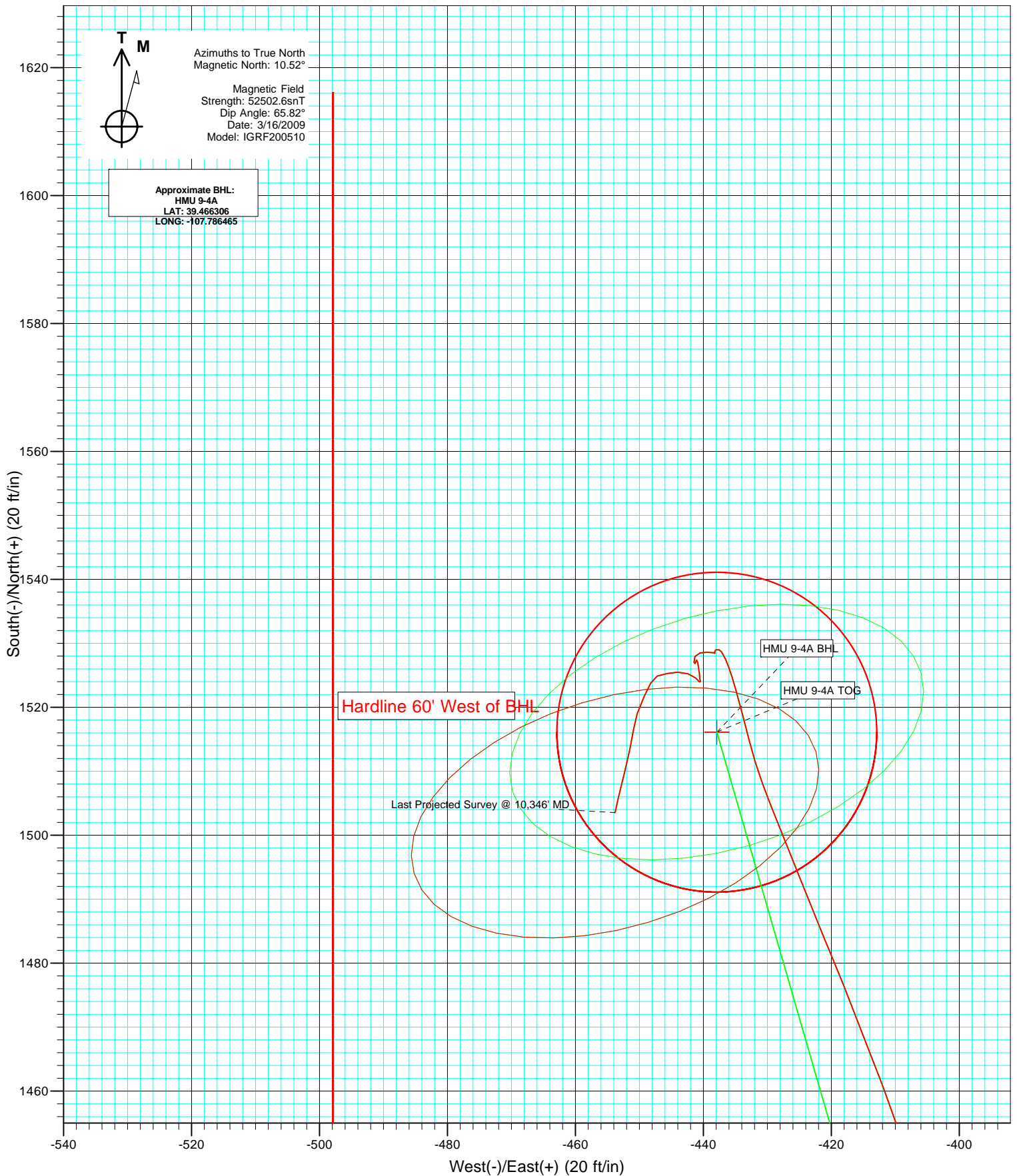
Job# 95066; BH

KBE @ 7142.0ft (Original Well Elev)

