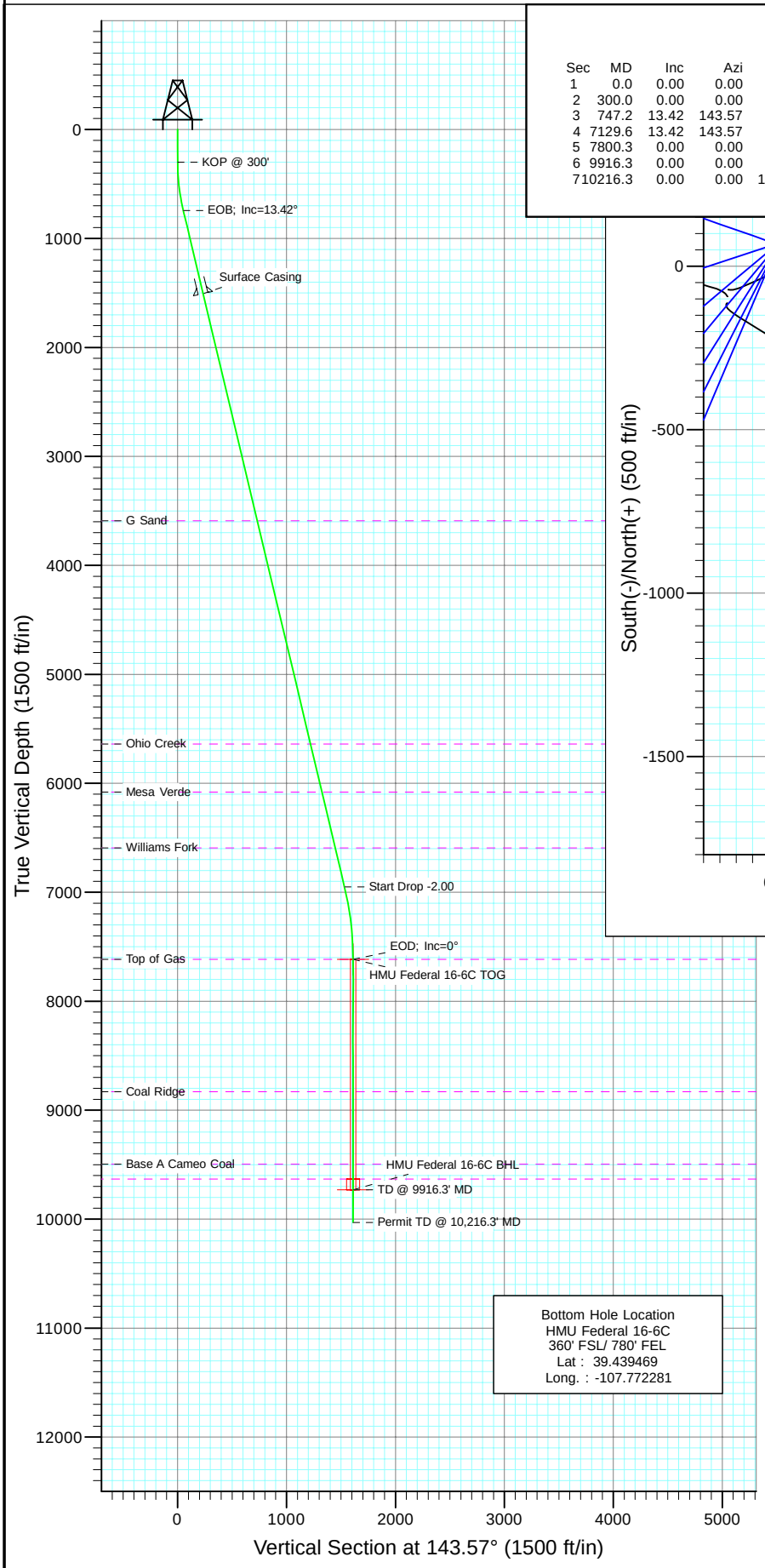
Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 16-6C
Wellbore: DD
Design: Plan #1

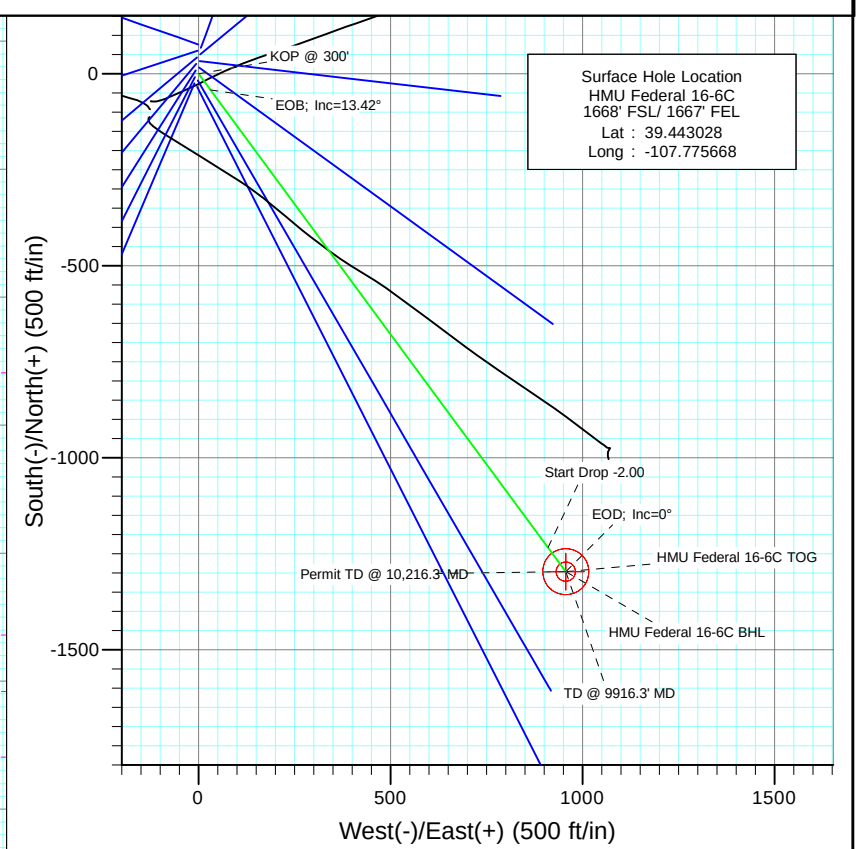
CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	747.2	13.42	143.57	743.1	-41.9	30.9	3.00	143.57	52.1	
4	7129.6	13.42	143.57	6951.4	-1233.4	910.2	0.00	0.00	1532.9	
5	7800.3	0.00	0.00	7616.0	-1296.3	956.6	2.00	180.00	1611.0	HMU Federal 16-6C TOG
6	9916.3	0.00	0.00	9732.0	-1296.3	956.6	0.00	0.00	1611.0	HMU Federal 16-6C BHL
7	10216.3	0.00	0.00	10032.0	-1296.3	956.6	0.00	0.00	1611.0	



Bottom Hole Location
HMU Federal 16-6C
360' FSL/ 780' FEL
Lat : 39.439469
Long. : -107.772281



Surface Hole Location
HMU Federal 16-6C
1668' FSL/ 1667' FEL
Lat : 39.443028
Long : -107.775668

Azimuths to True North
Magnetic North: 10.30°

Magnetic Field
Strength: 52330.6snT
Dip Angle: 65.77°
Date: 10/29/2010
Model: IGRF200510

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3590.0	3673.9	G Sand
5640.0	5781.4	Ohio Creek
6081.0	6234.8	Mesa Verde
6593.0	6761.2	Williams Fork
7616.0	7800.3	Top of Gas
8832.0	9016.3	Coal Ridge
9496.0	9680.3	Base A Cameo Coal
9632.0	9816.3	Rollins

DESIGN DETAILS: Plan #1

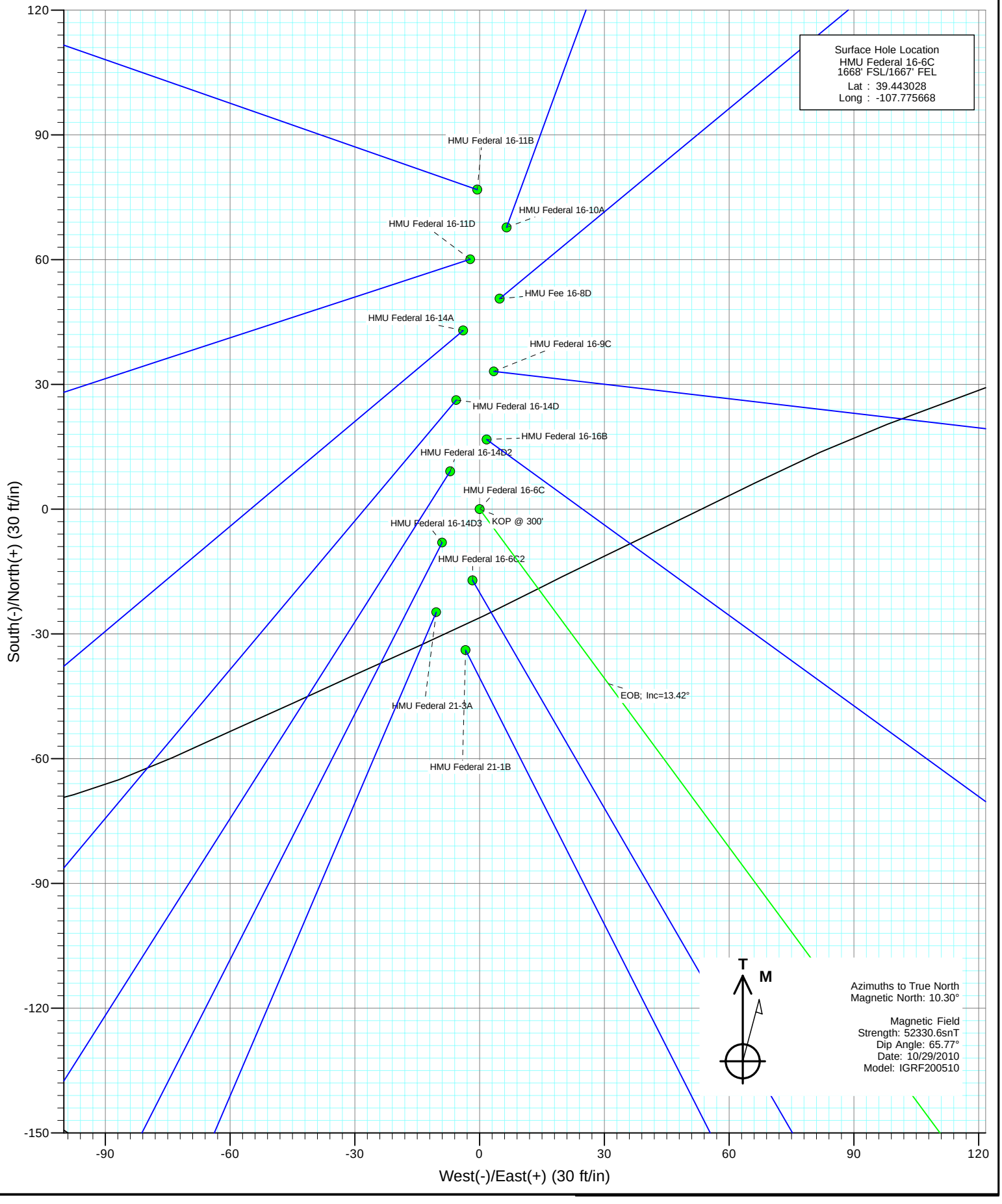
105XXX; KR
KBE @ 7667.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
HMU Federal 16-6C BHL	143.57	Slot	0.0	0.0	0.0

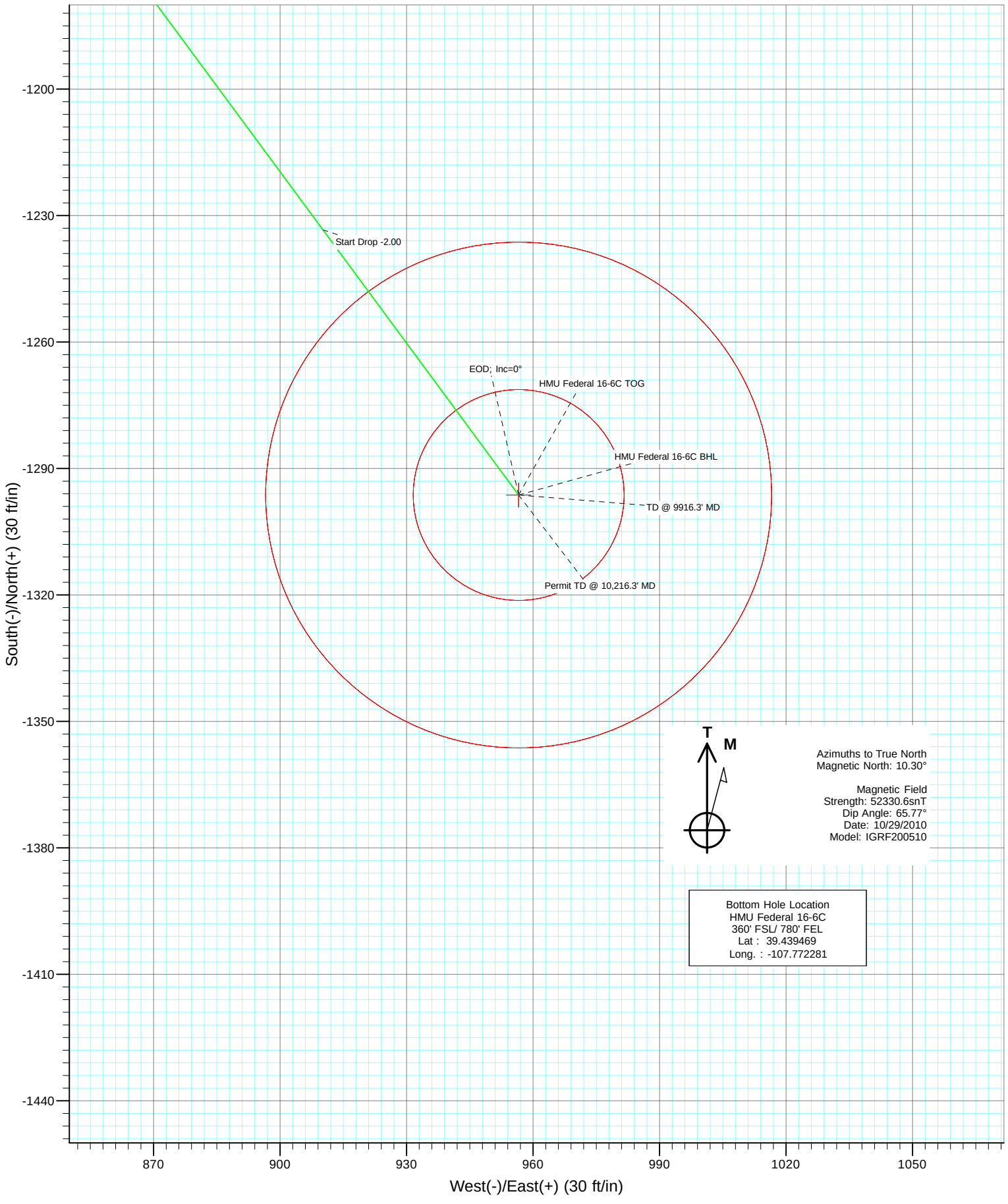
ENCANA

Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 16-6C
Wellbore: DD
Design: Plan #1

CATHEDRAL



Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 16-6C
Wellbore: DD
Design: Plan #1



Azimuths to True North
Magnetic North: 10.30°

Magnetic Field
Strength: 52330.6snT
Dip Angle: 65.77°
Date: 10/29/2010
Model: IGRF200510

Bottom Hole Location
HMU Federal 16-6C
360' FSL/ 780' FEL
Lat : 39.439469
Long. : -107.772281

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**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 (J16W)

Site Position:		**Northing:**	1,594,381.52 ft	**Latitude:**	39.443239
From:	Lat/Long	**Easting:**	2,357,395.39 ft	**Longitude:**	-107.775670
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.44 °

Well HMU Federal 16-6C

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,594,304.67 ft	**Latitude:**	39.443028
	+E/-W	0.0 ft	**Easting:**	2,357,394.03 ft	**Longitude:**	-107.775668
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	7,645.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/29/2010	10.30	65.77	52,331

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	143.57

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
747.2	13.42	143.57	743.1	-41.9	30.9	3.00	3.00	0.00	143.57	
7,129.6	13.42	143.57	6,951.4	-1,233.4	910.2	0.00	0.00	0.00	0.00	
7,800.3	0.00	0.00	7,616.0	-1,296.3	956.6	2.00	-2.00	0.00	180.00	HMU Federal 16-6C T
9,916.3	0.00	0.00	9,732.0	-1,296.3	956.6	0.00	0.00	0.00	0.00	HMU Federal 16-6C E
10,216.3	0.00	0.00	10,032.0	-1,296.3	956.6	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**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	
30.0	0.00	0.00	30.0	0.0	0.0	0.0	0.00	0.00	
60.0	0.00	0.00	60.0	0.0	0.0	0.0	0.00	0.00	
90.0	0.00	0.00	90.0	0.0	0.0	0.0	0.00	0.00	
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	
150.0	0.00	0.00	150.0	0.0	0.0	0.0	0.00	0.00	
180.0	0.00	0.00	180.0	0.0	0.0	0.0	0.00	0.00	
210.0	0.00	0.00	210.0	0.0	0.0	0.0	0.00	0.00	
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	
270.0	0.00	0.00	270.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
330.0	0.90	143.57	330.0	-0.2	0.1	0.2	3.00	3.00	
360.0	1.80	143.57	360.0	-0.8	0.6	0.9	3.00	3.00	
390.0	2.70	143.57	390.0	-1.7	1.3	2.1	3.00	3.00	
420.0	3.60	143.57	419.9	-3.0	2.2	3.8	3.00	3.00	
450.0	4.50	143.57	449.8	-4.7	3.5	5.9	3.00	3.00	
480.0	5.40	143.57	479.7	-6.8	5.0	8.5	3.00	3.00	
510.0	6.30	143.57	509.6	-9.3	6.8	11.5	3.00	3.00	
540.0	7.20	143.57	539.4	-12.1	8.9	15.1	3.00	3.00	
570.0	8.10	143.57	569.1	-15.3	11.3	19.1	3.00	3.00	
600.0	9.00	143.57	598.8	-18.9	14.0	23.5	3.00	3.00	
630.0	9.90	143.57	628.4	-22.9	16.9	28.4	3.00	3.00	
660.0	10.80	143.57	657.9	-27.2	20.1	33.8	3.00	3.00	
690.0	11.70	143.57	687.3	-31.9	23.6	39.7	3.00	3.00	
720.0	12.60	143.57	716.6	-37.0	27.3	46.0	3.00	3.00	
747.2	13.42	143.57	743.1	-41.9	30.9	52.1	3.00	3.00	EOB; Inc=13.42°
750.0	13.42	143.57	745.8	-42.5	31.3	52.8	0.00	0.00	
780.0	13.42	143.57	775.0	-48.1	35.5	59.7	0.00	0.00	
810.0	13.42	143.57	804.2	-53.7	39.6	66.7	0.00	0.00	
840.0	13.42	143.57	833.4	-59.3	43.7	73.6	0.00	0.00	
870.0	13.42	143.57	862.6	-64.9	47.9	80.6	0.00	0.00	
900.0	13.42	143.57	891.8	-70.5	52.0	87.6	0.00	0.00	
930.0	13.42	143.57	920.9	-76.1	56.1	94.5	0.00	0.00	
960.0	13.42	143.57	950.1	-81.7	60.3	101.5	0.00	0.00	
990.0	13.42	143.57	979.3	-87.3	64.4	108.4	0.00	0.00	
1,020.0	13.42	143.57	1,008.5	-92.9	68.5	115.4	0.00	0.00	
1,050.0	13.42	143.57	1,037.7	-98.5	72.7	122.4	0.00	0.00	
1,080.0	13.42	143.57	1,066.8	-104.1	76.8	129.3	0.00	0.00	
1,110.0	13.42	143.57	1,096.0	-109.7	80.9	136.3	0.00	0.00	
1,140.0	13.42	143.57	1,125.2	-115.3	85.1	143.2	0.00	0.00	
1,170.0	13.42	143.57	1,154.4	-120.9	89.2	150.2	0.00	0.00	
1,200.0	13.42	143.57	1,183.6	-126.5	93.3	157.2	0.00	0.00	
1,230.0	13.42	143.57	1,212.8	-132.1	97.5	164.1	0.00	0.00	
1,260.0	13.42	143.57	1,241.9	-137.7	101.6	171.1	0.00	0.00	
1,290.0	13.42	143.57	1,271.1	-143.3	105.7	178.1	0.00	0.00	
1,320.0	13.42	143.57	1,300.3	-148.9	109.9	185.0	0.00	0.00	
1,350.0	13.42	143.57	1,329.5	-154.5	114.0	192.0	0.00	0.00	
1,380.0	13.42	143.57	1,358.7	-160.1	118.1	198.9	0.00	0.00	
1,410.0	13.42	143.57	1,387.8	-165.7	122.3	205.9	0.00	0.00	
1,440.0	13.42	143.57	1,417.0	-171.3	126.4	212.9	0.00	0.00	
1,470.0	13.42	143.57	1,446.2	-176.9	130.5	219.8	0.00	0.00	
1,500.0	13.42	143.57	1,475.4	-182.5	134.7	226.8	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**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
1,530.0	13.42	143.57	1,504.6	-188.1	138.8	233.7	0.00	0.00	
1,532.0	13.42	143.57	1,506.6	-188.4	139.1	234.2	0.00	0.00	Surface Casing
1,560.0	13.42	143.57	1,533.7	-193.7	142.9	240.7	0.00	0.00	
1,590.0	13.42	143.57	1,562.9	-199.3	147.0	247.7	0.00	0.00	
1,620.0	13.42	143.57	1,592.1	-204.9	151.2	254.6	0.00	0.00	
1,650.0	13.42	143.57	1,621.3	-210.5	155.3	261.6	0.00	0.00	
1,680.0	13.42	143.57	1,650.5	-216.1	159.4	268.5	0.00	0.00	
1,710.0	13.42	143.57	1,679.7	-221.7	163.6	275.5	0.00	0.00	
1,740.0	13.42	143.57	1,708.8	-227.3	167.7	282.5	0.00	0.00	
1,770.0	13.42	143.57	1,738.0	-232.9	171.8	289.4	0.00	0.00	
1,800.0	13.42	143.57	1,767.2	-238.5	176.0	296.4	0.00	0.00	
1,830.0	13.42	143.57	1,796.4	-244.1	180.1	303.3	0.00	0.00	
1,860.0	13.42	143.57	1,825.6	-249.7	184.2	310.3	0.00	0.00	
1,890.0	13.42	143.57	1,854.7	-255.3	188.4	317.3	0.00	0.00	
1,920.0	13.42	143.57	1,883.9	-260.9	192.5	324.2	0.00	0.00	
1,950.0	13.42	143.57	1,913.1	-266.5	196.6	331.2	0.00	0.00	
1,980.0	13.42	143.57	1,942.3	-272.1	200.8	338.1	0.00	0.00	
2,010.0	13.42	143.57	1,971.5	-277.7	204.9	345.1	0.00	0.00	
2,040.0	13.42	143.57	2,000.7	-283.3	209.0	352.1	0.00	0.00	
2,070.0	13.42	143.57	2,029.8	-288.9	213.2	359.0	0.00	0.00	
2,100.0	13.42	143.57	2,059.0	-294.5	217.3	366.0	0.00	0.00	
2,130.0	13.42	143.57	2,088.2	-300.1	221.4	372.9	0.00	0.00	
2,160.0	13.42	143.57	2,117.4	-305.7	225.6	379.9	0.00	0.00	
2,190.0	13.42	143.57	2,146.6	-311.3	229.7	386.9	0.00	0.00	
2,220.0	13.42	143.57	2,175.7	-316.9	233.8	393.8	0.00	0.00	
2,250.0	13.42	143.57	2,204.9	-322.5	238.0	400.8	0.00	0.00	
2,280.0	13.42	143.57	2,234.1	-328.1	242.1	407.7	0.00	0.00	
2,310.0	13.42	143.57	2,263.3	-333.7	246.2	414.7	0.00	0.00	
2,340.0	13.42	143.57	2,292.5	-339.3	250.4	421.7	0.00	0.00	
2,370.0	13.42	143.57	2,321.6	-344.9	254.5	428.6	0.00	0.00	
2,400.0	13.42	143.57	2,350.8	-350.5	258.6	435.6	0.00	0.00	
2,430.0	13.42	143.57	2,380.0	-356.1	262.8	442.5	0.00	0.00	
2,460.0	13.42	143.57	2,409.2	-361.7	266.9	449.5	0.00	0.00	
2,490.0	13.42	143.57	2,438.4	-367.3	271.0	456.5	0.00	0.00	

