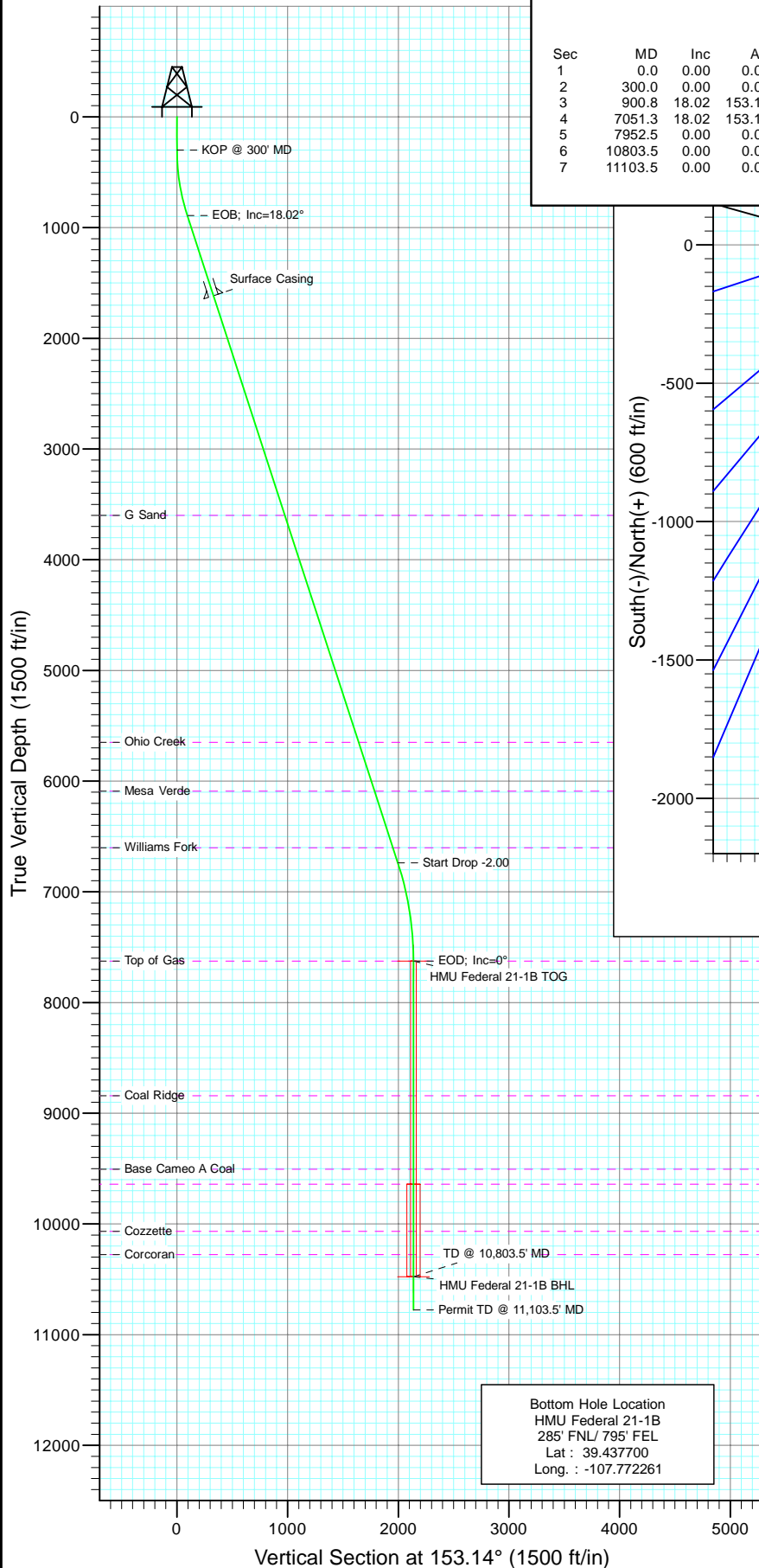
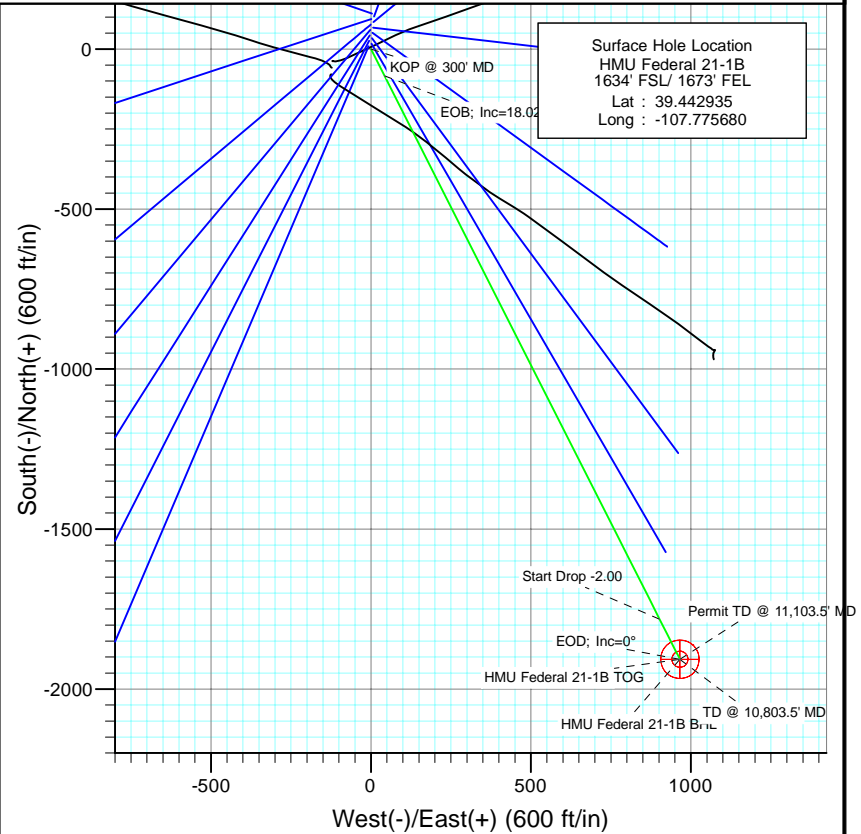




Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 21-1B
Wellbore: DD
Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N-/S	+E-/W	Dleg	TFace	VSec	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	900.8	18.02	153.14	890.9	-83.6	42.3	3.00	153.14	93.7	
4	7051.3	18.02	153.14	6739.6	-1781.3	902.1	0.00	0.00	1996.7	
5	7952.5	0.00	0.00	7626.0	-1906.7	965.6	2.00	180.00	2137.3	HMU Federal 21-1B TOG
6	10803.5	0.00	0.00	10477.0	-1906.7	965.6	0.00	0.00	2137.3	HMU Federal 21-1B BHL
7	11103.5	0.00	0.00	10777.0	-1906.7	965.6	0.00	0.00	2137.3	



Azimuths to True North
Magnetic North: 10.30°

Magnetic Field
Strength: 52330.5snT
Dip Angle: 65.77°
Date: 10/29/2010
Model: IGRF200510

FORMATION TOP DETAILS

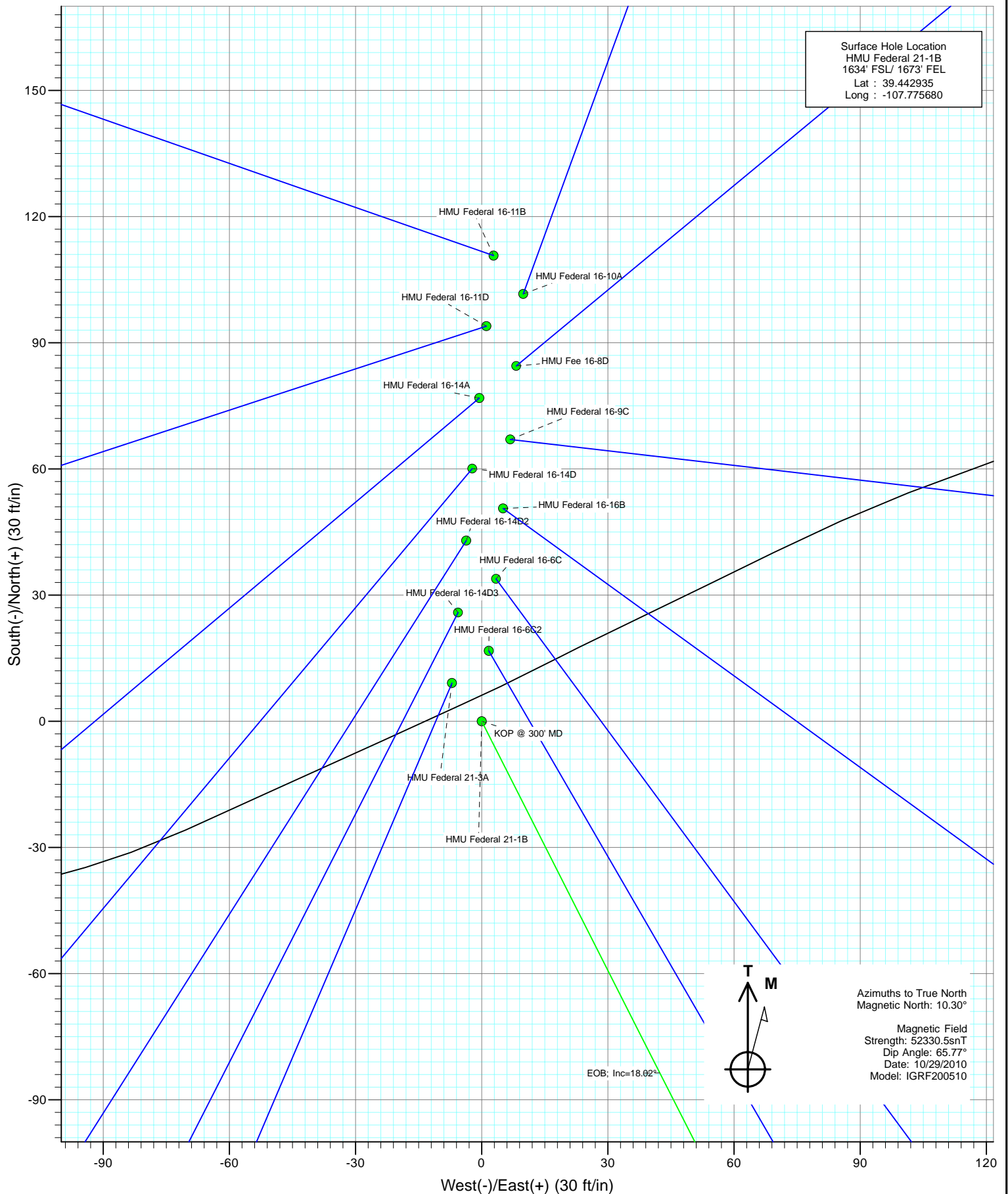
TVDPath	MDPath	Formation
3600.0	3749.7	G Sand
5650.0	5905.4	Ohio Creek
6091.0	6369.2	Mesa Verde
6603.0	6907.6	Williams Fork
7626.0	7952.5	Top of Gas
8842.0	9168.5	Coal Ridge
9506.0	9832.5	Base Cameo A Coal
9642.0	9968.5	Rollins
10068.0	10394.5	Cozzette
10277.0	10603.5	Corcoran

DESIGN DETAILS: Plan #1

105XXX; KR				
KBE @ 7667.0ft (Original Well Elev)				
Target	Azimuth	Origin	N/S	E/W From TVD
HMU Federal 21-1B BHL	153.14	Slot	0.0	0.0

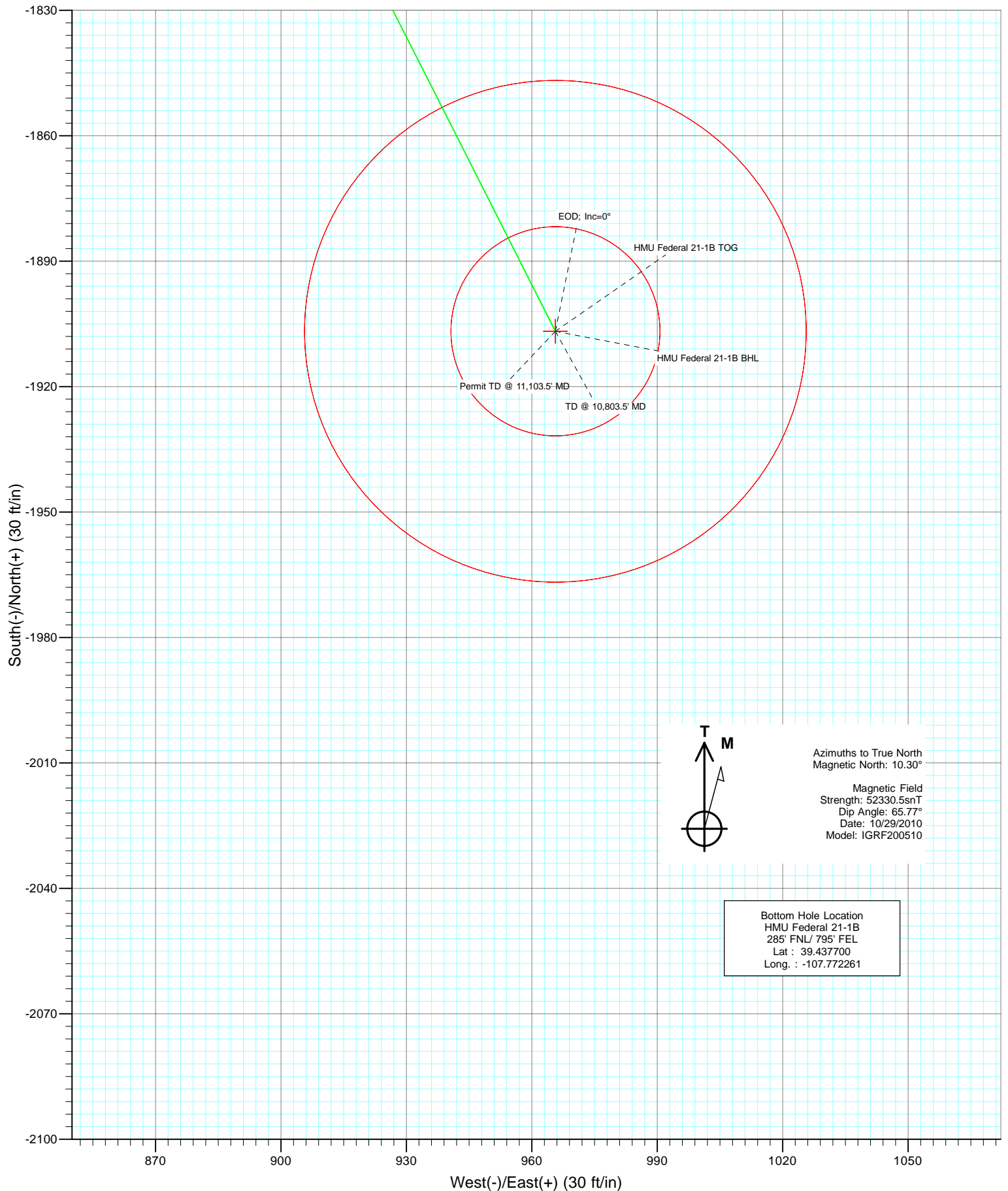


Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 21-1B
Wellbore: DD
Design: Plan #1





Project: Mamm Creek
Site: (J16W)
Well: HMU Federal 21-1B
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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 21-1B					
Well Position	+N/-S	0.0 ft	Northing:	1,594,270.89 ft	Latitude:	39.442935
	+E/-W	0.0 ft	Easting:	2,357,389.79 ft	Longitude:	-107.775680
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	153.14

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	
900.8	18.02	153.14	890.9	-83.6	42.3	3.00	3.00	0.00	153.14	
7,051.3	18.02	153.14	6,739.6	-1,781.3	902.1	0.00	0.00	0.00	0.00	
7,952.5	0.00	0.00	7,626.0	-1,906.7	965.6	2.00	-2.00	0.00	180.00	HMU Federal 21-1B T
10,803.5	0.00	0.00	10,477.0	-1,906.7	965.6	0.00	0.00	0.00	0.00	HMU Federal 21-1B E
11,103.5	0.00	0.00	10,777.0	-1,906.7	965.6	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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' MD
330.0	0.90	153.14	330.0	-0.2	0.1	0.2	3.00	3.00	
360.0	1.80	153.14	360.0	-0.8	0.4	0.9	3.00	3.00	
390.0	2.70	153.14	390.0	-1.9	1.0	2.1	3.00	3.00	
420.0	3.60	153.14	419.9	-3.4	1.7	3.8	3.00	3.00	
450.0	4.50	153.14	449.8	-5.3	2.7	5.9	3.00	3.00	
480.0	5.40	153.14	479.7	-7.6	3.8	8.5	3.00	3.00	
510.0	6.30	153.14	509.6	-10.3	5.2	11.5	3.00	3.00	
540.0	7.20	153.14	539.4	-13.4	6.8	15.1	3.00	3.00	
570.0	8.10	153.14	569.1	-17.0	8.6	19.1	3.00	3.00	
600.0	9.00	153.14	598.8	-21.0	10.6	23.5	3.00	3.00	
630.0	9.90	153.14	628.4	-25.4	12.8	28.4	3.00	3.00	
660.0	10.80	153.14	657.9	-30.2	15.3	33.8	3.00	3.00	
690.0	11.70	153.14	687.3	-35.4	17.9	39.7	3.00	3.00	
720.0	12.60	153.14	716.6	-41.0	20.8	46.0	3.00	3.00	
750.0	13.50	153.14	745.8	-47.1	23.8	52.8	3.00	3.00	
780.0	14.40	153.14	775.0	-53.5	27.1	60.0	3.00	3.00	
810.0	15.30	153.14	804.0	-60.4	30.6	67.7	3.00	3.00	
840.0	16.20	153.14	832.8	-67.7	34.3	75.8	3.00	3.00	
870.0	17.10	153.14	861.6	-75.3	38.1	84.4	3.00	3.00	
900.0	18.00	153.14	890.2	-83.4	42.2	93.5	3.00	3.00	
900.8	18.02	153.14	890.9	-83.6	42.3	93.7	3.00	3.00	EOB; Inc=18.02°
930.0	18.02	153.14	918.7	-91.7	46.4	102.8	0.00	0.00	
960.0	18.02	153.14	947.2	-100.0	50.6	112.0	0.00	0.00	
990.0	18.02	153.14	975.8	-108.2	54.8	121.3	0.00	0.00	
1,020.0	18.02	153.14	1,004.3	-116.5	59.0	130.6	0.00	0.00	
1,050.0	18.02	153.14	1,032.8	-124.8	63.2	139.9	0.00	0.00	
1,080.0	18.02	153.14	1,061.3	-133.1	67.4	149.2	0.00	0.00	
1,110.0	18.02	153.14	1,089.9	-141.4	71.6	158.5	0.00	0.00	
1,140.0	18.02	153.14	1,118.4	-149.6	75.8	167.7	0.00	0.00	
1,170.0	18.02	153.14	1,146.9	-157.9	80.0	177.0	0.00	0.00	
1,200.0	18.02	153.14	1,175.5	-166.2	84.2	186.3	0.00	0.00	
1,230.0	18.02	153.14	1,204.0	-174.5	88.4	195.6	0.00	0.00	
1,260.0	18.02	153.14	1,232.5	-182.8	92.6	204.9	0.00	0.00	
1,290.0	18.02	153.14	1,261.0	-191.0	96.8	214.1	0.00	0.00	
1,320.0	18.02	153.14	1,289.6	-199.3	100.9	223.4	0.00	0.00	
1,350.0	18.02	153.14	1,318.1	-207.6	105.1	232.7	0.00	0.00	
1,380.0	18.02	153.14	1,346.6	-215.9	109.3	242.0	0.00	0.00	
1,410.0	18.02	153.14	1,375.2	-224.2	113.5	251.3	0.00	0.00	
1,440.0	18.02	153.14	1,403.7	-232.4	117.7	260.6	0.00	0.00	
1,470.0	18.02	153.14	1,432.2	-240.7	121.9	269.8	0.00	0.00	
1,500.0	18.02	153.14	1,460.7	-249.0	126.1	279.1	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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	18.02	153.14	1,489.3	-257.3	130.3	288.4	0.00	0.00	
1,560.0	18.02	153.14	1,517.8	-265.6	134.5	297.7	0.00	0.00	
1,590.0	18.02	153.14	1,546.3	-273.9	138.7	307.0	0.00	0.00	
1,620.0	18.02	153.14	1,574.8	-282.1	142.9	316.3	0.00	0.00	
1,650.0	18.02	153.14	1,603.4	-290.4	147.1	325.5	0.00	0.00	
1,664.8	18.02	153.14	1,617.4	-294.5	149.1	330.1	0.00	0.00	Surface Casing
1,680.0	18.02	153.14	1,631.9	-298.7	151.3	334.8	0.00	0.00	
1,710.0	18.02	153.14	1,660.4	-307.0	155.5	344.1	0.00	0.00	
1,740.0	18.02	153.14	1,689.0	-315.3	159.7	353.4	0.00	0.00	
1,770.0	18.02	153.14	1,717.5	-323.5	163.9	362.7	0.00	0.00	
1,800.0	18.02	153.14	1,746.0	-331.8	168.0	371.9	0.00	0.00	
1,830.0	18.02	153.14	1,774.5	-340.1	172.2	381.2	0.00	0.00	
1,860.0	18.02	153.14	1,803.1	-348.4	176.4	390.5	0.00	0.00	
1,890.0	18.02	153.14	1,831.6	-356.7	180.6	399.8	0.00	0.00	
1,920.0	18.02	153.14	1,860.1	-364.9	184.8	409.1	0.00	0.00	
1,950.0	18.02	153.14	1,888.7	-373.2	189.0	418.4	0.00	0.00	
1,980.0	18.02	153.14	1,917.2	-381.5	193.2	427.6	0.00	0.00	
2,010.0	18.02	153.14	1,945.7	-389.8	197.4	436.9	0.00	0.00	
2,040.0	18.02	153.14	1,974.2	-398.1	201.6	446.2	0.00	0.00	
2,070.0	18.02	153.14	2,002.8	-406.3	205.8	455.5	0.00	0.00	
2,100.0	18.02	153.14	2,031.3	-414.6	210.0	464.8	0.00	0.00	
2,130.0	18.02	153.14	2,059.8	-422.9	214.2	474.0	0.00	0.00	
2,160.0	18.02	153.14	2,088.3	-431.2	218.4	483.3	0.00	0.00	
2,190.0	18.02	153.14	2,116.9	-439.5	222.6	492.6	0.00	0.00	
2,220.0	18.02	153.14	2,145.4	-447.8	226.8	501.9	0.00	0.00	
2,250.0	18.02	153.14	2,173.9	-456.0	231.0	511.2	0.00	0.00	
2,280.0	18.02	153.14	2,202.5	-464.3	235.1	520.5	0.00	0.00	
2,310.0	18.02	153.14	2,231.0	-472.6	239.3	529.7	0.00	0.00	
2,340.0	18.02	153.14	2,259.5	-480.9	243.5	539.0	0.00	0.00	
2,370.0	18.02	153.14	2,288.0	-489.2	247.7	548.3	0.00	0.00	
2,400.0	18.02	153.14	2,316.6	-497.4	251.9	557.6	0.00	0.00	
2,430.0	18.02	153.14	2,345.1	-505.7	256.1	566.9	0.00	0.00	
2,460.0	18.02	153.14	2,373.6	-514.0	260.3	576.2	0.00	0.00	
2,490.0	18.02	153.14	2,402.2	-522.3	264.5	585.4	0.00	0.00	

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
HMU Federal 21-1B TOC	0.00	0.00	7,626.0	-1,906.7	965.6	1,592,340.56	2,358,307.37	39.437700	-107.772261
- plan misses target center by 5449.5ft at 2490.0ft MD (2402.2 TVD, -522.3 N, 264.5 E)									
- Circle (radius 25.0)									
HMU Federal 21-1B BHI	0.00	0.00	10,477.0	-1,906.7	965.6	1,592,340.56	2,358,307.37	39.437700	-107.772261
- plan misses target center by 8222.6ft at 2490.0ft MD (2402.2 TVD, -522.3 N, 264.5 E)									
- Circle (radius 60.0)									