Type	Target	Azimuth	Origin	Type	N/S	E/W	From TVD
Target	No Target (Freehand)	343.89	Slot		0.0	0.0	0.0



Project: Mamm Creek
Site: SWNW S9-T7S-R93W (E9W Pad)
Well: HMU 9-4A
Wellbore: Final
DD



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU 9-4A
Project:	Mamm Creek	TVD Reference:	KBE @ 7142.0ft (Original Well Elev)
Site:	SWNW S9-T7S-R93W (E9W Pad)	MD Reference:	KBE @ 7142.0ft (Original Well Elev)
Well:	HMU 9-4A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	US EDM 2003.21 Multi User 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	SWNW S9-T7S-R93W (E9W Pad)			
Site Position:		Northing:	1,601,342.73 ft	Latitude: 39.462178
From:	Lat/Long	Easting:	2,354,974.88 ft	Longitude: -107.784858
Position Uncertainty:	0.0 ft	Slot Radius:	in	Grid Convergence: -1.44 °

Well	HMU 9-4A			
Well Position	+N/-S	0.0 ft	Northing:	1,601,342.73 ft
	+E/-W	0.0 ft	Easting:	2,354,974.88 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 7,120.0 ft

Wellbore	Final				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/16/2009	10.52	65.82	52,503