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 Federal 16-6C BHI	0.00	0.00	9,732.0	-1,296.3	956.6	1,592,984.83	2,358,317.84	39.439469	-107.772281
- plan misses target center by 7384.4ft at 2490.0ft MD (2438.4 TVD, -367.3 N, 271.0 E)									
- Circle (radius 60.0)									
HMU Federal 16-6C TO	0.00	0.00	7,616.0	-1,296.3	956.6	1,592,984.83	2,358,317.84	39.439469	-107.772281
- plan misses target center by 5304.8ft at 2490.0ft MD (2438.4 TVD, -367.3 N, 271.0 E)									
- Circle (radius 25.0)									

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Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**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
2,500.0	13.42	143.57	2,448.1	-369.1	272.4	458.8	0.00	0.00	
2,600.0	13.42	143.57	2,545.4	-387.8	286.2	482.0	0.00	0.00	
2,700.0	13.42	143.57	2,642.6	-406.5	300.0	505.2	0.00	0.00	
2,800.0	13.42	143.57	2,739.9	-425.1	313.7	528.4	0.00	0.00	
2,900.0	13.42	143.57	2,837.2	-443.8	327.5	551.6	0.00	0.00	
3,000.0	13.42	143.57	2,934.5	-462.5	341.3	574.8	0.00	0.00	
3,100.0	13.42	143.57	3,031.7	-481.2	355.1	598.0	0.00	0.00	
3,200.0	13.42	143.57	3,129.0	-499.8	368.8	621.2	0.00	0.00	
3,300.0	13.42	143.57	3,226.3	-518.5	382.6	644.4	0.00	0.00	
3,400.0	13.42	143.57	3,323.5	-537.2	396.4	667.6	0.00	0.00	
3,500.0	13.42	143.57	3,420.8	-555.8	410.2	690.8	0.00	0.00	
3,600.0	13.42	143.57	3,518.1	-574.5	423.9	714.0	0.00	0.00	
3,673.9	13.42	143.57	3,590.0	-588.3	434.1	731.1	0.00	0.00	G Sand
3,700.0	13.42	143.57	3,615.4	-593.2	437.7	737.2	0.00	0.00	
3,800.0	13.42	143.57	3,712.6	-611.8	451.5	760.4	0.00	0.00	
3,900.0	13.42	143.57	3,809.9	-630.5	465.3	783.6	0.00	0.00	
4,000.0	13.42	143.57	3,907.2	-649.2	479.0	806.8	0.00	0.00	
4,100.0	13.42	143.57	4,004.4	-667.8	492.8	830.0	0.00	0.00	
4,200.0	13.42	143.57	4,101.7	-686.5	506.6	853.2	0.00	0.00	
4,300.0	13.42	143.57	4,199.0	-705.2	520.4	876.4	0.00	0.00	
4,400.0	13.42	143.57	4,296.3	-723.8	534.1	899.6	0.00	0.00	
4,500.0	13.42	143.57	4,393.5	-742.5	547.9	922.8	0.00	0.00	
4,600.0	13.42	143.57	4,490.8	-761.2	561.7	946.0	0.00	0.00	
4,700.0	13.42	143.57	4,588.1	-779.8	575.5	969.2	0.00	0.00	
4,800.0	13.42	143.57	4,685.3	-798.5	589.3	992.4	0.00	0.00	
4,900.0	13.42	143.57	4,782.6	-817.2	603.0	1,015.6	0.00	0.00	
5,000.0	13.42	143.57	4,879.9	-835.8	616.8	1,038.8	0.00	0.00	
5,100.0	13.42	143.57	4,977.2	-854.5	630.6	1,062.0	0.00	0.00	
5,200.0	13.42	143.57	5,074.4	-873.2	644.4	1,085.2	0.00	0.00	
5,300.0	13.42	143.57	5,171.7	-891.8	658.1	1,108.4	0.00	0.00	
5,400.0	13.42	143.57	5,269.0	-910.5	671.9	1,131.6	0.00	0.00	
5,500.0	13.42	143.57	5,366.2	-929.2	685.7	1,154.8	0.00	0.00	
5,600.0	13.42	143.57	5,463.5	-947.9	699.5	1,178.0	0.00	0.00	
5,700.0	13.42	143.57	5,560.8	-966.5	713.2	1,201.2	0.00	0.00	
5,781.4	13.42	143.57	5,640.0	-981.7	724.5	1,220.1	0.00	0.00	Ohio Creek
5,800.0	13.42	143.57	5,658.1	-985.2	727.0	1,224.4	0.00	0.00	
5,900.0	13.42	143.57	5,755.3	-1,003.9	740.8	1,247.6	0.00	0.00	
6,000.0	13.42	143.57	5,852.6	-1,022.5	754.6	1,270.8	0.00	0.00	
6,100.0	13.42	143.57	5,949.9	-1,041.2	768.3	1,294.0	0.00	0.00	
6,200.0	13.42	143.57	6,047.1	-1,059.9	782.1	1,317.2	0.00	0.00	
6,234.8	13.42	143.57	6,081.0	-1,066.4	786.9	1,325.3	0.00	0.00	Mesa Verde
6,300.0	13.42	143.57	6,144.4	-1,078.5	795.9	1,340.4	0.00	0.00	
6,400.0	13.42	143.57	6,241.7	-1,097.2	809.7	1,363.6	0.00	0.00	
6,500.0	13.42	143.57	6,339.0	-1,115.9	823.4	1,386.8	0.00	0.00	
6,600.0	13.42	143.57	6,436.2	-1,134.5	837.2	1,410.0	0.00	0.00	
6,700.0	13.42	143.57	6,533.5	-1,153.2	851.0	1,433.2	0.00	0.00	
6,761.2	13.42	143.57	6,593.0	-1,164.6	859.4	1,447.4	0.00	0.00	Williams Fork
6,800.0	13.42	143.57	6,630.8	-1,171.9	864.8	1,456.4	0.00	0.00	
6,900.0	13.42	143.57	6,728.0	-1,190.5	878.5	1,479.6	0.00	0.00	
7,000.0	13.42	143.57	6,825.3	-1,209.2	892.3	1,502.8	0.00	0.00	
7,100.0	13.42	143.57	6,922.6	-1,227.9	906.1	1,526.0	0.00	0.00	
7,129.6	13.42	143.57	6,951.4	-1,233.4	910.2	1,532.9	0.00	0.00	Start Drop -2.00

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**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
7,200.0	12.01	143.57	7,020.1	-1,245.9	919.4	1,548.4	2.00	-2.00	
7,300.0	10.01	143.57	7,118.2	-1,261.2	930.7	1,567.4	2.00	-2.00	
7,400.0	8.01	143.57	7,217.0	-1,273.8	940.0	1,583.1	2.00	-2.00	
7,500.0	6.01	143.57	7,316.2	-1,283.6	947.2	1,595.3	2.00	-2.00	
7,600.0	4.01	143.57	7,415.8	-1,290.7	952.4	1,604.0	2.00	-2.00	
7,700.0	2.01	143.57	7,515.7	-1,294.9	955.5	1,609.3	2.00	-2.00	
7,800.0	0.01	143.57	7,615.7	-1,296.3	956.6	1,611.0	2.00	-2.00	
7,800.3	0.00	0.00	7,616.0	-1,296.3	956.6	1,611.0	2.00	-2.00	EOD; Inc=0° - Top of Gas - HMU Federal 16-6C
7,900.0	0.00	0.00	7,715.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,000.0	0.00	0.00	7,815.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,100.0	0.00	0.00	7,915.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,200.0	0.00	0.00	8,015.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,300.0	0.00	0.00	8,115.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,400.0	0.00	0.00	8,215.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,500.0	0.00	0.00	8,315.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,600.0	0.00	0.00	8,415.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,700.0	0.00	0.00	8,515.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,800.0	0.00	0.00	8,615.7	-1,296.3	956.6	1,611.0	0.00	0.00	
8,900.0	0.00	0.00	8,715.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,000.0	0.00	0.00	8,815.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,016.3	0.00	0.00	8,832.0	-1,296.3	956.6	1,611.0	0.00	0.00	Coal Ridge
9,100.0	0.00	0.00	8,915.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,200.0	0.00	0.00	9,015.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,300.0	0.00	0.00	9,115.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,400.0	0.00	0.00	9,215.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,500.0	0.00	0.00	9,315.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,600.0	0.00	0.00	9,415.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,680.3	0.00	0.00	9,496.0	-1,296.3	956.6	1,611.0	0.00	0.00	Base A Cameo Coal
9,700.0	0.00	0.00	9,515.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,800.0	0.00	0.00	9,615.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,816.3	0.00	0.00	9,632.0	-1,296.3	956.6	1,611.0	0.00	0.00	Rollins
9,900.0	0.00	0.00	9,715.7	-1,296.3	956.6	1,611.0	0.00	0.00	
9,916.3	0.00	0.00	9,732.0	-1,296.3	956.6	1,611.0	0.00	0.00	TD @ 9916.3' MD - HMU Federal 16-6C BHL
10,000.0	0.00	0.00	9,815.7	-1,296.3	956.6	1,611.0	0.00	0.00	
10,100.0	0.00	0.00	9,915.7	-1,296.3	956.6	1,611.0	0.00	0.00	
10,200.0	0.00	0.00	10,015.7	-1,296.3	956.6	1,611.0	0.00	0.00	
10,216.3	0.00	0.00	10,032.0	-1,296.3	956.6	1,611.0	0.00	0.00	Permit TD @ 10,216.3' MD

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 Federal 16-6C BHl - plan hits target center - Circle (radius 60.0)	0.00	0.00	9,732.0	-1,296.3	956.6	1,592,984.83	2,358,317.84	39.439469	-107.772281
HMU Federal 16-6C TO - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,616.0	-1,296.3	956.6	1,592,984.83	2,358,317.84	39.439469	-107.772281

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site:	(J16W)	**North Reference:**	True
Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,532.0	1,506.6	Surface Casing	5.500	6.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,673.9	3,590.0	G Sand		0.00	
5,781.4	5,640.0	Ohio Creek		0.00	
6,234.8	6,081.0	Mesa Verde		0.00	
6,761.2	6,593.0	Williams Fork		0.00	
7,800.3	7,616.0	Top of Gas		0.00	
9,016.3	8,832.0	Coal Ridge		0.00	
9,680.3	9,496.0	Base A Cameo Coal		0.00	
9,816.3	9,632.0	Rollins		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
300.0	300.0	0.0	0.0	KOP @ 300'
747.2	743.1	-41.9	30.9	EOB; Inc=13.42°
7,129.6	6,951.4	-1,233.4	910.2	Start Drop -2.00
7,800.3	7,616.0	-1,296.3	956.6	EOD; Inc=0°
9,916.3	9,732.0	-1,296.3	956.6	TD @ 9916.3' MD
10,216.3	10,032.0	-1,296.3	956.6	Permit TD @ 10,216.3' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
(J16W)
HMU Federal 16-6C
DD
Plan #1

Anticollision Report

02 November, 2010

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,221.6ft	**Error Surface:**	Elliptical Conic

