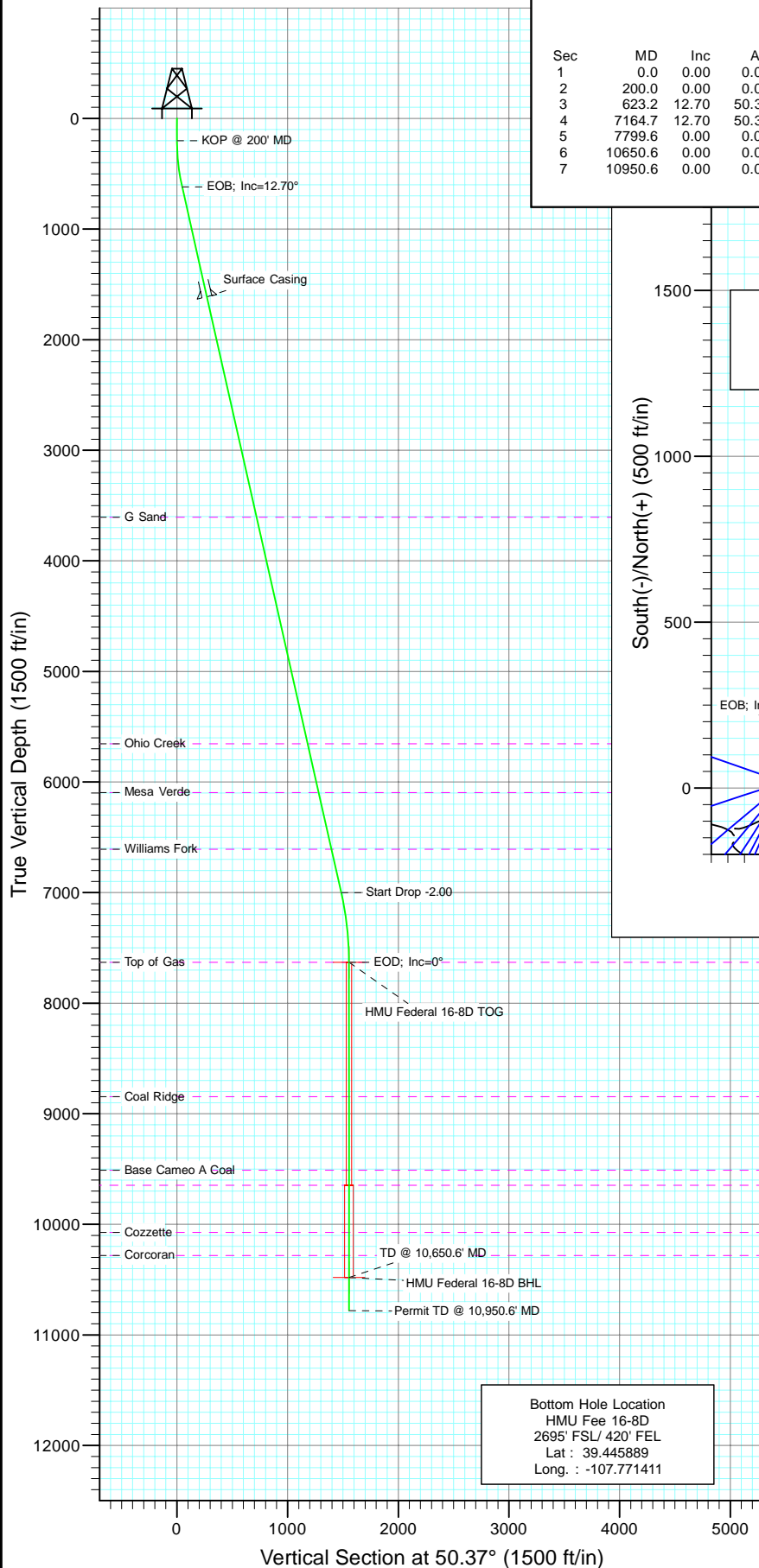
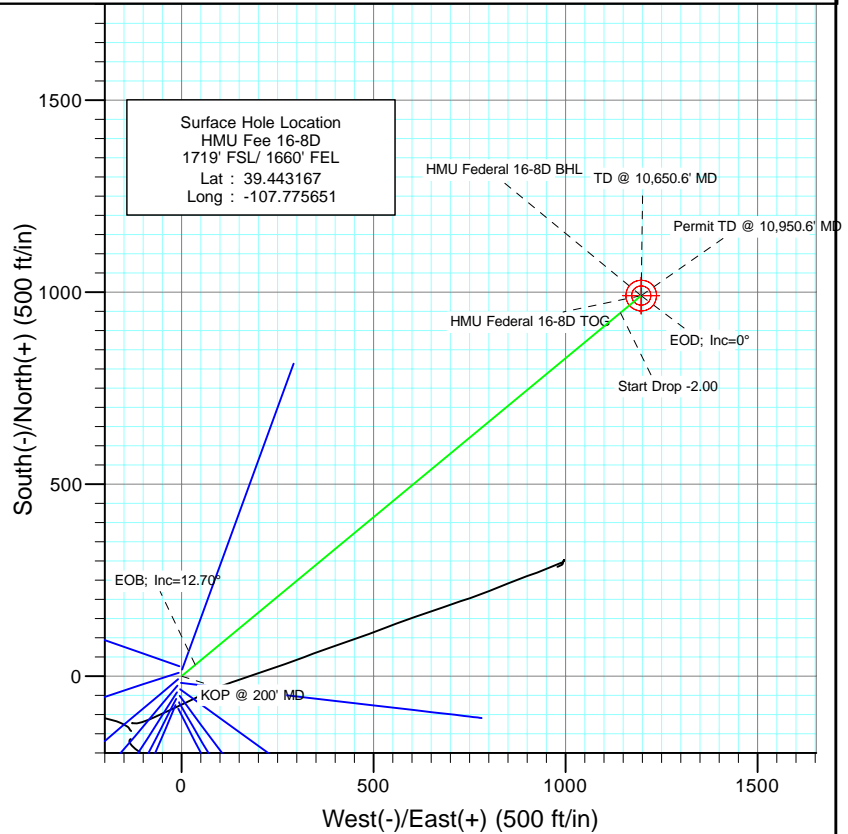




Project: Mamm Creek
Site: (J16W)
Well: HMU Fee 16-8D
Wellbore: DD
Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	623.2	12.70	50.37	619.8	29.8	36.0	3.00	50.37	46.7	
4	7164.7	12.70	50.37	7001.3	946.8	1143.4	0.00	0.00	1484.5	
5	7799.6	0.00	0.00	7631.0	991.5	1197.4	2.00	180.00	1554.6	HMU Federal 16-8D TOG
6	10650.6	0.00	0.00	10482.0	991.5	1197.4	0.00	0.00	1554.6	HMU Federal 16-8D BHL
7	10950.6	0.00	0.00	10782.0	991.5	1197.4	0.00	0.00	1554.6	



Azimuths to True North
Magnetic North: 10.30°

Magnetic Field
Strength: 52331.7snT
Dip Angle: 65.77°
Date: 10/25/2010
Model: IGRF200510

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3605.0	3683.3	G Sand
5655.0	5784.7	Ohio Creek
6096.0	6236.7	Mesa Verde
6608.0	6761.6	Williams Fork
7631.0	7799.6	Top of Gas
8847.0	9015.6	Coal Ridge
9511.0	9679.6	Base Cameo A Coal
9647.0	9815.6	Rollins
10073.0	10241.6	Cozzette
10282.0	10450.6	Corcoran

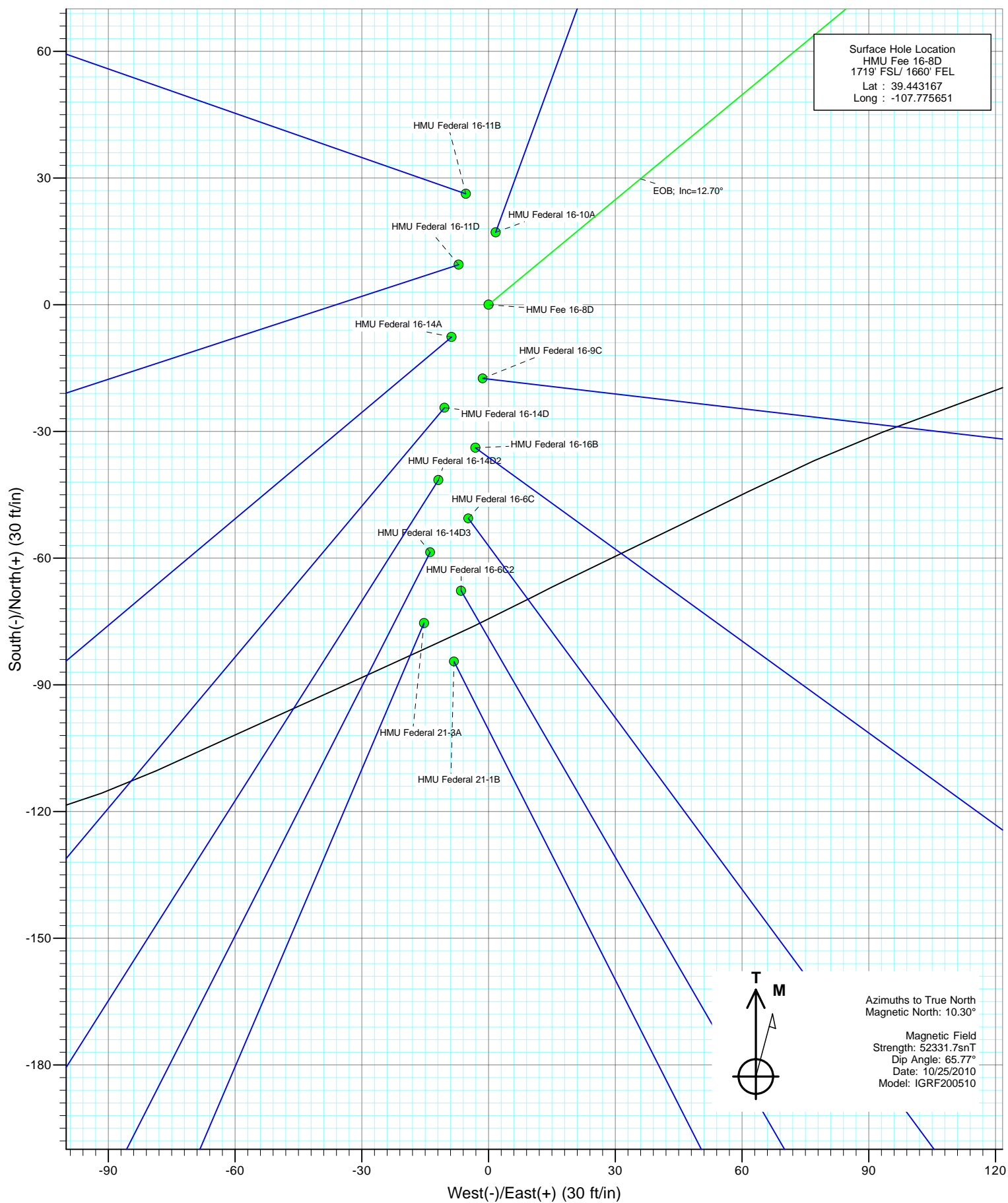
DESIGN DETAILS: Plan #1

Job #10xxx: KR
WELL @ 7667.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
HMU Federal 16-8D BHL	50.37	Slot	0.0	0.0	0.0

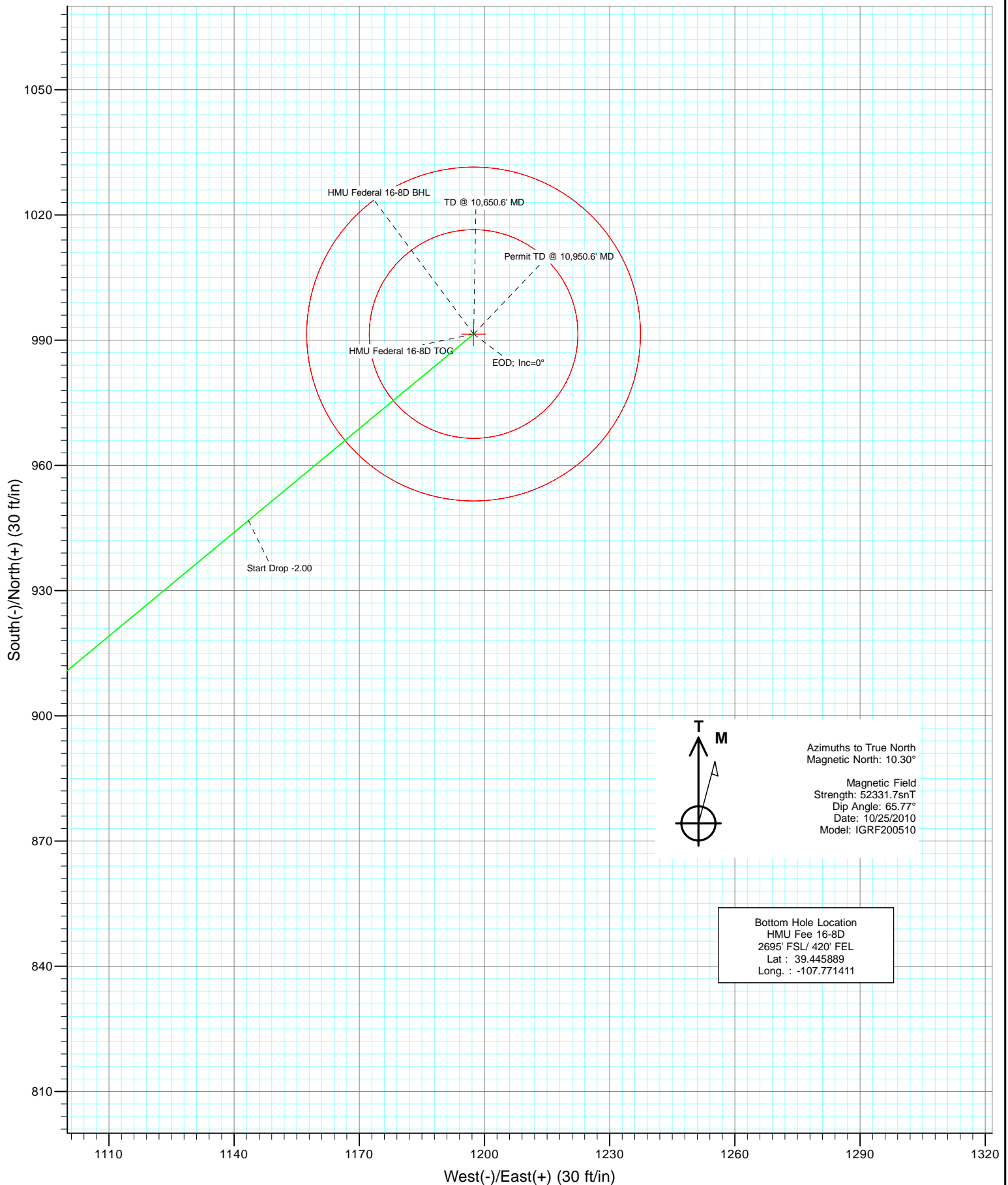


Project: Mamm Creek
Site: (J16W)
Well: HMU Fee 16-8D
Wellbore: DD
Design: Plan #1





Project: Mamm Creek
Site: (J16W)