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	343.89

Survey Program	Date	3/16/2009		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
116.0	10,346.0	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	
116.0	0.40	125.10	116.0	-0.2	0.3	-0.3	0.34	0.34	
208.0	1.80	2.00	208.0	1.0	0.6	0.8	2.22	1.52	
300.0	4.50	350.30	299.8	6.0	0.1	5.8	3.00	2.93	
393.0	6.60	349.40	392.4	14.9	-1.5	14.7	2.26	2.26	
485.0	9.00	345.00	483.5	27.0	-4.3	27.2	2.69	2.61	
577.0	11.70	345.30	574.0	43.0	-8.6	43.7	2.94	2.93	
669.0	13.70	347.20	663.8	62.7	-13.4	63.9	2.22	2.17	
761.0	14.50	345.50	753.0	84.4	-18.7	86.3	0.98	0.87	
853.0	14.50	345.00	842.1	106.7	-24.5	109.3	0.14	0.00	
945.0	14.90	344.70	931.1	129.2	-30.6	132.7	0.44	0.43	
1,058.0	15.90	345.10	1,040.0	158.2	-38.4	162.7	0.89	0.88	
1,160.0	16.30	344.40	1,138.0	185.5	-45.9	190.9	0.44	0.39	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU 9-4A
Project:	Mamm Creek	TVD Reference:	KBE @ 7142.0ft (Original Well Elev)
Site:	SWNW S9-T7S-R93W (E9W Pad)	MD Reference:	KBE @ 7142.0ft (Original Well Elev)
Well:	HMU 9-4A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	US EDM 2003.21 Multi User 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
1,255.0	15.20	343.20	1,229.4	210.3	-53.1	216.7	1.21	-1.16	
1,351.0	14.30	342.20	1,322.3	233.6	-60.3	241.2	0.97	-0.94	
1,446.0	13.70	344.30	1,414.5	255.6	-67.0	264.1	0.83	-0.63	
1,540.0	14.10	343.10	1,505.7	277.3	-73.3	286.7	0.52	0.43	
1,635.0	12.90	341.90	1,598.1	298.4	-80.0	308.9	1.30	-1.26	
1,730.0	13.20	341.30	1,690.6	318.8	-86.7	330.3	0.35	0.32	
1,825.0	12.90	344.00	1,783.2	339.2	-93.1	351.8	0.72	-0.32	
1,920.0	13.40	344.40	1,875.7	360.0	-99.0	373.4	0.53	0.53	
2,015.0	12.70	344.00	1,968.2	380.7	-104.9	394.8	0.74	-0.74	
2,111.0	12.90	346.20	2,061.8	401.2	-110.3	416.1	0.55	0.21	
2,206.0	12.80	347.60	2,154.5	421.8	-115.1	437.2	0.34	-0.11	
2,301.0	12.90	347.20	2,247.1	442.4	-119.7	458.3	0.14	0.11	
2,396.0	13.00	347.90	2,339.7	463.2	-124.3	479.5	0.20	0.11	
2,492.0	12.50	343.60	2,433.3	483.7	-129.5	500.7	1.12	-0.52	
2,587.0	12.90	344.00	2,526.0	503.8	-135.3	521.6	0.43	0.42	
2,682.0	12.60	342.90	2,618.6	523.9	-141.3	542.5	0.41	-0.32	
2,777.0	12.60	342.50	2,711.3	543.7	-147.5	563.3	0.09	0.00	
2,872.0	12.50	343.20	2,804.1	563.4	-153.5	583.9	0.19	-0.11	
2,967.0	12.90	342.70	2,896.8	583.4	-159.7	604.8	0.44	0.42	
3,062.0	12.60	340.90	2,989.4	603.3	-166.2	625.7	0.52	-0.32	
3,157.0	12.70	340.90	3,082.1	623.0	-173.0	646.5	0.11	0.11	
3,253.0	12.90	342.80	3,175.7	643.2	-179.6	667.8	0.49	0.21	
3,348.0	12.70	341.80	3,268.4	663.2	-186.0	688.8	0.31	-0.21	
3,443.0	12.90	345.50	3,361.0	683.4	-192.0	709.8	0.89	0.21	
3,538.0	12.70	344.60	3,453.6	703.7	-197.4	730.9	0.30	-0.21	
3,634.0	13.70	346.60	3,547.1	725.0	-202.8	752.8	1.15	1.04	
3,728.0	13.70	345.20	3,638.4	746.6	-208.2	775.0	0.35	0.00	
3,823.0	13.80	345.60	3,730.7	768.4	-213.9	797.6	0.15	0.11	
3,918.0	13.90	344.10	3,822.9	790.4	-219.9	820.3	0.39	0.11	