Warning Levels Evaluated at: 2.00 **Sigma**

Survey Tool Program **Date** 11/2/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	10,216.3	Plan #1 (DD)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
(J16W)						
Existing 16-11 - DD - DD	0.0	0.0	156.0			
Existing 16-11 - DD - DD	400.0	400.5	156.8	155.5	116.808	ES
Existing 16-11 - DD - DD	900.0	871.7	208.9	205.2	57.571	SF
Existing 16-16 - DD - DD	3,347.5	3,358.4	56.9	43.2	4.150	CC
Existing 16-16 - DD - DD	3,500.0	3,509.8	59.0	41.7	3.399	ES
Existing 16-16 - DD - DD	3,700.0	3,708.1	68.0	45.7	3.044	SF
Existing 16-9 - DD - DD	856.7	869.7	129.7	126.3	38.111	CC, ES
Existing 16-9 - DD - DD	1,200.0	1,204.0	151.3	146.5	31.616	SF
HMU Federal 16-10A - DD - Plan #1	300.0	300.0	68.1	67.1	70.134	CC, ES
HMU Federal 16-10A - DD - Plan #1	600.0	594.8	89.2	87.2	43.682	SF
HMU Federal 16-11B - DD - Plan #1	200.0	200.0	76.9	76.2	123.701	CC, ES
HMU Federal 16-11B - DD - Plan #1	500.0	492.0	97.1	95.3	55.164	SF
HMU Federal 16-11D - DD - Plan #1	300.0	300.0	60.1	59.2	61.975	CC, ES
HMU Federal 16-11D - DD - Plan #1	600.0	597.8	81.4	79.3	38.102	SF
HMU Federal 16-14A - DD - Plan #1	377.2	379.0	40.5	39.2	31.606	CC, ES
HMU Federal 16-14A - DD - Plan #1	500.0	501.1	45.9	44.1	25.088	SF
HMU Federal 16-14D - DD - Plan #1	300.0	300.0	26.8	25.9	27.644	CC, ES
HMU Federal 16-14D - DD - Plan #1	500.0	499.6	36.6	34.9	21.961	SF
HMU Federal 16-14D2 - DD - Plan #1	300.0	300.0	11.5	10.6	11.874	CC, ES
HMU Federal 16-14D2 - DD - Plan #1	400.0	400.0	14.1	12.8	10.725	SF
HMU Federal 16-14D3 - DD - Plan #1	364.3	364.3	12.0	10.8	10.039	CC
HMU Federal 16-14D3 - DD - Plan #1	400.0	400.0	12.1	10.8	9.149	ES
HMU Federal 16-14D3 - DD - Plan #1	500.0	499.6	15.3	13.6	9.007	SF
HMU Federal 16-16B - DD - Plan #1	360.3	360.7	15.1	13.9	12.370	CC, ES
HMU Federal 16-16B - DD - Plan #1	800.0	799.3	34.1	30.3	8.950	SF
HMU Federal 16-6C2 - DD - Plan #1	200.0	200.0	17.2	16.6	27.687	CC, ES
HMU Federal 16-6C2 - DD - Plan #1	10,216.3	10,268.6	312.4	259.6	5.915	SF
HMU Federal 16-9C - DD - Plan #1	300.0	300.0	33.3	32.3	34.334	CC, ES
HMU Federal 16-9C - DD - Plan #1	600.0	599.1	50.8	48.6	23.062	SF
HMU Federal 21-1B - DD - Plan #1	300.0	300.0	34.0	33.1	35.081	CC
HMU Federal 21-1B - DD - Plan #1	400.0	398.5	34.3	33.0	25.945	ES
HMU Federal 21-1B - DD - Plan #1	900.0	890.6	47.7	43.7	11.798	SF
HMU Federal 21-3A - DD - Plan #1	200.0	200.0	26.9	26.3	43.265	CC, ES
HMU Federal 21-3A - DD - Plan #1	500.0	493.9	45.6	43.9	26.744	SF
HMU Fee 16-8D - DD - Plan #1	200.0	200.0	50.9	50.2	81.842	CC, ES
HMU Fee 16-8D - DD - Plan #1	500.0	491.7	75.4	73.7	43.429	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-11 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 212-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-126.20	-92.2	-125.9	156.0				
100.0	100.0	99.7	99.7	0.1	0.2	-126.08	-92.0	-126.2	156.1	155.9	0.29	533.672	
200.0	200.0	199.4	199.4	0.3	0.3	-125.74	-91.4	-127.0	156.5	155.8	0.62	250.908	
300.0	300.0	299.7	299.7	0.5	0.5	-125.08	-90.1	-128.3	156.8	155.8	0.97	161.110	
400.0	400.0	400.5	400.4	0.7	0.7	93.43	-87.5	-129.9	156.8	155.5	1.34	116.808	ES
500.0	499.6	498.3	498.1	0.9	0.9	97.61	-84.3	-132.2	157.9	156.1	1.74	90.876	
600.0	598.8	594.4	594.2	1.1	1.1	103.58	-80.8	-135.9	162.2	160.0	2.18	74.237	
700.0	697.1	688.7	688.2	1.5	1.3	110.65	-77.3	-141.0	171.7	169.0	2.68	64.063	
800.0	794.5	781.2	780.4	1.9	1.5	118.05	-74.0	-147.6	187.6	184.5	3.17	59.145	
900.0	891.8	871.7	870.4	2.3	1.7	124.65	-70.1	-155.8	208.9	205.2	3.63	57.571	SF
1,000.0	989.0	960.0	958.1	2.7	1.9	129.90	-66.3	-165.9	234.9	230.8	4.04	58.065	
1,100.0	1,086.3	1,046.3	1,043.4	3.2	2.2	133.95	-62.8	-178.2	265.2	260.7	4.44	59.755	
1,200.0	1,183.6	1,131.0	1,126.8	3.6	2.4	137.12	-59.1	-192.7	299.3	294.5	4.81	62.161	
1,300.0	1,280.8	1,215.0	1,209.1	4.0	2.8	139.69	-54.8	-209.1	336.6	331.4	5.18	64.927	
1,400.0	1,378.1	1,301.1	1,293.0	4.5	3.1	141.88	-49.7	-227.4	376.2	370.7	5.55	67.803	
1,500.0	1,475.4	1,388.6	1,378.2	4.9	3.5	143.66	-44.4	-246.9	417.2	411.3	5.91	70.542	
1,600.0	1,572.7	1,476.0	1,463.1	5.4	3.8	145.09	-39.3	-266.9	459.1	452.8	6.28	73.075	
1,700.0	1,669.9	1,566.8	1,551.2	5.8	4.2	146.34	-33.8	-288.0	501.4	494.7	6.66	75.331	
1,800.0	1,767.2	1,656.4	1,638.3	6.2	4.6	147.43	-28.0	-308.6	543.8	536.8	7.03	77.378	
1,900.0	1,864.5	1,749.3	1,728.5	6.7	5.0	148.44	-21.6	-329.6	586.2	578.8	7.40	79.186	
2,000.0	1,961.7	1,845.5	1,822.1	7.1	5.5	149.36	-15.3	-350.7	628.1	620.4	7.78	80.692	
2,100.0	2,059.0	1,933.0	1,907.5	7.6	5.8	150.10	-9.4	-369.6	669.8	661.7	8.16	82.120	
2,200.0	2,156.3	2,027.1	1,999.1	8.0	6.2	150.82	-2.9	-390.0	711.8	703.2	8.54	83.373	
2,300.0	2,253.6	2,113.1	2,082.8	8.4	6.6	151.43	3.2	-408.3	753.6	744.7	8.91	84.607	
2,400.0	2,350.8	2,194.7	2,162.2	8.9	7.0	151.93	9.1	-426.5	796.4	787.1	9.28	85.850	
2,500.0	2,448.1	2,283.0	2,247.8	9.3	7.4	152.36	15.2	-447.2	840.0	830.4	9.66	86.958	
2,600.0	2,545.4	2,368.6	2,330.8	9.8	7.8	152.73	20.9	-467.2	883.6	873.5	10.04	87.983	
2,700.0	2,642.6	2,449.5	2,409.0	10.2	8.2	153.04	26.7	-487.0	928.2	917.8	10.42	89.082	
2,800.0	2,739.9	2,544.8	2,501.2	10.7	8.6	153.38	33.5	-510.3	972.8	962.0	10.82	89.915	
2,900.0	2,837.2	2,639.4	2,592.8	11.1	9.1	153.68	39.9	-532.8	1,016.8	1,005.6	11.22	90.624	
3,000.0	2,934.5	2,724.2	2,675.0	11.5	9.5	153.93	45.8	-553.1	1,061.0	1,049.3	11.61	91.407	
3,100.0	3,031.7	2,811.8	2,759.7	12.0	9.9	154.14	51.5	-574.6	1,105.4	1,093.4	12.00	92.088	
3,200.0	3,129.0	2,910.6	2,855.4	12.4	10.4	154.36	57.8	-598.5	1,149.6	1,137.2	12.42	92.562	
3,300.0	3,226.3	3,007.6	2,949.5	12.9	10.8	154.56	63.8	-621.2	1,193.0	1,180.2	12.83	92.965	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-16 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 212-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-131.40	-112.4	-127.5	170.0				
100.0	100.0	98.4	98.4	0.1	0.2	-131.42	-112.7	-127.8	170.4	170.1	0.29	584.426	
200.0	200.0	196.7	196.7	0.3	0.3	-131.48	-113.8	-128.7	171.9	171.3	0.62	276.504	
300.0	300.0	297.0	297.0	0.5	0.5	-131.61	-115.4	-129.9	173.8	172.8	0.97	179.128	
400.0	400.0	397.1	397.0	0.7	0.7	85.29	-117.3	-130.5	175.2	173.9	1.32	132.502	
500.0	499.6	496.6	496.5	0.9	0.8	86.93	-120.4	-130.1	176.4	174.7	1.71	102.913	
600.0	598.8	598.0	597.8	1.1	1.0	89.78	-124.7	-128.4	177.4	175.2	2.17	81.555	
700.0	697.1	698.7	698.3	1.5	1.2	93.93	-129.2	-125.3	177.9	175.2	2.72	65.464	
800.0	794.5	800.0	799.4	1.9	1.4	99.05	-134.3	-120.3	178.8	175.5	3.32	53.889	
900.0	891.8	903.3	902.2	2.3	1.7	103.75	-140.6	-112.5	179.1	175.2	3.94	45.466	
1,000.0	989.0	1,007.5	1,005.5	2.7	1.9	107.58	-148.6	-101.3	178.1	173.5	4.58	38.902	
1,100.0	1,086.3	1,113.4	1,109.7	3.2	2.3	110.44	-158.8	-85.3	174.1	168.9	5.24	33.205	
1,200.0	1,183.6	1,216.1	1,209.9	3.6	2.7	112.49	-170.3	-66.2	167.5	161.6	5.92	28.306	
1,300.0	1,280.8	1,316.6	1,307.7	4.0	3.1	114.27	-182.5	-46.4	160.3	153.7	6.59	24.324	
1,400.0	1,378.1	1,416.9	1,405.0	4.5	3.5	115.84	-195.4	-26.0	152.7	145.4	7.26	21.033	
1,500.0	1,475.4	1,516.9	1,502.0	4.9	3.9	117.43	-208.6	-5.4	144.9	137.0	7.91	18.321	
1,600.0	1,572.7	1,617.7	1,599.4	5.4	4.4	119.06	-222.2	16.5	136.3	127.7	8.54	15.952	
1,700.0	1,669.9	1,716.6	1,695.1	5.8	4.8	120.94	-235.3	37.7	128.0	118.8	9.12	14.026	
1,800.0	1,767.2	1,815.6	1,791.1	6.2	5.3	123.15	-248.4	58.5	120.3	110.6	9.65	12.468	
1,900.0	1,864.5	1,914.8	1,887.2	6.7	5.7	125.80	-261.3	78.9	113.2	103.1	10.08	11.225	
2,000.0	1,961.7	2,014.3	1,983.8	7.1	6.2	128.88	-274.0	99.1	106.7	96.3	10.43	10.227	
2,100.0	2,059.0	2,113.3	2,079.9	7.6	6.6	132.02	-287.2	119.0	100.7	90.0	10.72	9.400	
2,200.0	2,156.3	2,213.1	2,176.9	8.0	7.1	135.39	-300.7	138.5	95.7	84.7	10.93	8.755	
2,300.0	2,253.6	2,312.7	2,273.4	8.4	7.5	138.46	-315.2	158.0	90.6	79.5	11.12	8.151	
2,400.0	2,350.8	2,412.2	2,370.0	8.9	8.0	141.94	-329.6	177.2	86.2	75.0	11.21	7.695	
2,500.0	2,448.1	2,512.6	2,467.3	9.3	8.5	145.12	-345.1	196.5	81.9	70.6	11.30	7.253	
2,600.0	2,545.4	2,611.8	2,563.4	9.8	8.9	148.09	-361.1	215.4	77.7	66.4	11.38	6.831	
2,700.0	2,642.6	2,711.4	2,660.0	10.2	9.4	151.45	-376.9	233.9	74.4	63.1	11.38	6.541	
2,800.0	2,739.9	2,811.0	2,756.7	10.7	9.8	155.24	-392.3	252.2	71.8	60.4	11.31	6.342	
2,900.0	2,837.2	2,912.1	2,854.6	11.1	10.3	159.58	-408.2	271.5	68.6	57.4	11.21	6.119	
3,000.0	2,934.5	3,011.7	2,951.0	11.5	10.8	164.45	-424.0	291.1	65.4	54.2	11.14	5.866	
3,100.0	3,031.7	3,112.3	3,048.1	12.0	11.3	170.56	-439.9	312.0	61.8	50.6	11.22	5.511	
3,200.0	3,129.0	3,211.8	3,144.0	12.4	11.8	177.70	-455.5	333.2	58.8	47.1	11.72	5.015	
3,300.0	3,226.3	3,311.2	3,240.0	12.9	12.3	-174.61	-470.9	354.2	57.1	44.2	12.88	4.435	
3,347.5	3,272.5	3,358.4	3,285.5	13.1	12.5	-170.64	-477.9	364.2	56.9	43.2	13.71	4.150	CC
3,400.0	3,323.5	3,410.5	3,335.9	13.3	12.8	-166.03	-485.5	375.4	57.1	42.3	14.84	3.852	
3,500.0	3,420.8	3,509.8	3,431.8	13.8	13.3	-157.32	-499.4	396.8	59.0	41.7	17.37	3.399	ES
3,600.0	3,518.1	3,609.0	3,527.8	14.2	13.7	-149.38	-512.8	418.1	62.7	42.7	19.98	3.137	
3,700.0	3,615.4	3,708.1	3,623.8	14.7	14.2	-142.74	-525.7	439.0	68.0	45.7	22.35	3.044	SF
3,800.0	3,712.6	3,808.0	3,720.7	15.1	14.7	-137.32	-538.1	459.8	74.6	50.2	24.41	3.056	
3,900.0	3,809.9	3,908.7	3,818.3	15.5	15.1	-132.75	-551.9	480.7	80.6	54.3	26.25	3.069	
4,000.0	3,907.2	4,008.9	3,915.2	16.0	15.6	-128.79	-566.7	501.1	85.7	57.8	27.92	3.071	
4,100.0	4,004.4	4,108.6	4,011.7	16.4	16.1	-125.44	-581.5	521.3	91.2	61.8	29.43	3.098	
4,200.0	4,101.7	4,208.3	4,108.2	16.9	16.6	-122.46	-596.3	541.5	96.9	66.1	30.83	3.144	
4,300.0	4,199.0	4,308.1	4,204.9	17.3	17.0	-119.99	-611.1	561.4	102.9	70.7	32.12	3.202	
4,400.0	4,296.3	4,407.7	4,301.4	17.8	17.5	-117.97	-625.6	581.0	108.9	75.6	33.31	3.271	
4,500.0	4,393.5	4,507.3	4,398.2	18.2	18.0	-116.35	-639.9	600.4	115.3	80.9	34.42	3.351	
4,600.0	4,490.8	4,607.1	4,495.1	18.7	18.4	-115.05	-654.0	619.5	121.8	86.3	35.46	3.434	
4,700.0	4,588.1	4,707.1	4,592.2	19.1	18.9	-114.03	-668.2	638.3	128.2	91.7	36.47	3.515	
4,800.0	4,685.3	4,807.0	4,689.1	19.5	19.3	-112.66	-682.9	657.9	134.5	97.0	37.55	3.582	
4,900.0	4,782.6	4,906.5	4,785.3	20.0	19.8	-110.92	-698.1	678.5	141.0	102.3	38.67	3.645	
5,000.0	4,879.9	5,006.2	4,881.5	20.4	20.3	-109.27	-713.4	699.2	147.6	107.8	39.77	3.711	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-16 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 212-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,977.2	5,105.4	4,977.4	20.9	20.8	-107.71	-728.6	720.1	154.5	113.7	40.84	3.784	
5,200.0	5,074.4	5,205.0	5,073.3	21.3	21.3	-106.11	-744.0	741.6	161.7	119.8	41.91	3.858	
5,300.0	5,171.7	5,304.1	5,168.8	21.8	21.8	-104.48	-759.4	763.4	169.2	126.3	42.96	3.939	
5,400.0	5,269.0	5,403.6	5,264.5	22.2	22.3	-102.89	-774.9	785.6	177.0	133.0	43.99	4.024	
5,500.0	5,366.2	5,502.6	5,359.8	22.6	22.9	-101.51	-790.2	807.7	185.1	140.1	44.98	4.114	
5,600.0	5,463.5	5,602.0	5,455.6	23.1	23.3	-100.48	-804.7	829.6	193.6	147.7	45.93	4.216	
5,700.0	5,560.8	5,702.5	5,553.0	23.5	23.8	-99.98	-818.5	850.3	201.9	155.0	46.83	4.311	
5,800.0	5,658.1	5,803.3	5,651.3	24.0	24.2	-100.12	-831.2	869.3	209.7	162.1	47.69	4.398	
5,900.0	5,755.3	5,904.4	5,750.1	24.4	24.6	-100.75	-843.3	886.5	216.9	168.4	48.52	4.470	
6,000.0	5,852.6	6,003.5	5,847.1	24.9	25.0	-101.31	-855.3	903.2	223.8	174.5	49.34	4.537	
6,100.0	5,949.9	6,101.7	5,943.1	25.3	25.4	-101.85	-866.7	920.1	231.4	181.2	50.15	4.614	
6,200.0	6,047.1	6,202.5	6,041.7	25.8	25.9	-102.34	-878.3	937.7	239.2	188.2	50.98	4.692	
6,300.0	6,144.4	6,304.7	6,141.5	26.2	26.3	-102.67	-891.1	955.4	246.1	194.3	51.82	4.749	
6,400.0	6,241.7	6,404.4	6,238.9	26.6	26.7	-102.99	-904.0	972.2	252.5	199.8	52.65	4.795	
6,500.0	6,339.0	6,504.6	6,337.0	27.1	27.1	-103.47	-916.5	988.6	258.9	205.5	53.45	4.844	
6,600.0	6,436.2	6,604.0	6,434.7	27.5	27.4	-104.40	-927.5	1,003.1	265.3	211.1	54.16	4.899	
6,700.0	6,533.5	6,703.4	6,532.9	28.0	27.7	-105.85	-936.8	1,015.7	271.9	217.1	54.76	4.965	
6,800.0	6,630.8	6,803.1	6,631.7	28.4	28.0	-107.61	-945.1	1,026.8	278.7	223.4	55.27	5.042	
6,900.0	6,728.0	6,903.2	6,730.9	28.9	28.3	-109.62	-952.7	1,036.5	285.6	229.9	55.67	5.129	
7,000.0	6,825.3	7,000.7	6,827.9	29.3	28.5	-111.82	-958.9	1,044.6	293.0	237.0	55.94	5.237	
7,100.0	6,922.6	7,098.5	6,925.3	29.8	28.7	-114.05	-964.4	1,052.4	301.3	245.2	56.12	5.370	
7,200.0	7,020.1	7,197.1	7,023.5	30.2	28.9	-116.42	-969.1	1,059.0	310.0	253.9	56.14	5.522	
7,300.0	7,118.2	7,295.0	7,121.3	30.5	29.0	-118.79	-971.9	1,062.6	317.9	262.0	55.97	5.680	
7,400.0	7,217.0	7,392.3	7,218.6	30.8	29.1	-120.78	-973.8	1,064.7	324.9	269.1	55.77	5.826	
7,500.0	7,316.2	7,488.2	7,314.4	31.1	29.2	-122.26	-974.5	1,066.8	331.5	275.8	55.64	5.958	
7,600.0	7,415.8	7,587.4	7,413.7	31.2	29.3	-123.39	-974.3	1,068.2	336.9	281.3	55.53	6.067	
7,700.0	7,515.7	7,688.0	7,514.2	31.4	29.4	-123.99	-974.2	1,069.5	340.3	284.8	55.54	6.127	
7,800.0	7,615.7	7,788.2	7,614.4	31.4	29.5	-124.08	-974.2	1,070.6	341.6	286.0	55.68	6.135	
7,900.0	7,715.7	7,889.2	7,715.4	31.5	29.6	19.65	-974.2	1,071.6	342.0	286.1	55.92	6.115	
8,000.0	7,815.7	7,991.6	7,817.8	31.6	29.7	19.76	-974.7	1,072.1	341.7	285.5	56.14	6.086	
8,100.0	7,915.7	8,092.4	7,918.6	31.7	29.8	19.75	-975.5	1,071.8	340.9	284.6	56.31	6.053	
8,200.0	8,015.7	8,193.4	8,019.6	31.8	29.9	19.71	-976.3	1,071.2	339.9	283.5	56.47	6.020	
8,300.0	8,115.7	8,294.8	8,121.0	31.8	29.9	19.64	-977.5	1,070.4	338.6	281.9	56.62	5.980	
8,400.0	8,215.7	8,395.2	8,221.4	31.9	30.0	19.59	-978.9	1,069.5	336.9	280.1	56.77	5.934	
8,500.0	8,315.7	8,495.1	8,321.3	32.0	30.1	19.51	-980.4	1,068.5	335.2	278.3	56.92	5.889	
8,600.0	8,415.7	8,594.3	8,420.5	32.1	30.2	19.45	-981.7	1,067.7	333.6	276.6	57.08	5.845	
8,700.0	8,515.7	8,694.2	8,520.3	32.2	30.3	19.46	-983.1	1,067.3	332.2	275.0	57.27	5.801	
8,800.0	8,615.7	8,794.1	8,620.2	32.2	30.4	19.49	-984.4	1,067.0	330.9	273.4	57.47	5.757	
8,900.0	8,715.7	8,894.7	8,720.8	32.3	30.5	19.53	-985.9	1,066.7	329.4	271.7	57.67	5.712	
9,000.0	8,815.7	8,993.2	8,819.3	32.4	30.6	19.57	-987.2	1,066.5	328.1	270.2	57.88	5.668	
9,100.0	8,915.7	9,092.2	8,918.3	32.5	30.7	19.64	-988.2	1,066.5	327.1	269.0	58.09	5.631	
9,200.0	9,015.7	9,193.2	9,019.3	32.6	30.8	19.68	-989.2	1,066.4	326.2	267.9	58.30	5.595	
9,300.0	9,115.7	9,295.0	9,121.1	32.7	30.9	19.73	-990.6	1,066.2	324.8	266.3	58.52	5.550	
9,400.0	9,215.7	9,397.0	9,223.1	32.7	31.0	19.83	-992.7	1,066.0	322.8	264.0	58.76	5.493	
9,500.0	9,315.7	9,497.4	9,323.4	32.8	31.1	20.05	-995.5	1,066.4	320.3	261.3	59.05	5.424	
9,600.0	9,415.7	9,596.3	9,422.3	32.9	31.2	20.32	-998.0	1,067.0	318.1	258.8	59.36	5.359	
9,700.0	9,515.7	9,695.8	9,521.8	33.0	31.4	20.53	-1,000.3	1,067.4	316.1	256.5	59.64	5.301	
9,800.0	9,615.7	9,794.8	9,620.8	33.1	31.5	20.70	-1,002.3	1,067.7	314.3	254.4	59.90	5.247	
9,861.7	9,677.3	9,855.0	9,680.9	33.2	31.5	20.79	-1,003.4	1,067.8	313.3	253.3	60.06	5.217	
9,900.0	9,715.7	9,855.0	9,680.9	33.2	31.5	20.79	-1,003.4	1,067.8	315.2	255.1	60.10	5.245	
10,000.0	9,815.7	9,855.0	9,680.9	33.3	31.5	20.79	-1,003.4	1,067.8	341.1	280.9	60.20	5.665	
10,100.0	9,915.7	9,855.0	9,680.9	33.4	31.5	20.79	-1,003.4	1,067.8	391.5	331.2	60.31	6.492	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-16 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 212-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,200.0	10,015.7	9,855.0	9,680.9	33.5	31.5	20.79	-1,003.4	1,067.8	458.5	398.1	60.41	7.590	
10,216.3	10,032.0	9,855.0	9,680.9	33.5	31.5	20.79	-1,003.4	1,067.8	470.6	410.1	60.43	7.787	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-9 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 195-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-120.20	-71.9	-123.6	143.0				
100.0	100.0	100.1	100.1	0.1	0.2	-120.13	-71.7	-123.6	142.9	142.6	0.29	490.273	
200.0	200.0	200.3	200.3	0.3	0.3	-119.92	-71.2	-123.7	142.8	142.2	0.62	229.371	
300.0	300.0	301.1	301.1	0.5	0.5	-119.89	-71.0	-123.5	142.4	141.4	0.97	146.401	
400.0	400.0	403.4	403.4	0.7	0.7	97.06	-71.4	-121.3	141.1	139.8	1.33	105.889	
500.0	499.6	505.9	505.8	0.9	0.9	99.33	-72.1	-117.1	138.9	137.2	1.72	80.543	
600.0	598.8	608.9	608.6	1.1	1.1	103.87	-71.8	-110.5	135.6	133.4	2.17	62.502	
700.0	697.1	711.6	710.9	1.5	1.3	111.20	-69.8	-101.8	132.4	129.7	2.66	49.718	
800.0	794.5	813.2	811.7	1.9	1.6	120.88	-66.2	-90.0	130.2	127.1	3.15	41.362	
856.7	849.7	869.7	867.7	2.1	1.7	126.72	-63.4	-82.5	129.7	126.3	3.40	38.111	CC, ES
900.0	891.8	912.3	909.8	2.3	1.8	131.30	-60.9	-76.5	130.1	126.5	3.59	36.253	
1,000.0	989.0	1,010.9	1,007.0	2.7	2.1	142.11	-54.2	-61.7	133.3	129.3	3.99	33.401	
1,100.0	1,086.3	1,108.5	1,103.0	3.2	2.5	152.43	-47.0	-45.7	140.2	135.8	4.39	31.956	
1,200.0	1,183.6	1,204.0	1,196.9	3.6	2.8	161.41	-39.8	-30.0	151.3	146.5	4.79	31.616	SF
1,300.0	1,280.8	1,301.7	1,293.1	4.0	3.1	169.19	-32.7	-14.1	165.8	160.6	5.23	31.691	
1,400.0	1,378.1	1,397.1	1,386.8	4.5	3.5	175.74	-25.2	2.0	182.9	177.1	5.72	31.943	
1,500.0	1,475.4	1,493.3	1,481.2	4.9	3.8	-178.58	-16.9	18.5	202.3	196.0	6.28	32.213	
1,600.0	1,572.7	1,590.6	1,576.6	5.4	4.2	-173.70	-8.4	35.9	223.2	216.3	6.89	32.376	
1,700.0	1,669.9	1,685.9	1,670.0	5.8	4.6	-169.79	-0.2	52.8	245.3	237.8	7.52	32.633	
1,800.0	1,767.2	1,783.1	1,765.4	6.2	4.9	-166.64	7.8	69.2	268.4	260.2	8.15	32.910	
1,900.0	1,864.5	1,881.1	1,861.8	6.7	5.3	-164.06	15.3	85.5	291.7	282.9	8.80	33.153	
2,000.0	1,961.7	1,981.0	1,960.0	7.1	5.6	-161.81	22.1	102.6	314.6	305.1	9.47	33.234	
2,100.0	2,059.0	2,077.9	2,055.2	7.6	6.0	-159.86	28.4	119.6	337.4	327.2	10.13	33.296	
2,200.0	2,156.3	2,174.5	2,150.0	8.0	6.4	-158.09	34.8	136.9	360.5	349.7	10.81	33.343	
2,300.0	2,253.6	2,271.5	2,245.2	8.4	6.7	-156.54	41.2	154.3	384.0	372.5	11.49	33.425	
2,400.0	2,350.8	2,369.7	2,341.7	8.9	7.1	-155.18	47.4	171.7	407.4	395.2	12.17	33.473	
2,500.0	2,448.1	2,466.7	2,436.8	9.3	7.5	-153.89	53.4	189.5	430.7	417.9	12.86	33.488	
2,600.0	2,545.4	2,562.8	2,531.0	9.8	7.8	-152.74	59.5	207.3	454.5	440.9	13.56	33.525	
2,700.0	2,642.6	2,660.3	2,626.5	10.2	8.2	-151.57	65.8	226.3	478.3	464.0	14.28	33.504	
2,800.0	2,739.9	2,755.9	2,720.0	10.7	8.6	-150.52	72.0	244.9	502.2	487.3	14.99	33.505	
2,900.0	2,837.2	2,850.1	2,812.1	11.1	9.0	-149.49	78.6	264.1	526.8	511.1	15.71	33.526	
3,000.0	2,934.5	2,946.1	2,905.8	11.5	9.4	-148.55	85.5	283.4	551.8	535.3	16.43	33.573	
3,100.0	3,031.7	3,042.4	3,000.1	12.0	9.8	-147.74	92.4	302.2	576.9	559.7	17.14	33.647	
3,200.0	3,129.0	3,139.1	3,094.6	12.4	10.2	-147.03	99.3	320.7	602.1	584.2	17.85	33.737	
3,300.0	3,226.3	3,236.4	3,190.0	12.9	10.6	-146.41	106.2	339.0	627.3	608.7	18.54	33.832	
3,400.0	3,323.5	3,334.3	3,286.0	13.3	10.9	-145.88	113.0	357.0	652.4	633.2	19.23	33.934	
3,500.0	3,420.8	3,432.5	3,382.4	13.8	11.3	-145.41	119.5	374.7	677.3	657.4	19.92	34.007	
3,600.0	3,518.1	3,529.5	3,477.3	14.2	11.7	-144.88	125.8	393.4	702.2	681.5	20.62	34.052	
3,700.0	3,615.4	3,628.2	3,574.1	14.7	12.1	-144.42	132.2	411.9	727.0	705.7	21.31	34.108	
3,800.0	3,712.6	3,724.7	3,668.8	15.1	12.5	-144.04	138.1	429.6	751.5	729.5	22.00	34.164	
3,900.0	3,809.9	3,818.0	3,760.2	15.5	12.8	-143.65	144.2	447.2	776.5	753.8	22.68	34.235	
4,000.0	3,907.2	3,912.7	3,852.9	16.0	13.2	-143.25	150.7	465.4	801.8	778.5	23.37	34.310	
4,100.0	4,004.4	4,009.2	3,947.5	16.4	13.6	-142.90	157.5	483.6	827.3	803.2	24.05	34.394	
4,200.0	4,101.7	4,111.2	4,047.5	16.9	14.0	-142.61	164.4	501.9	852.6	827.8	24.75	34.455	
4,300.0	4,199.0	4,204.3	4,138.9	17.3	14.3	-142.36	170.3	518.7	877.5	852.1	25.41	34.539	
4,400.0	4,296.3	4,298.9	4,231.7	17.8	14.7	-142.11	176.9	535.9	903.1	877.0	26.07	34.637	
4,500.0	4,393.5	4,398.2	4,329.1	18.2	15.1	-141.88	183.7	553.6	928.5	901.7	26.75	34.711	
4,600.0	4,490.8	4,497.2	4,426.4	18.7	15.4	-141.68	190.3	571.0	953.7	926.2	27.42	34.783	
4,700.0	4,588.1	4,593.4	4,520.9	19.1	15.8	-141.50	196.5	588.0	978.7	950.6	28.09	34.846	
4,800.0	4,685.3	4,691.3	4,616.9	19.5	16.2	-141.27	202.8	606.0	1,003.8	975.0	28.77	34.889	
4,900.0	4,782.6	4,793.5	4,717.2	20.0	16.6	-141.05	209.1	624.7	1,028.6	999.2	29.47	34.905	
5,000.0	4,879.9	4,885.4	4,807.3	20.4	16.9	-140.87	214.7	641.5	1,053.3	1,023.2	30.13	34.958	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - Existing 16-9 - DD - DD