Well: HMU Fee 16-8D
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	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 Fee 16-8D					
Well Position	+N/-S	0.0 ft	Northing:	1,594,355.16 ft	Latitude:	39.443167
	+E/-W	0.0 ft	Easting:	2,357,400.09 ft	Longitude:	-107.775651
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	10/25/2010	10.30	65.77	52,332

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	50.37

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
623.2	12.70	50.37	619.8	29.8	36.0	3.00	3.00	0.00	50.37	
7,164.7	12.70	50.37	7,001.3	946.8	1,143.4	0.00	0.00	0.00	0.00	
7,799.6	0.00	0.00	7,631.0	991.5	1,197.4	2.00	-2.00	0.00	180.00	HMU Federal 16-8D 1
10,650.6	0.00	0.00	10,482.0	991.5	1,197.4	0.00	0.00	0.00	0.00	HMU Federal 16-8D E
10,950.6	0.00	0.00	10,782.0	991.5	1,197.4	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 Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	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	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200' MD
210.0	0.30	50.37	210.0	0.0	0.0	0.0	3.00	3.00	
240.0	1.20	50.37	240.0	0.3	0.3	0.4	3.00	3.00	
270.0	2.10	50.37	270.0	0.8	1.0	1.3	3.00	3.00	
300.0	3.00	50.37	300.0	1.7	2.0	2.6	3.00	3.00	
330.0	3.90	50.37	329.9	2.8	3.4	4.4	3.00	3.00	
360.0	4.80	50.37	359.8	4.3	5.2	6.7	3.00	3.00	
390.0	5.70	50.37	389.7	6.0	7.3	9.4	3.00	3.00	