4,013.0	13.20	344.50	3,915.3	811.8	-225.9	842.6	0.74	-0.74	
4,109.0	13.00	344.40	4,008.8	832.7	-231.7	864.3	0.21	-0.21	
4,204.0	13.00	343.40	4,101.4	853.3	-237.7	885.7	0.24	0.00	
4,299.0	12.50	344.20	4,194.0	873.4	-243.5	906.7	0.56	-0.53	
4,394.0	13.10	345.10	4,286.7	893.7	-249.1	927.7	0.67	0.63	
4,489.0	12.60	343.30	4,379.3	914.0	-254.8	948.9	0.67	-0.53	
4,584.0	13.30	342.40	4,471.9	934.4	-261.1	970.1	0.77	0.74	
4,680.0	12.90	341.90	4,565.4	955.1	-267.8	991.9	0.43	-0.42	
4,775.0	13.20	345.10	4,657.9	975.6	-273.9	1,013.3	0.82	0.32	
4,870.0	13.50	344.20	4,750.3	996.8	-279.7	1,035.3	0.38	0.32	
4,965.0	13.30	342.70	4,842.8	1,017.9	-285.9	1,057.3	0.42	-0.21	
5,060.0	12.70	341.60	4,935.3	1,038.2	-292.5	1,078.6	0.68	-0.63	
5,155.0	13.40	345.60	5,027.9	1,058.8	-298.5	1,100.1	1.20	0.74	
5,250.0	13.30	344.30	5,120.3	1,080.0	-304.2	1,122.0	0.33	-0.11	
5,345.0	12.60	344.20	5,212.9	1,100.5	-310.0	1,143.3	0.74	-0.74	
5,441.0	13.10	347.80	5,306.5	1,121.2	-315.1	1,164.6	0.98	0.52	
5,536.0	12.80	345.80	5,399.1	1,141.9	-320.0	1,185.9	0.57	-0.32	
5,631.0	13.20	350.10	5,491.6	1,162.8	-324.4	1,207.2	1.10	0.42	
5,727.0	12.70	349.30	5,585.2	1,184.0	-328.3	1,228.6	0.55	-0.52	
5,822.0	14.00	349.70	5,677.6	1,205.5	-332.3	1,250.4	1.37	1.37	
5,917.0	14.00	345.60	5,769.8	1,228.0	-337.2	1,273.3	1.04	0.00	
6,012.0	13.50	345.40	5,862.1	1,249.8	-342.9	1,295.9	0.53	-0.53	
6,107.0	13.30	344.10	5,954.5	1,271.1	-348.6	1,317.9	0.38	-0.21	
6,203.0	13.40	341.30	6,047.9	1,292.2	-355.2	1,340.1	0.68	0.10	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU 9-4A
Project:	Mamm Creek	TVD Reference:	KBE @ 7142.0ft (Original Well Elev)
Site:	SWNW S9-T7S-R93W (E9W Pad)	MD Reference:	KBE @ 7142.0ft (Original Well Elev)
Well:	HMU 9-4A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	US EDM 2003.21 Multi User 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
6,298.0	12.50	340.60	6,140.5	1,312.4	-362.2	1,361.3	0.96	-0.95	
6,393.0	12.50	343.10	6,233.2	1,331.9	-368.6	1,381.9	0.57	0.00	
6,488.0	12.70	341.20	6,325.9	1,351.6	-374.9	1,402.6	0.48	0.21	
6,583.0	12.50	341.30	6,418.7	1,371.2	-381.6	1,423.3	0.21	-0.21	
6,677.0	12.60	342.30	6,510.4	1,390.6	-388.0	1,443.7	0.25	0.11	
6,773.0	11.60	341.60	6,604.3	1,409.8	-394.2	1,463.8	1.05	-1.04	
6,868.0	10.90	340.80	6,697.5	1,427.3	-400.2	1,482.3	0.75	-0.74	
6,963.0	11.00	340.60	6,790.7	1,444.4	-406.1	1,500.3	0.11	0.11	
7,058.0	10.20	340.40	6,884.1	1,460.8	-412.0	1,517.8	0.84	-0.84	
7,154.0	10.30	337.20	6,978.6	1,476.8	-418.1	1,534.8	0.60	0.10	
7,249.0	9.20	338.40	7,072.2	1,491.6	-424.2	1,550.8	1.18	-1.16	
7,344.0	7.40	337.90	7,166.2	1,504.4	-429.3	1,564.4	1.90	-1.89	
7,439.0	5.60	346.00	7,260.6	1,514.5	-432.8	1,575.1	2.12	-1.89	
7,534.0	4.40	344.30	7,355.2	1,522.5	-434.9	1,583.4	1.27	-1.26	
7,629.0	2.00	335.30	7,450.1	1,527.6	-436.5	1,588.7	2.57	-2.53	
7,724.0	0.40	257.10	7,545.0	1,529.0	-437.6	1,590.4	2.06	-1.68	
7,819.0	0.10	33.60	7,640.0	1,529.0	-437.8	1,590.4	0.50	-0.32	