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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	18.02	153.14	2,411.7	-525.0	265.9	588.5	0.00	0.00	
2,600.0	18.02	153.14	2,506.8	-552.6	279.9	619.5	0.00	0.00	
2,700.0	18.02	153.14	2,601.9	-580.2	293.9	650.4	0.00	0.00	
2,800.0	18.02	153.14	2,696.9	-607.8	307.8	681.4	0.00	0.00	
2,900.0	18.02	153.14	2,792.0	-635.5	321.8	712.3	0.00	0.00	
3,000.0	18.02	153.14	2,887.1	-663.1	335.8	743.2	0.00	0.00	
3,100.0	18.02	153.14	2,982.2	-690.7	349.8	774.2	0.00	0.00	
3,200.0	18.02	153.14	3,077.3	-718.3	363.8	805.1	0.00	0.00	
3,300.0	18.02	153.14	3,172.4	-745.9	377.7	836.1	0.00	0.00	
3,400.0	18.02	153.14	3,267.5	-773.5	391.7	867.0	0.00	0.00	
3,500.0	18.02	153.14	3,362.6	-801.1	405.7	897.9	0.00	0.00	
3,600.0	18.02	153.14	3,457.7	-828.7	419.7	928.9	0.00	0.00	
3,700.0	18.02	153.14	3,552.8	-856.3	433.6	959.8	0.00	0.00	
3,749.7	18.02	153.14	3,600.0	-870.0	440.6	975.2	0.00	0.00	G Sand
3,800.0	18.02	153.14	3,647.9	-883.9	447.6	990.8	0.00	0.00	
3,900.0	18.02	153.14	3,743.0	-911.5	461.6	1,021.7	0.00	0.00	
4,000.0	18.02	153.14	3,838.1	-939.1	475.6	1,052.6	0.00	0.00	
4,100.0	18.02	153.14	3,933.2	-966.7	489.6	1,083.6	0.00	0.00	
4,200.0	18.02	153.14	4,028.2	-994.3	503.5	1,114.5	0.00	0.00	
4,300.0	18.02	153.14	4,123.3	-1,021.9	517.5	1,145.5	0.00	0.00	
4,400.0	18.02	153.14	4,218.4	-1,049.5	531.5	1,176.4	0.00	0.00	
4,500.0	18.02	153.14	4,313.5	-1,077.1	545.5	1,207.4	0.00	0.00	
4,600.0	18.02	153.14	4,408.6	-1,104.7	559.5	1,238.3	0.00	0.00	
4,700.0	18.02	153.14	4,503.7	-1,132.3	573.4	1,269.2	0.00	0.00	
4,800.0	18.02	153.14	4,598.8	-1,159.9	587.4	1,300.2	0.00	0.00	
4,900.0	18.02	153.14	4,693.9	-1,187.5	601.4	1,331.1	0.00	0.00	
5,000.0	18.02	153.14	4,789.0	-1,215.1	615.4	1,362.1	0.00	0.00	
5,100.0	18.02	153.14	4,884.1	-1,242.7	629.4	1,393.0	0.00	0.00	
5,200.0	18.02	153.14	4,979.2	-1,270.3	643.3	1,423.9	0.00	0.00	
5,300.0	18.02	153.14	5,074.3	-1,297.9	657.3	1,454.9	0.00	0.00	
5,400.0	18.02	153.14	5,169.4	-1,325.5	671.3	1,485.8	0.00	0.00	
5,500.0	18.02	153.14	5,264.5	-1,353.1	685.3	1,516.8	0.00	0.00	
5,600.0	18.02	153.14	5,359.5	-1,380.7	699.3	1,547.7	0.00	0.00	
5,700.0	18.02	153.14	5,454.6	-1,408.3	713.2	1,578.6	0.00	0.00	
5,800.0	18.02	153.14	5,549.7	-1,435.9	727.2	1,609.6	0.00	0.00	
5,900.0	18.02	153.14	5,644.8	-1,463.5	741.2	1,640.5	0.00	0.00	
5,905.4	18.02	153.14	5,650.0	-1,465.0	742.0	1,642.2	0.00	0.00	Ohio Creek
6,000.0	18.02	153.14	5,739.9	-1,491.1	755.2	1,671.5	0.00	0.00	
6,100.0	18.02	153.14	5,835.0	-1,518.7	769.1	1,702.4	0.00	0.00	
6,200.0	18.02	153.14	5,930.1	-1,546.4	783.1	1,733.3	0.00	0.00	
6,300.0	18.02	153.14	6,025.2	-1,574.0	797.1	1,764.3	0.00	0.00	
6,369.2	18.02	153.14	6,091.0	-1,593.1	806.8	1,785.7	0.00	0.00	Mesa Verde
6,400.0	18.02	153.14	6,120.3	-1,601.6	811.1	1,795.2	0.00	0.00	
6,500.0	18.02	153.14	6,215.4	-1,629.2	825.1	1,826.2	0.00	0.00	
6,600.0	18.02	153.14	6,310.5	-1,656.8	839.0	1,857.1	0.00	0.00	
6,700.0	18.02	153.14	6,405.6	-1,684.4	853.0	1,888.1	0.00	0.00	
6,800.0	18.02	153.14	6,500.7	-1,712.0	867.0	1,919.0	0.00	0.00	
6,900.0	18.02	153.14	6,595.8	-1,739.6	881.0	1,949.9	0.00	0.00	
6,907.6	18.02	153.14	6,603.0	-1,741.7	882.0	1,952.3	0.00	0.00	Williams Fork
7,000.0	18.02	153.14	6,690.8	-1,767.2	895.0	1,980.9	0.00	0.00	
7,051.3	18.02	153.14	6,739.6	-1,781.3	902.1	1,996.7	0.00	0.00	Start Drop -2.00
7,100.0	17.05	153.14	6,786.1	-1,794.4	908.8	2,011.4	2.00	-2.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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	15.05	153.14	6,882.2	-1,819.1	921.3	2,039.1	2.00	-2.00	
7,300.0	13.05	153.14	6,979.2	-1,840.7	932.2	2,063.3	2.00	-2.00	
7,400.0	11.05	153.14	7,077.0	-1,859.4	941.7	2,084.2	2.00	-2.00	
7,500.0	9.05	153.14	7,175.4	-1,874.9	949.5	2,101.7	2.00	-2.00	
7,600.0	7.05	153.14	7,274.4	-1,887.4	955.9	2,115.7	2.00	-2.00	
7,700.0	5.05	153.14	7,373.9	-1,896.8	960.6	2,126.2	2.00	-2.00	
7,800.0	3.05	153.14	7,473.6	-1,903.1	963.8	2,133.3	2.00	-2.00	
7,900.0	1.05	153.14	7,573.5	-1,906.3	965.4	2,136.8	2.00	-2.00	
7,952.5	0.00	0.00	7,626.0	-1,906.7	965.6	2,137.3	2.00	-2.00	EOD; Inc=0° - Top of Gas - HMU Federal 21-1E
8,000.0	0.00	0.00	7,673.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,100.0	0.00	0.00	7,773.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,200.0	0.00	0.00	7,873.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,300.0	0.00	0.00	7,973.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,400.0	0.00	0.00	8,073.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,500.0	0.00	0.00	8,173.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,600.0	0.00	0.00	8,273.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,700.0	0.00	0.00	8,373.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,800.0	0.00	0.00	8,473.5	-1,906.7	965.6	2,137.3	0.00	0.00	
8,900.0	0.00	0.00	8,573.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,000.0	0.00	0.00	8,673.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,100.0	0.00	0.00	8,773.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,168.5	0.00	0.00	8,842.0	-1,906.7	965.6	2,137.3	0.00	0.00	Coal Ridge
9,200.0	0.00	0.00	8,873.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,300.0	0.00	0.00	8,973.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,400.0	0.00	0.00	9,073.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,500.0	0.00	0.00	9,173.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,600.0	0.00	0.00	9,273.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,700.0	0.00	0.00	9,373.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,800.0	0.00	0.00	9,473.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,832.5	0.00	0.00	9,506.0	-1,906.7	965.6	2,137.3	0.00	0.00	Base Cameo A Coal
9,900.0	0.00	0.00	9,573.5	-1,906.7	965.6	2,137.3	0.00	0.00	
9,968.5	0.00	0.00	9,642.0	-1,906.7	965.6	2,137.3	0.00	0.00	Rollins
10,000.0	0.00	0.00	9,673.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,100.0	0.00	0.00	9,773.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,200.0	0.00	0.00	9,873.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,300.0	0.00	0.00	9,973.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,394.5	0.00	0.00	10,068.0	-1,906.7	965.6	2,137.3	0.00	0.00	Cozzette
10,400.0	0.00	0.00	10,073.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,500.0	0.00	0.00	10,173.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,600.0	0.00	0.00	10,273.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,603.5	0.00	0.00	10,277.0	-1,906.7	965.6	2,137.3	0.00	0.00	Corcoran
10,700.0	0.00	0.00	10,373.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,800.0	0.00	0.00	10,473.5	-1,906.7	965.6	2,137.3	0.00	0.00	
10,803.5	0.00	0.00	10,477.0	-1,906.7	965.6	2,137.3	0.00	0.00	TD @ 10,803.5' MD - HMU Federal 21-1B BHL
10,900.0	0.00	0.00	10,573.5	-1,906.7	965.6	2,137.3	0.00	0.00	
11,000.0	0.00	0.00	10,673.5	-1,906.7	965.6	2,137.3	0.00	0.00	
11,100.0	0.00	0.00	10,773.5	-1,906.7	965.6	2,137.3	0.00	0.00	
11,103.5	0.00	0.00	10,777.0	-1,906.7	965.6	2,137.3	0.00	0.00	Permit TD @ 11,103.5' MD

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
HMU Federal 21-1B TOC	0.00	0.00	7,626.0	-1,906.7	965.6	1,592,340.56	2,358,307.37	39.437700	-107.772261
- plan hits target center									
- Circle (radius 25.0)									
HMU Federal 21-1B BHI	0.00	0.00	10,477.0	-1,906.7	965.6	1,592,340.56	2,358,307.37	39.437700	-107.772261
- plan hits target center									
- Circle (radius 60.0)									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)	Name		(in)	(in)
1,664.8	1,617.4	Surface Casing		5.500	6.000

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)	Name	Lithology		(°)	(°)
3,749.7	3,600.0	G Sand			0.00	
5,905.4	5,650.0	Ohio Creek			0.00	
6,369.2	6,091.0	Mesa Verde			0.00	
6,907.6	6,603.0	Williams Fork			0.00	
7,952.5	7,626.0	Top of Gas			0.00	
9,168.5	8,842.0	Coal Ridge			0.00	
9,832.5	9,506.0	Base Cameo A Coal			0.00	
9,968.5	9,642.0	Rollins			0.00	
10,394.5	10,068.0	Cozzette			0.00	
10,603.5	10,277.0	Corcoran			0.00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
300.0	300.0	0.0	0.0	KOP @ 300' MD	
900.8	890.9	-83.6	42.3	EOB; Inc=18.02°	
7,051.3	6,739.6	-1,781.3	902.1	Start Drop -2.00	
7,952.5	7,626.0	-1,906.7	965.6	EOD; Inc=0°	
10,803.5	10,477.0	-1,906.7	965.6	TD @ 10,803.5' MD	
11,103.5	10,777.0	-1,906.7	965.6	Permit TD @ 11,103.5' MD	

EnCana Oil & Gas (USA) Inc

Mamm Creek

(J16W)