420.0	6.60	50.37	419.5	8.1	9.7	12.7	3.00	3.00	
450.0	7.50	50.37	449.3	10.4	12.6	16.3	3.00	3.00	
480.0	8.40	50.37	479.0	13.1	15.8	20.5	3.00	3.00	
510.0	9.30	50.37	508.6	16.0	19.3	25.1	3.00	3.00	
540.0	10.20	50.37	538.2	19.3	23.2	30.2	3.00	3.00	
570.0	11.10	50.37	567.7	22.8	27.5	35.7	3.00	3.00	
600.0	12.00	50.37	597.1	26.6	32.1	41.7	3.00	3.00	
623.2	12.70	50.37	619.8	29.8	36.0	46.7	3.00	3.00	EOB; Inc=12.70°
630.0	12.70	50.37	626.4	30.7	37.1	48.2	0.00	0.00	
660.0	12.70	50.37	655.6	34.9	42.2	54.8	0.00	0.00	
690.0	12.70	50.37	684.9	39.1	47.3	61.4	0.00	0.00	
720.0	12.70	50.37	714.2	43.4	52.4	68.0	0.00	0.00	
750.0	12.70	50.37	743.4	47.6	57.4	74.6	0.00	0.00	
780.0	12.70	50.37	772.7	51.8	62.5	81.2	0.00	0.00	
810.0	12.70	50.37	802.0	56.0	67.6	87.8	0.00	0.00	
840.0	12.70	50.37	831.2	60.2	72.7	94.3	0.00	0.00	
870.0	12.70	50.37	860.5	64.4	77.7	100.9	0.00	0.00	
900.0	12.70	50.37	889.8	68.6	82.8	107.5	0.00	0.00	
930.0	12.70	50.37	919.0	72.8	87.9	114.1	0.00	0.00	
960.0	12.70	50.37	948.3	77.0	93.0	120.7	0.00	0.00	
990.0	12.70	50.37	977.6	81.2	98.1	127.3	0.00	0.00	
1,020.0	12.70	50.37	1,006.8	85.4	103.1	133.9	0.00	0.00	
1,050.0	12.70	50.37	1,036.1	89.6	108.2	140.5	0.00	0.00	
1,080.0	12.70	50.37	1,065.4	93.8	113.3	147.1	0.00	0.00	
1,110.0	12.70	50.37	1,094.6	98.0	118.4	153.7	0.00	0.00	
1,140.0	12.70	50.37	1,123.9	102.2	123.5	160.3	0.00	0.00	