Offset Site Error: 0.0 ft

Survey Program: 195-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,977.2	4,980.4	4,900.5	20.9	17.3	-140.67	220.8	659.2	1,078.4	1,047.6	30.81	35.005	
5,200.0	5,074.4	5,075.3	4,993.5	21.3	17.7	-140.49	227.1	676.7	1,103.7	1,072.2	31.48	35.060	
5,300.0	5,171.7	5,176.4	5,092.8	21.8	18.0	-140.32	233.7	695.1	1,128.9	1,096.7	32.17	35.092	
5,400.0	5,269.0	5,275.5	5,190.0	22.2	18.4	-140.17	239.8	712.9	1,153.7	1,120.9	32.85	35.124	
5,500.0	5,366.2	5,375.6	5,288.4	22.6	18.8	-140.03	245.8	730.8	1,178.4	1,144.9	33.53	35.146	
5,600.0	5,463.5	5,469.3	5,380.4	23.1	19.2	-139.89	251.3	747.7	1,203.0	1,168.8	34.19	35.185	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-10A - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	5.48	67.7	6.5	68.1				
100.0	100.0	100.0	100.0	0.1	0.1	5.48	67.7	6.5	68.1	67.8	0.27	249.965	
200.0	200.0	200.0	200.0	0.3	0.3	5.48	67.7	6.5	68.1	67.4	0.62	109.535	
300.0	300.0	300.0	300.0	0.5	0.5	5.48	67.7	6.5	68.1	67.1	0.97	70.134	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	-139.49	67.7	6.5	70.0	68.7	1.32	52.995	
500.0	499.6	499.6	499.6	0.9	0.8	-143.21	67.7	6.5	76.2	74.5	1.68	45.320	
600.0	598.8	594.8	594.7	1.1	1.0	-147.32	70.0	7.3	89.2	87.2	2.04	43.682	SF
700.0	697.1	687.7	687.4	1.5	1.2	-150.35	76.4	9.6	111.4	109.0	2.41	46.171	
800.0	794.5	780.3	779.4	1.9	1.4	-152.46	86.6	13.3	141.4	138.6	2.80	50.499	
900.0	891.8	875.3	873.6	2.3	1.6	-153.99	97.6	17.3	172.5	169.3	3.20	53.910	
1,000.0	989.0	970.2	967.9	2.7	1.9	-155.05	108.5	21.4	203.7	200.1	3.60	56.520	
1,100.0	1,086.3	1,065.2	1,062.1	3.2	2.1	-155.83	119.5	25.4	235.0	230.9	4.01	58.570	
1,200.0	1,183.6	1,160.1	1,156.3	3.6	2.4	-156.43	130.5	29.4	266.2	261.8	4.42	60.217	
1,300.0	1,280.8	1,255.1	1,250.5	4.0	2.6	-156.90	141.5	33.4	297.5	292.7	4.83	61.565	
1,400.0	1,378.1	1,350.0	1,344.8	4.5	2.9	-157.28	152.5	37.4	328.8	323.6	5.25	62.688	
1,500.0	1,475.4	1,445.0	1,439.0	4.9	3.1	-157.60	163.5	41.4	360.2	354.5	5.66	63.637	
1,600.0	1,572.7	1,539.9	1,533.2	5.4	3.4	-157.86	174.5	45.4	391.5	385.4	6.07	64.448	
1,700.0	1,669.9	1,634.9	1,627.4	5.8	3.6	-158.09	185.5	49.4	422.8	416.3	6.49	65.149	
1,800.0	1,767.2	1,729.8	1,721.7	6.2	3.9	-158.28	196.5	53.4	454.2	447.3	6.91	65.761	
1,900.0	1,864.5	1,824.8	1,815.9	6.7	4.1	-158.45	207.5	57.4	485.5	478.2	7.32	66.299	
2,000.0	1,961.7	1,919.7	1,910.1	7.1	4.4	-158.60	218.5	61.4	516.9	509.1	7.74	66.777	
2,100.0	2,059.0	2,014.7	2,004.4	7.6	4.7	-158.73	229.4	65.4	548.2	540.1	8.16	67.202	
2,200.0	2,156.3	2,109.6	2,098.6	8.0	4.9	-158.85	240.4	69.4	579.6	571.0	8.58	67.584	
2,300.0	2,253.6	2,204.6	2,192.8	8.4	5.2	-158.95	251.4	73.4	610.9	602.0	8.99	67.929	
2,400.0	2,350.8	2,299.5	2,287.0	8.9	5.4	-159.05	262.4	77.4	642.3	632.9	9.41	68.242	
2,500.0	2,448.1	2,394.5	2,381.3	9.3	5.7	-159.14	273.4	81.4	673.7	663.8	9.83	68.527	
2,600.0	2,545.4	2,489.4	2,475.5	9.8	6.0	-159.22	284.4	85.4	705.0	694.8	10.25	68.787	
2,700.0	2,642.6	2,584.4	2,569.7	10.2	6.2	-159.29	295.4	89.4	736.4	725.7	10.67	69.026	
2,800.0	2,739.9	2,679.3	2,663.9	10.7	6.5	-159.35	306.4	93.4	767.8	756.7	11.09	69.247	
2,900.0	2,837.2	2,774.3	2,758.2	11.1	6.7	-159.41	317.4	97.4	799.1	787.6	11.51	69.450	
3,000.0	2,934.5	2,869.2	2,852.4	11.5	7.0	-159.47	328.4	101.4	830.5	818.6	11.93	69.639	
3,100.0	3,031.7	2,964.2	2,946.6	12.0	7.3	-159.52	339.3	105.4	861.9	849.5	12.35	69.814	
3,200.0	3,129.0	3,059.1	3,040.9	12.4	7.5	-159.57	350.3	109.4	893.2	880.5	12.76	69.978	
3,300.0	3,226.3	3,154.1	3,135.1	12.9	7.8	-159.62	361.3	113.4	924.6	911.4	13.18	70.130	
3,400.0	3,323.5	3,249.1	3,229.3	13.3	8.1	-159.66	372.3	117.4	956.0	942.4	13.60	70.273	
3,500.0	3,420.8	3,344.0	3,323.5	13.8	8.3	-159.70	383.3	121.4	987.3	973.3	14.02	70.407	
3,600.0	3,518.1	3,439.0	3,417.8	14.2	8.6	-159.74	394.3	125.4	1,018.7	1,004.3	14.44	70.533	
3,700.0	3,615.4	3,533.9	3,512.0	14.7	8.8	-159.77	405.3	129.4	1,050.1	1,035.2	14.86	70.652	
3,800.0	3,712.6	3,628.9	3,606.2	15.1	9.1	-159.80	416.3	133.4	1,081.4	1,066.2	15.28	70.764	
3,900.0	3,809.9	3,723.8	3,700.4	15.5	9.4	-159.83	427.3	137.4	1,112.8	1,097.1	15.70	70.869	
4,000.0	3,907.2	3,818.8	3,794.7	16.0	9.6	-159.86	438.3	141.4	1,144.2	1,128.1	16.12	70.970	
4,100.0	4,004.4	3,913.7	3,888.9	16.4	9.9	-159.89	449.3	145.4	1,175.6	1,159.0	16.54	71.064	
4,200.0	4,101.7	4,008.7	3,983.1	16.9	10.2	-159.92	460.2	149.4	1,206.9	1,190.0	16.96	71.154	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-11B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-0.42	76.9	-0.6	76.9				
100.0	100.0	100.0	100.0	0.1	0.1	-0.42	76.9	-0.6	76.9	76.6	0.27	282.292	
200.0	200.0	200.0	200.0	0.3	0.3	-0.42	76.9	-0.6	76.9	76.2	0.62	123.701	CC, ES
300.0	300.0	298.6	298.5	0.5	0.5	-2.19	77.7	-3.0	77.8	76.8	0.98	79.699	
400.0	400.0	396.4	396.0	0.7	0.7	-151.53	80.2	-10.1	83.2	81.8	1.36	61.359	
500.0	499.6	492.0	490.9	0.9	1.0	-160.00	84.2	-21.6	97.1	95.3	1.76	55.164	SF
600.0	598.8	584.3	581.7	1.1	1.3	-168.31	89.6	-36.9	121.0	118.9	2.16	56.056	
700.0	697.1	673.6	668.8	1.5	1.7	-175.06	96.1	-55.6	155.1	152.6	2.52	61.469	
800.0	794.5	764.0	756.8	1.9	2.1	-179.83	103.0	-75.3	195.6	192.7	2.88	67.894	
900.0	891.8	854.2	844.5	2.3	2.4	177.00	109.9	-95.1	237.5	234.2	3.25	73.119	
1,000.0	989.0	944.4	932.2	2.7	2.8	174.78	116.8	-114.8	279.7	276.1	3.62	77.335	
1,100.0	1,086.3	1,034.6	1,019.9	3.2	3.2	173.13	123.7	-134.6	322.2	318.2	3.99	80.765	
1,200.0	1,183.6	1,124.7	1,107.7	3.6	3.6	171.87	130.5	-154.3	364.9	360.5	4.37	83.586	
1,300.0	1,280.8	1,214.9	1,195.4	4.0	4.0	170.87	137.4	-174.0	407.7	402.9	4.74	85.936	
1,400.0	1,378.1	1,305.1	1,283.1	4.5	4.4	170.06	144.3	-193.8	450.5	445.4	5.12	87.917	
1,500.0	1,475.4	1,395.3	1,370.8	4.9	4.8	169.39	151.2	-213.5	493.5	488.0	5.51	89.604	
1,600.0	1,572.7	1,485.5	1,458.5	5.4	5.2	168.83	158.1	-233.3	536.4	530.5	5.89	91.056	
1,700.0	1,669.9	1,575.6	1,546.3	5.8	5.7	168.35	165.0	-253.0	579.5	573.2	6.28	92.318	
1,800.0	1,767.2	1,665.8	1,634.0	6.2	6.1	167.94	171.9	-272.7	622.5	615.8	6.66	93.423	
1,900.0	1,864.5	1,756.0	1,721.7	6.7	6.5	167.58	178.8	-292.5	665.6	658.5	7.05	94.399	
2,000.0	1,961.7	1,846.2	1,809.4	7.1	6.9	167.27	185.7	-312.2	708.6	701.2	7.44	95.266	
2,100.0	2,059.0	1,936.3	1,897.1	7.6	7.3	166.99	192.6	-332.0	751.7	743.9	7.83	96.041	
2,200.0	2,156.3	2,026.5	1,984.9	8.0	7.7	166.74	199.5	-351.7	794.9	786.6	8.22	96.738	
2,300.0	2,253.6	2,116.7	2,072.6	8.4	8.1	166.51	206.4	-371.4	838.0	829.4	8.61	97.367	
2,400.0	2,350.8	2,206.9	2,160.3	8.9	8.5	166.31	213.3	-391.2	881.1	872.1	9.00	97.939	
2,500.0	2,448.1	2,297.1	2,248.0	9.3	8.9	166.13	220.2	-410.9	924.2	914.9	9.39	98.460	
2,600.0	2,545.4	2,387.2	2,335.7	9.8	9.3	165.96	227.1	-430.7	967.4	957.6	9.78	98.936	
2,700.0	2,642.6	2,477.4	2,423.5	10.2	9.7	165.81	233.9	-450.4	1,010.6	1,000.4	10.17	99.374	
2,800.0	2,739.9	2,567.6	2,511.2	10.7	10.1	165.67	240.8	-470.1	1,053.7	1,043.1	10.56	99.778	
2,900.0	2,837.2	2,657.8	2,598.9	11.1	10.5	165.54	247.7	-489.9	1,096.9	1,085.9	10.95	100.151	
3,000.0	2,934.5	2,748.0	2,686.6	11.5	10.9	165.42	254.6	-509.6	1,140.0	1,128.7	11.34	100.497	
3,100.0	3,031.7	2,838.1	2,774.4	12.0	11.3	165.31	261.5	-529.4	1,183.2	1,171.5	11.74	100.819	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-11D - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-2.15	60.1	-2.3	60.1				
100.0	100.0	100.0	100.0	0.1	0.1	-2.15	60.1	-2.3	60.1	59.9	0.27	220.887	
200.0	200.0	200.0	200.0	0.3	0.3	-2.15	60.1	-2.3	60.1	59.5	0.62	96.793	
300.0	300.0	300.0	300.0	0.5	0.5	-2.15	60.1	-2.3	60.1	59.2	0.97	61.975	CC, ES
400.0	400.0	400.7	400.6	0.7	0.7	-149.45	59.3	-4.8	61.7	60.4	1.33	46.477	
500.0	499.6	500.3	499.9	0.9	0.9	-159.26	56.8	-12.2	67.8	66.1	1.71	39.559	
600.0	598.8	597.8	596.6	1.1	1.1	-171.47	52.9	-24.3	81.4	79.3	2.14	38.102	SF
700.0	697.1	693.4	690.9	1.5	1.4	178.04	47.9	-39.6	104.0	101.5	2.56	40.672	
800.0	794.5	788.2	784.2	1.9	1.7	171.47	42.8	-55.0	133.2	130.3	2.99	44.552	
900.0	891.8	882.8	877.4	2.3	2.1	167.33	37.8	-70.4	164.0	160.6	3.45	47.576	
1,000.0	989.0	977.4	970.6	2.7	2.4	164.50	32.8	-85.8	195.4	191.5	3.92	49.869	
1,100.0	1,086.3	1,071.9	1,063.8	3.2	2.7	162.45	27.8	-101.2	227.0	222.6	4.40	51.631	
1,200.0	1,183.6	1,166.5	1,157.0	3.6	3.0	160.90	22.7	-116.5	258.9	254.0	4.88	53.013	
1,300.0	1,280.8	1,261.1	1,250.2	4.0	3.3	159.69	17.7	-131.9	290.8	285.5	5.37	54.118	
1,400.0	1,378.1	1,355.7	1,343.4	4.5	3.7	158.72	12.7	-147.3	322.9	317.0	5.87	55.018	
1,500.0	1,475.4	1,450.3	1,436.6	4.9	4.0	157.92	7.6	-162.7	355.0	348.7	6.37	55.762	
1,600.0	1,572.7	1,544.9	1,529.8	5.4	4.3	157.26	2.6	-178.1	387.2	380.4	6.87	56.387	
1,700.0	1,669.9	1,639.5	1,623.0	5.8	4.6	156.69	-2.4	-193.4	419.5	412.1	7.37	56.919	
1,800.0	1,767.2	1,734.1	1,716.2	6.2	5.0	156.21	-7.5	-208.8	451.7	443.8	7.87	57.376	
1,900.0	1,864.5	1,828.7	1,809.4	6.7	5.3	155.79	-12.5	-224.2	484.0	475.6	8.38	57.773	
2,000.0	1,961.7	1,923.3	1,902.5	7.1	5.6	155.43	-17.5	-239.6	516.3	507.4	8.88	58.121	
2,100.0	2,059.0	2,017.8	1,995.7	7.6	6.0	155.11	-22.5	-255.0	548.6	539.2	9.39	58.428	
2,200.0	2,156.3	2,112.4	2,088.9	8.0	6.3	154.82	-27.6	-270.4	581.0	571.1	9.90	58.701	
2,300.0	2,253.6	2,207.0	2,182.1	8.4	6.6	154.56	-32.6	-285.7	613.3	602.9	10.40	58.945	
2,400.0	2,350.8	2,301.6	2,275.3	8.9	6.9	154.33	-37.6	-301.1	645.7	634.8	10.91	59.165	
2,500.0	2,448.1	2,396.2	2,368.5	9.3	7.3	154.12	-42.7	-316.5	678.0	666.6	11.42	59.364	
2,600.0	2,545.4	2,490.8	2,461.7	9.8	7.6	153.93	-47.7	-331.9	710.4	698.5	11.93	59.544	
2,700.0	2,642.6	2,585.4	2,554.9	10.2	7.9	153.76	-52.7	-347.3	742.8	730.3	12.44	59.709	
2,800.0	2,739.9	2,680.0	2,648.1	10.7	8.3	153.60	-57.8	-362.6	775.2	762.2	12.95	59.860	
2,900.0	2,837.2	2,774.6	2,741.3	11.1	8.6	153.45	-62.8	-378.0	807.6	794.1	13.46	59.999	
3,000.0	2,934.5	2,869.2	2,834.5	11.5	8.9	153.32	-67.8	-393.4	840.0	826.0	13.97	60.127	
3,100.0	3,031.7	2,963.7	2,927.7	12.0	9.3	153.19	-72.8	-408.8	872.4	857.9	14.48	60.245	
3,200.0	3,129.0	3,058.3	3,020.9	12.4	9.6	153.08	-77.9	-424.2	904.8	889.8	14.99	60.355	
3,300.0	3,226.3	3,152.9	3,114.1	12.9	9.9	152.97	-82.9	-439.6	937.2	921.7	15.50	60.457	
3,400.0	3,323.5	3,247.5	3,207.3	13.3	10.2	152.87	-87.9	-454.9	969.6	953.6	16.01	60.553	
3,500.0	3,420.8	3,342.1	3,300.5	13.8	10.6	152.78	-93.0	-470.3	1,002.0	985.5	16.52	60.642	
3,600.0	3,518.1	3,436.7	3,393.7	14.2	10.9	152.69	-98.0	-485.7	1,034.4	1,017.4	17.03	60.725	
3,700.0	3,615.4	3,531.3	3,486.9	14.7	11.2	152.60	-103.0	-501.1	1,066.8	1,049.3	17.55	60.804	
3,800.0	3,712.6	3,625.9	3,580.1	15.1	11.6	152.53	-108.1	-516.5	1,099.2	1,081.2	18.06	60.877	
3,900.0	3,809.9	3,720.5	3,673.3	15.5	11.9	152.45	-113.1	-531.8	1,131.6	1,113.1	18.57	60.947	
4,000.0	3,907.2	3,815.1	3,766.5	16.0	12.2	152.38	-118.1	-547.2	1,164.1	1,145.0	19.08	61.012	
4,100.0	4,004.4	3,909.6	3,859.6	16.4	12.6	152.32	-123.1	-562.6	1,196.5	1,176.9	19.59	61.074	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14A - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-5.26	43.0	-4.0	43.2				
100.0	100.0	100.0	100.0	0.1	0.1	-5.26	43.0	-4.0	43.2	42.9	0.27	158.523	
200.0	200.0	200.0	200.0	0.3	0.3	-5.26	43.0	-4.0	43.2	42.5	0.62	69.465	
300.0	300.0	301.2	301.2	0.5	0.5	-8.28	41.3	-6.0	41.7	40.7	0.97	42.824	
377.2	377.2	379.0	378.7	0.6	0.7	-159.81	37.6	-10.4	40.5	39.2	1.28	31.606	CC, ES
400.0	400.0	401.8	401.5	0.7	0.7	-163.25	36.1	-12.1	40.6	39.3	1.37	29.605	
500.0	499.6	501.1	499.9	0.9	1.0	178.36	27.7	-22.1	45.9	44.1	1.83	25.088	SF
600.0	598.8	599.1	596.6	1.1	1.3	163.26	17.5	-34.2	60.5	58.2	2.30	26.333	
700.0	697.1	696.3	692.5	1.5	1.6	155.67	7.4	-46.3	82.2	79.4	2.77	29.606	
800.0	794.5	792.7	787.6	1.9	1.9	152.41	-2.6	-58.2	108.5	105.2	3.29	33.005	
900.0	891.8	888.9	882.5	2.3	2.2	150.64	-12.6	-70.1	135.4	131.6	3.82	35.428	
1,000.0	989.0	985.1	977.5	2.7	2.6	149.46	-22.7	-82.1	162.5	158.1	4.37	37.182	
1,100.0	1,086.3	1,081.3	1,072.4	3.2	2.9	148.62	-32.7	-94.0	189.6	184.7	4.92	38.499	
1,200.0	1,183.6	1,177.6	1,167.4	3.6	3.2	147.99	-42.7	-105.9	216.7	211.2	5.48	39.520	
1,300.0	1,280.8	1,273.8	1,262.3	4.0	3.5	147.50	-52.7	-117.8	243.9	237.8	6.05	40.331	
1,400.0	1,378.1	1,370.0	1,357.3	4.5	3.8	147.10	-62.8	-129.8	271.0	264.4	6.61	40.990	
1,500.0	1,475.4	1,466.2	1,452.3	4.9	4.2	146.78	-72.8	-141.7	298.2	291.0	7.18	41.536	
1,600.0	1,572.7	1,562.5	1,547.2	5.4	4.5	146.51	-82.8	-153.6	325.4	317.6	7.75	41.995	
1,700.0	1,669.9	1,658.7	1,642.2	5.8	4.8	146.29	-92.8	-165.5	352.6	344.2	8.32	42.385	
1,800.0	1,767.2	1,754.9	1,737.1	6.2	5.1	146.09	-102.9	-177.5	379.8	370.9	8.89	42.721	
1,900.0	1,864.5	1,851.1	1,832.1	6.7	5.4	145.93	-112.9	-189.4	406.9	397.5	9.46	43.014	
2,000.0	1,961.7	1,947.4	1,927.0	7.1	5.8	145.78	-122.9	-201.3	434.1	424.1	10.03	43.270	
2,100.0	2,059.0	2,043.6	2,022.0	7.6	6.1	145.65	-132.9	-213.2	461.3	450.7	10.61	43.497	
2,200.0	2,156.3	2,139.8	2,117.0	8.0	6.4	145.53	-142.9	-225.2	488.5	477.4	11.18	43.699	
2,300.0	2,253.6	2,236.0	2,211.9	8.4	6.7	145.43	-153.0	-237.1	515.7	504.0	11.75	43.881	
2,400.0	2,350.8	2,332.3	2,306.9	8.9	7.0	145.34	-163.0	-249.0	542.9	530.6	12.33	44.044	
2,500.0	2,448.1	2,428.5	2,401.8	9.3	7.4	145.25	-173.0	-260.9	570.1	557.2	12.90	44.192	
2,600.0	2,545.4	2,524.7	2,496.8	9.8	7.7	145.18	-183.0	-272.9	597.3	583.9	13.48	44.326	
2,700.0	2,642.6	2,620.9	2,591.7	10.2	8.0	145.11	-193.1	-284.8	624.6	610.5	14.05	44.449	
2,800.0	2,739.9	2,717.2	2,686.7	10.7	8.3	145.04	-203.1	-296.7	651.8	637.1	14.63	44.562	
2,900.0	2,837.2	2,813.4	2,781.6	11.1	8.6	144.99	-213.1	-308.6	679.0	663.8	15.20	44.666	
3,000.0	2,934.5	2,909.6	2,876.6	11.5	9.0	144.93	-223.1	-320.6	706.2	690.4	15.78	44.761	
3,100.0	3,031.7	3,005.8	2,971.6	12.0	9.3	144.88	-233.2	-332.5	733.4	717.0	16.35	44.850	
3,200.0	3,129.0	3,102.1	3,066.5	12.4	9.6	144.84	-243.2	-344.4	760.6	743.7	16.93	44.933	
3,300.0	3,226.3	3,198.3	3,161.5	12.9	9.9	144.79	-253.2	-356.3	787.8	770.3	17.50	45.009	
3,400.0	3,323.5	3,294.5	3,256.4	13.3	10.2	144.75	-263.2	-368.3	815.0	796.9	18.08	45.081	
3,500.0	3,420.8	3,390.7	3,351.4	13.8	10.6	144.71	-273.3	-380.2	842.2	823.6	18.65	45.148	
3,600.0	3,518.1	3,487.0	3,446.3	14.2	10.9	144.68	-283.3	-392.1	869.4	850.2	19.23	45.211	
3,700.0	3,615.4	3,583.2	3,541.3	14.7	11.2	144.64	-293.3	-404.0	896.6	876.8	19.81	45.270	
3,800.0	3,712.6	3,679.4	3,636.3	15.1	11.5	144.61	-303.3	-416.0	923.8	903.5	20.38	45.325	
3,900.0	3,809.9	3,775.6	3,731.2	15.5	11.9	144.58	-313.3	-427.9	951.1	930.1	20.96	45.378	
4,000.0	3,907.2	3,871.9	3,826.2	16.0	12.2	144.56	-323.4	-439.8	978.3	956.7	21.53	45.427	
4,100.0	4,004.4	3,968.1	3,921.1	16.4	12.5	144.53	-333.4	-451.7	1,005.5	983.4	22.11	45.474	
4,200.0	4,101.7	4,064.3	4,016.1	16.9	12.8	144.50	-343.4	-463.7	1,032.7	1,010.0	22.69	45.518	
4,300.0	4,199.0	4,160.5	4,111.0	17.3	13.1	144.48	-353.4	-475.6	1,059.9	1,036.6	23.26	45.561	
4,400.0	4,296.3	4,256.8	4,206.0	17.8	13.5	144.46	-363.5	-487.5	1,087.1	1,063.3	23.84	45.601	
4,500.0	4,393.5	4,353.0	4,300.9	18.2	13.8	144.44	-373.5	-499.4	1,114.3	1,089.9	24.42	45.639	
4,600.0	4,490.8	4,449.2	4,395.9	18.7	14.1	144.42	-383.5	-511.4	1,141.5	1,116.5	24.99	45.675	
4,700.0	4,588.1	4,545.5	4,490.9	19.1	14.4	144.40	-393.5	-523.3	1,168.7	1,143.2	25.57	45.709	
4,800.0	4,685.3	4,641.7	4,585.8	19.5	14.7	144.38	-403.6	-535.2	1,196.0	1,169.8	26.15	45.742	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-12.15	26.2	-5.6	26.8				
100.0	100.0	100.0	100.0	0.1	0.1	-12.15	26.2	-5.6	26.8	26.6	0.27	98.528	
200.0	200.0	200.0	200.0	0.3	0.3	-12.15	26.2	-5.6	26.8	26.2	0.62	43.175	
300.0	300.0	300.0	300.0	0.5	0.5	-12.15	26.2	-5.6	26.8	25.9	0.97	27.644	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	-157.81	26.2	-5.6	29.2	27.9	1.32	22.157	
500.0	499.6	499.6	499.6	0.9	0.8	-162.38	26.2	-5.6	36.6	34.9	1.67	21.961	SF
600.0	598.8	598.8	598.8	1.1	1.0	-166.90	26.2	-5.6	49.2	47.2	2.01	24.478	
700.0	697.1	697.1	697.1	1.5	1.2	-170.33	26.2	-5.6	67.1	64.8	2.35	28.597	
800.0	794.5	794.5	794.5	1.9	1.3	-172.73	26.2	-5.6	89.5	86.8	2.68	33.362	
900.0	891.8	891.8	891.8	2.3	1.5	-174.22	26.2	-5.6	112.6	109.5	3.03	37.205	
1,000.0	989.0	989.0	989.0	2.7	1.7	-175.21	26.2	-5.6	135.7	132.3	3.37	40.283	
1,100.0	1,086.3	1,088.5	1,088.4	3.2	1.9	-176.64	24.7	-7.0	158.2	154.5	3.71	42.614	
1,200.0	1,183.6	1,188.2	1,187.9	3.6	2.1	-179.34	19.1	-11.6	179.5	175.4	4.07	44.135	
1,300.0	1,280.8	1,287.6	1,286.5	4.0	2.3	177.08	9.7	-19.5	200.1	195.6	4.46	44.843	
1,400.0	1,378.1	1,385.9	1,383.3	4.5	2.5	172.88	-3.5	-30.6	220.6	215.7	4.94	44.695	
1,500.0	1,475.4	1,482.5	1,477.7	4.9	2.8	168.60	-19.2	-43.8	241.8	236.4	5.49	44.081	
1,600.0	1,572.7	1,578.7	1,571.6	5.4	3.1	164.98	-35.0	-57.0	264.2	258.1	6.09	43.382	
1,700.0	1,669.9	1,674.8	1,665.6	5.8	3.5	161.92	-50.8	-70.3	287.4	280.7	6.73	42.711	
1,800.0	1,767.2	1,771.0	1,759.5	6.2	3.8	159.32	-66.6	-83.5	311.4	304.0	7.39	42.115	
1,900.0	1,864.5	1,867.2	1,853.5	6.7	4.2	157.08	-82.3	-96.7	335.8	327.7	8.07	41.604	
2,000.0	1,961.7	1,963.4	1,947.4	7.1	4.6	155.15	-98.1	-110.0	360.6	351.9	8.76	41.175	
2,100.0	2,059.0	2,059.6	2,041.4	7.6	4.9	153.47	-113.9	-123.2	385.8	376.4	9.45	40.818	
2,200.0	2,156.3	2,155.8	2,135.3	8.0	5.3	151.99	-129.6	-136.4	411.3	401.2	10.15	40.523	
2,300.0	2,253.6	2,251.9	2,229.3	8.4	5.7	150.68	-145.4	-149.7	437.0	426.2	10.85	40.278	
2,400.0	2,350.8	2,348.1	2,323.2	8.9	6.1	149.52	-161.2	-162.9	462.9	451.3	11.55	40.076	
2,500.0	2,448.1	2,444.3	2,417.2	9.3	6.4	148.47	-177.0	-176.1	489.0	476.7	12.25	39.908	
2,600.0	2,545.4	2,540.5	2,511.1	9.8	6.8	147.54	-192.7	-189.4	515.1	502.2	12.95	39.768	
2,700.0	2,642.6	2,636.7	2,605.1	10.2	7.2	146.69	-208.5	-202.6	541.4	527.8	13.66	39.651	
2,800.0	2,739.9	2,732.8	2,699.1	10.7	7.6	145.93	-224.3	-215.8	567.9	553.5	14.36	39.554	
2,900.0	2,837.2	2,829.0	2,793.0	11.1	8.0	145.23	-240.0	-229.1	594.3	579.3	15.06	39.473	
3,000.0	2,934.5	2,925.2	2,887.0	11.5	8.4	144.59	-255.8	-242.3	620.9	605.2	15.76	39.405	
3,100.0	3,031.7	3,021.4	2,980.9	12.0	8.8	144.00	-271.6	-255.5	647.5	631.1	16.46	39.348	
3,200.0	3,129.0	3,117.6	3,074.9	12.4	9.2	143.46	-287.4	-268.8	674.2	657.1	17.16	39.300	
3,300.0	3,226.3	3,213.8	3,168.8	12.9	9.5	142.96	-303.1	-282.0	701.0	683.1	17.85	39.260	
3,400.0	3,323.5	3,309.9	3,262.8	13.3	9.9	142.49	-318.9	-295.2	727.8	709.2	18.55	39.226	
3,500.0	3,420.8	3,406.1	3,356.7	13.8	10.3	142.06	-334.7	-308.4	754.6	735.4	19.25	39.199	
3,600.0	3,518.1	3,502.3	3,450.7	14.2	10.7	141.66	-350.4	-321.7	781.5	761.5	19.95	39.176	
3,700.0	3,615.4	3,598.5	3,544.6	14.7	11.1	141.29	-366.2	-334.9	808.4	787.7	20.64	39.157	
3,800.0	3,712.6	3,694.7	3,638.6	15.1	11.5	140.94	-382.0	-348.1	835.3	814.0	21.34	39.141	
3,900.0	3,809.9	3,790.9	3,732.5	15.5	11.9	140.61	-397.7	-361.4	862.3	840.2	22.04	39.128	
4,000.0	3,907.2	3,887.0	3,826.5	16.0	12.3	140.30	-413.5	-374.6	889.3	866.5	22.73	39.118	
4,100.0	4,004.4	3,983.2	3,920.4	16.4	12.7	140.01	-429.3	-387.8	916.3	892.8	23.43	39.110	
4,200.0	4,101.7	4,079.4	4,014.4	16.9	13.1	139.73	-445.1	-401.1	943.3	919.2	24.12	39.104	
4,300.0	4,199.0	4,175.6	4,108.4	17.3	13.5	139.47	-460.8	-414.3	970.3	945.5	24.82	39.100	
4,400.0	4,296.3	4,271.8	4,202.3	17.8	13.9	139.23	-476.6	-427.5	997.4	971.9	25.51	39.097	
4,500.0	4,393.5	4,368.0	4,296.3	18.2	14.3	139.00	-492.4	-440.8	1,024.5	998.3	26.20	39.095	
4,600.0	4,490.8	4,464.1	4,390.2	18.7	14.7	138.78	-508.1	-454.0	1,051.6	1,024.7	26.90	39.094	
4,700.0	4,588.1	4,560.3	4,484.2	19.1	15.1	138.57	-523.9	-467.2	1,078.7	1,051.1	27.59	39.094	
4,800.0	4,685.3	4,656.5	4,578.1	19.5	15.5	138.37	-539.7	-480.5	1,105.8	1,077.5	28.29	39.095	
4,900.0	4,782.6	4,752.7	4,672.1	20.0	15.9	138.18	-555.5	-493.7	1,132.9	1,104.0	28.98	39.096	
5,000.0	4,879.9	4,848.9	4,766.0	20.4	16.3	138.00	-571.2	-506.9	1,160.1	1,130.4	29.67	39.098	
5,100.0	4,977.2	4,945.1	4,860.0	20.9	16.7	137.83	-587.0	-520.2	1,187.2	1,156.9	30.36	39.101	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,074.4	5,041.2	4,953.9	21.3	17.1	137.66	-602.8	-533.4	1,214.4	1,183.3	31.06	39.104	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D2 - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-37.79	9.1	-7.1	11.5				
100.0	100.0	100.0	100.0	0.1	0.1	-37.79	9.1	-7.1	11.5	11.3	0.27	42.319	
200.0	200.0	200.0	200.0	0.3	0.3	-37.79	9.1	-7.1	11.5	10.9	0.62	18.544	
300.0	300.0	300.0	300.0	0.5	0.5	-37.79	9.1	-7.1	11.5	10.6	0.97	11.874	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	178.89	9.1	-7.1	14.1	12.8	1.32	10.725	SF
500.0	499.6	499.6	499.6	0.9	0.8	179.28	9.1	-7.1	22.0	20.3	1.66	13.221	
600.0	598.8	598.8	598.8	1.1	1.0	179.55	9.1	-7.1	35.0	33.0	2.00	17.495	
700.0	697.1	697.1	697.1	1.5	1.2	179.70	9.1	-7.1	53.3	50.9	2.34	22.799	
800.0	794.5	794.5	794.5	1.9	1.3	179.79	9.1	-7.1	75.9	73.2	2.67	28.402	
900.0	891.8	891.8	891.8	2.3	1.5	179.84	9.1	-7.1	99.1	96.1	3.02	32.862	
1,000.0	989.0	989.0	989.0	2.7	1.7	179.87	9.1	-7.1	122.3	118.9	3.36	36.413	
1,100.0	1,086.3	1,088.7	1,088.6	3.2	1.9	179.11	7.4	-8.2	144.8	141.1	3.71	39.051	
1,200.0	1,183.6	1,189.0	1,188.7	3.6	2.1	176.83	1.2	-12.1	165.6	161.6	4.07	40.648	
1,300.0	1,280.8	1,289.2	1,288.1	4.0	2.3	173.48	-9.3	-18.8	185.3	180.8	4.49	41.263	
1,400.0	1,378.1	1,388.7	1,386.0	4.5	2.5	169.37	-24.2	-28.2	204.4	199.4	4.99	40.916	
1,500.0	1,475.4	1,486.9	1,481.7	4.9	2.9	164.71	-43.0	-40.1	223.7	218.0	5.62	39.771	
1,600.0	1,572.7	1,583.2	1,574.8	5.4	3.2	160.21	-63.8	-53.3	244.0	237.7	6.34	38.495	
1,700.0	1,669.9	1,679.4	1,667.8	5.8	3.6	156.41	-84.6	-66.4	265.6	258.5	7.10	37.413	
1,800.0	1,767.2	1,775.6	1,760.8	6.2	4.0	153.17	-105.3	-79.6	288.2	280.4	7.89	36.539	
1,900.0	1,864.5	1,871.8	1,853.7	6.7	4.4	150.41	-126.1	-92.8	311.6	302.9	8.69	35.853	
2,000.0	1,961.7	1,968.0	1,946.7	7.1	4.9	148.02	-146.8	-105.9	335.6	326.1	9.50	35.320	
2,100.0	2,059.0	2,064.2	2,039.7	7.6	5.3	145.96	-167.6	-119.1	360.0	349.7	10.31	34.910	
2,200.0	2,156.3	2,160.3	2,132.7	8.0	5.7	144.15	-188.4	-132.2	384.9	373.7	11.12	34.596	
2,300.0	2,253.6	2,256.5	2,225.7	8.4	6.2	142.56	-209.1	-145.4	410.0	398.1	11.94	34.355	
2,400.0	2,350.8	2,352.7	2,318.7	8.9	6.6	141.15	-229.9	-158.6	435.4	422.7	12.74	34.171	
2,500.0	2,448.1	2,448.9	2,411.7	9.3	7.0	139.90	-250.6	-171.7	461.1	447.5	13.55	34.032	
2,600.0	2,545.4	2,545.1	2,504.7	9.8	7.5	138.78	-271.4	-184.9	486.9	472.6	14.35	33.928	
2,700.0	2,642.6	2,641.3	2,597.7	10.2	7.9	137.77	-292.2	-198.0	512.9	497.8	15.15	33.851	
2,800.0	2,739.9	2,737.5	2,690.7	10.7	8.4	136.86	-312.9	-211.2	539.0	523.1	15.95	33.795	
2,900.0	2,837.2	2,833.6	2,783.7	11.1	8.9	136.03	-333.7	-224.3	565.3	548.5	16.75	33.756	
3,000.0	2,934.5	2,929.8	2,876.7	11.5	9.3	135.28	-354.4	-237.5	591.6	574.1	17.54	33.731	
3,100.0	3,031.7	3,026.0	2,969.7	12.0	9.8	134.59	-375.2	-250.7	618.0	599.7	18.33	33.716	
3,200.0	3,129.0	3,122.2	3,062.7	12.4	10.2	133.95	-396.0	-263.8	644.6	625.4	19.12	33.709	
3,300.0	3,226.3	3,218.4	3,155.7	12.9	10.7	133.37	-416.7	-277.0	671.1	651.2	19.91	33.710	
3,400.0	3,323.5	3,314.6	3,248.6	13.3	11.1	132.83	-437.5	-290.1	697.8	677.1	20.70	33.715	
3,500.0	3,420.8	3,410.8	3,341.6	13.8	11.6	132.33	-458.2	-303.3	724.4	703.0	21.48	33.725	
3,600.0	3,518.1	3,507.0	3,434.6	14.2	12.0	131.86	-479.0	-316.5	751.2	728.9	22.26	33.739	
3,700.0	3,615.4	3,603.1	3,527.6	14.7	12.5	131.43	-499.8	-329.6	778.0	754.9	23.05	33.755	
3,800.0	3,712.6	3,699.3	3,620.6	15.1	13.0	131.02	-520.5	-342.8	804.8	780.9	23.83	33.773	
3,900.0	3,809.9	3,795.5	3,713.6	15.5	13.4	130.65	-541.3	-355.9	831.6	807.0	24.61	33.793	
4,000.0	3,907.2	3,891.7	3,806.6	16.0	13.9	130.29	-562.0	-369.1	858.5	833.1	25.39	33.814	
4,100.0	4,004.4	3,987.9	3,899.6	16.4	14.3	129.96	-582.8	-382.3	885.4	859.3	26.17	33.836	
4,200.0	4,101.7	4,084.1	3,992.6	16.9	14.8	129.65	-603.6	-395.4	912.4	885.4	26.95	33.858	
4,300.0	4,199.0	4,180.3	4,085.6	17.3	15.3	129.35	-624.3	-408.6	939.3	911.6	27.72	33.881	
4,400.0	4,296.3	4,276.4	4,178.6	17.8	15.7	129.07	-645.1	-421.7	966.3	937.8	28.50	33.905	
4,500.0	4,393.5	4,372.6	4,271.6	18.2	16.2	128.81	-665.8	-434.9	993.3	964.0	29.28	33.928	
4,600.0	4,490.8	4,468.8	4,364.6	18.7	16.6	128.56	-686.6	-448.0	1,020.3	990.3	30.05	33.952	
4,700.0	4,588.1	4,565.0	4,457.6	19.1	17.1	128.32	-707.4	-461.2	1,047.4	1,016.5	30.83	33.976	
4,800.0	4,685.3	4,661.2	4,550.6	19.5	17.6	128.09	-728.1	-474.4	1,074.4	1,042.8	31.60	33.999	
4,900.0	4,782.6	4,757.4	4,643.5	20.0	18.0	127.88	-748.9	-487.5	1,101.5	1,069.1	32.38	34.022	
5,000.0	4,879.9	4,853.6	4,736.5	20.4	18.5	127.68	-769.6	-500.7	1,128.6	1,095.4	33.15	34.045	
5,100.0	4,977.2	4,949.7	4,829.5	20.9	19.0	127.48	-790.4	-513.8	1,155.7	1,121.8	33.92	34.068	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D2 - DD - Plan #1