HMU Federal 21-1B

DD

Plan #1

Anticollision Report

01 November, 2010

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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 1,310.3ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	11/1/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,103.5	Plan #1 (DD)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Separation Factor	Warning
			Between Centres (ft)	Between Ellipses (ft)		
(J16W)						
Existing 16-11 - DD - DD	0.0	0.0	135.7			
Existing 16-11 - DD - DD	100.0	99.6	135.8	135.6	464.627	ES
Existing 16-11 - DD - DD	900.0	869.4	201.2	197.6	55.296	SF
Existing 16-16 - DD - DD	0.0	0.0	146.9			
Existing 16-16 - DD - DD	1,400.0	1,414.3	152.6	146.4	24.555	ES
Existing 16-16 - DD - DD	5,700.0	5,664.0	645.6	603.7	15.386	SF
Existing 16-9 - DD - DD	706.4	716.1	118.0	115.4	44.310	CC, ES
Existing 16-9 - DD - DD	900.0	905.9	129.7	126.1	36.565	SF
HMU Federal 16-10A - DD - Plan #1	300.0	300.0	102.1	101.1	105.215	CC, ES
HMU Federal 16-10A - DD - Plan #1	600.0	593.1	124.9	122.8	61.610	SF
HMU Federal 16-11B - DD - Plan #1	200.0	200.0	110.8	110.1	178.273	CC, ES
HMU Federal 16-11B - DD - Plan #1	600.0	583.2	152.0	149.8	69.140	SF
HMU Federal 16-11D - DD - Plan #1	200.0	200.0	94.0	93.4	151.253	CC
HMU Federal 16-11D - DD - Plan #1	300.0	300.0	94.0	93.0	96.846	ES
HMU Federal 16-11D - DD - Plan #1	700.0	696.9	131.2	128.6	50.562	SF
HMU Federal 16-14A - DD - Plan #1	418.7	423.4	72.9	71.5	50.158	CC, ES
HMU Federal 16-14A - DD - Plan #1	700.0	701.4	99.9	97.1	35.727	SF
HMU Federal 16-14D - DD - Plan #1	300.0	300.0	60.1	59.2	61.975	CC, ES
HMU Federal 16-14D - DD - Plan #1	600.0	598.8	82.1	80.1	40.682	SF
HMU Federal 16-14D2 - DD - Plan #1	300.0	300.0	43.1	42.2	44.452	CC, ES
HMU Federal 16-14D2 - DD - Plan #1	500.0	499.6	53.0	51.3	31.774	SF
HMU Federal 16-14D3 - DD - Plan #1	300.0	300.0	26.5	25.5	27.278	CC, ES
HMU Federal 16-14D3 - DD - Plan #1	400.0	400.0	29.0	27.7	22.000	SF
HMU Federal 16-16B - DD - Plan #1	396.2	398.3	48.4	47.0	35.593	CC
HMU Federal 16-16B - DD - Plan #1	400.0	402.2	48.4	47.0	35.165	ES
HMU Federal 16-16B - DD - Plan #1	800.0	801.3	74.7	71.0	20.308	SF
HMU Federal 16-6C - DD - Plan #1	300.0	300.0	34.0	33.1	35.081	CC
HMU Federal 16-6C - DD - Plan #1	400.0	401.3	34.3	33.0	25.853	ES
HMU Federal 16-6C - DD - Plan #1	900.0	905.4	48.3	44.3	11.864	SF
HMU Federal 16-6C2 - DD - Plan #1	488.1	489.0	10.4	8.6	5.742	CC
HMU Federal 16-6C2 - DD - Plan #1	500.0	500.9	10.5	8.6	5.563	ES
HMU Federal 16-6C2 - DD - Plan #1	1,200.0	1,199.6	20.7	12.6	2.545	SF
HMU Federal 16-9C - DD - Plan #1	300.0	300.0	67.4	66.4	69.416	CC, ES
HMU Federal 16-9C - DD - Plan #1	800.0	795.7	122.0	118.8	38.143	SF
HMU Federal 21-3A - DD - Plan #1	323.6	323.8	10.3	9.2	9.621	CC, ES
HMU Federal 21-3A - DD - Plan #1	400.0	400.0	12.5	11.1	9.080	SF
HMU Fee 16-8D - DD - Plan #1	200.0	200.0	84.9	84.3	136.631	CC, ES
HMU Fee 16-8D - DD - Plan #1	600.0	580.5	133.9	131.7	62.066	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-115.44	-58.3	-122.5	135.7					
100.0	100.0	99.6	99.6	0.1	0.2	-115.32	-58.1	-122.8	135.8	135.6	0.29	464.627 ES		
200.0	200.0	199.1	199.1	0.3	0.3	-114.95	-57.5	-123.6	136.3	135.7	0.62	218.772		
300.0	300.0	299.2	299.1	0.5	0.5	-114.25	-56.3	-124.9	137.0	136.0	0.97	140.941		
400.0	400.0	399.4	399.4	0.7	0.7	94.94	-53.7	-126.5	137.7	136.3	1.34	102.784		
500.0	499.6	497.3	497.1	0.9	0.9	99.60	-50.4	-128.8	139.7	138.0	1.73	80.707		
600.0	598.8	593.4	593.1	1.1	1.0	106.05	-46.9	-132.4	145.5	143.3	2.17	67.037		
700.0	697.1	688.0	687.5	1.5	1.2	113.44	-43.4	-137.6	156.8	154.2	2.65	59.214		
800.0	794.3	780.5	779.7	1.9	1.5	120.79	-40.1	-144.1	175.1	171.9	3.14	55.665		
900.0	890.2	869.4	868.2	2.4	1.7	127.49	-36.3	-152.2	201.2	197.6	3.64	55.296 SF		
1,000.0	985.3	956.0	954.2	3.0	1.9	133.41	-32.6	-162.0	234.0	229.9	4.08	57.369		
1,100.0	1,080.4	1,039.0	1,036.2	3.5	2.1	137.57	-29.2	-173.7	270.9	266.4	4.50	60.251		
1,200.0	1,175.5	1,122.6	1,118.5	4.1	2.4	140.66	-25.6	-187.8	311.4	306.5	4.91	63.445		
1,300.0	1,270.6	1,203.9	1,198.2	4.7	2.7	142.95	-21.6	-203.5	354.8	349.5	5.32	66.714		
1,400.0	1,365.6	1,286.9	1,279.2	5.2	3.0	144.80	-16.7	-220.9	400.4	394.6	5.73	69.878		
1,500.0	1,460.7	1,371.6	1,361.7	5.8	3.4	146.26	-11.6	-239.6	447.2	441.0	6.15	72.717		
1,600.0	1,555.8	1,456.3	1,444.0	6.4	3.8	147.40	-6.6	-259.0	494.7	488.1	6.58	75.215		
1,700.0	1,650.9	1,543.6	1,528.7	6.9	4.1	148.36	-1.3	-279.2	542.6	535.6	7.01	77.380		
1,800.0	1,746.0	1,630.3	1,612.9	7.5	4.5	149.19	4.1	-299.2	590.7	583.2	7.45	79.303		
1,900.0	1,841.1	1,718.8	1,698.9	8.1	4.9	149.97	10.2	-319.3	638.9	631.0	7.88	81.032		
2,000.0	1,936.2	1,811.1	1,788.7	8.6	5.3	150.68	16.3	-339.9	686.8	678.4	8.33	82.472		
2,100.0	2,031.3	1,899.6	1,874.9	9.2	5.7	151.30	22.2	-358.9	734.1	725.4	8.76	83.766		
2,200.0	2,126.4	1,986.7	1,959.7	9.8	6.1	151.84	28.1	-377.9	781.8	772.6	9.20	84.975		
2,300.0	2,221.5	2,074.8	2,045.5	10.3	6.4	152.35	34.3	-396.6	829.4	819.7	9.64	86.075		
2,400.0	2,316.6	2,155.3	2,123.9	10.9	6.8	152.76	40.1	-414.2	877.4	867.3	10.06	87.178		
2,500.0	2,411.7	2,233.8	2,200.1	11.5	7.2	153.08	45.7	-432.2	926.2	915.7	10.50	88.209		
2,600.0	2,506.8	2,327.4	2,290.9	12.1	7.6	153.38	52.0	-454.1	975.2	964.2	10.97	88.934		
2,700.0	2,601.9	2,400.5	2,361.7	12.6	8.0	153.59	57.0	-471.5	1,024.5	1,013.1	11.40	89.875		
2,800.0	2,696.9	2,485.8	2,444.2	13.2	8.4	153.80	63.2	-492.6	1,074.6	1,062.8	11.86	90.632		
2,900.0	2,792.0	2,581.0	2,536.2	13.8	8.8	154.02	69.9	-515.6	1,124.4	1,112.0	12.33	91.164		
3,000.0	2,887.1	2,667.5	2,620.1	14.3	9.2	154.20	75.7	-536.2	1,173.6	1,160.8	12.79	91.729		
3,100.0	2,982.2	2,750.8	2,700.7	14.9	9.6	154.36	81.4	-556.2	1,223.2	1,209.9	13.25	92.292		
3,200.0	3,077.3	2,839.9	2,786.9	15.5	10.1	154.49	87.2	-578.1	1,272.8	1,259.1	13.73	92.703		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-122.32	-78.5	-124.1	146.9					
100.0	100.0	98.6	98.6	0.1	0.2	-122.37	-78.9	-124.4	147.3	147.0	0.29	504.480		
200.0	200.0	197.2	197.2	0.3	0.3	-122.53	-80.0	-125.4	148.7	148.1	0.62	238.947		
300.0	300.0	297.6	297.5	0.5	0.5	-122.80	-81.5	-126.5	150.6	149.6	0.97	155.029		
400.0	400.0	397.9	397.8	0.7	0.7	84.54	-83.4	-127.1	151.8	150.5	1.33	114.501		
500.0	499.6	497.9	497.8	0.9	0.9	86.36	-86.6	-126.7	152.5	150.7	1.72	88.635		
600.0	598.8	599.4	599.2	1.1	1.0	89.63	-90.8	-125.0	152.6	150.4	2.18	69.927		
700.0	697.1	700.1	699.8	1.5	1.2	94.53	-95.3	-121.8	152.2	149.5	2.72	55.888		
724.8	721.3	725.2	724.8	1.6	1.3	95.99	-96.5	-120.8	152.2	149.3	2.88	52.855		
800.0	794.3	801.4	800.7	1.9	1.4	100.94	-100.5	-116.9	152.4	149.1	3.35	45.556		
900.0	890.2	903.7	902.6	2.4	1.7	108.63	-106.7	-109.1	153.6	149.6	4.02	38.216		
1,000.0	985.3	1,006.8	1,004.8	3.0	1.9	116.43	-114.7	-98.0	155.5	150.8	4.64	33.511		
1,100.0	1,080.4	1,112.2	1,108.5	3.5	2.3	123.51	-124.8	-82.1	155.5	150.3	5.19	29.982		
1,200.0	1,175.5	1,214.3	1,208.2	4.1	2.7	129.97	-136.3	-63.2	153.9	148.2	5.63	27.310		
1,300.0	1,270.6	1,314.5	1,305.6	4.7	3.1	136.19	-148.3	-43.5	152.8	146.9	5.97	25.588		
1,372.3	1,339.3	1,386.8	1,375.8	5.1	3.4	140.56	-157.6	-28.8	152.6	146.4	6.16	24.776		
1,400.0	1,365.6	1,414.3	1,402.5	5.2	3.5	142.21	-161.2	-23.2	152.6	146.4	6.21	24.555 ES		
1,500.0	1,460.7	1,513.5	1,498.6	5.8	3.9	148.11	-174.3	-2.7	153.6	147.3	6.38	24.099		
1,600.0	1,555.8	1,613.6	1,595.5	6.4	4.4	154.08	-187.8	19.0	155.3	148.9	6.48	23.971		
1,700.0	1,650.9	1,711.4	1,690.1	6.9	4.8	159.71	-200.8	40.0	158.9	152.3	6.60	24.092		
1,800.0	1,746.0	1,809.5	1,785.1	7.5	5.3	164.99	-213.7	60.6	164.3	157.6	6.77	24.277		
1,900.0	1,841.1	1,907.2	1,879.9	8.1	5.7	169.82	-226.4	80.8	171.6	164.6	7.04	24.385		
2,000.0	1,936.2	2,006.3	1,976.0	8.6	6.2	174.25	-239.0	100.9	180.4	172.9	7.42	24.308		
2,100.0	2,031.3	2,104.7	2,071.5	9.2	6.6	178.11	-252.2	120.7	189.7	181.8	7.91	23.977		
2,200.0	2,126.4	2,205.2	2,169.2	9.8	7.1	-178.51	-265.7	140.3	200.0	191.5	8.50	23.525		
2,300.0	2,221.5	2,304.3	2,265.3	10.3	7.5	-175.61	-280.2	159.8	209.8	200.6	9.16	22.900		
2,400.0	2,316.6	2,403.7	2,361.8	10.9	8.0	-173.02	-294.5	179.0	220.4	210.5	9.88	22.306		
2,500.0	2,411.7	2,505.8	2,460.8	11.5	8.4	-170.72	-310.1	198.5	230.5	219.9	10.65	21.645		
2,600.0	2,506.8	2,604.5	2,556.3	12.1	8.9	-168.74	-326.1	217.4	240.2	228.8	11.43	21.021		
2,700.0	2,601.9	2,702.7	2,651.5	12.6	9.3	-167.03	-341.6	235.7	250.6	238.4	12.21	20.524		
2,800.0	2,696.9	2,801.0	2,746.9	13.2	9.8	-165.49	-356.9	253.7	261.5	248.5	13.01	20.106		
2,900.0	2,792.0	2,902.7	2,845.5	13.8	10.3	-163.90	-372.8	273.0	272.4	258.5	13.89	19.613		
3,000.0	2,887.1	3,000.9	2,940.5	14.3	10.7	-162.34	-388.4	292.4	283.1	268.3	14.79	19.141		
3,100.0	2,982.2	3,101.3	3,037.5	14.9	11.3	-160.69	-404.3	313.1	294.0	278.2	15.79	18.612		
3,200.0	3,077.3	3,199.6	3,132.2	15.5	11.7	-159.05	-419.7	334.0	305.0	288.1	16.83	18.122		
3,300.0	3,172.4	3,297.5	3,226.7	16.1	12.2	-157.57	-434.9	354.7	316.5	298.6	17.86	17.723		
3,400.0	3,267.5	3,393.5	3,319.4	16.6	12.7	-156.18	-449.1	375.1	328.9	310.0	18.90	17.404		
3,500.0	3,362.6	3,490.7	3,413.3	17.2	13.2	-154.82	-462.9	396.1	342.1	322.2	19.96	17.138		
3,600.0	3,457.7	3,587.7	3,507.1	17.8	13.6	-153.57	-476.1	416.9	356.0	335.0	21.02	16.936		
3,700.0	3,552.8	3,684.0	3,600.4	18.3	14.1	-152.48	-488.7	437.3	370.6	348.6	22.05	16.809		
3,800.0	3,647.9	3,781.8	3,695.3	18.9	14.5	-151.49	-500.9	457.8	386.0	362.9	23.07	16.732		
3,900.0	3,743.0	3,886.3	3,796.6	19.5	15.0	-150.54	-514.8	479.4	400.7	376.6	24.12	16.613		
4,000.0	3,838.1	3,988.9	3,895.9	20.1	15.5	-149.70	-529.9	500.5	414.0	388.9	25.14	16.469		
4,100.0	3,933.2	4,087.7	3,991.5	20.6	16.0	-148.97	-544.5	520.5	427.3	401.2	26.12	16.358		
4,200.0	4,028.2	4,186.4	4,087.1	21.2	16.5	-148.28	-559.2	540.5	440.6	413.5	27.10	16.258		
4,300.0	4,123.3	4,285.4	4,182.9	21.8	16.9	-147.67	-573.8	560.3	454.0	426.0	28.06	16.179		
4,400.0	4,218.4	4,383.4	4,277.9	22.3	17.4	-147.13	-588.2	579.7	467.6	438.6	29.00	16.123		
4,500.0	4,313.5	4,481.2	4,372.8	22.9	17.8	-146.66	-602.3	598.7	481.4	451.5	29.92	16.093		
4,600.0	4,408.6	4,579.5	4,468.2	23.5	18.3	-146.24	-616.3	617.6	495.5	464.7	30.82	16.078		
4,700.0	4,503.7	4,678.7	4,564.6	24.1	18.7	-145.89	-630.3	636.3	509.6	477.9	31.70	16.077		
4,800.0	4,598.8	4,781.5	4,664.4	24.6	19.2	-145.50	-645.1	656.1	523.5	490.8	32.64	16.038		
4,900.0	4,693.9	4,881.8	4,761.4	25.2	19.7	-144.98	-660.5	676.7	536.7	503.0	33.64	15.952		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,000.0	4,789.0	4,980.9	4,857.1	25.8	20.2	-144.46	-675.7	697.3	549.9	515.2	34.65	15.869		
5,100.0	4,884.1	5,078.9	4,951.7	26.3	20.7	-143.95	-690.7	717.9	563.2	527.5	35.66	15.793		
5,200.0	4,979.2	5,179.5	5,048.8	26.9	21.2	-143.42	-706.1	739.4	576.5	539.8	36.72	15.702		
5,300.0	5,074.3	5,277.7	5,143.4	27.5	21.7	-142.86	-721.4	760.9	589.8	552.0	37.79	15.610		
5,400.0	5,169.4	5,377.4	5,239.4	28.1	22.2	-142.28	-737.0	783.2	603.2	564.3	38.89	15.511		
5,500.0	5,264.5	5,474.2	5,332.4	28.6	22.7	-141.74	-752.0	804.8	616.7	576.7	39.96	15.432		
5,600.0	5,359.5	5,567.7	5,422.6	29.2	23.2	-141.27	-765.9	825.5	630.8	589.8	40.99	15.390		
5,700.0	5,454.6	5,664.0	5,515.6	29.8	23.6	-140.90	-779.4	845.9	645.6	603.7	41.96	15.386 SF		
5,800.0	5,549.7	5,757.0	5,606.1	30.4	24.0	-140.71	-791.6	864.2	661.1	618.3	42.82	15.440		
5,900.0	5,644.8	5,853.3	5,700.1	30.9	24.4	-140.69	-803.3	881.3	677.2	633.6	43.57	15.543		
6,000.0	5,739.9	5,954.8	5,799.5	31.5	24.8	-140.76	-815.5	898.3	693.2	648.9	44.30	15.646		
6,100.0	5,835.0	6,049.3	5,891.9	32.1	25.2	-140.80	-826.8	914.4	709.3	664.3	45.03	15.753		
6,200.0	5,930.1	6,145.2	5,985.7	32.6	25.6	-140.82	-837.7	931.1	726.1	680.3	45.77	15.863		
6,300.0	6,025.2	6,253.3	6,091.3	33.2	26.1	-140.82	-850.7	950.0	742.2	695.6	46.57	15.937		
6,400.0	6,120.3	6,355.5	6,191.1	33.8	26.5	-140.85	-863.9	967.4	757.4	710.1	47.33	16.003		
6,500.0	6,215.4	6,451.3	6,284.8	34.4	26.9	-140.89	-876.1	983.4	772.7	724.6	48.04	16.082		
6,600.0	6,310.5	6,543.5	6,375.2	34.9	27.2	-141.01	-887.2	998.0	788.5	739.8	48.68	16.198		
6,700.0	6,405.6	6,631.8	6,462.1	35.5	27.5	-141.26	-896.4	1,010.2	805.5	756.3	49.19	16.374		
6,800.0	6,500.7	6,722.9	6,552.2	36.1	27.8	-141.63	-904.6	1,021.3	823.6	773.9	49.62	16.598		
6,900.0	6,595.8	6,816.8	6,645.2	36.6	28.0	-142.09	-912.3	1,031.6	842.3	792.4	49.97	16.856		
7,000.0	6,690.8	6,910.3	6,738.0	37.2	28.3	-142.62	-919.3	1,040.5	861.6	811.3	50.25	17.146		
7,100.0	6,786.1	6,998.7	6,825.9	37.8	28.5	-143.29	-924.9	1,047.8	881.4	831.0	50.45	17.471		
7,200.0	6,882.2	7,093.1	6,919.9	38.3	28.7	-143.99	-930.3	1,055.3	899.7	849.0	50.64	17.766		
7,300.0	6,979.2	7,182.0	7,008.4	38.7	28.9	-144.56	-934.6	1,061.5	915.8	865.0	50.81	18.023		
7,400.0	7,077.0	7,272.0	7,098.3	39.1	29.0	-145.14	-937.5	1,065.4	930.3	879.5	50.88	18.286		
7,500.0	7,175.4	7,363.9	7,190.2	39.4	29.1	-145.70	-939.5	1,067.5	943.0	892.1	50.90	18.526		
7,600.0	7,274.4	7,450.6	7,276.8	39.6	29.2	-146.11	-940.5	1,069.4	953.7	902.8	50.96	18.715		
7,700.0	7,373.9	7,543.7	7,370.0	39.9	29.3	-146.44	-940.6	1,071.1	962.6	911.6	51.02	18.867		
7,800.0	7,473.6	7,645.3	7,471.5	40.0	29.4	-146.67	-940.3	1,072.3	968.9	917.8	51.11	18.958		
7,900.0	7,573.5	7,746.0	7,572.2	40.1	29.5	-146.75	-940.3	1,073.5	972.0	920.8	51.24	18.968		
8,000.0	7,673.5	7,845.2	7,671.4	40.1	29.6	6.43	-940.3	1,074.6	972.6	921.1	51.45	18.903		
8,100.0	7,773.5	7,952.6	7,778.8	40.2	29.6	6.48	-940.6	1,075.4	972.4	920.7	51.69	18.813		
8,200.0	7,873.5	8,055.3	7,881.5	40.3	29.7	6.48	-941.3	1,075.3	971.7	919.8	51.87	18.731		
8,300.0	7,973.5	8,155.9	7,982.1	40.3	29.8	6.46	-942.1	1,074.9	970.9	918.8	52.05	18.654		
8,400.0	8,073.5	8,260.1	8,086.3	40.4	29.9	6.42	-943.1	1,074.1	969.8	917.6	52.21	18.576		
8,500.0	8,173.5	8,362.5	8,188.7	40.5	30.0	6.38	-944.6	1,073.2	968.3	915.9	52.36	18.491		
8,600.0	8,273.5	8,462.3	8,288.4	40.5	30.1	6.33	-946.0	1,072.2	966.7	914.2	52.52	18.406		
8,700.0	8,373.5	8,561.2	8,387.3	40.6	30.2	6.28	-947.4	1,071.3	965.2	912.5	52.68	18.323		
8,800.0	8,473.5	8,660.6	8,486.8	40.7	30.3	6.26	-948.7	1,070.8	963.8	911.0	52.86	18.234		
8,900.0	8,573.5	8,760.8	8,586.9	40.7	30.4	6.25	-950.1	1,070.4	962.5	909.4	53.05	18.141		
9,000.0	8,673.5	8,861.9	8,688.0	40.8	30.5	6.25	-951.5	1,070.2	961.0	907.8	53.25	18.047		
9,100.0	8,773.5	8,959.9	8,786.0	40.9	30.6	6.24	-952.9	1,069.9	959.6	906.1	53.45	17.953		
9,200.0	8,873.5	9,056.5	8,882.6	40.9	30.6	6.24	-954.0	1,069.9	958.5	904.8	53.66	17.862		
9,300.0	8,973.5	9,157.0	8,983.1	41.0	30.7	6.25	-954.9	1,069.9	957.5	903.7	53.87	17.775		
9,400.0	9,073.5	9,261.8	9,087.9	41.1	30.9	6.25	-956.2	1,069.7	956.3	902.2	54.08	17.683		
9,500.0	9,173.5	9,369.1	9,195.1	41.1	31.0	6.25	-958.2	1,069.5	954.5	900.2	54.30	17.578		
9,600.0	9,273.5	9,474.2	9,300.3	41.2	31.1	6.28	-960.9	1,069.7	951.9	897.3	54.55	17.450		
9,700.0	9,373.5	9,570.4	9,396.4	41.3	31.2	6.33	-963.5	1,070.2	949.3	894.5	54.80	17.322		
9,800.0	9,473.5	9,668.2	9,494.1	41.3	31.3	6.37	-965.8	1,070.7	947.0	891.9	55.05	17.203		
9,900.0	9,573.5	9,766.0	9,591.9	41.4	31.4	6.40	-967.9	1,071.0	944.9	889.6	55.29	17.090		
10,000.0	9,673.5	9,855.0	9,680.9	41.5	31.5	6.43	-969.5	1,071.2	943.2	887.7	55.51	16.991		
10,007.4	9,680.9	9,855.0	9,680.9	41.5	31.5	6.43	-969.5	1,071.2	943.2	887.6	55.52	16.988		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,100.0	9,773.5	9,855.0	9,680.9	41.6	31.5	6.43	-969.5	1,071.2	947.7	892.1	55.63	17.037		
10,200.0	9,873.5	9,855.0	9,680.9	41.6	31.5	6.43	-969.5	1,071.2	962.6	906.9	55.74	17.270		
10,300.0	9,973.5	9,855.0	9,680.9	41.7	31.5	6.43	-969.5	1,071.2	987.5	931.7	55.85	17.680		
10,400.0	10,073.5	9,855.0	9,680.9	41.8	31.5	6.43	-969.5	1,071.2	1,021.6	965.6	55.97	18.253		
10,500.0	10,173.5	9,855.0	9,680.9	41.9	31.5	6.43	-969.5	1,071.2	1,064.1	1,008.0	56.08	18.972		
10,600.0	10,273.5	9,855.0	9,680.9	41.9	31.5	6.43	-969.5	1,071.2	1,113.9	1,057.7	56.20	19.820		
10,700.0	10,373.5	9,855.0	9,680.9	42.0	31.5	6.43	-969.5	1,071.2	1,170.2	1,113.8	56.32	20.778		
10,800.0	10,473.5	9,855.0	9,680.9	42.1	31.5	6.43	-969.5	1,071.2	1,232.0	1,175.6	56.44	21.830		
10,900.0	10,573.5	9,855.0	9,680.9	42.2	31.5	6.43	-969.5	1,071.2	1,298.6	1,242.0	56.55	22.962		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-107.57	-38.0	-120.2	126.1					
100.0	100.0	100.0	100.0	0.1	0.2	-107.49	-37.9	-120.2	126.1	125.8	0.29	432.666		
200.0	200.0	200.1	200.1	0.3	0.3	-107.24	-37.4	-120.4	126.0	125.4	0.62	202.574		
300.0	300.0	301.1	301.1	0.5	0.5	-107.17	-37.1	-120.1	125.7	124.7	0.97	129.197		
400.0	400.0	403.5	403.5	0.7	0.7	100.46	-37.5	-117.9	124.2	122.9	1.33	93.269		
500.0	499.6	505.8	505.7	0.9	0.9	103.37	-38.2	-113.7	122.1	120.4	1.72	70.934		
600.0	598.8	608.0	607.7	1.1	1.1	109.08	-38.0	-107.2	119.4	117.2	2.16	55.356		
700.0	697.1	709.6	708.8	1.5	1.3	118.00	-36.0	-98.6	118.0	115.4	2.63	44.872		
706.4	703.3	716.1	715.3	1.5	1.3	118.67	-35.8	-97.9	118.0	115.4	2.66	44.310 CC, ES		
800.0	794.3	809.6	808.2	1.9	1.5	129.63	-32.5	-87.1	120.1	117.0	3.11	38.635		
900.0	890.2	905.9	903.4	2.4	1.8	142.31	-27.4	-74.0	129.7	126.1	3.55	36.565 SF		
1,000.0	985.3	1,001.0	997.3	3.0	2.1	154.17	-21.0	-59.8	147.3	143.4	3.93	37.468		
1,100.0	1,080.4	1,095.6	1,090.3	3.5	2.4	163.75	-14.1	-44.5	169.5	165.2	4.31	39.306		
1,200.0	1,175.5	1,188.8	1,182.0	4.1	2.7	171.09	-7.1	-29.1	195.4	190.7	4.71	41.465		
1,300.0	1,270.6	1,283.3	1,275.0	4.7	3.1	176.69	-0.1	-13.8	223.7	218.6	5.17	43.314		
1,400.0	1,365.6	1,375.7	1,365.7	5.2	3.4	-178.88	7.0	1.7	253.6	248.0	5.66	44.816		
1,500.0	1,460.7	1,468.0	1,456.4	5.8	3.7	-175.26	14.8	17.5	285.3	279.1	6.20	46.009		
1,600.0	1,555.8	1,562.6	1,549.1	6.4	4.1	-172.16	23.0	34.3	317.9	311.1	6.79	46.817		
1,700.0	1,650.9	1,655.1	1,639.8	6.9	4.4	-169.66	31.0	50.8	350.9	343.5	7.39	47.503		
1,800.0	1,746.0	1,749.7	1,732.7	7.5	4.8	-167.66	39.0	67.1	384.5	376.5	8.00	48.094		
1,900.0	1,841.1	1,844.7	1,826.0	8.1	5.1	-166.05	46.5	82.9	418.1	409.5	8.61	48.580		
2,000.0	1,936.2	1,943.9	1,923.5	8.6	5.5	-164.63	53.6	99.6	451.2	442.0	9.25	48.805		
2,100.0	2,031.3	2,038.8	2,016.8	9.2	5.8	-163.42	59.7	116.1	483.8	473.9	9.88	48.962		
2,200.0	2,126.4	2,132.5	2,108.8	9.8	6.2	-162.32	65.9	132.7	516.5	506.0	10.53	49.065		
2,300.0	2,221.5	2,226.3	2,200.9	10.3	6.6	-161.32	72.1	149.6	549.5	538.3	11.18	49.160		
2,400.0	2,316.6	2,322.2	2,295.0	10.9	6.9	-160.46	78.3	166.6	582.5	570.6	11.83	49.227		
2,500.0	2,411.7	2,418.1	2,389.2	11.5	7.3	-159.65	84.3	183.9	615.2	602.7	12.50	49.205		
2,600.0	2,506.8	2,510.1	2,479.4	12.1	7.6	-158.92	90.0	200.9	648.1	634.9	13.16	49.241		
2,700.0	2,601.9	2,604.8	2,572.2	12.6	8.0	-158.21	96.1	218.8	681.2	667.3	13.85	49.177		
2,800.0	2,696.9	2,699.6	2,665.0	13.2	8.4	-157.50	102.2	237.3	714.3	699.7	14.55	49.096		
2,900.0	2,792.0	2,789.6	2,753.0	13.8	8.8	-156.88	108.1	255.1	747.6	732.4	15.24	49.056		
3,000.0	2,887.1	2,881.4	2,842.6	14.3	9.1	-156.24	114.7	273.8	781.5	765.5	15.94	49.013		
3,100.0	2,982.2	2,974.9	2,934.0	14.9	9.5	-155.68	121.4	292.4	815.5	798.9	16.65	48.993		
3,200.0	3,077.3	3,068.5	3,025.6	15.5	9.9	-155.19	128.1	310.6	849.6	832.3	17.34	49.005		
3,300.0	3,172.4	3,162.9	3,117.9	16.1	10.3	-154.77	134.9	328.6	883.8	865.8	18.03	49.030		
3,400.0	3,267.5	3,258.0	3,211.2	16.6	10.6	-154.39	141.6	346.4	917.9	899.2	18.71	49.064		
3,500.0	3,362.6	3,354.1	3,305.4	17.2	11.0	-154.07	148.2	363.9	951.9	932.5	19.38	49.112		
3,600.0	3,457.7	3,450.0	3,399.5	17.8	11.4	-153.78	154.5	381.4	985.6	965.6	20.07	49.109		
3,700.0	3,552.8	3,543.9	3,491.5	18.3	11.8	-153.44	160.6	399.5	1,019.3	998.6	20.76	49.098		
3,800.0	3,647.9	3,641.9	3,587.5	18.9	12.1	-153.16	166.9	417.8	1,052.9	1,031.5	21.45	49.084		
3,900.0	3,743.0	3,734.4	3,678.2	19.5	12.5	-152.92	172.6	434.8	1,086.3	1,064.2	22.12	49.104		
4,000.0	3,838.1	3,823.5	3,765.6	20.1	12.8	-152.68	178.4	451.6	1,120.1	1,097.3	22.79	49.144		
4,100.0	3,933.2	3,915.0	3,855.1	20.6	13.2	-152.43	184.7	469.2	1,154.2	1,130.8	23.47	49.174		
4,200.0	4,028.2	4,008.8	3,947.0	21.2	13.6	-152.20	191.3	486.9	1,188.5	1,164.3	24.15	49.213		
4,300.0	4,123.3	4,110.1	4,046.5	21.8	14.0	-152.02	198.2	505.1	1,222.5	1,197.7	24.84	49.213		
4,400.0	4,218.4	4,199.8	4,134.5	22.3	14.3	-151.86	203.9	521.2	1,256.2	1,230.7	25.49	49.277		
4,500.0	4,313.5	4,290.0	4,222.9	22.9	14.7	-151.71	210.2	537.6	1,290.5	1,264.3	26.15	49.356		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	5.56	101.6	9.9	102.1					
100.0	100.0	100.0	100.0	0.1	0.1	5.56	101.6	9.9	102.1	101.8	0.27	374.997		
200.0	200.0	200.0	200.0	0.3	0.3	5.56	101.6	9.9	102.1	101.5	0.62	164.325		
300.0	300.0	300.0	300.0	0.5	0.5	5.56	101.6	9.9	102.1	101.1	0.97	105.215 CC, ES		
400.0	400.0	400.0	400.0	0.7	0.7	-148.32	101.6	9.9	104.3	103.0	1.32	79.011		
500.0	499.6	499.6	499.6	0.9	0.8	-150.34	101.6	9.9	111.1	109.4	1.68	66.313		
600.0	598.8	593.1	593.1	1.1	1.0	-152.65	103.8	10.7	124.9	122.8	2.03	61.610 SF		
700.0	697.1	684.2	683.9	1.5	1.2	-154.50	110.0	12.9	147.9	145.5	2.38	62.034		
800.0	794.3	775.0	774.1	1.9	1.4	-155.86	119.8	16.5	179.5	176.7	2.75	65.201		
900.0	890.2	867.8	866.2	2.4	1.6	-157.18	130.6	20.4	216.4	213.3	3.13	69.061		
1,000.0	985.3	959.5	957.2	3.0	1.8	-158.68	141.2	24.3	255.7	252.2	3.53	72.527		
1,100.0	1,080.4	1,051.3	1,048.3	3.5	2.1	-159.79	151.8	28.2	295.2	291.3	3.92	75.309		
1,200.0	1,175.5	1,143.0	1,139.3	4.1	2.3	-160.63	162.4	32.0	334.7	330.4	4.31	77.589		
1,300.0	1,270.6	1,234.8	1,230.4	4.7	2.6	-161.30	173.0	35.9	374.3	369.5	4.71	79.489		
1,400.0	1,365.6	1,326.6	1,321.5	5.2	2.8	-161.84	183.7	39.8	413.8	408.7	5.10	81.094		
1,500.0	1,460.7	1,418.3	1,412.5	5.8	3.0	-162.28	194.3	43.6	453.5	448.0	5.50	82.468		
1,600.0	1,555.8	1,510.1	1,503.6	6.4	3.3	-162.66	204.9	47.5	493.1	487.2	5.89	83.655		
1,700.0	1,650.9	1,601.9	1,594.7	6.9	3.5	-162.97	215.5	51.4	532.8	526.5	6.29	84.692		
1,800.0	1,746.0	1,693.6	1,685.7	7.5	3.8	-163.25	226.2	55.2	572.4	565.8	6.69	85.604		
1,900.0	1,841.1	1,785.4	1,776.8	8.1	4.0	-163.49	236.8	59.1	612.1	605.0	7.08	86.413		
2,000.0	1,936.2	1,877.1	1,867.9	8.6	4.3	-163.70	247.4	63.0	651.8	644.3	7.48	87.135		
2,100.0	2,031.3	1,968.9	1,958.9	9.2	4.5	-163.88	258.0	66.8	691.5	683.6	7.88	87.783		
2,200.0	2,126.4	2,060.7	2,050.0	9.8	4.8	-164.05	268.6	70.7	731.2	722.9	8.27	88.369		
2,300.0	2,221.5	2,152.4	2,141.0	10.3	5.0	-164.20	279.3	74.6	770.9	762.2	8.67	88.899		
2,400.0	2,316.6	2,244.2	2,232.1	10.9	5.3	-164.33	289.9	78.4	810.6	801.5	9.07	89.383		
2,500.0	2,411.7	2,336.0	2,323.2	11.5	5.5	-164.45	300.5	82.3	850.3	840.9	9.47	89.826		
2,600.0	2,506.8	2,427.7	2,414.2	12.1	5.8	-164.56	311.1	86.2	890.0	880.2	9.86	90.232		
2,700.0	2,601.9	2,519.5	2,505.3	12.6	6.0	-164.66	321.7	90.0	929.8	919.5	10.26	90.607		
2,800.0	2,696.9	2,611.2	2,596.4	13.2	6.3	-164.76	332.4	93.9	969.5	958.8	10.66	90.953		
2,900.0	2,792.0	2,703.0	2,687.4	13.8	6.6	-164.84	343.0	97.8	1,009.2	998.1	11.06	91.274		
3,000.0	2,887.1	2,794.8	2,778.5	14.3	6.8	-164.92	353.6	101.6	1,048.9	1,037.5	11.45	91.572		
3,100.0	2,982.2	2,886.5	2,869.6	14.9	7.1	-164.99	364.2	105.5	1,088.6	1,076.8	11.85	91.850		
3,200.0	3,077.3	2,978.3	2,960.6	15.5	7.3	-165.06	374.9	109.4	1,128.4	1,116.1	12.25	92.110		
3,300.0	3,172.4	3,070.1	3,051.7	16.1	7.6	-165.13	385.5	113.2	1,168.1	1,155.5	12.65	92.353		
3,400.0	3,267.5	3,161.8	3,142.7	16.6	7.8	-165.18	396.1	117.1	1,207.8	1,194.8	13.05	92.581		
3,500.0	3,362.6	3,253.6	3,233.8	17.2	8.1	-165.24	406.7	121.0	1,247.6	1,234.1	13.44	92.795		
3,600.0	3,457.7	3,345.3	3,324.9	17.8	8.3	-165.29	417.3	124.8	1,287.3	1,273.4	13.84	92.997		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	1.46	110.7	2.8	110.8						
100.0	100.0	100.0	100.0	0.1	0.1	1.46	110.7	2.8	110.8	110.5	0.27	406.828			
200.0	200.0	200.0	200.0	0.3	0.3	1.46	110.7	2.8	110.8	110.1	0.62	178.273 CC, ES			
300.0	300.0	298.2	298.1	0.5	0.5	0.23	111.6	0.4	111.6	110.6	0.98	114.391			
400.0	400.0	395.6	395.3	0.7	0.7	-156.90	114.0	-6.6	116.7	115.4	1.36	86.034			
500.0	499.6	491.0	489.9	0.9	1.0	-163.07	118.0	-18.1	129.8	128.0	1.77	73.248			
600.0	598.8	583.2	580.6	1.1	1.3	-169.77	123.4	-33.4	152.0	149.8	2.20	69.140 SF			
700.0	697.1	672.8	668.0	1.5	1.7	-175.89	129.9	-52.0	183.8	181.2	2.60	70.711			
800.0	794.3	763.5	756.2	1.9	2.1	179.36	136.8	-71.8	222.9	219.9	2.98	74.796			
900.0	890.2	852.0	842.3	2.4	2.4	175.99	143.6	-91.2	267.6	264.3	3.34	80.167			
1,000.0	985.3	939.3	927.3	3.0	2.8	173.67	150.2	-110.3	315.2	311.5	3.73	84.414			
1,100.0	1,080.4	1,026.6	1,012.2	3.5	3.2	171.96	156.9	-129.4	363.1	358.9	4.14	87.748			
1,200.0	1,175.5	1,114.0	1,097.2	4.1	3.6	170.64	163.6	-148.6	411.2	406.6	4.55	90.393			
1,300.0	1,270.6	1,201.3	1,182.1	4.7	4.0	169.60	170.3	-167.7	459.4	454.4	4.97	92.517			
1,400.0	1,365.6	1,288.6	1,267.1	5.2	4.4	168.75	176.9	-186.8	507.7	502.3	5.39	94.243			
1,500.0	1,460.7	1,376.0	1,352.0	5.8	4.8	168.05	183.6	-205.9	556.1	550.3	5.81	95.667			
1,600.0	1,555.8	1,463.3	1,437.0	6.4	5.2	167.47	190.3	-225.0	604.5	598.3	6.24	96.854			
1,700.0	1,650.9	1,550.6	1,521.9	6.9	5.5	166.96	197.0	-244.1	653.0	646.3	6.67	97.856			
1,800.0	1,746.0	1,638.0	1,606.9	7.5	5.9	166.53	203.6	-263.3	701.5	694.4	7.11	98.710			
1,900.0	1,841.1	1,725.3	1,691.8	8.1	6.3	166.16	210.3	-282.4	750.0	742.5	7.54	99.445			
2,000.0	1,936.2	1,812.6	1,776.8	8.6	6.7	165.83	217.0	-301.5	798.6	790.6	7.98	100.082			
2,100.0	2,031.3	1,900.0	1,861.7	9.2	7.1	165.54	223.7	-320.6	847.2	838.8	8.42	100.640			
2,200.0	2,126.4	1,987.3	1,946.7	9.8	7.5	165.27	230.4	-339.7	895.8	886.9	8.86	101.131			
2,300.0	2,221.5	2,074.6	2,031.6	10.3	7.9	165.04	237.0	-358.8	944.4	935.1	9.30	101.567			
2,400.0	2,316.6	2,161.9	2,116.6	10.9	8.3	164.83	243.7	-377.9	993.0	983.2	9.74	101.955			
2,500.0	2,411.7	2,249.3	2,201.5	11.5	8.7	164.64	250.4	-397.1	1,041.6	1,031.4	10.18	102.304			
2,600.0	2,506.8	2,336.6	2,286.5	12.1	9.1	164.46	257.1	-416.2	1,090.2	1,079.6	10.62	102.618			
2,700.0	2,601.9	2,423.9	2,371.5	12.6	9.5	164.30	263.7	-435.3	1,138.9	1,127.8	11.07	102.902			
2,800.0	2,696.9	2,511.3	2,456.4	13.2	9.8	164.16	270.4	-454.4	1,187.5	1,176.0	11.51	103.160			
2,900.0	2,792.0	2,598.6	2,541.4	13.8	10.2	164.02	277.1	-473.5	1,236.2	1,224.2	11.96	103.396			
3,000.0	2,887.1	2,685.9	2,626.3	14.3	10.6	163.90	283.8	-492.6	1,284.8	1,272.4	12.40	103.612			