1,170.0	12.70	50.37	1,153.2	106.4	128.5	166.9	0.00	0.00	
1,200.0	12.70	50.37	1,182.4	110.6	133.6	173.5	0.00	0.00	
1,230.0	12.70	50.37	1,211.7	114.8	138.7	180.1	0.00	0.00	
1,260.0	12.70	50.37	1,241.0	119.1	143.8	186.7	0.00	0.00	
1,290.0	12.70	50.37	1,270.2	123.3	148.9	193.3	0.00	0.00	
1,320.0	12.70	50.37	1,299.5	127.5	153.9	199.9	0.00	0.00	
1,350.0	12.70	50.37	1,328.8	131.7	159.0	206.4	0.00	0.00	
1,380.0	12.70	50.37	1,358.0	135.9	164.1	213.0	0.00	0.00	
1,410.0	12.70	50.37	1,387.3	140.1	169.2	219.6	0.00	0.00	
1,440.0	12.70	50.37	1,416.6	144.3	174.2	226.2	0.00	0.00	
1,470.0	12.70	50.37	1,445.8	148.5	179.3	232.8	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	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
1,500.0	12.70	50.37	1,475.1	152.7	184.4	239.4	0.00	0.00	
1,530.0	12.70	50.37	1,504.4	156.9	189.5	246.0	0.00	0.00	
1,560.0	12.70	50.37	1,533.6	161.1	194.6	252.6	0.00	0.00	
1,590.0	12.70	50.37	1,562.9	165.3	199.6	259.2	0.00	0.00	
1,620.0	12.70	50.37	1,592.2	169.5	204.7	265.8	0.00	0.00	
1,642.6	12.70	50.37	1,614.2	172.7	208.5	270.8	0.00	0.00	Surface Casing
1,650.0	12.70	50.37	1,621.4	173.7	209.8	272.4	0.00	0.00	
1,680.0	12.70	50.37	1,650.7	177.9	214.9	279.0	0.00	0.00	
1,710.0	12.70	50.37	1,680.0	182.1	220.0	285.6	0.00	0.00	
1,740.0	12.70	50.37	1,709.2	186.3	225.0	292.2	0.00	0.00	