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,074.4	5,045.9	4,922.5	21.3	19.4	127.30	-811.1	-527.0	1,182.8	1,148.1	34.70	34.091	
5,300.0	5,171.7	5,142.1	5,015.5	21.8	19.9	127.12	-831.9	-540.2	1,209.9	1,174.4	35.47	34.113	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D3 - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-131.56	-8.0	-9.0	12.1				
100.0	100.0	100.0	100.0	0.1	0.1	-131.56	-8.0	-9.0	12.1	11.8	0.27	44.361	
200.0	200.0	200.0	200.0	0.3	0.3	-131.56	-8.0	-9.0	12.1	11.5	0.62	19.439	
300.0	300.0	300.0	300.0	0.5	0.5	-131.56	-8.0	-9.0	12.1	11.1	0.97	12.447	
364.3	364.3	364.3	364.3	0.6	0.6	90.00	-8.0	-9.0	12.0	10.8	1.20	10.039	CC
400.0	400.0	400.0	400.0	0.7	0.7	97.27	-8.0	-9.0	12.1	10.8	1.33	9.149	ES
500.0	499.6	499.6	499.6	0.9	0.8	127.79	-8.0	-9.0	15.3	13.6	1.69	9.007	SF
600.0	598.8	598.6	598.6	1.1	1.0	145.74	-10.3	-10.2	25.7	23.6	2.06	12.473	
700.0	697.1	697.2	696.8	1.5	1.2	149.07	-17.1	-13.6	41.8	39.4	2.46	16.983	
800.0	794.5	794.9	793.7	1.9	1.5	147.86	-28.3	-19.3	62.2	59.2	2.95	21.059	
900.0	891.8	892.0	889.2	2.3	1.8	144.08	-43.7	-27.2	83.6	80.1	3.56	23.485	
1,000.0	989.0	988.2	982.9	2.7	2.1	139.21	-63.3	-37.1	106.3	102.0	4.29	24.792	
1,100.0	1,086.3	1,083.6	1,074.6	3.2	2.6	134.12	-86.6	-49.0	130.8	125.7	5.09	25.690	
1,200.0	1,183.6	1,179.8	1,166.9	3.6	3.0	130.25	-111.0	-61.4	156.4	150.4	5.91	26.440	
1,300.0	1,280.8	1,276.0	1,259.2	4.0	3.5	127.47	-135.4	-73.8	182.4	175.7	6.73	27.090	
1,400.0	1,378.1	1,372.3	1,351.4	4.5	4.0	125.38	-159.7	-86.1	208.8	201.2	7.55	27.647	
1,500.0	1,475.4	1,468.5	1,443.7	4.9	4.5	123.76	-184.1	-98.5	235.3	226.9	8.37	28.126	
1,600.0	1,572.7	1,564.7	1,535.9	5.4	5.0	122.47	-208.4	-110.9	262.0	252.8	9.18	28.539	
1,700.0	1,669.9	1,660.9	1,628.2	5.8	5.5	121.42	-232.8	-123.3	288.8	278.8	9.99	28.898	
1,800.0	1,767.2	1,757.1	1,720.4	6.2	6.0	120.54	-257.2	-135.7	315.7	304.9	10.81	29.213	
1,900.0	1,864.5	1,853.4	1,812.7	6.7	6.5	119.81	-281.5	-148.0	342.6	331.0	11.62	29.490	
2,000.0	1,961.7	1,949.6	1,905.0	7.1	7.0	119.18	-305.9	-160.4	369.6	357.1	12.43	29.736	
2,100.0	2,059.0	2,045.8	1,997.2	7.6	7.5	118.63	-330.2	-172.8	396.6	383.3	13.24	29.956	
2,200.0	2,156.3	2,142.0	2,089.5	8.0	8.0	118.16	-354.6	-185.2	423.6	409.6	14.05	30.153	
2,300.0	2,253.6	2,238.2	2,181.7	8.4	8.5	117.74	-379.0	-197.6	450.7	435.8	14.86	30.331	
2,400.0	2,350.8	2,334.5	2,274.0	8.9	9.0	117.37	-403.3	-209.9	477.8	462.1	15.67	30.492	
2,500.0	2,448.1	2,430.7	2,366.3	9.3	9.5	117.04	-427.7	-222.3	504.9	488.4	16.48	30.639	
2,600.0	2,545.4	2,526.9	2,458.5	9.8	10.0	116.74	-452.1	-234.7	532.0	514.7	17.29	30.773	
2,700.0	2,642.6	2,623.1	2,550.8	10.2	10.5	116.47	-476.4	-247.1	559.1	541.0	18.10	30.896	
2,800.0	2,739.9	2,719.3	2,643.0	10.7	11.0	116.23	-500.8	-259.5	586.2	567.3	18.90	31.009	
2,900.0	2,837.2	2,815.6	2,735.3	11.1	11.5	116.01	-525.1	-271.8	613.4	593.7	19.71	31.114	
3,000.0	2,934.5	2,911.8	2,827.5	11.5	12.0	115.81	-549.5	-284.2	640.5	620.0	20.52	31.210	
3,100.0	3,031.7	3,008.0	2,919.8	12.0	12.5	115.62	-573.9	-296.6	667.7	646.3	21.33	31.300	
3,200.0	3,129.0	3,104.2	3,012.1	12.4	13.0	115.45	-598.2	-309.0	694.8	672.7	22.14	31.384	
3,300.0	3,226.3	3,200.4	3,104.3	12.9	13.6	115.29	-622.6	-321.4	722.0	699.1	22.95	31.462	
3,400.0	3,323.5	3,296.7	3,196.6	13.3	14.1	115.14	-647.0	-333.7	749.2	725.4	23.76	31.535	
3,500.0	3,420.8	3,392.9	3,288.8	13.8	14.6	115.00	-671.3	-346.1	776.4	751.8	24.57	31.603	
3,600.0	3,518.1	3,489.1	3,381.1	14.2	15.1	114.88	-695.7	-358.5	803.5	778.2	25.37	31.668	
3,700.0	3,615.4	3,585.3	3,473.3	14.7	15.6	114.76	-720.0	-370.9	830.7	804.5	26.18	31.728	
3,800.0	3,712.6	3,681.5	3,565.6	15.1	16.1	114.64	-744.4	-383.3	857.9	830.9	26.99	31.785	
3,900.0	3,809.9	3,777.8	3,657.9	15.5	16.6	114.54	-768.8	-395.6	885.1	857.3	27.80	31.839	
4,000.0	3,907.2	3,874.0	3,750.1	16.0	17.1	114.44	-793.1	-408.0	912.3	883.7	28.61	31.890	
4,100.0	4,004.4	3,970.2	3,842.4	16.4	17.6	114.35	-817.5	-420.4	939.5	910.1	29.42	31.938	
4,200.0	4,101.7	4,066.4	3,934.6	16.9	18.1	114.26	-841.8	-432.8	966.7	936.5	30.22	31.984	
4,300.0	4,199.0	4,162.6	4,026.9	17.3	18.6	114.18	-866.2	-445.2	993.9	962.9	31.03	32.028	
4,400.0	4,296.3	4,258.9	4,119.2	17.8	19.1	114.10	-890.6	-457.5	1,021.1	989.2	31.84	32.069	
4,500.0	4,393.5	4,355.1	4,211.4	18.2	19.6	114.02	-914.9	-469.9	1,048.3	1,015.6	32.65	32.108	
4,600.0	4,490.8	4,451.3	4,303.7	18.7	20.2	113.95	-939.3	-482.3	1,075.5	1,042.0	33.46	32.146	
4,700.0	4,588.1	4,547.5	4,395.9	19.1	20.7	113.89	-963.7	-494.7	1,102.7	1,068.4	34.26	32.181	
4,800.0	4,685.3	4,643.7	4,488.2	19.5	21.2	113.82	-988.0	-507.1	1,129.9	1,094.8	35.07	32.216	
4,900.0	4,782.6	4,740.0	4,580.4	20.0	21.7	113.76	-1,012.4	-519.4	1,157.1	1,121.2	35.88	32.248	
5,000.0	4,879.9	4,836.2	4,672.7	20.4	22.2	113.70	-1,036.7	-531.8	1,184.3	1,147.6	36.69	32.280	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-14D3 - DD - Plan #1