7,915.0	0.30	253.70	7,736.1	1,529.0	-438.0	1,590.5	0.40	0.21	
8,010.0	0.30	171.60	7,831.1	1,528.7	-438.2	1,590.2	0.41	0.00	
8,105.0	0.00	100.50	7,926.1	1,528.4	-438.2	1,590.0	0.32	-0.32	
8,200.0	0.40	286.90	8,021.1	1,528.5	-438.5	1,590.2	0.42	0.42	
8,295.0	0.70	268.80	8,116.1	1,528.6	-439.4	1,590.5	0.36	0.32	
8,390.0	0.60	260.40	8,211.0	1,528.5	-440.5	1,590.7	0.15	-0.11	
8,486.0	0.70	215.60	8,307.0	1,527.9	-441.3	1,590.4	0.52	0.10	
8,580.0	0.60	156.90	8,401.0	1,527.0	-441.5	1,589.6	0.68	-0.11	
8,676.0	0.70	10.50	8,497.0	1,527.1	-441.2	1,589.6	1.30	0.10	
8,771.0	0.90	165.50	8,592.0	1,527.0	-440.9	1,589.4	1.64	0.21	
8,868.0	1.20	176.60	8,689.0	1,525.2	-440.6	1,587.6	0.37	0.31	
8,964.0	0.20	146.20	8,785.0	1,524.1	-440.5	1,586.5	1.08	-1.04	
9,057.0	0.20	264.00	8,878.0	1,523.9	-440.5	1,586.3	0.37	0.00	
9,152.0	0.20	348.50	8,973.0	1,524.1	-440.7	1,586.5	0.28	0.00	
9,246.0	0.60	307.40	9,067.0	1,524.6	-441.2	1,587.1	0.50	0.43	
9,342.0	1.10	293.50	9,163.0	1,525.2	-442.4	1,588.1	0.56	0.52	
9,437.0	0.90	262.50	9,258.0	1,525.5	-444.0	1,588.8	0.60	-0.21	
9,532.0	1.10	263.10	9,352.9	1,525.3	-445.6	1,589.0	0.21	0.21	
9,627.0	0.90	247.40	9,447.9	1,524.9	-447.2	1,589.1	0.36	-0.21	
9,722.0	1.10	200.90	9,542.9	1,523.7	-448.2	1,588.3	0.85	0.21	
9,817.0	1.80	209.90	9,637.9	1,521.6	-449.3	1,586.5	0.77	0.74	
9,912.0	1.70	193.10	9,732.8	1,518.9	-450.4	1,584.3	0.55	-0.11	
10,007.0	1.50	191.50	9,827.8	1,516.3	-450.9	1,581.9	0.22	-0.21	
10,102.0	2.20	190.70	9,922.8	1,513.3	-451.5	1,579.2	0.74	0.74	
10,197.0	2.30	194.90	10,017.7	1,509.7	-452.3	1,575.9	0.20	0.11	
10,292.0	2.50	192.60	10,112.6	1,505.8	-453.3	1,572.5	0.23	0.21	
10,346.0	2.50	192.60	10,166.6	1,503.5	-453.8	1,570.4	0.00	0.00	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU 9-4A
Project:	Mamm Creek	TVD Reference:	KBE @ 7142.0ft (Original Well Elev)
Site:	SWNW S9-T7S-R93W (E9W Pad)	MD Reference:	KBE @ 7142.0ft (Original Well Elev)
Well:	HMU 9-4A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	US EDM 2003.21 Multi User 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
HMU 9-4A TOG - survey misses target center by 8.0ft at 7550.5ft MD (7371.6 TVD, 1523.7 N, -435.2 E) - Point	0.00	0.00	7,372.0	1,516.1	-437.9	1,602,869.39	2,354,575.25	39.466340	-107.786409
HMU 9-4A BHL - survey misses target center by 20.1ft at 10340.8ft MD (10161.3 TVD, 1503.8 N, -453.7 E) - Circle (radius 25.0)	0.00	0.00	10,162.0	1,516.1	-437.9	1,602,869.38	2,354,575.25	39.466340	-107.786409
HMU 9-4A Hardline - survey misses target center by 10283.8ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon Point 1 Point 2	0.00	0.00	-10,162.0 -10,162.0	1,516.1 -100.0	-437.9 -60.0	1,602,869.38 1,602,970.86 1,602,770.92	2,354,575.25 2,354,517.78 2,354,512.75	39.466340	-107.786409

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,346.0	10,166.6	1,503.5	-453.8	Last Projected Survey @ 10,346' MD

Checked By: _____ Approved By: _____ Date: _____