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.69	94.0	1.1	94.0					
100.0	100.0	100.0	100.0	0.1	0.1	0.69	94.0	1.1	94.0	93.7	0.27	345.168		
200.0	200.0	200.0	200.0	0.3	0.3	0.69	94.0	1.1	94.0	93.4	0.62	151.253 CC		
300.0	300.0	300.0	300.0	0.5	0.5	0.69	94.0	1.1	94.0	93.0	0.97	96.846 ES		
400.0	400.0	401.4	401.4	0.7	0.7	-154.70	93.1	-1.4	95.5	94.2	1.33	71.896		
500.0	499.6	501.9	501.5	0.9	0.9	-160.90	90.7	-9.0	100.9	99.2	1.72	58.812		
600.0	598.8	600.5	599.3	1.1	1.2	-169.54	86.6	-21.3	112.3	110.1	2.15	52.218		
700.0	697.1	696.9	694.3	1.5	1.4	-178.19	81.6	-36.8	131.2	128.6	2.60	50.562 SF		
800.0	794.3	792.1	788.1	1.9	1.8	175.40	76.5	-52.3	157.5	154.5	3.04	51.887		
900.0	890.2	885.8	880.4	2.4	2.1	170.97	71.5	-67.5	190.1	186.6	3.48	54.655		
1,000.0	985.3	978.7	971.9	3.0	2.4	168.06	66.6	-82.6	225.8	221.8	3.97	56.897		
1,100.0	1,080.4	1,071.6	1,063.5	3.5	2.7	165.94	61.6	-97.7	261.9	257.4	4.48	58.514		
1,200.0	1,175.5	1,164.5	1,155.0	4.1	3.0	164.33	56.7	-112.8	298.2	293.2	4.99	59.699		
1,300.0	1,270.6	1,257.4	1,246.5	4.7	3.3	163.07	51.8	-127.9	334.7	329.1	5.52	60.584		
1,400.0	1,365.6	1,350.3	1,338.0	5.2	3.7	162.05	46.8	-143.0	371.2	365.2	6.06	61.258		
1,500.0	1,460.7	1,443.2	1,429.5	5.8	4.0	161.22	41.9	-158.1	407.9	401.3	6.60	61.782		
1,600.0	1,555.8	1,536.0	1,521.0	6.4	4.3	160.53	37.0	-173.2	444.6	437.5	7.15	62.197		
1,700.0	1,650.9	1,628.9	1,612.6	6.9	4.6	159.94	32.0	-188.3	481.4	473.7	7.70	62.531		
1,800.0	1,746.0	1,721.8	1,704.1	7.5	4.9	159.43	27.1	-203.4	518.2	510.0	8.25	62.803		
1,900.0	1,841.1	1,814.7	1,795.6	8.1	5.3	158.99	22.1	-218.5	555.1	546.3	8.81	63.028		
2,000.0	1,936.2	1,907.6	1,887.1	8.6	5.6	158.61	17.2	-233.7	592.0	582.6	9.36	63.217		
2,100.0	2,031.3	2,000.5	1,978.6	9.2	5.9	158.27	12.3	-248.8	628.8	618.9	9.92	63.377		
2,200.0	2,126.4	2,093.4	2,070.1	9.8	6.2	157.97	7.3	-263.9	665.8	655.3	10.48	63.513		
2,300.0	2,221.5	2,186.2	2,161.7	10.3	6.5	157.70	2.4	-279.0	702.7	691.6	11.04	63.631		
2,400.0	2,316.6	2,279.1	2,253.2	10.9	6.9	157.46	-2.6	-294.1	739.6	728.0	11.60	63.733		
2,500.0	2,411.7	2,372.0	2,344.7	11.5	7.2	157.24	-7.5	-309.2	776.6	764.4	12.17	63.822		
2,600.0	2,506.8	2,464.9	2,436.2	12.1	7.5	157.04	-12.4	-324.3	813.5	800.8	12.73	63.901		
2,700.0	2,601.9	2,557.8	2,527.7	12.6	7.8	156.85	-17.4	-339.4	850.5	837.2	13.29	63.971		
2,800.0	2,696.9	2,650.7	2,619.2	13.2	8.2	156.69	-22.3	-354.5	887.4	873.6	13.86	64.033		
2,900.0	2,792.0	2,743.6	2,710.7	13.8	8.5	156.53	-27.3	-369.6	924.4	910.0	14.42	64.089		
3,000.0	2,887.1	2,836.4	2,802.3	14.3	8.8	156.39	-32.2	-384.7	961.4	946.4	14.99	64.139		
3,100.0	2,982.2	2,929.3	2,893.8	14.9	9.1	156.26	-37.1	-399.8	998.4	982.8	15.56	64.184		
3,200.0	3,077.3	3,022.2	2,985.3	15.5	9.5	156.14	-42.1	-414.9	1,035.4	1,019.3	16.12	64.225		
3,300.0	3,172.4	3,115.1	3,076.8	16.1	9.8	156.02	-47.0	-430.0	1,072.4	1,055.7	16.69	64.262		
3,400.0	3,267.5	3,208.0	3,168.3	16.6	10.1	155.92	-52.0	-445.1	1,109.4	1,092.1	17.25	64.296		
3,500.0	3,362.6	3,300.9	3,259.8	17.2	10.4	155.82	-56.9	-460.2	1,146.4	1,128.5	17.82	64.328		
3,600.0	3,457.7	3,393.7	3,351.4	17.8	10.8	155.72	-61.8	-475.3	1,183.4	1,165.0	18.39	64.356		
3,700.0	3,552.8	3,486.6	3,442.9	18.3	11.1	155.64	-66.8	-490.4	1,220.4	1,201.4	18.95	64.383		
3,800.0	3,647.9	3,579.5	3,534.4	18.9	11.4	155.55	-71.7	-505.5	1,257.4	1,237.9	19.52	64.407		
3,900.0	3,743.0	3,672.4	3,625.9	19.5	11.7	155.48	-76.7	-520.6	1,294.4	1,274.3	20.09	64.430		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
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	282.276		
200.0	200.0	200.0	200.0	0.3	0.3	-0.42	76.9	-0.6	76.9	76.2	0.62	123.694		
300.0	300.0	302.5	302.5	0.5	0.5	-2.04	75.1	-2.7	75.2	74.2	0.98	76.959		
400.0	400.0	404.5	404.1	0.7	0.7	-161.16	69.8	-8.9	73.0	71.6	1.37	53.246		
418.7	418.6	423.4	422.9	0.7	0.8	-162.84	68.5	-10.6	72.9	71.5	1.45	50.158 CC, ES		
500.0	499.6	505.3	504.0	0.9	1.0	-171.89	61.2	-19.2	74.6	72.8	1.82	40.904		
600.0	598.8	603.7	601.1	1.1	1.3	176.54	50.9	-31.4	83.3	81.0	2.31	36.142		
700.0	697.1	701.4	697.5	1.5	1.6	167.97	40.8	-43.5	99.9	97.1	2.80	35.727 SF		
800.0	794.3	798.2	793.0	1.9	1.9	162.52	30.7	-55.5	122.8	119.5	3.30	37.236		
900.0	890.2	893.8	887.4	2.4	2.3	159.35	20.7	-67.4	151.2	147.4	3.82	39.571		
1,000.0	985.3	988.8	981.1	3.0	2.6	157.70	10.8	-79.1	182.1	177.7	4.39	41.519		
1,100.0	1,080.4	1,083.8	1,074.9	3.5	2.9	156.54	0.9	-90.9	213.2	208.2	4.97	42.924		
1,200.0	1,175.5	1,178.8	1,168.6	4.1	3.2	155.67	-9.0	-102.7	244.3	238.7	5.56	43.974		
1,300.0	1,270.6	1,273.8	1,262.3	4.7	3.5	155.00	-18.9	-114.4	275.4	269.3	6.15	44.781		
1,400.0	1,365.6	1,368.7	1,356.0	5.2	3.8	154.46	-28.8	-126.2	306.6	299.9	6.75	45.418		
1,500.0	1,460.7	1,463.7	1,449.8	5.8	4.1	154.03	-38.6	-138.0	337.8	330.5	7.35	45.930		
1,600.0	1,555.8	1,558.7	1,543.5	6.4	4.5	153.66	-48.5	-149.7	369.0	361.1	7.96	46.351		
1,700.0	1,650.9	1,653.7	1,637.2	6.9	4.8	153.36	-58.4	-161.5	400.2	391.7	8.57	46.702		
1,800.0	1,746.0	1,748.7	1,731.0	7.5	5.1	153.10	-68.3	-173.3	431.5	422.3	9.18	46.998		
1,900.0	1,841.1	1,843.6	1,824.7	8.1	5.4	152.87	-78.2	-185.1	462.7	452.9	9.79	47.252		
2,000.0	1,936.2	1,938.6	1,918.4	8.6	5.7	152.67	-88.1	-196.8	493.9	483.5	10.41	47.471		
2,100.0	2,031.3	2,033.6	2,012.1	9.2	6.0	152.50	-98.0	-208.6	525.2	514.2	11.02	47.662		
2,200.0	2,126.4	2,128.6	2,105.9	9.8	6.4	152.34	-107.9	-220.4	556.4	544.8	11.63	47.830		
2,300.0	2,221.5	2,223.6	2,199.6	10.3	6.7	152.20	-117.8	-232.1	587.7	575.5	12.25	47.978		
2,400.0	2,316.6	2,318.5	2,293.3	10.9	7.0	152.08	-127.7	-243.9	619.0	606.1	12.87	48.111		
2,500.0	2,411.7	2,413.5	2,387.1	11.5	7.3	151.97	-137.6	-255.7	650.2	636.7	13.48	48.230		
2,600.0	2,506.8	2,508.5	2,480.8	12.1	7.6	151.87	-147.5	-267.5	681.5	667.4	14.10	48.337		
2,700.0	2,601.9	2,603.5	2,574.5	12.6	7.9	151.77	-157.4	-279.2	712.7	698.0	14.72	48.434		
2,800.0	2,696.9	2,698.5	2,668.2	13.2	8.3	151.69	-167.3	-291.0	744.0	728.7	15.33	48.523		
2,900.0	2,792.0	2,793.5	2,762.0	13.8	8.6	151.61	-177.2	-302.8	775.3	759.3	15.95	48.603		
3,000.0	2,887.1	2,888.4	2,855.7	14.3	8.9	151.54	-187.1	-314.5	806.5	790.0	16.57	48.678		
3,100.0	2,982.2	2,983.4	2,949.4	14.9	9.2	151.47	-196.9	-326.3	837.8	820.6	17.19	48.746		
3,200.0	3,077.3	3,078.4	3,043.2	15.5	9.5	151.41	-206.8	-338.1	869.1	851.3	17.81	48.809		
3,300.0	3,172.4	3,173.4	3,136.9	16.1	9.8	151.35	-216.7	-349.9	900.3	881.9	18.42	48.867		
3,400.0	3,267.5	3,268.4	3,230.6	16.6	10.2	151.30	-226.6	-361.6	931.6	912.6	19.04	48.921		
3,500.0	3,362.6	3,363.3	3,324.3	17.2	10.5	151.25	-236.5	-373.4	962.9	943.2	19.66	48.972		
3,600.0	3,457.7	3,458.3	3,418.1	17.8	10.8	151.20	-246.4	-385.2	994.2	973.9	20.28	49.019		
3,700.0	3,552.8	3,553.3	3,511.8	18.3	11.1	151.15	-256.3	-396.9	1,025.4	1,004.5	20.90	49.063		
3,800.0	3,647.9	3,648.3	3,605.5	18.9	11.4	151.11	-266.2	-408.7	1,056.7	1,035.2	21.52	49.104		
3,900.0	3,743.0	3,743.3	3,699.3	19.5	11.7	151.07	-276.1	-420.5	1,088.0	1,065.8	22.14	49.143		
4,000.0	3,838.1	3,838.2	3,793.0	20.1	12.1	151.04	-286.0	-432.3	1,119.3	1,096.5	22.76	49.179		
4,100.0	3,933.2	3,933.2	3,886.7	20.6	12.4	151.00	-295.9	-444.0	1,150.5	1,127.2	23.38	49.213		
4,200.0	4,028.2	4,028.2	3,980.4	21.2	12.7	150.97	-305.8	-455.8	1,181.8	1,157.8	24.00	49.246		
4,300.0	4,123.3	4,123.2	4,074.2	21.8	13.0	150.94	-315.7	-467.6	1,213.1	1,188.5	24.62	49.277		
4,400.0	4,218.4	4,218.2	4,167.9	22.3	13.3	150.91	-325.6	-479.3	1,244.4	1,219.1	25.24	49.306		
4,500.0	4,313.5	4,313.2	4,261.6	22.9	13.6	150.88	-335.5	-491.1	1,275.6	1,249.8	25.86	49.333		
4,600.0	4,408.6	4,408.1	4,355.4	23.5	14.0	150.85	-345.4	-502.9	1,306.9	1,280.4	26.48	49.359		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
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	400.0	400.0	0.7	0.7	-156.27	60.1	-2.3	62.5	61.2	1.32	47.389		
500.0	499.6	499.6	499.6	0.9	0.8	-158.78	60.1	-2.3	69.8	68.1	1.67	41.803		
600.0	598.8	598.8	598.8	1.1	1.0	-161.96	60.1	-2.3	82.1	80.1	2.02	40.682 SF		
700.0	697.1	697.1	697.1	1.5	1.2	-165.07	60.1	-2.3	99.6	97.2	2.36	42.188		
800.0	794.3	794.3	794.3	1.9	1.3	-167.74	60.1	-2.3	122.3	119.6	2.69	45.400		
900.0	890.2	890.2	890.2	2.4	1.5	-169.88	60.1	-2.3	150.2	147.2	3.02	49.797		
1,000.0	985.3	985.3	985.3	3.0	1.7	-171.60	60.1	-2.3	180.8	177.5	3.36	53.881		
1,100.0	1,080.4	1,085.0	1,085.0	3.5	1.9	-173.34	58.6	-3.5	210.6	206.9	3.70	56.958		
1,200.0	1,175.5	1,186.4	1,186.1	4.1	2.0	-175.81	53.1	-8.1	238.2	234.2	4.04	58.939		
1,300.0	1,270.6	1,288.1	1,287.0	4.7	2.3	-178.84	43.5	-16.2	263.9	259.5	4.41	59.814		
1,400.0	1,365.6	1,389.5	1,386.9	5.2	2.5	177.69	29.8	-27.7	288.3	283.4	4.85	59.430		
1,500.0	1,460.7	1,486.3	1,481.4	5.8	2.8	174.28	14.0	-40.9	312.3	306.9	5.35	58.327		
1,600.0	1,555.8	1,581.8	1,574.6	6.4	3.2	171.36	-1.6	-54.1	337.1	331.2	5.91	56.997		
1,700.0	1,650.9	1,677.3	1,667.9	6.9	3.5	168.85	-17.3	-67.2	362.7	356.2	6.52	55.596		
1,800.0	1,746.0	1,772.7	1,761.2	7.5	3.8	166.66	-33.0	-80.3	388.9	381.7	7.17	54.231		
1,900.0	1,841.1	1,868.2	1,854.5	8.1	4.2	164.74	-48.6	-93.5	415.5	407.7	7.85	52.959		
2,000.0	1,936.2	1,963.7	1,947.8	8.6	4.6	163.05	-64.3	-106.6	442.6	434.0	8.54	51.803		
2,100.0	2,031.3	2,059.2	2,041.0	9.2	4.9	161.56	-79.9	-119.8	469.9	460.7	9.26	50.766		
2,200.0	2,126.4	2,154.7	2,134.3	9.8	5.3	160.22	-95.6	-132.9	497.6	487.6	9.98	49.842		
2,300.0	2,221.5	2,250.2	2,227.6	10.3	5.7	159.03	-111.3	-146.0	525.4	514.7	10.72	49.020		
2,400.0	2,316.6	2,345.7	2,320.9	10.9	6.0	157.96	-126.9	-159.2	553.4	542.0	11.46	48.289		
2,500.0	2,411.7	2,441.2	2,414.1	11.5	6.4	156.98	-142.6	-172.3	581.6	569.4	12.21	47.638		
2,600.0	2,506.8	2,536.7	2,507.4	12.1	6.8	156.10	-158.2	-185.4	610.0	597.0	12.96	47.057		
2,700.0	2,601.9	2,632.2	2,600.7	12.6	7.2	155.30	-173.9	-198.6	638.5	624.7	13.72	46.536		
2,800.0	2,696.9	2,727.7	2,694.0	13.2	7.6	154.56	-189.5	-211.7	667.0	652.5	14.48	46.069		
2,900.0	2,792.0	2,823.2	2,787.3	13.8	8.0	153.89	-205.2	-224.9	695.7	680.5	15.24	45.647		
3,000.0	2,887.1	2,918.6	2,880.5	14.3	8.3	153.27	-220.9	-238.0	724.4	708.4	16.00	45.266		
3,100.0	2,982.2	3,014.1	2,973.8	14.9	8.7	152.69	-236.5	-251.1	753.3	736.5	16.77	44.920		
3,200.0	3,077.3	3,109.6	3,067.1	15.5	9.1	152.16	-252.2	-264.3	782.1	764.6	17.53	44.605		
3,300.0	3,172.4	3,205.1	3,160.4	16.1	9.5	151.66	-267.8	-277.4	811.1	792.8	18.30	44.317		
3,400.0	3,267.5	3,300.6	3,253.7	16.6	9.9	151.20	-283.5	-290.5	840.1	821.0	19.07	44.053		
3,500.0	3,362.6	3,396.1	3,346.9	17.2	10.3	150.77	-299.1	-303.7	869.1	849.3	19.84	43.811		
3,600.0	3,457.7	3,491.6	3,440.2	17.8	10.7	150.37	-314.8	-316.8	898.2	877.6	20.61	43.588		
3,700.0	3,552.8	3,587.1	3,533.5	18.3	11.1	149.99	-330.5	-330.0	927.3	906.0	21.38	43.382		
3,800.0	3,647.9	3,682.6	3,626.8	18.9	11.5	149.64	-346.1	-343.1	956.5	934.3	22.15	43.190		
3,900.0	3,743.0	3,778.1	3,720.1	19.5	11.9	149.30	-361.8	-356.2	985.7	962.8	22.92	43.013		
4,000.0	3,838.1	3,873.6	3,813.3	20.1	12.3	148.99	-377.4	-369.4	1,014.9	991.2	23.69	42.848		
4,100.0	3,933.2	3,969.1	3,906.6	20.6	12.6	148.69	-393.1	-382.5	1,044.1	1,019.7	24.46	42.694		
4,200.0	4,028.2	4,064.6	3,999.9	21.2	13.0	148.41	-408.8	-395.6	1,073.4	1,048.2	25.23	42.551		
4,300.0	4,123.3	4,160.0	4,093.2	21.8	13.4	148.14	-424.4	-408.8	1,102.7	1,076.7	26.00	42.416		
4,400.0	4,218.4	4,255.5	4,186.4	22.3	13.8	147.89	-440.1	-421.9	1,132.0	1,105.2	26.77	42.290		
4,500.0	4,313.5	4,351.0	4,279.7	22.9	14.2	147.65	-455.7	-435.1	1,161.3	1,133.8	27.54	42.172		
4,600.0	4,408.6	4,446.5	4,373.0	23.5	14.6	147.43	-471.4	-448.2	1,190.7	1,162.4	28.31	42.060		
4,700.0	4,503.7	4,542.0	4,466.3	24.1	15.0	147.21	-487.0	-461.3	1,220.0	1,191.0	29.08	41.955		
4,800.0	4,598.8	4,637.5	4,559.6	24.6	15.4	147.00	-502.7	-474.5	1,249.4	1,219.6	29.85	41.856		
4,900.0	4,693.9	4,733.0	4,652.8	25.2	15.8	146.81	-518.4	-487.6	1,278.8	1,248.2	30.62	41.762		
5,000.0	4,789.0	4,828.5	4,746.1	25.8	16.2	146.62	-534.0	-500.7	1,308.2	1,276.8	31.39	41.674		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	-4.88	43.0	-3.7	43.1						
100.0	100.0	100.0	100.0	0.1	0.1	-4.88	43.0	-3.7	43.1	42.9	0.27	158.431			
200.0	200.0	200.0	200.0	0.3	0.3	-4.88	43.0	-3.7	43.1	42.5	0.62	69.425			
300.0	300.0	300.0	300.0	0.5	0.5	-4.88	43.0	-3.7	43.1	42.2	0.97	44.452 CC, ES			
400.0	400.0	400.0	400.0	0.7	0.7	-159.23	43.0	-3.7	45.6	44.3	1.32	34.546			
500.0	499.6	499.6	499.6	0.9	0.8	-162.17	43.0	-3.7	53.0	51.3	1.67	31.774 SF			
600.0	598.8	598.8	598.8	1.1	1.0	-165.57	43.0	-3.7	65.5	63.5	2.01	32.564			
700.0	697.1	697.1	697.1	1.5	1.2	-168.58	43.0	-3.7	83.3	81.0	2.35	35.445			
800.0	794.3	794.3	794.3	1.9	1.3	-170.96	43.0	-3.7	106.3	103.6	2.68	39.676			
900.0	890.2	890.2	890.2	2.4	1.5	-172.75	43.0	-3.7	134.4	131.5	3.00	44.845			
1,000.0	985.3	985.3	985.3	3.0	1.7	-174.11	43.0	-3.7	165.2	161.9	3.34	49.523			
1,100.0	1,080.4	1,085.4	1,085.4	3.5	1.9	-175.55	41.4	-4.7	195.0	191.3	3.68	52.988			
1,200.0	1,175.5	1,187.6	1,187.3	4.1	2.1	-177.80	35.2	-8.6	222.1	218.0	4.03	55.096			
1,300.0	1,270.6	1,290.6	1,289.5	4.7	2.3	179.33	24.3	-15.5	246.7	242.3	4.41	55.910			
1,400.0	1,365.6	1,393.7	1,390.9	5.2	2.6	175.94	8.8	-25.3	269.3	264.5	4.87	55.345			
1,500.0	1,460.7	1,496.2	1,490.6	5.8	2.9	172.13	-11.2	-38.0	290.5	285.1	5.44	53.411			
1,600.0	1,555.8	1,592.2	1,583.4	6.4	3.3	168.63	-31.9	-51.1	311.8	305.7	6.09	51.215			
1,700.0	1,650.9	1,688.1	1,676.2	6.9	3.7	165.57	-52.6	-64.2	334.1	327.3	6.81	49.087			
1,800.0	1,746.0	1,784.1	1,769.0	7.5	4.1	162.89	-73.3	-77.4	357.2	349.6	7.58	47.146			
1,900.0	1,841.1	1,880.1	1,861.8	8.1	4.5	160.54	-94.0	-90.5	381.0	372.6	8.38	45.438			
2,000.0	1,936.2	1,976.1	1,954.6	8.6	4.9	158.45	-114.7	-103.6	405.3	396.1	9.22	43.959			
2,100.0	2,031.3	2,072.1	2,047.4	9.2	5.3	156.60	-135.4	-116.8	430.1	420.0	10.07	42.688			
2,200.0	2,126.4	2,168.0	2,140.2	9.8	5.8	154.95	-156.2	-129.9	455.2	444.3	10.94	41.598			
2,300.0	2,221.5	2,264.0	2,233.0	10.3	6.2	153.48	-176.9	-143.0	480.7	468.9	11.82	40.661			
2,400.0	2,316.6	2,360.0	2,325.8	10.9	6.6	152.15	-197.6	-156.2	506.5	493.8	12.71	39.853			
2,500.0	2,411.7	2,456.0	2,418.6	11.5	7.1	150.94	-218.3	-169.3	532.5	518.9	13.60	39.153			
2,600.0	2,506.8	2,552.0	2,511.4	12.1	7.5	149.85	-239.0	-182.4	558.7	544.2	14.49	38.544			
2,700.0	2,601.9	2,647.9	2,604.1	12.6	8.0	148.86	-259.7	-195.6	585.0	569.6	15.39	38.011			
2,800.0	2,696.9	2,743.9	2,696.9	13.2	8.4	147.95	-280.4	-208.7	611.5	595.3	16.29	37.542			
2,900.0	2,792.0	2,839.9	2,789.7	13.8	8.9	147.11	-301.2	-221.8	638.2	621.0	17.19	37.127			
3,000.0	2,887.1	2,935.9	2,882.5	14.3	9.3	146.34	-321.9	-234.9	665.0	646.9	18.09	36.759			
3,100.0	2,982.2	3,031.9	2,975.3	14.9	9.8	145.64	-342.6	-248.1	691.8	672.8	18.99	36.430			
3,200.0	3,077.3	3,127.9	3,068.1	15.5	10.2	144.98	-363.3	-261.2	718.8	698.9	19.89	36.135			
3,300.0	3,172.4	3,223.8	3,160.9	16.1	10.7	144.37	-384.0	-274.3	745.8	725.0	20.79	35.870			
3,400.0	3,267.5	3,319.8	3,253.7	16.6	11.2	143.80	-404.7	-287.5	772.9	751.2	21.69	35.631			
3,500.0	3,362.6	3,415.8	3,346.5	17.2	11.6	143.28	-425.5	-300.6	800.1	777.5	22.59	35.414			
3,600.0	3,457.7	3,511.8	3,439.3	17.8	12.1	142.78	-446.2	-313.7	827.4	803.9	23.49	35.216			
3,700.0	3,552.8	3,607.8	3,532.1	18.3	12.5	142.32	-466.9	-326.9	854.7	830.3	24.39	35.036			
3,800.0	3,647.9	3,703.7	3,624.9	18.9	13.0	141.89	-487.6	-340.0	882.0	856.7	25.29	34.871			
3,900.0	3,743.0	3,799.7	3,717.7	19.5	13.4	141.48	-508.3	-353.1	909.4	883.2	26.19	34.720			
4,000.0	3,838.1	3,895.7	3,810.5	20.1	13.9	141.09	-529.0	-366.3	936.8	909.7	27.09	34.580			
4,100.0	3,933.2	3,991.7	3,903.3	20.6	14.4	140.73	-549.7	-379.4	964.3	936.3	27.99	34.452			
4,200.0	4,028.2	4,087.7	3,996.1	21.2	14.8	140.39	-570.5	-392.5	991.8	962.9	28.89	34.332			
4,300.0	4,123.3	4,183.6	4,088.9	21.8	15.3	140.07	-591.2	-405.6	1,019.3	989.5	29.78	34.222			
4,400.0	4,218.4	4,279.6	4,181.7	22.3	15.7	139.76	-611.9	-418.8	1,046.8	1,016.2	30.68	34.119			
4,500.0	4,313.5	4,375.6	4,274.4	22.9	16.2	139.47	-632.6	-431.9	1,074.4	1,042.8	31.58	34.024			
4,600.0	4,408.6	4,471.6	4,367.2	23.5	16.7	139.19	-653.3	-445.0	1,102.0	1,069.6	32.48	33.935			
4,700.0	4,503.7	4,567.6	4,460.0	24.1	17.1	138.93	-674.0	-458.2	1,129.7	1,096.3	33.37	33.851			
4,800.0	4,598.8	4,663.5	4,552.8	24.6	17.6	138.68	-694.7	-471.3	1,157.3	1,123.0	34.27	33.773			
4,900.0	4,693.9	4,759.5	4,645.6	25.2	18.0	138.44	-715.5	-484.4	1,185.0	1,149.8	35.16	33.700			
5,000.0	4,789.0	4,855.5	4,738.4	25.8	18.5	138.21	-736.2	-497.6	1,212.7	1,176.6	36.06	33.631			
5,100.0	4,884.1	4,951.5	4,831.2	26.3	19.0	137.99	-756.9	-510.7	1,240.4	1,203.4	36.95	33.566			