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,977.2	4,932.4	4,765.0	20.9	22.7	113.65	-1,061.1	-544.2	1,211.5	1,174.0	37.50	32.310	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-16B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	5.78	16.8	1.7	16.8				
100.0	100.0	100.0	100.0	0.1	0.1	5.78	16.8	1.7	16.8	16.6	0.27	61.835	
200.0	200.0	200.0	200.0	0.3	0.3	5.78	16.8	1.7	16.8	16.2	0.62	27.096	
300.0	300.0	300.4	300.3	0.5	0.5	14.13	15.2	3.8	15.7	14.7	0.98	16.014	
360.3	360.3	360.7	360.5	0.6	0.6	-117.63	12.8	7.2	15.1	13.9	1.22	12.370	CC, ES
400.0	400.0	400.4	400.0	0.7	0.7	-109.31	10.6	10.2	15.4	14.0	1.38	11.120	
500.0	499.6	500.1	498.8	0.9	1.0	-91.33	2.9	20.7	18.5	16.6	1.87	9.876	
600.0	598.8	599.9	597.4	1.1	1.3	-85.53	-6.4	33.6	23.4	20.9	2.42	9.652	
700.0	697.1	699.7	695.9	1.5	1.6	-92.31	-15.8	46.5	28.1	25.0	3.09	9.096	
800.0	794.5	799.3	794.2	1.9	1.9	-104.62	-25.1	59.4	34.1	30.3	3.81	8.950	SF
900.0	891.8	898.9	892.5	2.3	2.3	-113.81	-34.5	72.3	41.3	36.9	4.46	9.272	
1,000.0	989.0	998.4	990.8	2.7	2.6	-120.15	-43.8	85.2	49.3	44.3	5.07	9.740	
1,100.0	1,086.3	1,098.0	1,089.1	3.2	2.9	-124.69	-53.1	98.0	57.8	52.1	5.65	10.230	
1,200.0	1,183.6	1,197.5	1,187.3	3.6	3.2	-128.05	-62.5	110.9	66.5	60.3	6.22	10.695	
1,300.0	1,280.8	1,297.1	1,285.6	4.0	3.6	-130.64	-71.8	123.8	75.4	68.6	6.78	11.122	
1,400.0	1,378.1	1,396.6	1,383.9	4.5	3.9	-132.67	-81.1	136.6	84.4	77.0	7.33	11.508	
1,500.0	1,475.4	1,496.2	1,482.2	4.9	4.2	-134.31	-90.5	149.5	93.4	85.6	7.88	11.856	
1,600.0	1,572.7	1,595.7	1,580.5	5.4	4.6	-135.66	-99.8	162.4	102.6	94.2	8.43	12.168	
1,700.0	1,669.9	1,695.3	1,678.7	5.8	4.9	-136.79	-109.1	175.3	111.8	102.8	8.98	12.450	
1,800.0	1,767.2	1,794.9	1,777.0	6.2	5.2	-137.74	-118.5	188.1	121.0	111.5	9.53	12.704	
1,900.0	1,864.5	1,894.4	1,875.3	6.7	5.5	-138.56	-127.8	201.0	130.3	120.2	10.07	12.935	
2,000.0	1,961.7	1,994.0	1,973.6	7.1	5.9	-139.28	-137.1	213.9	139.6	128.9	10.62	13.145	
2,100.0	2,059.0	2,093.5	2,071.8	7.6	6.2	-139.90	-146.5	226.7	148.9	137.7	11.16	13.336	
2,200.0	2,156.3	2,193.1	2,170.1	8.0	6.5	-140.45	-155.8	239.6	158.2	146.5	11.71	13.511	
2,300.0	2,253.6	2,292.6	2,268.4	8.4	6.9	-140.94	-165.1	252.5	167.5	155.3	12.25	13.672	
2,400.0	2,350.8	2,392.2	2,366.7	8.9	7.2	-141.37	-174.5	265.3	176.8	164.0	12.80	13.820	
2,500.0	2,448.1	2,491.7	2,464.9	9.3	7.5	-141.77	-183.8	278.2	186.2	172.8	13.34	13.957	
2,600.0	2,545.4	2,591.3	2,563.2	9.8	7.8	-142.12	-193.1	291.1	195.5	181.7	13.88	14.084	
2,700.0	2,642.6	2,690.8	2,661.5	10.2	8.2	-142.44	-202.5	304.0	204.9	190.5	14.43	14.202	
2,800.0	2,739.9	2,790.4	2,759.8	10.7	8.5	-142.74	-211.8	316.8	214.3	199.3	14.97	14.312	
2,900.0	2,837.2	2,890.0	2,858.0	11.1	8.8	-143.01	-221.2	329.7	223.7	208.1	15.52	14.414	
3,000.0	2,934.5	2,989.5	2,956.3	11.5	9.2	-143.26	-230.5	342.6	233.0	217.0	16.06	14.510	
3,100.0	3,031.7	3,089.1	3,054.6	12.0	9.5	-143.49	-239.8	355.4	242.4	225.8	16.60	14.600	
3,200.0	3,129.0	3,188.6	3,152.9	12.4	9.8	-143.70	-249.2	368.3	251.8	234.7	17.15	14.684	
3,300.0	3,226.3	3,288.2	3,251.2	12.9	10.1	-143.90	-258.5	381.2	261.2	243.5	17.69	14.763	
3,400.0	3,323.5	3,387.7	3,349.4	13.3	10.5	-144.08	-267.8	394.1	270.6	252.3	18.24	14.838	
3,500.0	3,420.8	3,487.3	3,447.7	13.8	10.8	-144.25	-277.2	406.9	280.0	261.2	18.78	14.909	
3,600.0	3,518.1	3,586.8	3,546.0	14.2	11.1	-144.41	-286.5	419.8	289.4	270.1	19.32	14.976	
3,700.0	3,615.4	3,686.4	3,644.3	14.7	11.5	-144.56	-295.8	432.7	298.8	278.9	19.87	15.039	
3,800.0	3,712.6	3,785.9	3,742.5	15.1	11.8	-144.70	-305.2	445.5	308.2	287.8	20.41	15.099	
3,900.0	3,809.9	3,885.5	3,840.8	15.5	12.1	-144.83	-314.5	458.4	317.6	296.6	20.95	15.156	
4,000.0	3,907.2	3,985.1	3,939.1	16.0	12.4	-144.96	-323.8	471.3	327.0	305.5	21.50	15.210	
4,100.0	4,004.4	4,084.6	4,037.4	16.4	12.8	-145.07	-333.2	484.1	336.4	314.3	22.04	15.262	
4,200.0	4,101.7	4,184.2	4,135.6	16.9	13.1	-145.19	-342.5	497.0	345.8	323.2	22.59	15.311	
4,300.0	4,199.0	4,283.7	4,233.9	17.3	13.4	-145.29	-351.8	509.9	355.2	332.1	23.13	15.358	
4,400.0	4,296.3	4,383.3	4,332.2	17.8	13.8	-145.39	-361.2	522.8	364.6	340.9	23.67	15.402	
4,500.0	4,393.5	4,482.8	4,430.5	18.2	14.1	-145.49	-370.5	535.6	374.0	349.8	24.22	15.445	
4,600.0	4,490.8	4,582.4	4,528.7	18.7	14.4	-145.58	-379.8	548.5	383.4	358.7	24.76	15.486	
4,700.0	4,588.1	4,681.9	4,627.0	19.1	14.8	-145.66	-389.2	561.4	392.8	367.5	25.30	15.525	
4,800.0	4,685.3	4,781.5	4,725.3	19.5	15.1	-145.74	-398.5	574.2	402.3	376.4	25.85	15.563	
4,900.0	4,782.6	4,881.0	4,823.6	20.0	15.4	-145.82	-407.9	587.1	411.7	385.3	26.39	15.599	
5,000.0	4,879.9	4,980.6	4,921.9	20.4	15.7	-145.90	-417.2	600.0	421.1	394.2	26.93	15.634	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-16B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,977.2	5,080.2	5,020.1	20.9	16.1	-145.97	-426.5	612.9	430.5	403.0	27.48	15.667	
5,200.0	5,074.4	5,179.7	5,118.4	21.3	16.4	-146.04	-435.9	625.7	439.9	411.9	28.02	15.699	
5,300.0	5,171.7	5,279.3	5,216.7	21.8	16.7	-146.10	-445.2	638.6	449.3	420.8	28.57	15.730	
5,400.0	5,269.0	5,378.8	5,315.0	22.2	17.1	-146.16	-454.5	651.5	458.8	429.6	29.11	15.760	
5,500.0	5,366.2	5,478.4	5,413.2	22.6	17.4	-146.22	-463.9	664.3	468.2	438.5	29.65	15.788	
5,600.0	5,463.5	5,577.9	5,511.5	23.1	17.7	-146.28	-473.2	677.2	477.6	447.4	30.20	15.816	
5,700.0	5,560.8	5,677.5	5,609.8	23.5	18.0	-146.34	-482.5	690.1	487.0	456.3	30.74	15.843	
5,800.0	5,658.1	5,777.0	5,708.1	24.0	18.4	-146.39	-491.9	703.0	496.4	465.1	31.28	15.868	
5,900.0	5,755.3	5,876.6	5,806.3	24.4	18.7	-146.44	-501.2	715.8	505.9	474.0	31.83	15.893	
6,000.0	5,852.6	5,976.1	5,904.6	24.9	19.0	-146.49	-510.5	728.7	515.3	482.9	32.37	15.917	
6,100.0	5,949.9	6,075.7	6,002.9	25.3	19.4	-146.54	-519.9	741.6	524.7	491.8	32.92	15.941	
6,200.0	6,047.1	6,175.2	6,101.2	25.8	19.7	-146.59	-529.2	754.4	534.1	500.7	33.46	15.963	
6,300.0	6,144.4	6,274.8	6,199.4	26.2	20.0	-146.63	-538.5	767.3	543.5	509.5	34.00	15.985	
6,400.0	6,241.7	6,374.4	6,297.7	26.6	20.4	-146.67	-547.9	780.2	553.0	518.4	34.55	16.006	
6,500.0	6,339.0	6,473.9	6,396.0	27.1	20.7	-146.72	-557.2	793.0	562.4	527.3	35.09	16.027	
6,600.0	6,436.2	6,573.5	6,494.3	27.5	21.0	-146.76	-566.5	805.9	571.8	536.2	35.63	16.047	
6,700.0	6,533.5	6,673.0	6,592.6	28.0	21.3	-146.80	-575.9	818.8	581.2	545.0	36.18	16.066	
6,800.0	6,630.8	6,772.6	6,690.8	28.4	21.7	-146.83	-585.2	831.7	590.6	553.9	36.72	16.085	
6,900.0	6,728.0	6,872.1	6,789.1	28.9	22.0	-146.87	-594.6	844.5	600.1	562.8	37.26	16.103	
7,000.0	6,825.3	6,971.7	6,887.4	29.3	22.3	-146.90	-603.9	857.4	609.5	571.7	37.81	16.120	
7,100.0	6,922.6	7,071.2	6,985.7	29.8	22.7	-146.94	-613.2	870.3	618.9	580.6	38.35	16.138	
7,200.0	7,020.1	7,170.9	7,084.0	30.2	23.0	-146.99	-622.6	883.1	627.6	588.7	38.90	16.132	
7,300.0	7,118.2	7,267.7	7,179.6	30.5	23.3	-146.90	-631.6	895.6	633.6	594.1	39.49	16.046	
7,400.0	7,217.0	7,355.2	7,266.3	30.8	23.5	-146.78	-638.6	905.3	638.0	598.0	39.98	15.959	
7,500.0	7,316.2	7,442.8	7,353.3	31.1	23.7	-146.70	-644.1	912.9	641.5	601.1	40.39	15.880	
7,600.0	7,415.8	7,530.3	7,440.7	31.2	23.9	-146.63	-648.1	918.3	644.0	603.2	40.73	15.810	
7,700.0	7,515.7	7,617.9	7,528.1	31.4	24.0	-146.60	-650.4	921.6	645.5	604.5	40.99	15.747	
7,800.0	7,615.7	7,705.8	7,616.0	31.4	24.1	-146.58	-651.2	922.7	645.9	604.8	41.17	15.689	
7,833.4	7,649.1	7,738.9	7,649.1	31.5	24.1	-3.01	-651.2	922.7	646.0	604.7	41.25	15.661	
7,900.0	7,715.7	7,805.5	7,715.7	31.5	24.2	-3.01	-651.2	922.7	645.9	604.5	41.40	15.603	
8,000.0	7,815.7	7,905.5	7,815.7	31.6	24.3	-3.01	-651.2	922.7	645.9	604.3	41.63	15.516	
8,100.0	7,915.7	8,005.5	7,915.7	31.7	24.4	-3.01	-651.2	922.7	645.9	604.1	41.86	15.430	
8,200.0	8,015.7	8,105.5	8,015.7	31.8	24.5	-3.01	-651.2	922.7	645.9	603.9	42.10	15.344	
8,300.0	8,115.7	8,205.5	8,115.7	31.8	24.6	-3.01	-651.2	922.7	645.9	603.6	42.33	15.258	
8,400.0	8,215.7	8,305.5	8,215.7	31.9	24.7	-3.01	-651.2	922.7	645.9	603.4	42.57	15.173	
8,500.0	8,315.7	8,405.5	8,315.7	32.0	24.8	-3.01	-651.2	922.7	645.9	603.1	42.81	15.088	
8,600.0	8,415.7	8,505.5	8,415.7	32.1	24.9	-3.01	-651.2	922.7	645.9	602.9	43.05	15.004	
8,700.0	8,515.7	8,605.5	8,515.7	32.2	25.0	-3.01	-651.2	922.7	645.9	602.7	43.29	14.920	
8,800.0	8,615.7	8,705.5	8,615.7	32.2	25.1	-3.01	-651.2	922.7	645.9	602.4	43.54	14.836	
8,900.0	8,715.7	8,805.5	8,715.7	32.3	25.2	-3.01	-651.2	922.7	645.9	602.2	43.78	14.753	
9,000.0	8,815.7	8,905.5	8,815.7	32.4	25.3	-3.01	-651.2	922.7	645.9	601.9	44.03	14.671	
9,100.0	8,915.7	9,005.5	8,915.7	32.5	25.4	-3.01	-651.2	922.7	645.9	601.7	44.28	14.589	
9,200.0	9,015.7	9,105.5	9,015.7	32.6	25.5	-3.01	-651.2	922.7	645.9	601.4	44.53	14.507	
9,300.0	9,115.7	9,205.5	9,115.7	32.7	25.6	-3.01	-651.2	922.7	645.9	601.2	44.78	14.426	
9,400.0	9,215.7	9,305.5	9,215.7	32.7	25.8	-3.01	-651.2	922.7	645.9	600.9	45.03	14.345	
9,500.0	9,315.7	9,405.5	9,315.7	32.8	25.9	-3.01	-651.2	922.7	645.9	600.7	45.28	14.265	
9,600.0	9,415.7	9,505.5	9,415.7	32.9	26.0	-3.01	-651.2	922.7	645.9	600.4	45.54	14.185	
9,700.0	9,515.7	9,605.5	9,515.7	33.0	26.1	-3.01	-651.2	922.7	645.9	600.2	45.79	14.106	
9,800.0	9,615.7	9,705.5	9,615.7	33.1	26.2	-3.01	-651.2	922.7	645.9	599.9	46.05	14.027	
9,900.0	9,715.7	9,805.5	9,715.7	33.2	26.3	-3.01	-651.2	922.7	645.9	599.6	46.31	13.949	
10,000.0	9,815.7	9,905.5	9,815.7	33.3	26.4	-3.01	-651.2	922.7	645.9	599.4	46.57	13.872	
10,100.0	9,915.7	10,005.5	9,915.7	33.4	26.5	-3.01	-651.2	922.7	645.9	599.1	46.83	13.794	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-16B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,200.0	10,015.7	10,105.5	10,015.7	33.5	26.7	-3.01	-651.2	922.7	645.9	598.9	47.09	13.718	
10,216.3	10,032.0	10,121.8	10,032.0	33.5	26.7	-3.01	-651.2	922.7	645.9	598.8	47.13	13.705	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-6C2 - DD - Plan #1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-174.35	-17.1	-1.7	17.2				
100.0	100.0	100.0	100.0	0.1	0.1	-174.35	-17.1	-1.7	17.2	16.9	0.27	63.182	
200.0	200.0	200.0	200.0	0.3	0.3	-174.35	-17.1	-1.7	17.2	16.6	0.62	27.687	CC, ES
300.0	300.0	299.2	299.1	0.5	0.5	-178.80	-19.3	-0.4	19.4	18.4	0.98	19.843	
400.0	400.0	398.1	397.7	0.7	0.7	31.79	-26.0	3.4	24.1	22.7	1.33	18.132	
500.0	499.6	496.7	495.5	0.9	1.0	28.95	-37.0	9.8	29.1	27.4	1.70	17.166	
600.0	598.8	595.0	592.2	1.1	1.3	27.85	-52.3	18.7	34.4	32.3	2.09	16.465	
700.0	697.1	693.1	687.6	1.5	1.8	27.81	-71.9	30.0	39.8	37.3	2.52	15.799	
800.0	794.5	792.8	783.9	1.9	2.2	29.04	-94.4	43.0	44.2	41.2	3.01	14.684	
900.0	891.8	892.7	880.3	2.3	2.7	30.41	-117.0	56.1	48.1	44.6	3.54	13.589	
1,000.0	989.0	992.6	976.8	2.7	3.2	31.57	-139.6	69.2	52.0	47.9	4.09	12.707	
1,100.0	1,086.3	1,092.5	1,073.2	3.2	3.7	32.57	-162.2	82.2	56.0	51.3	4.67	11.989	
1,200.0	1,183.6	1,192.4	1,169.7	3.6	4.2	33.44	-184.7	95.3	60.0	54.7	5.26	11.398	
1,300.0	1,280.8	1,292.3	1,266.1	4.0	4.7	34.20	-207.3	108.4	63.9	58.1	5.86	10.905	
1,400.0	1,378.1	1,392.3	1,362.6	4.5	5.1	34.87	-229.9	121.4	67.9	61.4	6.48	10.490	
1,500.0	1,475.4	1,492.2	1,459.0	4.9	5.6	35.46	-252.5	134.5	71.9	64.8	7.10	10.135	
1,600.0	1,572.7	1,592.1	1,555.5	5.4	6.1	35.99	-275.1	147.6	75.9	68.2	7.72	9.830	
1,700.0	1,669.9	1,692.0	1,651.9	5.8	6.6	36.47	-297.7	160.7	79.9	71.6	8.36	9.565	
1,800.0	1,767.2	1,791.9	1,748.4	6.2	7.1	36.91	-320.3	173.7	84.0	75.0	9.00	9.333	
1,900.0	1,864.5	1,891.9	1,844.8	6.7	7.6	37.30	-342.8	186.8	88.0	78.3	9.64	9.128	
2,000.0	1,961.7	1,991.8	1,941.3	7.1	8.1	37.66	-365.4	199.9	92.0	81.7	10.28	8.946	
2,100.0	2,059.0	2,091.7	2,037.7	7.6	8.6	37.99	-388.0	212.9	96.0	85.1	10.93	8.783	
2,200.0	2,156.3	2,191.6	2,134.2	8.0	9.1	38.29	-410.6	226.0	100.1	88.5	11.59	8.637	
2,300.0	2,253.6	2,291.5	2,230.6	8.4	9.5	38.57	-433.2	239.1	104.1	91.9	12.24	8.505	
2,400.0	2,350.8	2,391.4	2,327.1	8.9	10.0	38.83	-455.8	252.1	108.1	95.2	12.90	8.385	
2,500.0	2,448.1	2,491.4	2,423.5	9.3	10.5	39.07	-478.3	265.2	112.2	98.6	13.55	8.276	
2,600.0	2,545.4	2,591.3	2,520.0	9.8	11.0	39.29	-500.9	278.3	116.2	102.0	14.21	8.176	
2,700.0	2,642.6	2,691.2	2,616.4	10.2	11.5	39.50	-523.5	291.3	120.2	105.4	14.87	8.084	
2,800.0	2,739.9	2,791.1	2,712.9	10.7	12.0	39.69	-546.1	304.4	124.3	108.8	15.54	8.000	
2,900.0	2,837.2	2,891.0	2,809.3	11.1	12.5	39.88	-568.7	317.5	128.3	112.1	16.20	7.922	
3,000.0	2,934.5	2,990.9	2,905.8	11.5	13.0	40.05	-591.3	330.6	132.4	115.5	16.86	7.850	
3,100.0	3,031.7	3,090.9	3,002.2	12.0	13.5	40.21	-613.9	343.6	136.4	118.9	17.53	7.783	
3,200.0	3,129.0	3,190.8	3,098.7	12.4	14.0	40.36	-636.4	356.7	140.5	122.3	18.20	7.720	
3,300.0	3,226.3	3,290.7	3,195.1	12.9	14.5	40.50	-659.0	369.8	144.5	125.7	18.86	7.662	
3,400.0	3,323.5	3,390.6	3,291.6	13.3	14.9	40.64	-681.6	382.8	148.6	129.0	19.53	7.607	
3,500.0	3,420.8	3,490.5	3,388.0	13.8	15.4	40.77	-704.2	395.9	152.6	132.4	20.20	7.556	
3,600.0	3,518.1	3,590.4	3,484.5	14.2	15.9	40.89	-726.8	409.0	156.7	135.8	20.87	7.508	
3,700.0	3,615.4	3,690.4	3,580.9	14.7	16.4	41.00	-749.4	422.0	160.7	139.2	21.54	7.462	
3,800.0	3,712.6	3,790.3	3,677.4	15.1	16.9	41.11	-771.9	435.1	164.8	142.6	22.21	7.420	
3,900.0	3,809.9	3,890.2	3,773.8	15.5	17.4	41.22	-794.5	448.2	168.8	145.9	22.88	7.379	
4,000.0	3,907.2	3,990.1	3,870.3	16.0	17.9	41.32	-817.1	461.2	172.9	149.3	23.55	7.341	
4,100.0	4,004.4	4,090.0	3,966.7	16.4	18.4	41.41	-839.7	474.3	176.9	152.7	24.22	7.305	
4,200.0	4,101.7	4,190.0	4,063.2	16.9	18.9	41.50	-862.3	487.4	181.0	156.1	24.89	7.271	
4,300.0	4,199.0	4,289.9	4,159.6	17.3	19.4	41.59	-884.9	500.5	185.0	159.5	25.56	7.238	
4,400.0	4,296.3	4,389.8	4,256.1	17.8	19.9	41.67	-907.5	513.5	189.1	162.9	26.24	7.207	
4,500.0	4,393.5	4,489.7	4,352.5	18.2	20.3	41.75	-930.0	526.6	193.2	166.2	26.91	7.178	
4,600.0	4,490.8	4,589.6	4,449.0	18.7	20.8	41.83	-952.6	539.7	197.2	169.6	27.58	7.150	
4,700.0	4,588.1	4,689.5	4,545.4	19.1	21.3	41.90	-975.2	552.7	201.3	173.0	28.26	7.123	
4,800.0	4,685.3	4,789.5	4,641.9	19.5	21.8	41.97	-997.8	565.8	205.3	176.4	28.93	7.097	
4,900.0	4,782.6	4,889.4	4,738.3	20.0	22.3	42.04	-1,020.4	578.9	209.4	179.8	29.60	7.073	
5,000.0	4,879.9	4,989.3	4,834.8	20.4	22.8	42.11	-1,043.0	591.9	213.4	183.2	30.28	7.049	
5,100.0	4,977.2	5,089.2	4,931.2	20.9	23.3	42.17	-1,065.5	605.0	217.5	186.5	30.95	7.027	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-6C2 - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,074.4	5,189.1	5,027.7	21.3	23.8	42.23	-1,088.1	618.1	221.5	189.9	31.63	7.005	
5,300.0	5,171.7	5,289.0	5,124.1	21.8	24.3	42.29	-1,110.7	631.1	225.6	193.3	32.30	6.985	