1,770.0	12.70	50.37	1,738.5	190.5	230.1	298.8	0.00	0.00	
1,800.0	12.70	50.37	1,767.8	194.8	235.2	305.4	0.00	0.00	
1,830.0	12.70	50.37	1,797.0	199.0	240.3	312.0	0.00	0.00	
1,860.0	12.70	50.37	1,826.3	203.2	245.4	318.5	0.00	0.00	
1,890.0	12.70	50.37	1,855.6	207.4	250.4	325.1	0.00	0.00	
1,920.0	12.70	50.37	1,884.8	211.6	255.5	331.7	0.00	0.00	
1,950.0	12.70	50.37	1,914.1	215.8	260.6	338.3	0.00	0.00	
1,980.0	12.70	50.37	1,943.4	220.0	265.7	344.9	0.00	0.00	
2,010.0	12.70	50.37	1,972.6	224.2	270.7	351.5	0.00	0.00	
2,040.0	12.70	50.37	2,001.9	228.4	275.8	358.1	0.00	0.00	
2,070.0	12.70	50.37	2,031.2	232.6	280.9	364.7	0.00	0.00	
2,100.0	12.70	50.37	2,060.4	236.8	286.0	371.3	0.00	0.00	
2,130.0	12.70	50.37	2,089.7	241.0	291.1	377.9	0.00	0.00	
2,160.0	12.70	50.37	2,119.0	245.2	296.1	384.5	0.00	0.00	
2,190.0	12.70	50.37	2,148.2	249.4	301.2	391.1	0.00	0.00	
2,220.0	12.70	50.37	2,177.5	253.6	306.3	397.7	0.00	0.00	
2,250.0	12.70	50.37	2,206.8	257.8	311.4	404.3	0.00	0.00	
2,280.0	12.70	50.37	2,236.0	262.0	316.5	410.9	0.00	0.00	
2,310.0	12.70	50.37	2,265.3	266.2	321.5	417.5	0.00	0.00	
2,340.0	12.70	50.37	2,294.6	270.5	326.6	424.1	0.00	0.00	
2,370.0	12.70	50.37	2,323.8	274.7	331.7	430.6	0.00	0.00	
2,400.0	12.70	50.37	2,353.1	278.9	336.8	437.2	0.00	0.00	
2,430.0	12.70	50.37	2,382.4	283.1	341.9	443.8	0.00	0.00	
2,460.0	12.70	50.37	2,411.6	287.3	346.9	450.4	0.00	0.00	