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis		Separation Factor
5,200.0	4,979.2	5,047.5	4,924.0	26.9	19.4	137.79	-777.6	-523.8	1,268.1	1,230.2	37.85		33.505
5,300.0	5,074.3	5,143.4	5,016.8	27.5	19.9	137.59	-798.3	-537.0	1,295.8	1,257.1	38.74	33.448	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-12.32	25.9	-5.6	26.5					
100.0	100.0	100.0	100.0	0.1	0.1	-12.32	25.9	-5.6	26.5	26.2	0.27	97.220		
200.0	200.0	200.0	200.0	0.3	0.3	-12.32	25.9	-5.6	26.5	25.8	0.62	42.602		
300.0	300.0	300.0	300.0	0.5	0.5	-12.32	25.9	-5.6	26.5	25.5	0.97	27.278	CC, ES	
400.0	400.0	400.0	400.0	0.7	0.7	-166.74	25.9	-5.6	29.0	27.7	1.32	22.000	SF	
500.0	499.6	499.6	499.6	0.9	0.8	-169.51	25.9	-5.6	36.7	35.0	1.66	22.044		
600.0	598.8	600.5	600.4	1.1	1.0	-174.54	23.5	-6.8	47.8	45.8	2.01	23.797		
700.0	697.1	701.1	700.7	1.5	1.2	178.21	16.4	-10.4	61.2	58.9	2.37	25.893		
800.0	794.3	801.2	799.9	1.9	1.5	170.62	4.7	-16.4	77.9	75.1	2.78	28.044		
900.0	890.2	900.3	897.4	2.4	1.8	163.60	-11.4	-24.6	98.5	95.2	3.31	29.742		
1,000.0	985.3	998.7	993.1	3.0	2.2	157.25	-31.9	-35.0	121.0	117.0	4.04	29.984		
1,100.0	1,080.4	1,095.9	1,086.5	3.5	2.6	151.20	-55.9	-47.2	143.7	138.8	4.91	29.278		
1,200.0	1,175.5	1,192.3	1,178.9	4.1	3.1	146.62	-80.3	-59.6	167.5	161.7	5.84	28.698		
1,300.0	1,270.6	1,288.7	1,271.3	4.7	3.6	143.17	-104.7	-72.0	192.1	185.3	6.79	28.295		
1,400.0	1,365.6	1,385.0	1,363.7	5.2	4.1	140.51	-129.1	-84.4	217.1	209.4	7.75	28.018		
1,500.0	1,460.7	1,481.4	1,456.1	5.8	4.6	138.40	-153.5	-96.8	242.5	233.8	8.72	27.827		
1,600.0	1,555.8	1,577.8	1,548.5	6.4	5.0	136.69	-177.9	-109.2	268.2	258.5	9.68	27.694		
1,700.0	1,650.9	1,674.1	1,640.9	6.9	5.5	135.28	-202.3	-121.6	294.1	283.4	10.65	27.601		
1,800.0	1,746.0	1,770.5	1,733.3	7.5	6.0	134.09	-226.7	-134.0	320.1	308.4	11.62	27.535		
1,900.0	1,841.1	1,866.9	1,825.6	8.1	6.5	133.08	-251.1	-146.4	346.2	333.6	12.59	27.487		
2,000.0	1,936.2	1,963.2	1,918.0	8.6	7.0	132.22	-275.5	-158.8	372.4	358.8	13.56	27.454		
2,100.0	2,031.3	2,059.6	2,010.4	9.2	7.6	131.47	-299.9	-171.2	398.6	384.1	14.53	27.431		
2,200.0	2,126.4	2,156.0	2,102.8	9.8	8.1	130.81	-324.3	-183.6	424.9	409.4	15.50	27.414		
2,300.0	2,221.5	2,252.3	2,195.2	10.3	8.6	130.22	-348.7	-196.0	451.3	434.8	16.47	27.403		
2,400.0	2,316.6	2,348.7	2,287.6	10.9	9.1	129.70	-373.1	-208.4	477.7	460.2	17.44	27.396		
2,500.0	2,411.7	2,445.1	2,380.0	11.5	9.6	129.24	-397.5	-220.8	504.1	485.7	18.40	27.392		
2,600.0	2,506.8	2,541.4	2,472.4	12.1	10.1	128.82	-421.9	-233.2	530.6	511.2	19.37	27.391		
2,700.0	2,601.9	2,637.8	2,564.8	12.6	10.6	128.44	-446.3	-245.6	557.1	536.7	20.34	27.391		
2,800.0	2,696.9	2,734.2	2,657.2	13.2	11.1	128.10	-470.7	-258.0	583.6	562.3	21.30	27.392		
2,900.0	2,792.0	2,830.5	2,749.6	13.8	11.6	127.79	-495.1	-270.4	610.1	587.8	22.27	27.394		
3,000.0	2,887.1	2,926.9	2,842.0	14.3	12.1	127.50	-519.5	-282.8	636.6	613.4	23.24	27.397		
3,100.0	2,982.2	3,023.3	2,934.4	14.9	12.6	127.23	-543.9	-295.2	663.2	639.0	24.20	27.400		
3,200.0	3,077.3	3,119.6	3,026.8	15.5	13.1	126.99	-568.3	-307.6	689.7	664.6	25.17	27.404		
3,300.0	3,172.4	3,216.0	3,119.2	16.1	13.6	126.76	-592.7	-320.0	716.3	690.2	26.13	27.408		
3,400.0	3,267.5	3,312.4	3,211.6	16.6	14.1	126.55	-617.1	-332.4	742.9	715.8	27.10	27.413		
3,500.0	3,362.6	3,408.7	3,304.0	17.2	14.6	126.36	-641.5	-344.8	769.5	741.4	28.07	27.417		
3,600.0	3,457.7	3,505.1	3,396.4	17.8	15.2	126.17	-665.9	-357.2	796.1	767.0	29.03	27.422		
3,700.0	3,552.8	3,601.5	3,488.8	18.3	15.7	126.00	-690.3	-369.6	822.7	792.7	30.00	27.426		
3,800.0	3,647.9	3,697.8	3,581.2	18.9	16.2	125.84	-714.7	-382.0	849.3	818.3	30.96	27.431		
3,900.0	3,743.0	3,794.2	3,673.6	19.5	16.7	125.69	-739.0	-394.4	875.9	844.0	31.93	27.436		
4,000.0	3,838.1	3,890.6	3,766.0	20.1	17.2	125.55	-763.4	-406.8	902.5	869.7	32.89	27.440		
4,100.0	3,933.2	3,986.9	3,858.4	20.6	17.7	125.42	-787.8	-419.2	929.2	895.3	33.86	27.445		
4,200.0	4,028.2	4,083.3	3,950.8	21.2	18.2	125.29	-812.2	-431.6	955.8	921.0	34.82	27.449		
4,300.0	4,123.3	4,179.7	4,043.2	21.8	18.7	125.17	-836.6	-444.0	982.4	946.7	35.79	27.453		
4,400.0	4,218.4	4,276.0	4,135.6	22.3	19.2	125.06	-861.0	-456.4	1,009.1	972.3	36.75	27.458		
4,500.0	4,313.5	4,372.4	4,228.0	22.9	19.7	124.95	-885.4	-468.8	1,035.7	998.0	37.72	27.462		
4,600.0	4,408.6	4,468.8	4,320.4	23.5	20.2	124.85	-909.8	-481.2	1,062.4	1,023.7	38.68	27.466		
4,700.0	4,503.7	4,565.1	4,412.8	24.1	20.8	124.75	-934.2	-493.6	1,089.0	1,049.4	39.64	27.470		
4,800.0	4,598.8	4,661.5	4,505.2	24.6	21.3	124.66	-958.6	-506.0	1,115.7	1,075.1	40.61	27.474		
4,900.0	4,693.9	4,757.9	4,597.6	25.2	21.8	124.57	-983.0	-518.4	1,142.3	1,100.8	41.57	27.478		
5,000.0	4,789.0	4,854.2	4,690.0	25.8	22.3	124.49	-1,007.4	-530.8	1,169.0	1,126.5	42.54	27.481		
5,100.0	4,884.1	4,950.6	4,782.4	26.3	22.8	124.41	-1,031.8	-543.2	1,195.7	1,152.2	43.50	27.485		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	4,979.2	5,047.0	4,874.8	26.9	23.3	124.33	-1,056.2	-555.6	1,222.3	1,177.9	44.47	27.489		
5,300.0	5,074.3	5,143.3	4,967.2	27.5	23.8	124.26	-1,080.6	-568.0	1,249.0	1,203.6	45.43	27.492		
5,400.0	5,169.4	5,239.7	5,059.6	28.1	24.3	124.19	-1,105.0	-580.4	1,275.7	1,229.3	46.39	27.496		
5,500.0	5,264.5	5,336.1	5,152.0	28.6	24.8	124.12	-1,129.4	-592.8	1,302.3	1,255.0	47.36	27.499		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	5.73	50.6	5.1	50.9					
100.0	100.0	100.0	100.0	0.1	0.1	5.73	50.6	5.1	50.9	50.6	0.27	186.868		
200.0	200.0	200.0	200.0	0.3	0.3	5.73	50.6	5.1	50.9	50.3	0.62	81.886		
300.0	300.0	301.3	301.2	0.5	0.5	8.42	49.0	7.3	49.6	48.6	0.98	50.524		
396.2	396.1	398.3	397.9	0.7	0.7	-138.42	44.6	13.4	48.4	47.0	1.36	35.593 CC		
400.0	400.0	402.2	401.8	0.7	0.7	-138.13	44.3	13.7	48.4	47.0	1.38	35.165 ES		
500.0	499.6	502.7	501.4	0.9	1.0	-129.89	36.6	24.5	50.0	48.1	1.86	26.864		
600.0	598.8	602.4	599.8	1.1	1.3	-123.95	27.2	37.3	55.1	52.7	2.42	22.818		
700.0	697.1	702.0	698.2	1.5	1.6	-123.09	17.9	50.2	63.4	60.4	3.03	20.941		
800.0	794.3	801.3	796.2	1.9	2.0	-125.71	8.6	63.1	74.7	71.0	3.68	20.308 SF		
900.0	890.2	900.0	893.6	2.4	2.3	-130.15	-0.7	75.8	89.3	85.0	4.32	20.660		
1,000.0	985.3	998.3	990.6	3.0	2.6	-134.63	-9.9	88.5	106.3	101.3	4.93	21.566		
1,100.0	1,080.4	1,096.5	1,087.6	3.5	2.9	-137.87	-19.1	101.2	123.7	118.2	5.51	22.427		
1,200.0	1,175.5	1,194.8	1,184.7	4.1	3.2	-140.30	-28.3	113.9	141.4	135.3	6.09	23.212		
1,300.0	1,270.6	1,293.1	1,281.7	4.7	3.6	-142.19	-37.5	126.6	159.2	152.6	6.66	23.917		
1,400.0	1,365.6	1,391.3	1,378.7	5.2	3.9	-143.71	-46.8	139.3	177.2	170.0	7.22	24.547		
1,500.0	1,460.7	1,489.6	1,475.7	5.8	4.2	-144.94	-56.0	152.0	195.3	187.6	7.78	25.110		
1,600.0	1,555.8	1,587.9	1,572.7	6.4	4.5	-145.96	-65.2	164.8	213.5	205.2	8.34	25.614		
1,700.0	1,650.9	1,686.1	1,669.7	6.9	4.9	-146.82	-74.4	177.5	231.8	222.9	8.89	26.067		
1,800.0	1,746.0	1,784.4	1,766.7	7.5	5.2	-147.56	-83.6	190.2	250.0	240.6	9.44	26.476		
1,900.0	1,841.1	1,882.7	1,863.7	8.1	5.5	-148.19	-92.8	202.9	268.4	258.4	10.00	26.845		
2,000.0	1,936.2	1,980.9	1,960.7	8.6	5.8	-148.75	-102.0	215.6	286.7	276.2	10.55	27.182		
2,100.0	2,031.3	2,079.2	2,057.7	9.2	6.2	-149.24	-111.3	228.3	305.1	294.0	11.10	27.488		
2,200.0	2,126.4	2,177.5	2,154.7	9.8	6.5	-149.67	-120.5	241.0	323.5	311.8	11.65	27.769		
2,300.0	2,221.5	2,275.8	2,251.7	10.3	6.8	-150.06	-129.7	253.7	341.9	329.7	12.20	28.027		
2,400.0	2,316.6	2,374.0	2,348.7	10.9	7.1	-150.40	-138.9	266.4	360.3	347.5	12.75	28.265		
2,500.0	2,411.7	2,472.3	2,445.7	11.5	7.4	-150.72	-148.1	279.1	378.7	365.4	13.29	28.484		
2,600.0	2,506.8	2,570.6	2,542.7	12.1	7.8	-151.00	-157.3	291.8	397.1	383.3	13.84	28.688		
2,700.0	2,601.9	2,668.8	2,639.8	12.6	8.1	-151.26	-166.5	304.5	415.6	401.2	14.39	28.877		
2,800.0	2,696.9	2,767.1	2,736.8	13.2	8.4	-151.49	-175.8	317.2	434.0	419.1	14.94	29.054		
2,900.0	2,792.0	2,865.4	2,833.8	13.8	8.7	-151.71	-185.0	329.9	452.5	437.0	15.49	29.218		
3,000.0	2,887.1	2,963.6	2,930.8	14.3	9.1	-151.91	-194.2	342.6	470.9	454.9	16.03	29.372		
3,100.0	2,982.2	3,061.9	3,027.8	14.9	9.4	-152.10	-203.4	355.3	489.4	472.8	16.58	29.517		
3,200.0	3,077.3	3,160.2	3,124.8	15.5	9.7	-152.27	-212.6	368.0	507.9	490.8	17.13	29.652		
3,300.0	3,172.4	3,258.4	3,221.8	16.1	10.0	-152.43	-221.8	380.7	526.4	508.7	17.68	29.780		
3,400.0	3,267.5	3,356.7	3,318.8	16.6	10.4	-152.58	-231.0	393.4	544.8	526.6	18.22	29.901		
3,500.0	3,362.6	3,455.0	3,415.8	17.2	10.7	-152.72	-240.3	406.1	563.3	544.6	18.77	30.014		
3,600.0	3,457.7	3,553.2	3,512.8	17.8	11.0	-152.85	-249.5	418.8	581.8	562.5	19.32	30.122		
3,700.0	3,552.8	3,651.5	3,609.8	18.3	11.3	-152.97	-258.7	431.5	600.3	580.4	19.86	30.224		
3,800.0	3,647.9	3,749.8	3,706.8	18.9	11.7	-153.08	-267.9	444.2	618.8	598.4	20.41	30.321		
3,900.0	3,743.0	3,848.0	3,803.8	19.5	12.0	-153.19	-277.1	457.0	637.3	616.3	20.96	30.413		
4,000.0	3,838.1	3,946.3	3,900.8	20.1	12.3	-153.29	-286.3	469.7	655.8	634.3	21.50	30.500		
4,100.0	3,933.2	4,044.6	3,997.8	20.6	12.6	-153.39	-295.5	482.4	674.3	652.2	22.05	30.583		
4,200.0	4,028.2	4,142.8	4,094.9	21.2	13.0	-153.48	-304.8	495.1	692.8	670.2	22.59	30.662		
4,300.0	4,123.3	4,241.1	4,191.9	21.8	13.3	-153.57	-314.0	507.8	711.3	688.2	23.14	30.738		
4,400.0	4,218.4	4,339.4	4,288.9	22.3	13.6	-153.65	-323.2	520.5	729.8	706.1	23.69	30.810		
4,500.0	4,313.5	4,437.6	4,385.9	22.9	13.9	-153.73	-332.4	533.2	748.3	724.1	24.23	30.880		
4,600.0	4,408.6	4,535.9	4,482.9	23.5	14.3	-153.80	-341.6	545.9	766.8	742.0	24.78	30.946		
4,700.0	4,503.7	4,634.2	4,579.9	24.1	14.6	-153.88	-350.8	558.6	785.3	760.0	25.33	31.009		
4,800.0	4,598.8	4,732.4	4,676.9	24.6	14.9	-153.94	-360.0	571.3	803.8	778.0	25.87	31.070		
4,900.0	4,693.9	4,830.7	4,773.9	25.2	15.2	-154.01	-369.3	584.0	822.3	795.9	26.42	31.128		
5,000.0	4,789.0	4,929.0	4,870.9	25.8	15.6	-154.07	-378.5	596.7	840.8	813.9	26.96	31.185		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,100.0	4,884.1	5,027.3	4,967.9	26.3	15.9	-154.13	-387.7	609.4	859.4	831.9	27.51	31.238		
5,200.0	4,979.2	5,125.5	5,064.9	26.9	16.2	-154.19	-396.9	622.1	877.9	849.8	28.06	31.290		
5,300.0	5,074.3	5,223.8	5,161.9	27.5	16.5	-154.24	-406.1	634.8	896.4	867.8	28.60	31.340		
5,400.0	5,169.4	5,322.1	5,258.9	28.1	16.9	-154.29	-415.3	647.5	914.9	885.8	29.15	31.388		
5,500.0	5,264.5	5,420.3	5,355.9	28.6	17.2	-154.34	-424.5	660.2	933.4	903.7	29.69	31.435		
5,600.0	5,359.5	5,518.6	5,452.9	29.2	17.5	-154.39	-433.8	672.9	951.9	921.7	30.24	31.480		
5,700.0	5,454.6	5,616.9	5,549.9	29.8	17.8	-154.44	-443.0	685.6	970.4	939.7	30.79	31.523		
5,800.0	5,549.7	5,715.1	5,647.0	30.4	18.2	-154.48	-452.2	698.3	989.0	957.6	31.33	31.565		
5,900.0	5,644.8	5,813.4	5,744.0	30.9	18.5	-154.52	-461.4	711.0	1,007.5	975.6	31.88	31.605		
6,000.0	5,739.9	5,911.7	5,841.0	31.5	18.8	-154.56	-470.6	723.7	1,026.0	993.6	32.42	31.644		
6,100.0	5,835.0	6,009.9	5,938.0	32.1	19.1	-154.60	-479.8	736.4	1,044.5	1,011.5	32.97	31.682		
6,200.0	5,930.1	6,108.2	6,035.0	32.6	19.5	-154.64	-489.0	749.2	1,063.0	1,029.5	33.51	31.718		
6,300.0	6,025.2	6,206.5	6,132.0	33.2	19.8	-154.68	-498.3	761.9	1,081.6	1,047.5	34.06	31.754		
6,400.0	6,120.3	6,304.7	6,229.0	33.8	20.1	-154.72	-507.5	774.6	1,100.1	1,065.5	34.61	31.788		
6,500.0	6,215.4	6,403.0	6,326.0	34.4	20.4	-154.75	-516.7	787.3	1,118.6	1,083.4	35.15	31.821		
6,600.0	6,310.5	6,501.3	6,423.0	34.9	20.8	-154.78	-525.9	800.0	1,137.1	1,101.4	35.70	31.853		
6,700.0	6,405.6	6,599.5	6,520.0	35.5	21.1	-154.82	-535.1	812.7	1,155.6	1,119.4	36.24	31.885		
6,800.0	6,500.7	6,697.8	6,617.0	36.1	21.4	-154.85	-544.3	825.4	1,174.2	1,137.4	36.79	31.915		
6,900.0	6,595.8	6,796.1	6,714.0	36.6	21.7	-154.88	-553.5	838.1	1,192.7	1,155.3	37.34	31.945		
7,000.0	6,690.8	6,894.3	6,811.0	37.2	22.1	-154.91	-562.8	850.8	1,211.2	1,173.3	37.88	31.973		
7,100.0	6,786.1	6,992.7	6,908.1	37.8	22.4	-155.00	-572.0	863.5	1,229.4	1,190.9	38.43	31.989		
7,200.0	6,882.2	7,091.5	7,005.6	38.3	22.7	-155.09	-581.2	876.3	1,244.8	1,205.8	38.99	31.923		
7,300.0	6,979.2	7,190.7	7,103.6	38.7	23.1	-155.09	-590.5	889.1	1,257.1	1,217.5	39.58	31.762		
7,400.0	7,077.0	7,280.8	7,192.5	39.1	23.3	-155.03	-598.9	900.6	1,266.4	1,226.3	40.14	31.554		
7,500.0	7,175.4	7,359.0	7,270.1	39.4	23.5	-154.98	-605.0	909.1	1,274.1	1,233.5	40.58	31.395		
7,600.0	7,274.4	7,437.4	7,348.0	39.6	23.7	-154.94	-610.0	915.9	1,280.2	1,239.2	40.96	31.254		
7,700.0	7,373.9	7,515.7	7,426.1	39.9	23.9	-154.91	-613.7	921.0	1,284.8	1,243.6	41.27	31.130		
7,800.0	7,473.6	7,600.0	7,510.2	40.0	24.0	-154.90	-616.2	924.5	1,288.0	1,246.5	41.53	31.015		
7,900.0	7,573.5	7,672.5	7,582.7	40.1	24.1	-154.90	-617.2	925.9	1,289.7	1,248.0	41.69	30.934		
8,000.0	7,673.5	7,763.3	7,673.5	40.1	24.2	-1.76	-617.4	926.1	1,290.0	1,248.1	41.88	30.804		
8,100.0	7,773.5	7,863.3	7,773.5	40.2	24.3	-1.76	-617.4	926.1	1,290.0	1,247.9	42.11	30.636		
8,200.0	7,873.5	7,963.3	7,873.5	40.3	24.4	-1.76	-617.4	926.1	1,290.0	1,247.7	42.34	30.469		
8,300.0	7,973.5	8,063.3	7,973.5	40.3	24.5	-1.76	-617.4	926.1	1,290.0	1,247.4	42.57	30.303		
8,400.0	8,073.5	8,163.3	8,073.5	40.4	24.6	-1.76	-617.4	926.1	1,290.0	1,247.2	42.80	30.137		
8,500.0	8,173.5	8,263.3	8,173.5	40.5	24.7	-1.76	-617.4	926.1	1,290.0	1,247.0	43.04	29.972		
8,600.0	8,273.5	8,363.3	8,273.5	40.5	24.8	-1.76	-617.4	926.1	1,290.0	1,246.7	43.28	29.807		
8,700.0	8,373.5	8,463.3	8,373.5	40.6	24.9	-1.76	-617.4	926.1	1,290.0	1,246.5	43.52	29.644		
8,800.0	8,473.5	8,563.3	8,473.5	40.7	25.0	-1.76	-617.4	926.1	1,290.0	1,246.2	43.76	29.481		
8,900.0	8,573.5	8,663.3	8,573.5	40.7	25.1	-1.76	-617.4	926.1	1,290.0	1,246.0	44.00	29.319		
9,000.0	8,673.5	8,763.3	8,673.5	40.8	25.2	-1.76	-617.4	926.1	1,290.0	1,245.8	44.24	29.157		
9,100.0	8,773.5	8,863.3	8,773.5	40.9	25.3	-1.76	-617.4	926.1	1,290.0	1,245.5	44.49	28.997		
9,200.0	8,873.5	8,963.3	8,873.5	40.9	25.4	-1.76	-617.4	926.1	1,290.0	1,245.3	44.73	28.838		
9,300.0	8,973.5	9,063.3	8,973.5	41.0	25.5	-1.76	-617.4	926.1	1,290.0	1,245.0	44.98	28.679		
9,400.0	9,073.5	9,163.3	9,073.5	41.1	25.6	-1.76	-617.4	926.1	1,290.0	1,244.8	45.23	28.521		
9,500.0	9,173.5	9,263.3	9,173.5	41.1	25.7	-1.76	-617.4	926.1	1,290.0	1,244.5	45.48	28.364		
9,600.0	9,273.5	9,363.3	9,273.5	41.2	25.8	-1.76	-617.4	926.1	1,290.0	1,244.3	45.73	28.208		
9,700.0	9,373.5	9,463.3	9,373.5	41.3	25.9	-1.76	-617.4	926.1	1,290.0	1,244.0	45.98	28.053		
9,800.0	9,473.5	9,563.3	9,473.5	41.3	26.0	-1.76	-617.4	926.1	1,290.0	1,243.8	46.24	27.899		
9,900.0	9,573.5	9,663.3	9,573.5	41.4	26.2	-1.76	-617.4	926.1	1,290.0	1,243.5	46.49	27.746		
10,000.0	9,673.5	9,763.3	9,673.5	41.5	26.3	-1.76	-617.4	926.1	1,290.0	1,243.2	46.75	27.594		
10,100.0	9,773.5	9,863.3	9,773.5	41.6	26.4	-1.76	-617.4	926.1	1,290.0	1,243.0	47.01	27.443		
10,200.0	9,873.5	9,963.3	9,873.5	41.6	26.5	-1.76	-617.4	926.1	1,290.0	1,242.7	47.27	27.293		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,300.0	9,973.5	10,063.3	9,973.5	41.7	26.6	-1.76	-617.4	926.1	1,290.0	1,242.5	47.53	27.143		
10,343.0	10,016.5	10,106.3	10,016.5	41.7	26.7	-1.76	-617.4	926.1	1,290.0	1,242.4	47.64	27.080		
10,400.0	10,073.5	10,121.8	10,032.0	41.8	26.7	-1.76	-617.4	926.1	1,290.7	1,242.9	47.73	27.040		
10,500.0	10,173.5	10,121.8	10,032.0	41.9	26.7	-1.76	-617.4	926.1	1,297.7	1,249.9	47.86	27.113		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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 16-6C - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	5.71	33.9	3.4	34.0					
100.0	100.0	100.0	100.0	0.1	0.1	5.71	33.9	3.4	34.0	33.8	0.27	125.033		
200.0	200.0	200.0	200.0	0.3	0.3	5.71	33.9	3.4	34.0	33.4	0.62	54.790		
300.0	300.0	300.0	300.0	0.5	0.5	5.71	33.9	3.4	34.0	33.1	0.97	35.081 CC		
400.0	400.0	401.3	401.3	0.7	0.7	-146.80	31.7	5.0	34.3	33.0	1.33	25.853 ES		
500.0	499.6	502.7	502.3	0.9	0.9	-144.96	25.2	9.8	35.0	33.3	1.71	20.506		
600.0	598.8	603.9	602.7	1.1	1.2	-142.07	14.5	17.7	36.3	34.2	2.15	16.866		
700.0	697.1	705.2	702.2	1.5	1.5	-138.38	-0.6	28.8	38.3	35.6	2.72	14.106		
800.0	794.3	805.6	800.0	1.9	1.9	-135.23	-19.0	42.4	41.6	38.2	3.40	12.229		
900.0	890.2	905.4	897.0	2.4	2.3	-136.60	-37.6	56.1	48.3	44.3	4.07	11.864 SF		
1,000.0	985.3	1,005.0	993.9	3.0	2.8	-139.54	-56.2	69.8	57.1	52.4	4.69	12.176		
1,100.0	1,080.4	1,104.5	1,090.7	3.5	3.2	-141.69	-74.8	83.6	66.0	60.7	5.30	12.459		
1,200.0	1,175.5	1,204.1	1,187.6	4.1	3.6	-143.33	-93.4	97.3	75.0	69.1	5.90	12.710		
1,300.0	1,270.6	1,303.7	1,284.4	4.7	4.1	-144.62	-111.9	111.0	84.0	77.5	6.50	12.933		
1,400.0	1,365.6	1,403.3	1,381.3	5.2	4.5	-145.66	-130.5	124.7	93.1	86.0	7.09	13.130		
1,500.0	1,460.7	1,502.9	1,478.2	5.8	4.9	-146.51	-149.1	138.4	102.1	94.5	7.68	13.305		
1,600.0	1,555.8	1,602.4	1,575.0	6.4	5.4	-147.23	-167.7	152.1	111.2	103.0	8.26	13.461		
1,700.0	1,650.9	1,702.0	1,671.9	6.9	5.8	-147.83	-186.3	165.9	120.3	111.5	8.85	13.601		
1,800.0	1,746.0	1,801.6	1,768.7	7.5	6.2	-148.35	-204.9	179.6	129.5	120.0	9.43	13.726		
1,900.0	1,841.1	1,901.2	1,865.6	8.1	6.7	-148.81	-223.5	193.3	138.6	128.6	10.01	13.840		
2,000.0	1,936.2	2,000.7	1,962.5	8.6	7.1	-149.20	-242.1	207.0	147.7	137.1	10.60	13.943		
2,100.0	2,031.3	2,100.3	2,059.3	9.2	7.6	-149.55	-260.7	220.7	156.9	145.7	11.18	14.036		
2,200.0	2,126.4	2,199.9	2,156.2	9.8	8.0	-149.86	-279.2	234.5	166.0	154.3	11.76	14.122		
2,300.0	2,221.5	2,299.5	2,253.0	10.3	8.4	-150.14	-297.8	248.2	175.2	162.8	12.34	14.201		
2,400.0	2,316.6	2,399.0	2,349.9	10.9	8.9	-150.40	-316.4	261.9	184.3	171.4	12.91	14.273		
2,500.0	2,411.7	2,498.6	2,446.8	11.5	9.3	-150.62	-335.0	275.6	193.5	180.0	13.49	14.340		
2,600.0	2,506.8	2,598.2	2,543.6	12.1	9.8	-150.83	-353.6	289.3	202.6	188.6	14.07	14.402		
2,700.0	2,601.9	2,697.8	2,640.5	12.6	10.2	-151.02	-372.2	303.0	211.8	197.2	14.65	14.459		
2,800.0	2,696.9	2,797.4	2,737.3	13.2	10.7	-151.19	-390.8	316.8	221.0	205.7	15.23	14.512		
2,900.0	2,792.0	2,896.9	2,834.2	13.8	11.1	-151.35	-409.4	330.5	230.1	214.3	15.80	14.562		
3,000.0	2,887.1	2,996.5	2,931.1	14.3	11.5	-151.50	-428.0	344.2	239.3	222.9	16.38	14.609		
3,100.0	2,982.2	3,096.1	3,027.9	14.9	12.0	-151.64	-446.5	357.9	248.5	231.5	16.96	14.653		
3,200.0	3,077.3	3,195.7	3,124.8	15.5	12.4	-151.76	-465.1	371.6	257.7	240.1	17.53	14.694		
3,300.0	3,172.4	3,295.2	3,221.6	16.1	12.9	-151.88	-483.7	385.3	266.8	248.7	18.11	14.732		
3,400.0	3,267.5	3,394.8	3,318.5	16.6	13.3	-151.99	-502.3	399.1	276.0	257.3	18.69	14.769		
3,500.0	3,362.6	3,494.4	3,415.4	17.2	13.7	-152.09	-520.9	412.8	285.2	265.9	19.26	14.803		
3,600.0	3,457.7	3,594.0	3,512.2	17.8	14.2	-152.19	-539.5	426.5	294.4	274.5	19.84	14.836		
3,700.0	3,552.8	3,693.5	3,609.1	18.3	14.6	-152.28	-558.1	440.2	303.5	283.1	20.42	14.866		
3,800.0	3,647.9	3,793.1	3,705.9	18.9	15.1	-152.37	-576.7	453.9	312.7	291.7	20.99	14.896		
3,900.0	3,743.0	3,892.7	3,802.8	19.5	15.5	-152.45	-595.3	467.7	321.9	300.3	21.57	14.923		
4,000.0	3,838.1	3,992.3	3,899.7	20.1	16.0	-152.52	-613.8	481.4	331.1	308.9	22.15	14.950		
4,100.0	3,933.2	4,091.9	3,996.5	20.6	16.4	-152.60	-632.4	495.1	340.2	317.5	22.72	14.975		
4,200.0	4,028.2	4,191.4	4,093.4	21.2	16.8	-152.66	-651.0	508.8	349.4	326.1	23.30	14.999		
4,300.0	4,123.3	4,291.0	4,190.2	21.8	17.3	-152.73	-669.6	522.5	358.6	334.7	23.87	15.021		
4,400.0	4,218.4	4,390.6	4,287.1	22.3	17.7	-152.79	-688.2	536.2	367.8	343.3	24.45	15.043		
4,500.0	4,313.5	4,490.2	4,384.0	22.9	18.2	-152.85	-706.8	550.0	377.0	351.9	25.02	15.064		
4,600.0	4,408.6	4,589.7	4,480.8	23.5	18.6	-152.91	-725.4	563.7	386.2	360.6	25.60	15.084		
4,700.0	4,503.7	4,689.3	4,577.7	24.1	19.0	-152.96	-744.0	577.4	395.3	369.2	26.18	15.103		
4,800.0	4,598.8	4,788.9	4,674.5	24.6	19.5	-153.01	-762.6	591.1	404.5	377.8	26.75	15.121		
4,900.0	4,693.9	4,888.5	4,771.4	25.2	19.9	-153.06	-781.1	604.8	413.7	386.4	27.33	15.139		
5,000.0	4,789.0	4,988.0	4,868.3	25.8	20.4	-153.10	-799.7	618.5	422.9	395.0	27.90	15.156		
5,100.0	4,884.1	5,087.6	4,965.1	26.3	20.8	-153.15	-818.3	632.3	432.1	403.6	28.48	15.172		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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 16-6C - DD - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	4,979.2	5,187.2	5,062.0	26.9	21.3	-153.19	-836.9	646.0	441.3	412.2	29.05	15.188		
5,300.0	5,074.3	5,286.8	5,158.8	27.5	21.7	-153.23	-855.5	659.7	450.4	420.8	29.63	15.203		
5,400.0	5,169.4	5,386.4	5,255.7	28.1	22.1	-153.27	-874.1	673.4	459.6	429.4	30.20	15.217		
5,500.0	5,264.5	5,485.9	5,352.6	28.6	22.6	-153.31	-892.7	687.1	468.8	438.0	30.78	15.231		
5,600.0	5,359.5	5,585.5	5,449.4	29.2	23.0	-153.35	-911.3	700.9	478.0	446.6	31.35	15.245		
5,700.0	5,454.6	5,685.1	5,546.3	29.8	23.5	-153.38	-929.9	714.6	487.2	455.2	31.93	15.258		
5,800.0	5,549.7	5,784.7	5,643.1	30.4	23.9	-153.41	-948.4	728.3	496.4	463.9	32.51	15.270		
5,900.0	5,644.8	5,884.2	5,740.0	30.9	24.4	-153.45	-967.0	742.0	505.5	472.5	33.08	15.282		
6,000.0	5,739.9	5,983.8	5,836.9	31.5	24.8	-153.48	-985.6	755.7	514.7	481.1	33.66	15.294		
6,100.0	5,835.0	6,083.4	5,933.7	32.1	25.2	-153.51	-1,004.2	769.4	523.9	489.7	34.23	15.305		
6,200.0	5,930.1	6,183.0	6,030.6	32.6	25.7	-153.54	-1,022.8	783.2	533.1	498.3	34.81	15.316		
6,300.0	6,025.2	6,282.5	6,127.4	33.2	26.1	-153.56	-1,041.4	796.9	542.3	506.9	35.38	15.327		
6,400.0	6,120.3	6,382.1	6,224.3	33.8	26.6	-153.59	-1,060.0	810.6	551.5	515.5	35.96	15.337		
6,500.0	6,215.4	6,481.7	6,321.2	34.4	27.0	-153.62	-1,078.6	824.3	560.7	524.1	36.53	15.347		
6,600.0	6,310.5	6,581.3	6,418.0	34.9	27.5	-153.64	-1,097.2	838.0	569.8	532.7	37.11	15.357		
6,700.0	6,405.6	6,680.9	6,514.9	35.5	27.9	-153.67	-1,115.7	851.7	579.0	541.3	37.68	15.366		
6,800.0	6,500.7	6,780.4	6,611.7	36.1	28.3	-153.69	-1,134.3	865.5	588.2	550.0	38.26	15.375		
6,900.0	6,595.8	6,880.0	6,708.6	36.6	28.8	-153.71	-1,152.9	879.2	597.4	558.6	38.83	15.384		
7,000.0	6,690.8	6,979.6	6,805.5	37.2	29.2	-153.74	-1,171.5	892.9	606.6	567.2	39.41	15.393		
7,100.0	6,786.1	7,079.2	6,902.3	37.8	29.7	-153.78	-1,190.1	906.6	615.4	575.4	39.99	15.399		
7,200.0	6,882.2	7,171.6	6,992.3	38.3	30.1	-153.74	-1,207.1	919.2	621.8	581.2	40.59	15.321		
7,300.0	6,979.2	7,266.4	7,075.3	38.7	30.4	-153.70	-1,221.0	929.4	627.2	586.1	41.11	15.257		
7,400.0	7,077.0	7,361.2	7,158.8	39.1	30.6	-153.67	-1,232.9	938.2	631.8	590.3	41.57	15.200		
7,500.0	7,175.4	7,425.9	7,242.6	39.4	30.9	-153.65	-1,242.7	945.5	635.8	593.8	41.97	15.149		
7,600.0	7,274.4	7,510.5	7,326.7	39.6	31.1	-153.64	-1,250.6	951.3	639.0	596.6	42.31	15.103		
7,700.0	7,373.9	7,600.0	7,415.8	39.9	31.2	-153.63	-1,256.8	955.8	641.4	598.8	42.59	15.059		
7,800.0	7,473.6	7,679.8	7,495.5	40.0	31.3	-153.63	-1,260.4	958.5	643.1	600.3	42.80	15.027		
7,900.0	7,573.5	7,764.4	7,580.1	40.1	31.4	-153.64	-1,262.2	959.8	644.1	601.2	42.96	14.996		
8,000.0	7,673.5	7,857.9	7,673.5	40.1	31.5	-0.50	-1,262.4	960.0	644.4	601.2	43.13	14.940		
8,100.0	7,773.5	7,957.9	7,773.5	40.2	31.6	-0.50	-1,262.4	960.0	644.4	601.0	43.35	14.863		