5,400.0	5,269.0	5,389.0	5,220.6	22.2	24.8	42.34	-1,133.3	644.2	229.7	196.7	32.97	6.965	
5,500.0	5,366.2	5,488.9	5,317.0	22.6	25.3	42.40	-1,155.9	657.3	233.7	200.1	33.65	6.946	
5,600.0	5,463.5	5,588.8	5,413.5	23.1	25.7	42.45	-1,178.5	670.4	237.8	203.5	34.32	6.927	
5,700.0	5,560.8	5,688.7	5,509.9	23.5	26.2	42.50	-1,201.1	683.4	241.8	206.8	35.00	6.910	
5,800.0	5,658.1	5,788.6	5,606.4	24.0	26.7	42.55	-1,223.6	696.5	245.9	210.2	35.67	6.893	
5,900.0	5,755.3	5,888.5	5,702.8	24.4	27.2	42.60	-1,246.2	709.6	250.0	213.6	36.35	6.876	
6,000.0	5,852.6	5,988.5	5,799.3	24.9	27.7	42.64	-1,268.8	722.6	254.0	217.0	37.03	6.861	
6,100.0	5,949.9	6,088.4	5,895.7	25.3	28.2	42.69	-1,291.4	735.7	258.1	220.4	37.70	6.845	
6,200.0	6,047.1	6,188.3	5,992.2	25.8	28.7	42.73	-1,314.0	748.8	262.1	223.8	38.38	6.830	
6,300.0	6,144.4	6,288.2	6,088.6	26.2	29.2	42.77	-1,336.6	761.8	266.2	227.1	39.05	6.816	
6,400.0	6,241.7	6,388.1	6,185.1	26.6	29.7	42.81	-1,359.1	774.9	270.3	230.5	39.73	6.802	
6,500.0	6,339.0	6,488.1	6,281.5	27.1	30.2	42.85	-1,381.7	788.0	274.3	233.9	40.41	6.789	
6,600.0	6,436.2	6,588.0	6,378.0	27.5	30.7	42.89	-1,404.3	801.0	278.4	237.3	41.08	6.776	
6,700.0	6,533.5	6,687.9	6,474.4	28.0	31.2	42.93	-1,426.9	814.1	282.4	240.7	41.76	6.764	
6,800.0	6,630.8	6,787.8	6,570.9	28.4	31.6	42.96	-1,449.5	827.2	286.5	244.1	42.43	6.751	
6,900.0	6,728.0	6,887.7	6,667.3	28.9	32.1	43.00	-1,472.1	840.3	290.6	247.4	43.11	6.740	
7,000.0	6,825.3	6,987.6	6,763.8	29.3	32.6	43.03	-1,494.7	853.3	294.6	250.8	43.79	6.728	
7,100.0	6,922.6	7,087.6	6,860.2	29.8	33.1	43.06	-1,517.2	866.4	298.7	254.2	44.46	6.717	
7,200.0	7,020.1	7,195.4	6,964.7	30.2	33.6	43.19	-1,540.3	879.7	302.2	257.0	45.17	6.691	
7,300.0	7,118.2	7,304.6	7,071.5	30.5	34.0	43.31	-1,560.2	891.3	305.2	259.4	45.79	6.665	
7,400.0	7,217.0	7,413.9	7,179.1	30.8	34.4	43.41	-1,576.6	900.7	307.6	261.3	46.32	6.642	
7,500.0	7,316.2	7,523.3	7,287.5	31.1	34.6	43.48	-1,589.4	908.1	309.6	262.8	46.75	6.622	
7,600.0	7,415.8	7,632.8	7,396.4	31.2	34.8	43.53	-1,598.6	913.5	311.0	263.9	47.10	6.604	
7,700.0	7,515.7	7,742.2	7,505.7	31.4	35.0	43.55	-1,604.2	916.7	312.0	264.6	47.35	6.588	
7,800.0	7,615.7	7,851.7	7,615.2	31.4	35.1	43.54	-1,606.2	917.9	312.4	264.8	47.52	6.573	
7,900.0	7,715.7	7,952.3	7,715.7	31.5	35.2	-172.89	-1,606.2	917.9	312.4	264.6	47.72	6.545	
8,000.0	7,815.7	8,052.3	7,815.7	31.6	35.2	-172.89	-1,606.2	917.9	312.4	264.4	47.93	6.518	
8,100.0	7,915.7	8,152.3	7,915.7	31.7	35.3	-172.89	-1,606.2	917.9	312.4	264.2	48.13	6.490	
8,200.0	8,015.7	8,252.3	8,015.7	31.8	35.4	-172.89	-1,606.2	917.9	312.4	264.0	48.34	6.462	
8,300.0	8,115.7	8,352.3	8,115.7	31.8	35.4	-172.89	-1,606.2	917.9	312.4	263.8	48.55	6.435	
8,400.0	8,215.7	8,452.3	8,215.7	31.9	35.5	-172.89	-1,606.2	917.9	312.4	263.6	48.75	6.407	
8,500.0	8,315.7	8,552.3	8,315.7	32.0	35.6	-172.89	-1,606.2	917.9	312.4	263.4	48.97	6.379	
8,600.0	8,415.7	8,652.3	8,415.7	32.1	35.6	-172.89	-1,606.2	917.9	312.4	263.2	49.18	6.352	
8,700.0	8,515.7	8,752.3	8,515.7	32.2	35.7	-172.89	-1,606.2	917.9	312.4	263.0	49.39	6.324	
8,800.0	8,615.7	8,852.3	8,615.7	32.2	35.8	-172.89	-1,606.2	917.9	312.4	262.8	49.61	6.297	
8,900.0	8,715.7	8,952.3	8,715.7	32.3	35.9	-172.89	-1,606.2	917.9	312.4	262.5	49.82	6.269	
9,000.0	8,815.7	9,052.3	8,815.7	32.4	36.0	-172.89	-1,606.2	917.9	312.4	262.3	50.04	6.242	
9,100.0	8,915.7	9,152.3	8,915.7	32.5	36.0	-172.89	-1,606.2	917.9	312.4	262.1	50.26	6.215	
9,200.0	9,015.7	9,252.3	9,015.7	32.6	36.1	-172.89	-1,606.2	917.9	312.4	261.9	50.48	6.187	
9,300.0	9,115.7	9,352.3	9,115.7	32.7	36.2	-172.89	-1,606.2	917.9	312.4	261.7	50.71	6.160	
9,400.0	9,215.7	9,452.3	9,215.7	32.7	36.3	-172.89	-1,606.2	917.9	312.4	261.4	50.93	6.133	
9,500.0	9,315.7	9,552.3	9,315.7	32.8	36.3	-172.89	-1,606.2	917.9	312.4	261.2	51.16	6.106	
9,600.0	9,415.7	9,652.3	9,415.7	32.9	36.4	-172.89	-1,606.2	917.9	312.4	261.0	51.38	6.079	
9,700.0	9,515.7	9,752.3	9,515.7	33.0	36.5	-172.89	-1,606.2	917.9	312.4	260.8	51.61	6.052	
9,800.0	9,615.7	9,852.3	9,615.7	33.1	36.6	-172.89	-1,606.2	917.9	312.4	260.5	51.84	6.025	
9,900.0	9,715.7	9,952.3	9,715.7	33.2	36.7	-172.89	-1,606.2	917.9	312.4	260.3	52.07	5.999	
10,000.0	9,815.7	10,052.3	9,815.7	33.3	36.7	-172.89	-1,606.2	917.9	312.4	260.1	52.31	5.972	
10,100.0	9,915.7	10,152.3	9,915.7	33.4	36.8	-172.89	-1,606.2	917.9	312.4	259.8	52.54	5.945	
10,200.0	10,015.7	10,252.3	10,015.7	33.5	36.9	-172.89	-1,606.2	917.9	312.4	259.6	52.77	5.919	
10,216.3	10,032.0	10,268.6	10,032.0	33.5	36.9	-172.89	-1,606.2	917.9	312.4	259.6	52.81	5.915	SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-9C - DD - Plan #1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	5.84	33.1	3.4	33.3				
100.0	100.0	100.0	100.0	0.1	0.1	5.84	33.1	3.4	33.3	33.0	0.27	122.371	
200.0	200.0	200.0	200.0	0.3	0.3	5.84	33.1	3.4	33.3	32.7	0.62	53.623	
300.0	300.0	300.0	300.0	0.5	0.5	5.84	33.1	3.4	33.3	32.3	0.97	34.334	CC, ES
400.0	400.0	400.0	399.9	0.7	0.7	-136.30	32.8	6.0	35.2	33.9	1.33	26.525	
500.0	499.6	499.7	499.3	0.9	0.9	-132.81	31.9	13.8	41.1	39.3	1.73	23.690	
600.0	598.8	599.1	598.1	1.1	1.1	-129.99	30.6	25.5	50.8	48.6	2.20	23.062	SF
700.0	697.1	698.2	696.4	1.5	1.4	-131.37	29.2	37.5	64.0	61.3	2.72	23.507	
800.0	794.5	796.8	794.2	1.9	1.6	-134.69	27.8	49.5	80.4	77.1	3.26	24.649	
900.0	891.8	895.3	892.0	2.3	1.9	-137.24	26.4	61.4	97.3	93.5	3.80	25.613	
1,000.0	989.0	993.7	989.7	2.7	2.2	-139.03	25.0	73.4	114.4	110.1	4.34	26.365	
1,100.0	1,086.3	1,092.2	1,087.5	3.2	2.4	-140.36	23.6	85.3	131.5	126.7	4.88	26.967	
1,200.0	1,183.6	1,190.7	1,185.2	3.6	2.7	-141.37	22.2	97.3	148.8	143.3	5.42	27.460	
1,300.0	1,280.8	1,289.2	1,282.9	4.0	3.0	-142.18	20.8	109.2	166.0	160.0	5.96	27.870	
1,400.0	1,378.1	1,387.7	1,380.7	4.5	3.2	-142.84	19.5	121.2	183.3	176.8	6.50	28.216	
1,500.0	1,475.4	1,486.1	1,478.4	4.9	3.5	-143.38	18.1	133.1	200.6	193.5	7.03	28.512	
1,600.0	1,572.7	1,584.6	1,576.2	5.4	3.8	-143.84	16.7	145.1	217.9	210.3	7.57	28.768	
1,700.0	1,669.9	1,683.1	1,673.9	5.8	4.0	-144.23	15.3	157.0	235.2	227.1	8.11	28.992	
1,800.0	1,767.2	1,781.6	1,771.6	6.2	4.3	-144.56	13.9	169.0	252.5	243.9	8.65	29.189	
1,900.0	1,864.5	1,880.0	1,869.4	6.7	4.6	-144.85	12.5	180.9	269.8	260.6	9.19	29.364	
2,000.0	1,961.7	1,978.5	1,967.1	7.1	4.9	-145.11	11.1	192.8	287.2	277.4	9.73	29.521	
2,100.0	2,059.0	2,077.0	2,064.9	7.6	5.1	-145.34	9.7	204.8	304.5	294.3	10.27	29.661	
2,200.0	2,156.3	2,175.5	2,162.6	8.0	5.4	-145.54	8.3	216.7	321.9	311.1	10.81	29.788	
2,300.0	2,253.6	2,274.0	2,260.3	8.4	5.7	-145.73	7.0	228.7	339.2	327.9	11.34	29.903	
2,400.0	2,350.8	2,372.4	2,358.1	8.9	5.9	-145.89	5.6	240.6	356.6	344.7	11.88	30.008	
2,500.0	2,448.1	2,470.9	2,455.8	9.3	6.2	-146.04	4.2	252.6	373.9	361.5	12.42	30.105	
2,600.0	2,545.4	2,569.4	2,553.6	9.8	6.5	-146.18	2.8	264.5	391.3	378.3	12.96	30.193	
2,700.0	2,642.6	2,667.9	2,651.3	10.2	6.8	-146.30	1.4	276.5	408.7	395.2	13.50	30.275	
2,800.0	2,739.9	2,766.3	2,749.0	10.7	7.0	-146.42	0.0	288.4	426.0	412.0	14.04	30.350	
2,900.0	2,837.2	2,864.8	2,846.8	11.1	7.3	-146.52	-1.4	300.4	443.4	428.8	14.58	30.420	
3,000.0	2,934.5	2,963.3	2,944.5	11.5	7.6	-146.62	-2.8	312.3	460.7	445.6	15.11	30.485	
3,100.0	3,031.7	3,061.8	3,042.3	12.0	7.8	-146.71	-4.2	324.3	478.1	462.5	15.65	30.546	
3,200.0	3,129.0	3,160.3	3,140.0	12.4	8.1	-146.79	-5.5	336.2	495.5	479.3	16.19	30.603	
3,300.0	3,226.3	3,258.7	3,237.8	12.9	8.4	-146.87	-6.9	348.1	512.8	496.1	16.73	30.656	
3,400.0	3,323.5	3,357.2	3,335.5	13.3	8.7	-146.95	-8.3	360.1	530.2	512.9	17.27	30.706	
3,500.0	3,420.8	3,455.7	3,433.2	13.8	8.9	-147.01	-9.7	372.0	547.6	529.8	17.81	30.753	
3,600.0	3,518.1	3,554.2	3,531.0	14.2	9.2	-147.08	-11.1	384.0	565.0	546.6	18.34	30.797	
3,700.0	3,615.4	3,652.6	3,628.7	14.7	9.5	-147.14	-12.5	395.9	582.3	563.4	18.88	30.839	
3,800.0	3,712.6	3,751.1	3,726.5	15.1	9.7	-147.20	-13.9	407.9	599.7	580.3	19.42	30.878	
3,900.0	3,809.9	3,849.6	3,824.2	15.5	10.0	-147.25	-15.3	419.8	617.1	597.1	19.96	30.915	
4,000.0	3,907.2	3,948.1	3,921.9	16.0	10.3	-147.30	-16.7	431.8	634.4	613.9	20.50	30.951	
4,100.0	4,004.4	4,046.6	4,019.7	16.4	10.6	-147.35	-18.0	443.7	651.8	630.8	21.04	30.984	
4,200.0	4,101.7	4,145.0	4,117.4	16.9	10.8	-147.40	-19.4	455.7	669.2	647.6	21.58	31.016	
4,300.0	4,199.0	4,243.5	4,215.2	17.3	11.1	-147.44	-20.8	467.6	686.6	664.5	22.11	31.047	
4,400.0	4,296.3	4,342.0	4,312.9	17.8	11.4	-147.48	-22.2	479.6	703.9	681.3	22.65	31.076	
4,500.0	4,393.5	4,440.5	4,410.6	18.2	11.7	-147.52	-23.6	491.5	721.3	698.1	23.19	31.104	
4,600.0	4,490.8	4,538.9	4,508.4	18.7	11.9	-147.56	-25.0	503.4	738.7	715.0	23.73	31.130	
4,700.0	4,588.1	4,637.4	4,606.1	19.1	12.2	-147.59	-26.4	515.4	756.1	731.8	24.27	31.155	
4,800.0	4,685.3	4,735.9	4,703.9	19.5	12.5	-147.63	-27.8	527.3	773.4	748.6	24.81	31.180	
4,900.0	4,782.6	4,834.4	4,801.6	20.0	12.7	-147.66	-29.2	539.3	790.8	765.5	25.34	31.203	
5,000.0	4,879.9	4,932.9	4,899.3	20.4	13.0	-147.69	-30.5	551.2	808.2	782.3	25.88	31.225	
5,100.0	4,977.2	5,031.3	4,997.1	20.9	13.3	-147.72	-31.9	563.2	825.6	799.2	26.42	31.246	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 16-9C - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,074.4	5,129.8	5,094.8	21.3	13.6	-147.75	-33.3	575.1	843.0	816.0	26.96	31.267	
5,300.0	5,171.7	5,228.3	5,192.6	21.8	13.8	-147.78	-34.7	587.1	860.3	832.8	27.50	31.287	
5,400.0	5,269.0	5,326.8	5,290.3	22.2	14.1	-147.80	-36.1	599.0	877.7	849.7	28.04	31.306	
5,500.0	5,366.2	5,425.2	5,388.0	22.6	14.4	-147.83	-37.5	611.0	895.1	866.5	28.58	31.324	
5,600.0	5,463.5	5,523.7	5,485.8	23.1	14.6	-147.85	-38.9	622.9	912.5	883.4	29.11	31.341	
5,700.0	5,560.8	5,622.2	5,583.5	23.5	14.9	-147.88	-40.3	634.9	929.8	900.2	29.65	31.358	
5,800.0	5,658.1	5,720.7	5,681.3	24.0	15.2	-147.90	-41.7	646.8	947.2	917.0	30.19	31.375	
5,900.0	5,755.3	5,819.2	5,779.0	24.4	15.5	-147.92	-43.0	658.7	964.6	933.9	30.73	31.390	
6,000.0	5,852.6	5,917.6	5,876.7	24.9	15.7	-147.94	-44.4	670.7	982.0	950.7	31.27	31.406	
6,100.0	5,949.9	6,016.1	5,974.5	25.3	16.0	-147.96	-45.8	682.6	999.4	967.6	31.81	31.420	
6,200.0	6,047.1	6,114.6	6,072.2	25.8	16.3	-147.98	-47.2	694.6	1,016.7	984.4	32.34	31.435	
6,300.0	6,144.4	6,213.1	6,170.0	26.2	16.6	-148.00	-48.6	706.5	1,034.1	1,001.2	32.88	31.448	
6,400.0	6,241.7	6,311.5	6,267.7	26.6	16.8	-148.02	-50.0	718.5	1,051.5	1,018.1	33.42	31.462	
6,500.0	6,339.0	6,410.0	6,365.5	27.1	17.1	-148.04	-51.4	730.4	1,068.9	1,034.9	33.96	31.475	
6,600.0	6,436.2	6,508.5	6,463.2	27.5	17.4	-148.05	-52.8	742.4	1,086.3	1,051.8	34.50	31.487	
6,700.0	6,533.5	6,607.0	6,560.9	28.0	17.6	-148.07	-54.1	754.3	1,103.6	1,068.6	35.04	31.499	
6,800.0	6,630.8	6,704.8	6,658.0	28.4	17.9	-148.09	-55.5	766.2	1,121.0	1,085.4	35.57	31.515	
6,900.0	6,728.0	6,795.9	6,748.6	28.9	18.1	-148.19	-56.6	775.5	1,138.8	1,102.7	36.02	31.615	
7,000.0	6,825.3	6,886.5	6,839.0	29.3	18.3	-148.42	-57.4	782.0	1,157.2	1,120.8	36.38	31.806	
7,100.0	6,922.6	6,976.5	6,928.9	29.8	18.4	-148.79	-57.8	785.6	1,176.3	1,139.6	36.66	32.084	
7,200.0	7,020.1	7,067.6	7,020.1	30.2	18.5	-149.40	-57.9	786.5	1,195.4	1,158.5	36.88	32.414	
7,300.0	7,118.2	7,165.8	7,118.2	30.5	18.6	-150.03	-57.9	786.5	1,211.9	1,174.9	37.07	32.692	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 21-1B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-174.29	-33.9	-3.4	34.0				
100.0	100.0	100.0	100.0	0.1	0.1	-174.29	-33.9	-3.4	34.0	33.8	0.27	125.033	
200.0	200.0	200.0	200.0	0.3	0.3	-174.29	-33.9	-3.4	34.0	33.4	0.62	54.790	
300.0	300.0	300.0	300.0	0.5	0.5	-174.29	-33.9	-3.4	34.0	33.1	0.97	35.081	CC
400.0	400.0	398.5	398.5	0.7	0.7	42.74	-36.1	-2.2	34.3	33.0	1.32	25.945	ES
500.0	499.6	497.0	496.7	0.9	0.9	44.49	-42.9	1.2	35.0	33.3	1.70	20.620	
600.0	598.8	595.5	594.4	1.1	1.1	47.24	-54.2	6.9	36.3	34.1	2.14	16.985	
700.0	697.1	694.0	691.2	1.5	1.5	50.76	-70.0	14.9	38.2	35.5	2.69	14.219	
800.0	794.5	792.4	787.0	1.9	1.9	53.98	-90.2	25.1	41.3	37.9	3.36	12.270	
900.0	891.8	890.6	881.2	2.3	2.4	52.85	-114.7	37.5	47.7	43.7	4.04	11.798	SF
1,000.0	989.0	990.0	975.8	2.7	2.9	49.86	-142.1	51.4	56.5	51.8	4.66	12.110	
1,100.0	1,086.3	1,089.6	1,070.4	3.2	3.5	47.67	-169.6	65.3	65.4	60.1	5.27	12.399	
1,200.0	1,183.6	1,189.1	1,165.1	3.6	4.0	45.99	-197.1	79.3	74.3	68.4	5.87	12.656	
1,300.0	1,280.8	1,288.7	1,259.8	4.0	4.6	44.68	-224.6	93.2	83.3	76.9	6.47	12.883	
1,400.0	1,378.1	1,388.3	1,354.5	4.5	5.2	43.63	-252.1	107.1	92.4	85.3	7.06	13.084	
1,500.0	1,475.4	1,487.9	1,449.2	4.9	5.7	42.76	-279.5	121.0	101.5	93.8	7.65	13.263	
1,600.0	1,572.7	1,587.5	1,543.9	5.4	6.3	42.04	-307.0	134.9	110.5	102.3	8.24	13.422	
1,700.0	1,669.9	1,687.0	1,638.6	5.8	6.8	41.43	-334.5	148.9	119.7	110.8	8.82	13.564	
1,800.0	1,767.2	1,786.6	1,733.3	6.2	7.4	40.90	-362.0	162.8	128.8	119.4	9.40	13.692	
1,900.0	1,864.5	1,886.2	1,828.0	6.7	8.0	40.44	-389.5	176.7	137.9	127.9	9.99	13.808	
2,000.0	1,961.7	1,985.8	1,922.7	7.1	8.5	40.04	-417.0	190.6	147.0	136.5	10.57	13.912	
2,100.0	2,059.0	2,085.3	2,017.4	7.6	9.1	39.69	-444.5	204.5	156.2	145.0	11.15	14.008	
2,200.0	2,156.3	2,184.9	2,112.0	8.0	9.7	39.37	-471.9	218.5	165.3	153.6	11.73	14.095	
2,300.0	2,253.6	2,284.5	2,206.7	8.4	10.3	39.09	-499.4	232.4	174.5	162.2	12.31	14.175	
2,400.0	2,350.8	2,384.1	2,301.4	8.9	10.8	38.84	-526.9	246.3	183.6	170.7	12.89	14.248	
2,500.0	2,448.1	2,483.6	2,396.1	9.3	11.4	38.61	-554.4	260.2	192.8	179.3	13.47	14.316	
2,600.0	2,545.4	2,583.2	2,490.8	9.8	12.0	38.40	-581.9	274.1	202.0	187.9	14.04	14.379	
2,700.0	2,642.6	2,682.8	2,585.5	10.2	12.5	38.21	-609.4	288.1	211.1	196.5	14.62	14.438	
2,800.0	2,739.9	2,782.4	2,680.2	10.7	13.1	38.04	-636.9	302.0	220.3	205.1	15.20	14.492	
2,900.0	2,837.2	2,882.0	2,774.9	11.1	13.7	37.88	-664.3	315.9	229.5	213.7	15.78	14.543	
3,000.0	2,934.5	2,981.5	2,869.6	11.5	14.2	37.73	-691.8	329.8	238.6	222.3	16.36	14.590	
3,100.0	3,031.7	3,081.1	2,964.3	12.0	14.8	37.59	-719.3	343.7	247.8	230.9	16.93	14.634	
3,200.0	3,129.0	3,180.7	3,058.9	12.4	15.4	37.46	-746.8	357.7	257.0	239.5	17.51	14.676	
3,300.0	3,226.3	3,280.3	3,153.6	12.9	15.9	37.34	-774.3	371.6	266.1	248.1	18.09	14.715	
3,400.0	3,323.5	3,379.8	3,248.3	13.3	16.5	37.23	-801.8	385.5	275.3	256.7	18.66	14.752	
3,500.0	3,420.8	3,479.4	3,343.0	13.8	17.1	37.13	-829.3	399.4	284.5	265.3	19.24	14.787	
3,600.0	3,518.1	3,579.0	3,437.7	14.2	17.6	37.03	-856.7	413.3	293.7	273.9	19.82	14.820	
3,700.0	3,615.4	3,678.6	3,532.4	14.7	18.2	36.94	-884.2	427.3	302.8	282.5	20.39	14.852	
3,800.0	3,712.6	3,778.1	3,627.1	15.1	18.8	36.86	-911.7	441.2	312.0	291.1	20.97	14.881	
3,900.0	3,809.9	3,877.7	3,721.8	15.5	19.4	36.77	-939.2	455.1	321.2	299.7	21.54	14.909	