2,490.0	12.70	50.37	2,440.9	291.5	352.0	457.0	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 16-8D TOC	0.00	0.00	7,631.0	991.5	1,197.4	1,595,316.35	2,358,621.94	39.445889	-107.771411
- plan misses target center by 5304.9ft at 2490.0ft MD (2440.9 TVD, 291.5 N, 352.0 E)									
- Circle (radius 25.0)									
HMU Federal 16-8D BHI	0.00	0.00	10,482.0	991.5	1,197.4	1,595,316.35	2,358,621.94	39.445889	-107.771411
- plan misses target center by 8115.7ft at 2490.0ft MD (2440.9 TVD, 291.5 N, 352.0 E)									
- Circle (radius 40.0)									

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	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	12.70	50.37	2,450.6	292.9	353.7	459.2	0.00	0.00	
2,600.0	12.70	50.37	2,548.2	306.9	370.6	481.2	0.00	0.00	
2,700.0	12.70	50.37	2,645.8	320.9	387.6	503.2	0.00	0.00	
2,800.0	12.70	50.37	2,743.3	334.9	404.5	525.2	0.00	0.00	
2,900.0	12.70	50.37	2,840.9	349.0	421.4	547.1	0.00	0.00	
3,000.0	12.70	50.37	2,938.4	363.0	438.3	569.1	0.00	0.00	
3,100.0	12.70	50.37	3,036.0	377.0	455.3	591.1	0.00	0.00	
3,200.0	12.70	50.37	3,133.5	391.0	472.2	613.1	0.00	0.00	
3,300.0	12.70	50.37	3,231.1	405.0	489.1	635.1	0.00	0.00	
3,400.0	12.70	50.37	3,328.6	419.0	506.1	657.0	0.00	0.00	
3,500.0	12.70	50.37	3,426.2	433.1	523.0	679.0	0.00	0.00	
3,600.0	12.70	50.37	3,523.7	447.1	539.9	701.0	0.00	0.00	