8,200.0	7,873.5	8,057.9	7,873.5	40.3	31.6	-0.50	-1,262.4	960.0	644.4	600.8	43.58	14.786		
8,300.0	7,973.5	8,157.9	7,973.5	40.3	31.7	-0.50	-1,262.4	960.0	644.4	600.5	43.81	14.709		
8,400.0	8,073.5	8,257.9	8,073.5	40.4	31.8	-0.50	-1,262.4	960.0	644.4	600.3	44.04	14.633		
8,500.0	8,173.5	8,357.9	8,173.5	40.5	31.9	-0.50	-1,262.4	960.0	644.4	600.1	44.27	14.556		
8,600.0	8,273.5	8,457.9	8,273.5	40.5	32.0	-0.50	-1,262.4	960.0	644.4	599.9	44.50	14.481		
8,700.0	8,373.5	8,557.9	8,373.5	40.6	32.0	-0.50	-1,262.4	960.0	644.4	599.6	44.73	14.405		
8,800.0	8,473.5	8,657.9	8,473.5	40.7	32.1	-0.50	-1,262.4	960.0	644.4	599.4	44.97	14.330		
8,900.0	8,573.5	8,757.9	8,573.5	40.7	32.2	-0.50	-1,262.4	960.0	644.4	599.2	45.20	14.255		
9,000.0	8,673.5	8,857.9	8,673.5	40.8	32.3	-0.50	-1,262.4	960.0	644.4	598.9	45.44	14.180		
9,100.0	8,773.5	8,957.9	8,773.5	40.9	32.4	-0.50	-1,262.4	960.0	644.4	598.7	45.68	14.105		
9,200.0	8,873.5	9,057.9	8,873.5	40.9	32.5	-0.50	-1,262.4	960.0	644.4	598.4	45.92	14.031		
9,300.0	8,973.5	9,157.9	8,973.5	41.0	32.5	-0.50	-1,262.4	960.0	644.4	598.2	46.16	13.958		
9,400.0	9,073.5	9,257.9	9,073.5	41.1	32.6	-0.50	-1,262.4	960.0	644.4	597.9	46.41	13.885		
9,500.0	9,173.5	9,357.9	9,173.5	41.1	32.7	-0.50	-1,262.4	960.0	644.4	597.7	46.65	13.812		
9,600.0	9,273.5	9,457.9	9,273.5	41.2	32.8	-0.50	-1,262.4	960.0	644.4	597.5	46.90	13.739		
9,700.0	9,373.5	9,557.9	9,373.5	41.3	32.9	-0.50	-1,262.4	960.0	644.4	597.2	47.15	13.667		
9,800.0	9,473.5	9,657.9	9,473.5	41.3	33.0	-0.50	-1,262.4	960.0	644.4	597.0	47.40	13.595		
9,900.0	9,573.5	9,757.9	9,573.5	41.4	33.1	-0.50	-1,262.4	960.0	644.4	596.7	47.65	13.524		
10,000.0	9,673.5	9,857.9	9,673.5	41.5	33.2	-0.50	-1,262.4	960.0	644.4	596.5	47.90	13.453		
10,100.0	9,773.5	9,957.9	9,773.5	41.6	33.2	-0.50	-1,262.4	960.0	644.4	596.2	48.15	13.382		
10,200.0	9,873.5	10,057.9	9,873.5	41.6	33.3	-0.50	-1,262.4	960.0	644.4	596.0	48.40	13.312		
10,300.0	9,973.5	10,157.9	9,973.5	41.7	33.4	-0.50	-1,262.4	960.0	644.4	595.7	48.66	13.242		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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 16-6C - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,343.0	10,016.5	10,200.8	10,016.5	41.7	33.5	-0.50	-1,262.4	960.0	644.4	595.6	48.77	13.212		
10,400.0	10,073.5	10,216.3	10,032.0	41.8	33.5	-0.50	-1,262.4	960.0	645.7	596.8	48.86	13.215		
10,500.0	10,173.5	10,216.3	10,032.0	41.9	33.5	-0.50	-1,262.4	960.0	659.7	610.7	48.99	13.466		
10,600.0	10,273.5	10,216.3	10,032.0	41.9	33.5	-0.50	-1,262.4	960.0	688.1	639.0	49.12	14.009		
10,700.0	10,373.5	10,216.3	10,032.0	42.0	33.5	-0.50	-1,262.4	960.0	729.3	680.0	49.25	14.807		
10,800.0	10,473.5	10,216.3	10,032.0	42.1	33.5	-0.50	-1,262.4	960.0	781.1	731.7	49.38	15.818		
10,900.0	10,573.5	10,216.3	10,032.0	42.2	33.5	-0.50	-1,262.4	960.0	841.7	792.2	49.51	17.000		
11,000.0	10,673.5	10,216.3	10,032.0	42.2	33.5	-0.50	-1,262.4	960.0	909.3	859.6	49.64	18.316		
11,100.0	10,773.5	10,216.3	10,032.0	42.3	33.5	-0.50	-1,262.4	960.0	982.4	932.6	49.78	19.736		
11,103.5	10,777.0	10,216.3	10,032.0	42.3	33.5	-0.50	-1,262.4	960.0	985.0	935.2	49.78	19.786		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	5.77	16.8	1.7	16.8					
100.0	100.0	100.0	100.0	0.1	0.1	5.77	16.8	1.7	16.8	16.6	0.27	61.851		
200.0	200.0	200.0	200.0	0.3	0.3	5.77	16.8	1.7	16.8	16.2	0.62	27.103		
300.0	300.0	300.6	300.6	0.5	0.5	11.80	14.5	3.0	14.8	13.8	0.98	15.100		
400.0	400.0	400.9	400.6	0.7	0.7	-122.99	7.6	7.0	11.5	10.2	1.37	8.433		
488.1	487.8	489.0	487.9	0.9	1.0	-99.08	-2.1	12.6	10.4	8.6	1.82	5.742 CC		
500.0	499.6	500.9	499.7	0.9	1.0	-95.60	-3.7	13.5	10.5	8.6	1.88	5.563 ES		
600.0	598.8	600.7	597.8	1.1	1.4	-69.69	-19.5	22.7	12.2	9.7	2.45	4.981		
700.0	697.1	700.2	694.5	1.5	1.8	-53.39	-39.6	34.3	15.9	12.9	2.97	5.330		
800.0	794.3	800.1	790.9	1.9	2.3	-49.08	-62.2	47.4	18.8	15.2	3.59	5.222		
900.0	890.2	900.0	887.4	2.4	2.8	-57.73	-84.8	60.4	18.5	13.8	4.64	3.985		
998.2	983.6	998.1	982.0	3.0	3.2	-73.93	-106.9	73.3	17.7	11.7	6.00	2.957		
1,000.0	985.3	999.9	983.8	3.0	3.2	-74.30	-107.3	73.5	17.7	11.7	6.03	2.943		
1,100.0	1,080.4	1,099.7	1,080.2	3.5	3.7	-90.82	-129.9	86.6	18.5	11.3	7.26	2.554		
1,200.0	1,175.5	1,199.6	1,176.6	4.1	4.2	-104.93	-152.5	99.6	20.7	12.6	8.13	2.545 SF		
1,300.0	1,270.6	1,299.5	1,273.0	4.7	4.7	-115.86	-175.1	112.7	23.8	15.1	8.71	2.737		
1,400.0	1,365.6	1,399.3	1,369.4	5.2	5.2	-124.02	-197.6	125.8	27.7	18.5	9.14	3.026		
1,500.0	1,460.7	1,499.2	1,465.8	5.8	5.7	-130.12	-220.2	138.8	31.9	22.4	9.51	3.354		
1,600.0	1,555.8	1,599.0	1,562.2	6.4	6.2	-134.76	-242.8	151.9	36.4	26.5	9.86	3.692		
1,700.0	1,650.9	1,698.9	1,658.5	6.9	6.6	-138.35	-265.4	164.9	41.1	30.9	10.21	4.023		
1,800.0	1,746.0	1,798.8	1,754.9	7.5	7.1	-141.20	-287.9	178.0	45.9	35.3	10.57	4.341		
1,900.0	1,841.1	1,898.6	1,851.3	8.1	7.6	-143.51	-310.5	191.1	50.8	39.9	10.94	4.642		
2,000.0	1,936.2	1,998.5	1,947.7	8.6	8.1	-145.40	-333.1	204.1	55.8	44.4	11.32	4.925		
2,100.0	2,031.3	2,098.3	2,044.1	9.2	8.6	-146.99	-355.6	217.2	60.8	49.1	11.72	5.189		
2,200.0	2,126.4	2,198.2	2,140.5	9.8	9.1	-148.33	-378.2	230.3	65.9	53.7	12.12	5.435		
2,300.0	2,221.5	2,298.1	2,236.9	10.3	9.6	-149.48	-400.8	243.3	71.0	58.4	12.53	5.665		
2,400.0	2,316.6	2,397.9	2,333.3	10.9	10.1	-150.47	-423.4	256.4	76.1	63.1	12.94	5.880		
2,500.0	2,411.7	2,497.8	2,429.7	11.5	10.6	-151.34	-445.9	269.4	81.2	67.9	13.36	6.080		
2,600.0	2,506.8	2,597.6	2,526.1	12.1	11.0	-152.11	-468.5	282.5	86.4	72.6	13.78	6.267		
2,700.0	2,601.9	2,697.5	2,622.5	12.6	11.5	-152.79	-491.1	295.6	91.6	77.3	14.21	6.443		
2,800.0	2,696.9	2,797.4	2,718.9	13.2	12.0	-153.39	-513.6	308.6	96.7	82.1	14.64	6.607		
2,900.0	2,792.0	2,897.2	2,815.3	13.8	12.5	-153.94	-536.2	321.7	101.9	86.9	15.07	6.762		
3,000.0	2,887.1	2,997.1	2,911.7	14.3	13.0	-154.43	-558.8	334.7	107.1	91.6	15.51	6.907		
3,100.0	2,982.2	3,097.0	3,008.1	14.9	13.5	-154.88	-581.4	347.8	112.3	96.4	15.95	7.043		
3,200.0	3,077.3	3,196.8	3,104.5	15.5	14.0	-155.28	-603.9	360.9	117.5	101.2	16.39	7.172		
3,300.0	3,172.4	3,296.7	3,200.9	16.1	14.5	-155.66	-626.5	373.9	122.8	105.9	16.83	7.294		
3,400.0	3,267.5	3,396.5	3,297.3	16.6	15.0	-156.00	-649.1	387.0	128.0	110.7	17.28	7.409		
3,500.0	3,362.6	3,496.4	3,393.7	17.2	15.5	-156.31	-671.6	400.1	133.2	115.5	17.72	7.518		
3,600.0	3,457.7	3,596.3	3,490.1	17.8	16.0	-156.60	-694.2	413.1	138.5	120.3	18.17	7.621		
3,700.0	3,552.8	3,696.1	3,586.5	18.3	16.4	-156.87	-716.8	426.2	143.7	125.1	18.61	7.719		
3,800.0	3,647.9	3,796.0	3,682.8	18.9	16.9	-157.12	-739.4	439.2	148.9	129.9	19.06	7.812		
3,900.0	3,743.0	3,895.8	3,779.2	19.5	17.4	-157.36	-761.9	452.3	154.2	134.7	19.51	7.901		
4,000.0	3,838.1	3,995.7	3,875.6	20.1	17.9	-157.58	-784.5	465.4	159.4	139.4	19.96	7.985		
4,100.0	3,933.2	4,095.6	3,972.0	20.6	18.4	-157.78	-807.1	478.4	164.7	144.2	20.41	8.066		
4,200.0	4,028.2	4,195.4	4,068.4	21.2	18.9	-157.97	-829.6	491.5	169.9	149.0	20.87	8.143		
4,300.0	4,123.3	4,295.3	4,164.8	21.8	19.4	-158.15	-852.2	504.6	175.2	153.8	21.32	8.216		
4,400.0	4,218.4	4,395.1	4,261.2	22.3	19.9	-158.32	-874.8	517.6	180.4	158.6	21.77	8.287		
4,500.0	4,313.5	4,495.0	4,357.6	22.9	20.4	-158.49	-897.4	530.7	185.7	163.4	22.22	8.354		
4,600.0	4,408.6	4,594.9	4,454.0	23.5	20.9	-158.64	-919.9	543.7	190.9	168.2	22.68	8.418		
4,700.0	4,503.7	4,694.7	4,550.4	24.1	21.4	-158.78	-942.5	556.8	196.2	173.0	23.13	8.480		
4,800.0	4,598.8	4,794.6	4,646.8	24.6	21.8	-158.92	-965.1	569.9	201.4	177.8	23.59	8.539		
4,900.0	4,693.9	4,894.4	4,743.2	25.2	22.3	-159.05	-987.7	582.9	206.7	182.6	24.04	8.596		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,000.0	4,789.0	4,994.3	4,839.6	25.8	22.8	-159.17	-1,010.2	596.0	211.9	187.4	24.50	8.651		
5,100.0	4,884.1	5,094.2	4,936.0	26.3	23.3	-159.28	-1,032.8	609.0	217.2	192.2	24.95	8.704		
5,200.0	4,979.2	5,194.0	5,032.4	26.9	23.8	-159.40	-1,055.4	622.1	222.5	197.0	25.41	8.755		
5,300.0	5,074.3	5,293.9	5,128.8	27.5	24.3	-159.50	-1,077.9	635.2	227.7	201.9	25.87	8.804		
5,400.0	5,169.4	5,393.7	5,225.2	28.1	24.8	-159.60	-1,100.5	648.2	233.0	206.7	26.32	8.851		
5,500.0	5,264.5	5,493.6	5,321.6	28.6	25.3	-159.70	-1,123.1	661.3	238.2	211.5	26.78	8.896		
5,600.0	5,359.5	5,593.5	5,418.0	29.2	25.8	-159.79	-1,145.7	674.4	243.5	216.3	27.24	8.940		
5,700.0	5,454.6	5,693.3	5,514.4	29.8	26.3	-159.88	-1,168.2	687.4	248.8	221.1	27.70	8.982		
5,800.0	5,549.7	5,793.2	5,610.8	30.4	26.8	-159.97	-1,190.8	700.5	254.0	225.9	28.15	9.023		
5,900.0	5,644.8	5,893.1	5,707.1	30.9	27.2	-160.05	-1,213.4	713.5	259.3	230.7	28.61	9.063		
6,000.0	5,739.9	5,992.9	5,803.5	31.5	27.7	-160.13	-1,235.9	726.6	264.6	235.5	29.07	9.101		
6,100.0	5,835.0	6,092.8	5,899.9	32.1	28.2	-160.20	-1,258.5	739.7	269.8	240.3	29.53	9.138		
6,200.0	5,930.1	6,192.6	5,996.3	32.6	28.7	-160.27	-1,281.1	752.7	275.1	245.1	29.99	9.174		
6,300.0	6,025.2	6,292.5	6,092.7	33.2	29.2	-160.34	-1,303.7	765.8	280.4	249.9	30.44	9.209		
6,400.0	6,120.3	6,392.4	6,189.1	33.8	29.7	-160.41	-1,326.2	778.8	285.6	254.7	30.90	9.243		
6,500.0	6,215.4	6,492.2	6,285.5	34.4	30.2	-160.47	-1,348.8	791.9	290.9	259.5	31.36	9.275		
6,600.0	6,310.5	6,592.1	6,381.9	34.9	30.7	-160.54	-1,371.4	805.0	296.2	264.3	31.82	9.307		
6,700.0	6,405.6	6,691.9	6,478.3	35.5	31.2	-160.60	-1,393.9	818.0	301.4	269.2	32.28	9.338		
6,800.0	6,500.7	6,791.8	6,574.7	36.1	31.7	-160.66	-1,416.5	831.1	306.7	274.0	32.74	9.368		
6,900.0	6,595.8	6,891.7	6,671.1	36.6	32.2	-160.71	-1,439.1	844.2	312.0	278.8	33.20	9.397		
7,000.0	6,690.8	6,991.5	6,767.5	37.2	32.6	-160.77	-1,461.7	857.2	317.2	283.6	33.66	9.425		
7,100.0	6,786.1	7,091.4	6,863.9	37.8	33.1	-160.81	-1,484.2	870.3	322.1	288.0	34.13	9.437		
7,200.0	6,882.2	7,182.8	6,952.4	38.3	33.5	-160.77	-1,503.9	881.7	325.3	290.7	34.62	9.397		
7,300.0	6,979.2	7,273.2	7,040.6	38.7	33.9	-160.74	-1,521.0	891.5	328.2	293.1	35.06	9.360		
7,400.0	7,077.0	7,363.5	7,129.4	39.1	34.2	-160.72	-1,535.6	900.0	330.6	295.2	35.45	9.326		
7,500.0	7,175.4	7,453.9	7,218.6	39.4	34.5	-160.71	-1,547.8	907.1	332.7	296.9	35.80	9.293		
7,600.0	7,274.4	7,544.1	7,308.2	39.6	34.7	-160.69	-1,557.5	912.7	334.4	298.3	36.10	9.263		
7,700.0	7,373.9	7,634.4	7,398.0	39.9	34.8	-160.69	-1,564.9	916.9	335.7	299.3	36.36	9.234		
7,800.0	7,473.6	7,724.6	7,488.0	40.0	35.0	-160.69	-1,569.7	919.7	336.6	300.1	36.57	9.206		
7,900.0	7,573.5	7,814.8	7,578.2	40.1	35.1	-160.69	-1,572.1	921.1	337.2	300.4	36.73	9.179		
8,000.0	7,673.5	7,910.1	7,673.5	40.1	35.1	-7.56	-1,572.4	921.3	337.3	300.4	36.93	9.133		
8,100.0	7,773.5	8,010.1	7,773.5	40.2	35.2	-7.56	-1,572.4	921.3	337.3	300.1	37.19	9.069		
8,200.0	7,873.5	8,110.1	7,873.5	40.3	35.3	-7.56	-1,572.4	921.3	337.3	299.8	37.46	9.005		
8,300.0	7,973.5	8,210.1	7,973.5	40.3	35.3	-7.56	-1,572.4	921.3	337.3	299.6	37.72	8.942		
8,400.0	8,073.5	8,310.1	8,073.5	40.4	35.4	-7.56	-1,572.4	921.3	337.3	299.3	37.99	8.879		
8,500.0	8,173.5	8,410.1	8,173.5	40.5	35.5	-7.56	-1,572.4	921.3	337.3	299.0	38.26	8.817		
8,600.0	8,273.5	8,510.1	8,273.5	40.5	35.5	-7.56	-1,572.4	921.3	337.3	298.8	38.53	8.755		
8,700.0	8,373.5	8,610.1	8,373.5	40.6	35.6	-7.56	-1,572.4	921.3	337.3	298.5	38.80	8.694		
8,800.0	8,473.5	8,710.1	8,473.5	40.7	35.7	-7.56	-1,572.4	921.3	337.3	298.2	39.07	8.634		
8,900.0	8,573.5	8,810.1	8,573.5	40.7	35.8	-7.56	-1,572.4	921.3	337.3	298.0	39.34	8.574		
9,000.0	8,673.5	8,910.1	8,673.5	40.8	35.8	-7.56	-1,572.4	921.3	337.3	297.7	39.62	8.514		
9,100.0	8,773.5	9,010.1	8,773.5	40.9	35.9	-7.56	-1,572.4	921.3	337.3	297.4	39.89	8.456		
9,200.0	8,873.5	9,110.1	8,873.5	40.9	36.0	-7.56	-1,572.4	921.3	337.3	297.1	40.17	8.397		
9,300.0	8,973.5	9,210.1	8,973.5	41.0	36.1	-7.56	-1,572.4	921.3	337.3	296.9	40.44	8.340		
9,400.0	9,073.5	9,310.1	9,073.5	41.1	36.1	-7.56	-1,572.4	921.3	337.3	296.6	40.72	8.283		
9,500.0	9,173.5	9,410.1	9,173.5	41.1	36.2	-7.56	-1,572.4	921.3	337.3	296.3	41.00	8.226		
9,600.0	9,273.5	9,510.1	9,273.5	41.2	36.3	-7.56	-1,572.4	921.3	337.3	296.0	41.28	8.170		
9,700.0	9,373.5	9,610.1	9,373.5	41.3	36.4	-7.56	-1,572.4	921.3	337.3	295.7	41.57	8.115		
9,800.0	9,473.5	9,710.1	9,473.5	41.3	36.5	-7.56	-1,572.4	921.3	337.3	295.4	41.85	8.060		
9,900.0	9,573.5	9,810.1	9,573.5	41.4	36.5	-7.56	-1,572.4	921.3	337.3	295.2	42.13	8.006		
10,000.0	9,673.5	9,910.1	9,673.5	41.5	36.6	-7.56	-1,572.4	921.3	337.3	294.9	42.42	7.952		
10,100.0	9,773.5	10,010.1	9,773.5	41.6	36.7	-7.56	-1,572.4	921.3	337.3	294.6	42.70	7.899		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,200.0	9,873.5	10,110.1	9,873.5	41.6	36.8	-7.56	-1,572.4	921.3	337.3	294.3	42.99	7.846		
10,300.0	9,973.5	10,210.1	9,973.5	41.7	36.9	-7.56	-1,572.4	921.3	337.3	294.0	43.28	7.794		
10,400.0	10,073.5	10,310.1	10,073.5	41.8	37.0	-7.56	-1,572.4	921.3	337.3	293.7	43.57	7.742		
10,500.0	10,173.5	10,323.6	10,087.0	41.9	37.0	-7.56	-1,572.4	921.3	348.2	304.5	43.73	7.963		
10,600.0	10,273.5	10,323.6	10,087.0	41.9	37.0	-7.56	-1,572.4	921.3	385.4	341.6	43.88	8.785		
10,700.0	10,373.5	10,323.6	10,087.0	42.0	37.0	-7.56	-1,572.4	921.3	442.6	398.6	44.02	10.054		
10,800.0	10,473.5	10,323.6	10,087.0	42.1	37.0	-7.56	-1,572.4	921.3	513.0	468.8	44.17	11.615		
10,900.0	10,573.5	10,323.6	10,087.0	42.2	37.0	-7.56	-1,572.4	921.3	592.0	547.7	44.31	13.360		
11,000.0	10,673.5	10,323.6	10,087.0	42.2	37.0	-7.56	-1,572.4	921.3	676.6	632.1	44.46	15.218		
11,100.0	10,773.5	10,323.6	10,087.0	42.3	37.0	-7.56	-1,572.4	921.3	764.9	720.3	44.61	17.147		
11,103.5	10,777.0	10,323.6	10,087.0	42.3	37.0	-7.56	-1,572.4	921.3	768.0	723.4	44.61	17.215		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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: O-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	5.77	67.0	6.8	67.4					
100.0	100.0	100.0	100.0	0.1	0.1	5.77	67.0	6.8	67.4	67.1	0.27	247.404		
200.0	200.0	200.0	200.0	0.3	0.3	5.77	67.0	6.8	67.4	66.7	0.62	108.413		
300.0	300.0	300.0	300.0	0.5	0.5	5.77	67.0	6.8	67.4	66.4	0.97	69.416 CC, ES		
400.0	400.0	400.0	399.9	0.7	0.7	-146.34	66.7	9.4	69.5	68.2	1.33	52.404		
500.0	499.6	499.6	499.3	0.9	0.9	-143.60	65.8	17.1	76.2	74.4	1.72	44.184		
600.0	598.8	598.8	597.8	1.1	1.1	-140.67	64.5	28.9	87.4	85.2	2.18	40.165		
700.0	697.1	697.6	695.8	1.5	1.4	-140.06	63.1	40.8	102.7	100.0	2.67	38.455		
800.0	794.3	795.7	793.2	1.9	1.6	-141.05	61.7	52.7	122.0	118.8	3.20	38.143 SF		
900.0	890.2	892.8	889.5	2.4	1.9	-142.90	60.3	64.5	145.4	141.7	3.75	38.829		
1,000.0	985.3	989.2	985.2	3.0	2.1	-145.08	58.9	76.2	171.1	166.8	4.29	39.871		
1,100.0	1,080.4	1,085.7	1,081.0	3.5	2.4	-146.70	57.6	87.9	197.0	192.1	4.84	40.737		
1,200.0	1,175.5	1,182.2	1,176.7	4.1	2.7	-147.94	56.2	99.6	223.0	217.6	5.38	41.469		
1,300.0	1,270.6	1,278.6	1,272.5	4.7	2.9	-148.92	54.9	111.3	249.0	243.1	5.92	42.093		
1,400.0	1,365.6	1,375.1	1,368.2	5.2	3.2	-149.71	53.5	123.0	275.1	268.7	6.45	42.631		
1,500.0	1,460.7	1,471.6	1,464.0	5.8	3.5	-150.37	52.1	134.7	301.3	294.3	6.99	43.099		
1,600.0	1,555.8	1,568.0	1,559.7	6.4	3.7	-150.92	50.8	146.4	327.5	320.0	7.53	43.510		
1,700.0	1,650.9	1,664.5	1,655.4	6.9	4.0	-151.40	49.4	158.1	353.7	345.6	8.06	43.874		
1,800.0	1,746.0	1,761.0	1,751.2	7.5	4.3	-151.80	48.1	169.8	379.9	371.3	8.60	44.198		
1,900.0	1,841.1	1,857.4	1,846.9	8.1	4.5	-152.15	46.7	181.5	406.2	397.0	9.13	44.487		
2,000.0	1,936.2	1,953.9	1,942.7	8.6	4.8	-152.47	45.3	193.2	432.4	422.8	9.66	44.749		
2,100.0	2,031.3	2,050.4	2,038.4	9.2	5.1	-152.74	44.0	204.9	458.7	448.5	10.20	44.985		
2,200.0	2,126.4	2,146.8	2,134.2	9.8	5.3	-152.99	42.6	216.7	485.0	474.2	10.73	45.200		
2,300.0	2,221.5	2,243.3	2,229.9	10.3	5.6	-153.21	41.3	228.4	511.3	500.0	11.26	45.396		
2,400.0	2,316.6	2,339.8	2,325.7	10.9	5.8	-153.40	39.9	240.1	537.5	525.8	11.79	45.576		
2,500.0	2,411.7	2,436.2	2,421.4	11.5	6.1	-153.58	38.5	251.8	563.8	551.5	12.33	45.741		
2,600.0	2,506.8	2,532.7	2,517.1	12.1	6.4	-153.75	37.2	263.5	590.1	577.3	12.86	45.894		
2,700.0	2,601.9	2,629.2	2,612.9	12.6	6.6	-153.90	35.8	275.2	616.4	603.1	13.39	46.035		
2,800.0	2,696.9	2,725.6	2,708.6	13.2	6.9	-154.04	34.5	286.9	642.8	628.8	13.92	46.166		
2,900.0	2,792.0	2,822.1	2,804.4	13.8	7.2	-154.16	33.1	298.6	669.1	654.6	14.45	46.289		
3,000.0	2,887.1	2,918.6	2,900.1	14.3	7.4	-154.28	31.7	310.3	695.4	680.4	14.99	46.402		
3,100.0	2,982.2	3,015.0	2,995.9	14.9	7.7	-154.39	30.4	322.0	721.7	706.2	15.52	46.509		
3,200.0	3,077.3	3,111.5	3,091.6	15.5	8.0	-154.49	29.0	333.7	748.0	732.0	16.05	46.609		
3,300.0	3,172.4	3,208.0	3,187.4	16.1	8.2	-154.58	27.7	345.4	774.3	757.8	16.58	46.703		
3,400.0	3,267.5	3,304.4	3,283.1	16.6	8.5	-154.67	26.3	357.1	800.7	783.6	17.11	46.791		
3,500.0	3,362.6	3,400.9	3,378.8	17.2	8.8	-154.75	24.9	368.8	827.0	809.3	17.64	46.874		
3,600.0	3,457.7	3,497.4	3,474.6	17.8	9.0	-154.83	23.6	380.5	853.3	835.1	18.17	46.953		
3,700.0	3,552.8	3,593.8	3,570.3	18.3	9.3	-154.91	22.2	392.2	879.6	860.9	18.71	47.027		
3,800.0	3,647.9	3,690.3	3,666.1	18.9	9.6	-154.97	20.9	403.9	906.0	886.7	19.24	47.098		
3,900.0	3,743.0	3,786.8	3,761.8	19.5	9.8	-155.04	19.5	415.6	932.3	912.5	19.77	47.164		
4,000.0	3,838.1	3,883.2	3,857.6	20.1	10.1	-155.10	18.1	427.3	958.6	938.3	20.30	47.228		
4,100.0	3,933.2	3,979.7	3,953.3	20.6	10.4	-155.16	16.8	439.0	985.0	964.1	20.83	47.288		
4,200.0	4,028.2	4,076.1	4,049.0	21.2	10.6	-155.21	15.4	450.7	1,011.3	989.9	21.36	47.345		
4,300.0	4,123.3	4,172.6	4,144.8	21.8	10.9	-155.26	14.1	462.4	1,037.6	1,015.7	21.89	47.400		
4,400.0	4,218.4	4,269.1	4,240.5	22.3	11.2	-155.31	12.7	474.1	1,064.0	1,041.5	22.42	47.452		
4,500.0	4,313.5	4,365.5	4,336.3	22.9	11.4	-155.36	11.3	485.8	1,090.3	1,067.4	22.95	47.502		
4,600.0	4,408.6	4,462.0	4,432.0	23.5	11.7	-155.41	10.0	497.5	1,116.6	1,093.2	23.48	47.550		
4,700.0	4,503.7	4,558.5	4,527.8	24.1	12.0	-155.45	8.6	509.2	1,143.0	1,119.0	24.01	47.595		
4,800.0	4,598.8	4,654.9	4,623.5	24.6	12.2	-155.49	7.3	520.9	1,169.3	1,144.8	24.55	47.639		
4,900.0	4,693.9	4,751.4	4,719.3	25.2	12.5	-155.53	5.9	532.6	1,195.7	1,170.6	25.08	47.681		
5,000.0	4,789.0	4,847.9	4,815.0	25.8	12.8	-155.57	4.5	544.3	1,222.0	1,196.4	25.61	47.721		
5,100.0	4,884.1	4,944.3	4,910.7	26.3	13.0	-155.60	3.2	556.0	1,248.3	1,222.2	26.14	47.760		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,200.0	4,979.2	5,040.8	5,006.5	26.9	13.3	-155.64	1.8	567.7	1,274.7	1,248.0	26.67	47.797	
5,300.0	5,074.3	5,137.3	5,102.2	27.5	13.6	-155.67	0.5	579.4	1,301.0	1,273.8	27.20	47.833	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
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	300.2	300.2	0.5	0.5	-50.42	6.7	-8.1	10.5	9.5	0.98	10.763		
323.6	323.6	323.8	323.7	0.5	0.5	149.37	5.4	-8.6	10.3	9.2	1.07	9.621 CC, ES		
400.0	400.0	400.0	399.6	0.7	0.7	125.13	-0.5	-11.2	12.5	11.1	1.37	9.080 SF		
500.0	499.6	499.1	497.9	0.9	1.0	107.97	-12.4	-16.2	21.2	19.4	1.83	11.635		
600.0	598.8	597.3	594.5	1.1	1.3	102.61	-28.8	-23.2	35.0	32.6	2.37	14.735		
700.0	697.1	694.3	688.8	1.5	1.8	101.24	-49.4	-32.0	52.9	49.9	3.05	17.352		
800.0	794.3	790.0	780.6	1.9	2.3	101.12	-74.1	-42.5	74.9	71.0	3.87	19.369		
900.0	890.2	886.7	872.6	2.4	2.8	102.41	-101.4	-54.1	99.6	94.8	4.81	20.715		
1,000.0	985.3	983.3	964.6	3.0	3.3	104.85	-128.7	-65.7	125.0	119.2	5.80	21.560		
1,100.0	1,080.4	1,079.9	1,056.5	3.5	3.9	106.46	-156.0	-77.4	150.5	143.7	6.79	22.151		
1,200.0	1,175.5	1,176.5	1,148.4	4.1	4.4	107.61	-183.3	-89.0	176.1	168.3	7.80	22.586		
1,300.0	1,270.6	1,273.1	1,240.4	4.7	5.0	108.47	-210.7	-100.6	201.8	193.0	8.80	22.918		
1,400.0	1,365.6	1,369.7	1,332.3	5.2	5.5	109.13	-238.0	-112.3	227.5	217.7	9.81	23.180		
1,500.0	1,460.7	1,466.3	1,424.3	5.8	6.1	109.66	-265.3	-123.9	253.2	242.4	10.82	23.392		
1,600.0	1,555.8	1,562.9	1,516.2	6.4	6.6	110.09	-292.6	-135.5	278.9	267.1	11.84	23.566		
1,700.0	1,650.9	1,659.6	1,608.1	6.9	7.1	110.45	-319.9	-147.2	304.7	291.8	12.85	23.712		
1,800.0	1,746.0	1,756.2	1,700.1	7.5	7.7	110.75	-347.3	-158.8	330.4	316.6	13.86	23.836		
1,900.0	1,841.1	1,852.8	1,792.0	8.1	8.2	111.01	-374.6	-170.4	356.2	341.3	14.88	23.943		
2,000.0	1,936.2	1,949.4	1,883.9	8.6	8.8	111.23	-401.9	-182.1	382.0	366.1	15.89	24.036		
2,100.0	2,031.3	2,046.0	1,975.9	9.2	9.3	111.43	-429.2	-193.7	407.7	390.8	16.91	24.117		
2,200.0	2,126.4	2,142.6	2,067.8	9.8	9.9	111.60	-456.5	-205.3	433.5	415.6	17.92	24.189		
2,300.0	2,221.5	2,239.2	2,159.8	10.3	10.4	111.75	-483.8	-217.0	459.3	440.4	18.94	24.253		
2,400.0	2,316.6	2,335.8	2,251.7	10.9	11.0	111.89	-511.2	-228.6	485.1	465.1	19.95	24.311		
2,500.0	2,411.7	2,432.5	2,343.6	11.5	11.5	112.01	-538.5	-240.2	510.9	489.9	20.97	24.362		
2,600.0	2,506.8	2,529.1	2,435.6	12.1	12.1	112.12	-565.8	-251.9	536.7	514.7	21.99	24.409		
2,700.0	2,601.9	2,625.7	2,527.5	12.6	12.6	112.22	-593.1	-263.5	562.5	539.4	23.00	24.452		
2,800.0	2,696.9	2,722.3	2,619.4	13.2	13.2	112.32	-620.4	-275.1	588.2	564.2	24.02	24.491		
2,900.0	2,792.0	2,818.9	2,711.4	13.8	13.7	112.40	-647.7	-286.8	614.0	589.0	25.04	24.527		
3,000.0	2,887.1	2,915.5	2,803.3	14.3	14.3	112.48	-675.1	-298.4	639.8	613.8	26.05	24.559		
3,100.0	2,982.2	3,012.1	2,895.2	14.9	14.8	112.55	-702.4	-310.0	665.6	638.6	27.07	24.590		
3,200.0	3,077.3	3,108.7	2,987.2	15.5	15.4	112.62	-729.7	-321.7	691.4	663.3	28.09	24.618		
3,300.0	3,172.4	3,205.4	3,079.1	16.1	15.9	112.68	-757.0	-333.3	717.2	688.1	29.10	24.644		
3,400.0	3,267.5	3,302.0	3,171.1	16.6	16.4	112.73	-784.3	-344.9	743.0	712.9	30.12	24.668		
3,500.0	3,362.6	3,398.6	3,263.0	17.2	17.0	112.79	-811.7	-356.6	768.8	737.7	31.14	24.691		
3,600.0	3,457.7	3,495.2	3,354.9	17.8	17.5	112.84	-839.0	-368.2	794.6	762.5	32.15	24.712		
3,700.0	3,552.8	3,591.8	3,446.9	18.3	18.1	112.88	-866.3	-379.8	820.4	787.2	33.17	24.732		
3,800.0	3,647.9	3,688.4	3,538.8	18.9	18.6	112.93	-893.6	-391.5	846.2	812.0	34.19	24.751		
3,900.0	3,743.0	3,785.0	3,630.7	19.5	19.2	112.97	-920.9	-403.1	872.0	836.8	35.21	24.769		
4,000.0	3,838.1	3,881.6	3,722.7	20.1	19.7	113.01	-948.2	-414.7	897.8	861.6	36.22	24.785		
4,100.0	3,933.2	3,978.3	3,814.6	20.6	20.3	113.04	-975.6	-426.4	923.6	886.4	37.24	24.801		
4,200.0	4,028.2	4,074.9	3,906.6	21.2	20.8	113.08	-1,002.9	-438.0	949.4	911.2	38.26	24.816		
4,300.0	4,123.3	4,171.5	3,998.5	21.8	21.4	113.11	-1,030.2	-449.6	975.2	935.9	39.28	24.830		
4,400.0	4,218.4	4,268.1	4,090.4	22.3	21.9	113.14	-1,057.5	-461.3	1,001.0	960.7	40.29	24.843		
4,500.0	4,313.5	4,364.7	4,182.4	22.9	22.5	113.17	-1,084.8	-472.9	1,026.8	985.5	41.31	24.856		
4,600.0	4,408.6	4,461.3	4,274.3	23.5	23.0	113.20	-1,112.2	-484.5	1,052.6	1,010.3	42.33	24.868		
4,700.0	4,503.7	4,557.9	4,366.2	24.1	23.6	113.23	-1,139.5	-496.2	1,078.4	1,035.1	43.35	24.880		
4,800.0	4,598.8	4,654.5	4,458.2	24.6	24.1	113.25	-1,166.8	-507.8	1,104.2	1,059.9	44.36	24.891		
4,900.0	4,693.9	4,751.2	4,550.1	25.2	24.7	113.28	-1,194.1	-519.4	1,130.0	1,084.7	45.38	24.901		
5,000.0	4,789.0	4,847.8	4,642.0	25.8	25.2	113.30	-1,221.4	-531.1	1,155.8	1,109.4	46.40	24.911		