4,000.0	3,907.2	3,977.3	3,816.5	16.0	19.9	36.70	-966.7	469.0	330.4	308.3	22.12	14.936	
4,100.0	4,004.4	4,076.9	3,911.2	16.4	20.5	36.63	-994.2	482.9	339.6	316.9	22.70	14.961	
4,200.0	4,101.7	4,176.5	4,005.9	16.9	21.1	36.56	-1,021.7	496.9	348.7	325.5	23.27	14.986	
4,300.0	4,199.0	4,276.0	4,100.5	17.3	21.6	36.49	-1,049.2	510.8	357.9	334.1	23.85	15.009	
4,400.0	4,296.3	4,375.6	4,195.2	17.8	22.2	36.43	-1,076.6	524.7	367.1	342.7	24.42	15.031	
4,500.0	4,393.5	4,475.2	4,289.9	18.2	22.8	36.37	-1,104.1	538.6	376.3	351.3	25.00	15.052	
4,600.0	4,490.8	4,574.8	4,384.6	18.7	23.3	36.32	-1,131.6	552.5	385.5	359.9	25.57	15.072	
4,700.0	4,588.1	4,674.3	4,479.3	19.1	23.9	36.26	-1,159.1	566.5	394.6	368.5	26.15	15.092	
4,800.0	4,685.3	4,773.9	4,574.0	19.5	24.5	36.21	-1,186.6	580.4	403.8	377.1	26.73	15.110	
4,900.0	4,782.6	4,873.5	4,668.7	20.0	25.1	36.16	-1,214.1	594.3	413.0	385.7	27.30	15.128	
5,000.0	4,879.9	4,973.1	4,763.4	20.4	25.6	36.12	-1,241.6	608.2	422.2	394.3	27.88	15.145	
5,100.0	4,977.2	5,072.6	4,858.1	20.9	26.2	36.07	-1,269.0	622.1	431.4	402.9	28.45	15.162	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 21-1B - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,074.4	5,172.2	4,952.8	21.3	26.8	36.03	-1,296.5	636.1	440.6	411.5	29.03	15.178	
5,300.0	5,171.7	5,271.8	5,047.5	21.8	27.3	35.99	-1,324.0	650.0	449.7	420.1	29.60	15.193	
5,400.0	5,269.0	5,371.4	5,142.1	22.2	27.9	35.95	-1,351.5	663.9	458.9	428.8	30.18	15.207	
5,500.0	5,366.2	5,471.0	5,236.8	22.6	28.5	35.91	-1,379.0	677.8	468.1	437.4	30.75	15.222	
5,600.0	5,463.5	5,570.5	5,331.5	23.1	29.0	35.87	-1,406.5	691.7	477.3	446.0	31.33	15.235	
5,700.0	5,560.8	5,670.1	5,426.2	23.5	29.6	35.84	-1,434.0	705.7	486.5	454.6	31.90	15.248	
5,800.0	5,658.1	5,769.7	5,520.9	24.0	30.2	35.81	-1,461.4	719.6	495.7	463.2	32.48	15.261	
5,900.0	5,755.3	5,869.3	5,615.6	24.4	30.7	35.77	-1,488.9	733.5	504.9	471.8	33.05	15.273	
6,000.0	5,852.6	5,968.8	5,710.3	24.9	31.3	35.74	-1,516.4	747.4	514.0	480.4	33.63	15.285	
6,100.0	5,949.9	6,068.4	5,805.0	25.3	31.9	35.71	-1,543.9	761.3	523.2	489.0	34.20	15.297	
6,200.0	6,047.1	6,168.0	5,899.7	25.8	32.5	35.68	-1,571.4	775.3	532.4	497.6	34.78	15.308	
6,300.0	6,144.4	6,267.6	5,994.4	26.2	33.0	35.65	-1,598.9	789.2	541.6	506.2	35.36	15.319	
6,400.0	6,241.7	6,367.1	6,089.0	26.6	33.6	35.63	-1,626.4	803.1	550.8	514.9	35.93	15.329	
6,500.0	6,339.0	6,466.7	6,183.7	27.1	34.2	35.60	-1,653.8	817.0	560.0	523.5	36.51	15.339	
6,600.0	6,436.2	6,566.3	6,278.4	27.5	34.7	35.58	-1,681.3	830.9	569.2	532.1	37.08	15.349	
6,700.0	6,533.5	6,665.9	6,373.1	28.0	35.3	35.55	-1,708.8	844.9	578.3	540.7	37.66	15.359	
6,800.0	6,630.8	6,765.5	6,467.8	28.4	35.9	35.53	-1,736.3	858.8	587.5	549.3	38.23	15.368	
6,900.0	6,728.0	6,865.0	6,562.5	28.9	36.4	35.50	-1,763.8	872.7	596.7	557.9	38.81	15.377	
7,000.0	6,825.3	6,964.6	6,657.2	29.3	37.0	35.48	-1,791.3	886.6	605.9	566.5	39.38	15.386	
7,100.0	6,922.6	7,067.3	6,754.8	29.8	37.6	35.46	-1,819.6	901.0	615.1	575.1	39.96	15.390	
7,200.0	7,020.1	7,190.9	6,873.4	30.2	38.2	35.57	-1,850.9	916.8	622.5	581.9	40.64	15.319	
7,300.0	7,118.2	7,315.0	6,993.8	30.5	38.8	35.70	-1,877.6	930.3	628.8	587.6	41.24	15.249	
7,400.0	7,217.0	7,439.5	7,115.8	30.8	39.2	35.79	-1,899.8	941.6	634.1	592.3	41.75	15.186	
7,500.0	7,316.2	7,564.2	7,239.0	31.1	39.6	35.86	-1,917.2	950.4	638.3	596.1	42.19	15.129	
7,600.0	7,415.8	7,689.2	7,363.1	31.2	39.8	35.91	-1,929.8	956.8	641.4	598.8	42.54	15.077	
7,700.0	7,515.7	7,814.3	7,487.9	31.4	40.0	35.93	-1,937.6	960.8	643.4	600.6	42.81	15.030	
7,800.0	7,615.7	7,939.5	7,613.1	31.4	40.1	35.92	-1,940.6	962.2	644.3	601.3	43.00	14.985	
7,900.0	7,715.7	8,042.1	7,715.7	31.5	40.2	179.50	-1,940.6	962.3	644.4	601.1	43.22	14.908	
8,000.0	7,815.7	8,142.1	7,815.7	31.6	40.2	179.50	-1,940.6	962.3	644.4	600.9	43.45	14.831	
8,100.0	7,915.7	8,242.1	7,915.7	31.7	40.3	179.50	-1,940.6	962.3	644.4	600.7	43.67	14.754	
8,200.0	8,015.7	8,342.1	8,015.7	31.8	40.4	179.50	-1,940.6	962.3	644.4	600.5	43.90	14.677	
8,300.0	8,115.7	8,442.1	8,115.7	31.8	40.4	179.50	-1,940.6	962.3	644.4	600.2	44.13	14.601	
8,400.0	8,215.7	8,542.1	8,215.7	31.9	40.5	179.50	-1,940.6	962.3	644.4	600.0	44.36	14.524	
8,500.0	8,315.7	8,642.1	8,315.7	32.0	40.5	179.50	-1,940.6	962.3	644.4	599.8	44.60	14.449	
8,600.0	8,415.7	8,742.1	8,415.7	32.1	40.6	179.50	-1,940.6	962.3	644.4	599.5	44.83	14.373	
8,700.0	8,515.7	8,842.1	8,515.7	32.2	40.7	179.50	-1,940.6	962.3	644.4	599.3	45.07	14.298	
8,800.0	8,615.7	8,942.1	8,615.7	32.2	40.7	179.50	-1,940.6	962.3	644.4	599.1	45.30	14.223	
8,900.0	8,715.7	9,042.1	8,715.7	32.3	40.8	179.50	-1,940.6	962.3	644.4	598.8	45.54	14.148	
9,000.0	8,815.7	9,142.1	8,815.7	32.4	40.9	179.50	-1,940.6	962.3	644.4	598.6	45.78	14.074	
9,100.0	8,915.7	9,242.1	8,915.7	32.5	40.9	179.50	-1,940.6	962.3	644.4	598.3	46.02	14.000	
9,200.0	9,015.7	9,342.1	9,015.7	32.6	41.0	179.50	-1,940.6	962.3	644.4	598.1	46.27	13.927	
9,300.0	9,115.7	9,442.1	9,115.7	32.7	41.1	179.50	-1,940.6	962.3	644.4	597.8	46.51	13.854	
9,400.0	9,215.7	9,542.1	9,215.7	32.7	41.2	179.50	-1,940.6	962.3	644.4	597.6	46.76	13.781	
9,500.0	9,315.7	9,642.1	9,315.7	32.8	41.2	179.50	-1,940.6	962.3	644.4	597.4	47.00	13.709	
9,600.0	9,415.7	9,742.1	9,415.7	32.9	41.3	179.50	-1,940.6	962.3	644.4	597.1	47.25	13.637	
9,700.0	9,515.7	9,842.1	9,515.7	33.0	41.4	179.50	-1,940.6	962.3	644.4	596.9	47.50	13.565	
9,800.0	9,615.7	9,942.1	9,615.7	33.1	41.4	179.50	-1,940.6	962.3	644.4	596.6	47.75	13.494	
9,900.0	9,715.7	10,042.1	9,715.7	33.2	41.5	179.50	-1,940.6	962.3	644.4	596.4	48.00	13.423	
10,000.0	9,815.7	10,142.1	9,815.7	33.3	41.6	179.50	-1,940.6	962.3	644.4	596.1	48.26	13.353	
10,100.0	9,915.7	10,242.1	9,915.7	33.4	41.7	179.50	-1,940.6	962.3	644.4	595.8	48.51	13.283	
10,200.0	10,015.7	10,342.1	10,015.7	33.5	41.7	179.50	-1,940.6	962.3	644.4	595.6	48.77	13.213	
10,216.3	10,032.0	10,358.5	10,032.0	33.5	41.8	179.50	-1,940.6	962.3	644.4	595.5	48.81	13.202	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Federal 21-3A - DD - Plan #1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-157.13	-24.8	-10.4	26.9				
100.0	100.0	100.0	100.0	0.1	0.1	-157.13	-24.8	-10.4	26.9	26.6	0.27	98.732	
200.0	200.0	200.0	200.0	0.3	0.3	-157.13	-24.8	-10.4	26.9	26.3	0.62	43.265	CC, ES
300.0	300.0	298.5	298.5	0.5	0.5	-157.11	-27.1	-11.4	29.5	28.5	0.97	30.347	
400.0	400.0	396.6	396.3	0.7	0.7	62.72	-34.1	-14.4	35.9	34.6	1.32	27.235	
500.0	499.6	493.9	492.8	0.9	1.0	70.16	-45.5	-19.3	45.6	43.9	1.70	26.744	SF
600.0	598.8	590.2	587.4	1.1	1.3	78.16	-61.3	-26.0	59.3	57.2	2.17	27.289	
700.0	697.1	684.9	679.7	1.5	1.7	85.02	-81.1	-34.4	77.9	75.1	2.78	28.018	
800.0	794.5	778.0	769.2	1.9	2.2	90.31	-104.6	-44.5	101.3	97.8	3.50	28.942	
900.0	891.8	873.3	860.0	2.3	2.7	93.33	-131.5	-55.9	128.0	123.7	4.27	29.991	
1,000.0	989.0	969.5	951.5	2.7	3.3	95.31	-158.7	-67.5	154.9	149.9	5.06	30.636	
1,100.0	1,086.3	1,065.7	1,043.0	3.2	3.8	96.70	-185.9	-79.1	182.0	176.2	5.86	31.061	
1,200.0	1,183.6	1,161.9	1,134.6	3.6	4.3	97.73	-213.1	-90.6	209.2	202.5	6.67	31.358	
1,300.0	1,280.8	1,258.1	1,226.1	4.0	4.9	98.53	-240.3	-102.2	236.4	228.9	7.49	31.575	
1,400.0	1,378.1	1,354.3	1,317.6	4.5	5.4	99.16	-267.5	-113.8	263.6	255.3	8.31	31.740	
1,500.0	1,475.4	1,450.4	1,409.1	4.9	6.0	99.67	-294.7	-125.4	290.9	281.7	9.13	31.869	
1,600.0	1,572.7	1,546.6	1,500.7	5.4	6.5	100.09	-321.9	-137.0	318.1	308.2	9.95	31.972	
1,700.0	1,669.9	1,642.8	1,592.2	5.8	7.1	100.45	-349.1	-148.6	345.4	334.7	10.78	32.057	
1,800.0	1,767.2	1,739.0	1,683.7	6.2	7.6	100.75	-376.3	-160.1	372.7	361.1	11.60	32.127	
1,900.0	1,864.5	1,835.2	1,775.3	6.7	8.1	101.02	-403.5	-171.7	400.0	387.6	12.43	32.186	
2,000.0	1,961.7	1,931.4	1,866.8	7.1	8.7	101.25	-430.7	-183.3	427.4	414.1	13.26	32.237	
2,100.0	2,059.0	2,027.5	1,958.3	7.6	9.2	101.45	-457.9	-194.9	454.7	440.6	14.09	32.281	
2,200.0	2,156.3	2,123.7	2,049.8	8.0	9.8	101.63	-485.1	-206.5	482.0	467.1	14.91	32.319	
2,300.0	2,253.6	2,219.9	2,141.4	8.4	10.3	101.79	-512.3	-218.0	509.3	493.6	15.74	32.352	
2,400.0	2,350.8	2,316.1	2,232.9	8.9	10.9	101.93	-539.5	-229.6	536.7	520.1	16.57	32.382	
2,500.0	2,448.1	2,412.3	2,324.4	9.3	11.4	102.06	-566.6	-241.2	564.0	546.6	17.40	32.408	
2,600.0	2,545.4	2,508.5	2,416.0	9.8	12.0	102.18	-593.8	-252.8	591.3	573.1	18.23	32.432	
2,700.0	2,642.6	2,604.6	2,507.5	10.2	12.5	102.29	-621.0	-264.4	618.7	599.6	19.06	32.453	
2,800.0	2,739.9	2,700.8	2,599.0	10.7	13.0	102.39	-648.2	-275.9	646.0	626.1	19.89	32.472	
2,900.0	2,837.2	2,797.0	2,690.5	11.1	13.6	102.48	-675.4	-287.5	673.4	652.6	20.73	32.490	
3,000.0	2,934.5	2,893.2	2,782.1	11.5	14.1	102.56	-702.6	-299.1	700.7	679.2	21.56	32.506	
3,100.0	3,031.7	2,989.4	2,873.6	12.0	14.7	102.64	-729.8	-310.7	728.1	705.7	22.39	32.521	
3,200.0	3,129.0	3,085.6	2,965.1	12.4	15.2	102.71	-757.0	-322.3	755.4	732.2	23.22	32.534	
3,300.0	3,226.3	3,181.7	3,056.7	12.9	15.8	102.77	-784.2	-333.9	782.8	758.7	24.05	32.547	
3,400.0	3,323.5	3,277.9	3,148.2	13.3	16.3	102.84	-811.4	-345.4	810.1	785.2	24.88	32.558	
3,500.0	3,420.8	3,374.1	3,239.7	13.8	16.9	102.89	-838.6	-357.0	837.5	811.7	25.71	32.569	
3,600.0	3,518.1	3,470.3	3,331.2	14.2	17.4	102.95	-865.8	-368.6	864.8	838.3	26.55	32.579	
3,700.0	3,615.4	3,566.5	3,422.8	14.7	17.9	103.00	-893.0	-380.2	892.2	864.8	27.38	32.588	
3,800.0	3,712.6	3,662.7	3,514.3	15.1	18.5	103.05	-920.2	-391.8	919.5	891.3	28.21	32.597	
3,900.0	3,809.9	3,758.8	3,605.8	15.5	19.0	103.09	-947.4	-403.3	946.9	917.8	29.04	32.605	
4,000.0	3,907.2	3,855.0	3,697.4	16.0	19.6	103.14	-974.6	-414.9	974.2	944.3	29.87	32.613	
4,100.0	4,004.4	3,951.2	3,788.9	16.4	20.1	103.18	-1,001.8	-426.5	1,001.6	970.9	30.70	32.620	
4,200.0	4,101.7	4,047.4	3,880.4	16.9	20.7	103.21	-1,029.0	-438.1	1,028.9	997.4	31.54	32.627	
4,300.0	4,199.0	4,143.6	3,971.9	17.3	21.2	103.25	-1,056.2	-449.7	1,056.3	1,023.9	32.37	32.633	
4,400.0	4,296.3	4,239.8	4,063.5	17.8	21.8	103.28	-1,083.4	-461.2	1,083.6	1,050.4	33.20	32.639	
4,500.0	4,393.5	4,335.9	4,155.0	18.2	22.3	103.32	-1,110.6	-472.8	1,111.0	1,077.0	34.03	32.645	
4,600.0	4,490.8	4,432.1	4,246.5	18.7	22.9	103.35	-1,137.8	-484.4	1,138.4	1,103.5	34.86	32.651	
4,700.0	4,588.1	4,528.3	4,338.1	19.1	23.4	103.38	-1,165.0	-496.0	1,165.7	1,130.0	35.70	32.656	
4,800.0	4,685.3	4,624.5	4,429.6	19.5	24.0	103.41	-1,192.2	-507.6	1,193.1	1,156.5	36.53	32.661	
4,900.0	4,782.6	4,720.7	4,521.1	20.0	24.5	103.43	-1,219.4	-519.2	1,220.4	1,183.1	37.36	32.666	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design (J16W) - HMU Fee 16-8D - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	5.42	50.6	4.8	50.9				
100.0	100.0	100.0	100.0	0.1	0.1	5.42	50.6	4.8	50.9	50.6	0.27	186.767	
200.0	200.0	200.0	200.0	0.3	0.3	5.42	50.6	4.8	50.9	50.2	0.62	81.842	CC, ES
300.0	300.0	298.1	298.0	0.5	0.5	7.35	52.2	6.7	52.7	51.7	0.97	54.486	
400.0	400.0	395.6	395.2	0.7	0.7	-132.87	57.0	12.5	60.3	59.0	1.34	45.122	
500.0	499.6	491.7	490.6	0.9	1.0	-130.76	64.8	21.9	75.4	73.7	1.74	43.429	SF
600.0	598.8	585.8	583.2	1.1	1.3	-129.70	75.4	34.7	97.8	95.6	2.19	44.584	
700.0	697.1	680.0	675.1	1.5	1.7	-129.46	88.4	50.4	126.5	123.8	2.71	46.640	
800.0	794.5	774.7	767.5	1.9	2.1	-130.61	101.6	66.4	158.3	155.0	3.28	48.206	
900.0	891.8	869.3	859.8	2.3	2.5	-131.75	114.9	82.4	190.5	186.7	3.88	49.142	
1,000.0	989.0	963.9	952.1	2.7	2.9	-132.56	128.2	98.4	222.8	218.3	4.48	49.742	
1,100.0	1,086.3	1,058.5	1,044.4	3.2	3.2	-133.17	141.4	114.5	255.1	250.0	5.09	50.152	
1,200.0	1,183.6	1,153.1	1,136.7	3.6	3.6	-133.64	154.7	130.5	287.4	281.7	5.70	50.446	
1,300.0	1,280.8	1,247.7	1,229.0	4.0	4.0	-134.02	168.0	146.5	319.8	313.5	6.31	50.665	
1,400.0	1,378.1	1,342.3	1,321.3	4.5	4.4	-134.32	181.2	162.5	352.1	345.2	6.93	50.833	
1,500.0	1,475.4	1,437.0	1,413.6	4.9	4.8	-134.58	194.5	178.5	384.5	376.9	7.54	50.966	
1,600.0	1,572.7	1,531.6	1,505.9	5.4	5.2	-134.79	207.7	194.5	416.9	408.7	8.16	51.072	
1,700.0	1,669.9	1,626.2	1,598.2	5.8	5.7	-134.98	221.0	210.6	449.2	440.4	8.78	51.160	
1,800.0	1,767.2	1,720.8	1,690.5	6.2	6.1	-135.14	234.3	226.6	481.6	472.2	9.40	51.233	
1,900.0	1,864.5	1,815.4	1,782.8	6.7	6.5	-135.28	247.5	242.6	514.0	503.9	10.02	51.294	
2,000.0	1,961.7	1,910.0	1,875.1	7.1	6.9	-135.40	260.8	258.6	546.3	535.7	10.64	51.346	
2,100.0	2,059.0	2,004.6	1,967.4	7.6	7.3	-135.51	274.1	274.6	578.7	567.5	11.26	51.392	
2,200.0	2,156.3	2,099.2	2,059.7	8.0	7.7	-135.61	287.3	290.7	611.1	599.2	11.88	51.431	
2,300.0	2,253.6	2,193.8	2,152.0	8.4	8.1	-135.70	300.6	306.7	643.5	631.0	12.50	51.465	
2,400.0	2,350.8	2,288.4	2,244.2	8.9	8.5	-135.78	313.8	322.7	675.9	662.7	13.12	51.496	
2,500.0	2,448.1	2,383.0	2,336.5	9.3	8.9	-135.85	327.1	338.7	708.2	694.5	13.75	51.523	
2,600.0	2,545.4	2,477.6	2,428.8	9.8	9.3	-135.91	340.4	354.7	740.6	726.3	14.37	51.547	
2,700.0	2,642.6	2,572.3	2,521.1	10.2	9.7	-135.97	353.6	370.7	773.0	758.0	14.99	51.569	
2,800.0	2,739.9	2,666.9	2,613.4	10.7	10.1	-136.03	366.9	386.8	805.4	789.8	15.61	51.588	
2,900.0	2,837.2	2,761.5	2,705.7	11.1	10.5	-136.08	380.2	402.8	837.8	821.6	16.23	51.606	
3,000.0	2,934.5	2,856.1	2,798.0	11.5	10.9	-136.13	393.4	418.8	870.2	853.3	16.86	51.622	
3,100.0	3,031.7	2,950.7	2,890.3	12.0	11.3	-136.17	406.7	434.8	902.6	885.1	17.48	51.637	
3,200.0	3,129.0	3,045.3	2,982.6	12.4	11.7	-136.21	419.9	450.8	934.9	916.8	18.10	51.651	
3,300.0	3,226.3	3,139.9	3,074.9	12.9	12.1	-136.25	433.2	466.8	967.3	948.6	18.72	51.663	
3,400.0	3,323.5	3,234.5	3,167.2	13.3	12.5	-136.29	446.5	482.9	999.7	980.4	19.35	51.675	
3,500.0	3,420.8	3,329.1	3,259.5	13.8	12.9	-136.32	459.7	498.9	1,032.1	1,012.1	19.97	51.686	
3,600.0	3,518.1	3,423.7	3,351.8	14.2	13.3	-136.35	473.0	514.9	1,064.5	1,043.9	20.59	51.696	
3,700.0	3,615.4	3,518.3	3,444.1	14.7	13.7	-136.38	486.3	530.9	1,096.9	1,075.7	21.21	51.705	
3,800.0	3,712.6	3,612.9	3,536.4	15.1	14.1	-136.41	499.5	546.9	1,129.3	1,107.4	21.84	51.714	
3,900.0	3,809.9	3,707.5	3,628.7	15.5	14.5	-136.44	512.8	562.9	1,161.7	1,139.2	22.46	51.722	
4,000.0	3,907.2	3,802.2	3,721.0	16.0	14.9	-136.46	526.0	579.0	1,194.1	1,171.0	23.08	51.729	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU Federal 16-6C
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	**MD Reference:**	KBE @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU Federal 16-6C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KBE @ 7667.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinates are relative to: HMU Federal 16-6C
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°