CC - Min centre to center distance or convergent 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 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	4,884.1	4,944.4	4,734.0	26.3	25.8	113.32	-1,248.7	-542.7	1,181.6	1,134.2	47.42	24.921		
5,200.0	4,979.2	5,041.0	4,825.9	26.9	26.3	113.35	-1,276.1	-554.3	1,207.5	1,159.0	48.43	24.930		
5,300.0	5,074.3	5,137.6	4,917.9	27.5	26.9	113.37	-1,303.4	-566.0	1,233.3	1,183.8	49.45	24.939		
5,400.0	5,169.4	5,234.2	5,009.8	28.1	27.4	113.39	-1,330.7	-577.6	1,259.1	1,208.6	50.47	24.947		
5,500.0	5,264.5	5,330.8	5,101.7	28.6	28.0	113.40	-1,358.0	-589.2	1,284.9	1,233.4	51.49	24.955		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	5.54	84.5	8.2	84.9					
100.0	100.0	100.0	100.0	0.1	0.1	5.54	84.5	8.2	84.9	84.6	0.27	311.799		
200.0	200.0	200.0	200.0	0.3	0.3	5.54	84.5	8.2	84.9	84.3	0.62	136.631 CC, ES		
300.0	300.0	296.9	296.8	0.5	0.5	6.68	86.1	10.1	86.7	85.7	0.97	89.789		
400.0	400.0	393.1	392.8	0.7	0.7	-144.10	90.7	15.7	94.5	93.1	1.33	70.924		
500.0	499.6	487.9	486.8	0.9	1.0	-141.95	98.3	24.9	110.3	108.5	1.72	63.983		
600.0	598.8	580.5	577.9	1.1	1.3	-140.26	108.6	37.3	133.9	131.7	2.16	62.066 SF		
700.0	697.1	673.1	668.4	1.5	1.7	-139.10	121.3	52.6	164.6	161.9	2.64	62.405		
800.0	794.3	766.8	759.9	1.9	2.0	-138.95	134.4	68.5	199.4	196.2	3.17	62.931		
900.0	890.2	859.0	849.8	2.4	2.4	-139.42	147.3	84.1	237.9	234.2	3.74	63.608		
1,000.0	985.3	950.2	938.8	3.0	2.8	-140.72	160.1	99.5	278.5	274.1	4.34	64.099		
1,100.0	1,080.4	1,041.5	1,027.8	3.5	3.2	-141.70	172.9	115.0	319.1	314.1	4.95	64.420		
1,200.0	1,175.5	1,132.8	1,116.9	4.1	3.6	-142.45	185.7	130.4	359.7	354.2	5.56	64.648		
1,300.0	1,270.6	1,224.0	1,205.9	4.7	3.9	-143.06	198.5	145.9	400.5	394.3	6.18	64.819		
1,400.0	1,365.6	1,315.3	1,294.9	5.2	4.3	-143.55	211.3	161.3	441.2	434.4	6.79	64.952		
1,500.0	1,460.7	1,406.6	1,384.0	5.8	4.7	-143.95	224.1	176.8	482.0	474.6	7.41	65.059		
1,600.0	1,555.8	1,497.8	1,473.0	6.4	5.1	-144.30	236.9	192.2	522.7	514.7	8.02	65.146		
1,700.0	1,650.9	1,589.1	1,562.0	6.9	5.5	-144.59	249.7	207.7	563.5	554.9	8.64	65.219		
1,800.0	1,746.0	1,680.4	1,651.1	7.5	5.9	-144.85	262.5	223.1	604.4	595.1	9.26	65.282		
1,900.0	1,841.1	1,771.6	1,740.1	8.1	6.3	-145.07	275.3	238.6	645.2	635.3	9.87	65.336		
2,000.0	1,936.2	1,862.9	1,829.1	8.6	6.7	-145.27	288.1	254.0	686.0	675.5	10.49	65.383		
2,100.0	2,031.3	1,954.2	1,918.2	9.2	7.0	-145.44	300.9	269.5	726.8	715.7	11.11	65.424		
2,200.0	2,126.4	2,045.4	2,007.2	9.8	7.4	-145.60	313.7	284.9	767.6	755.9	11.73	65.461		
2,300.0	2,221.5	2,136.7	2,096.2	10.3	7.8	-145.74	326.4	300.4	808.5	796.1	12.34	65.493		
2,400.0	2,316.6	2,228.0	2,185.3	10.9	8.2	-145.87	339.2	315.8	849.3	836.4	12.96	65.523		
2,500.0	2,411.7	2,319.2	2,274.3	11.5	8.6	-145.98	352.0	331.3	890.2	876.6	13.58	65.550		
2,600.0	2,506.8	2,410.5	2,363.3	12.1	9.0	-146.08	364.8	346.7	931.0	916.8	14.20	65.574		
2,700.0	2,601.9	2,501.7	2,452.3	12.6	9.4	-146.18	377.6	362.2	971.9	957.1	14.82	65.596		
2,800.0	2,696.9	2,593.0	2,541.4	13.2	9.8	-146.27	390.4	377.6	1,012.7	997.3	15.43	65.616		
2,900.0	2,792.0	2,684.3	2,630.4	13.8	10.2	-146.35	403.2	393.1	1,053.6	1,037.5	16.05	65.635		
3,000.0	2,887.1	2,775.5	2,719.4	14.3	10.5	-146.43	416.0	408.5	1,094.4	1,077.8	16.67	65.652		
3,100.0	2,982.2	2,866.8	2,808.5	14.9	10.9	-146.50	428.8	424.0	1,135.3	1,118.0	17.29	65.668		
3,200.0	3,077.3	2,958.1	2,897.5	15.5	11.3	-146.56	441.6	439.4	1,176.1	1,158.2	17.91	65.683		
3,300.0	3,172.4	3,049.3	2,986.5	16.1	11.7	-146.62	454.4	454.9	1,217.0	1,198.5	18.52	65.697		
3,400.0	3,267.5	3,140.6	3,075.6	16.6	12.1	-146.68	467.2	470.3	1,257.9	1,238.7	19.14	65.710		
3,500.0	3,362.6	3,231.9	3,164.6	17.2	12.5	-146.73	480.0	485.8	1,298.7	1,279.0	19.76	65.722		

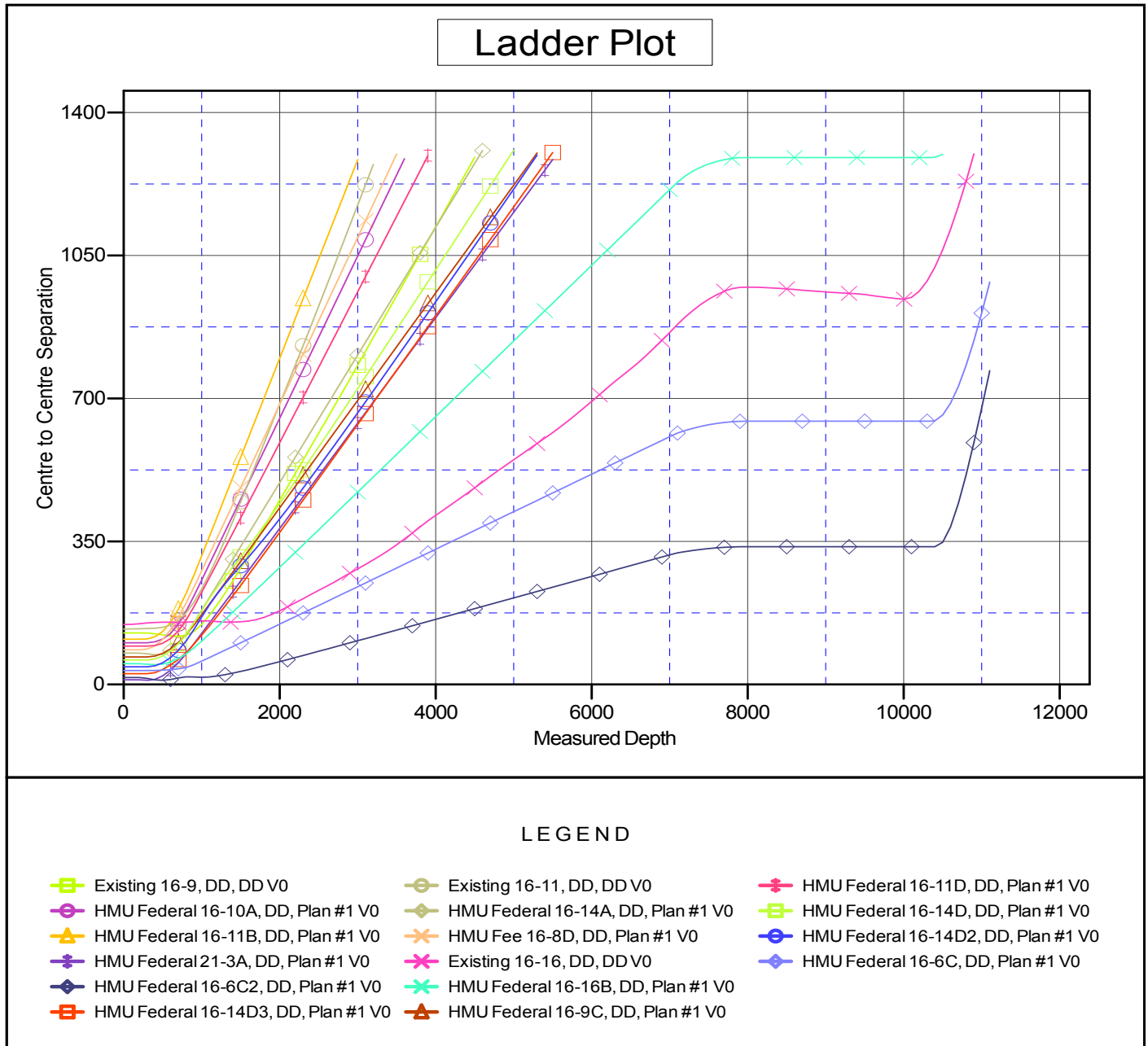
Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Federal 21-1B
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 21-1B	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 21-1B
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°



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