3,683.3	12.70	50.37	3,605.0	458.8	554.0	719.3	0.00	0.00	G Sand
3,700.0	12.70	50.37	3,621.3	461.1	556.9	723.0	0.00	0.00	
3,800.0	12.70	50.37	3,718.9	475.1	573.8	745.0	0.00	0.00	
3,900.0	12.70	50.37	3,816.4	489.1	590.7	766.9	0.00	0.00	
4,000.0	12.70	50.37	3,914.0	503.2	607.6	788.9	0.00	0.00	
4,100.0	12.70	50.37	4,011.5	517.2	624.6	810.9	0.00	0.00	
4,200.0	12.70	50.37	4,109.1	531.2	641.5	832.9	0.00	0.00	
4,300.0	12.70	50.37	4,206.6	545.2	658.4	854.9	0.00	0.00	
4,400.0	12.70	50.37	4,304.2	559.2	675.4	876.8	0.00	0.00	
4,500.0	12.70	50.37	4,401.7	573.2	692.3	898.8	0.00	0.00	
4,600.0	12.70	50.37	4,499.3	587.3	709.2	920.8	0.00	0.00	
4,700.0	12.70	50.37	4,596.8	601.3	726.2	942.8	0.00	0.00	
4,800.0	12.70	50.37	4,694.4	615.3	743.1	964.8	0.00	0.00	
4,900.0	12.70	50.37	4,792.0	629.3	760.0	986.7	0.00	0.00	
5,000.0	12.70	50.37	4,889.5	643.3	776.9	1,008.7	0.00	0.00	
5,100.0	12.70	50.37	4,987.1	657.4	793.9	1,030.7	0.00	0.00	
5,200.0	12.70	50.37	5,084.6	671.4	810.8	1,052.7	0.00	0.00	
5,300.0	12.70	50.37	5,182.2	685.4	827.7	1,074.7	0.00	0.00	
5,400.0	12.70	50.37	5,279.7	699.4	844.7	1,096.6	0.00	0.00	
5,500.0	12.70	50.37	5,377.3	713.4	861.6	1,118.6	0.00	0.00	
5,600.0	12.70	50.37	5,474.8	727.5	878.5	1,140.6	0.00	0.00	
5,700.0	12.70	50.37	5,572.4	741.5	895.4	1,162.6	0.00	0.00	
5,784.7	12.70	50.37	5,655.0	753.3	909.8	1,181.2	0.00	0.00	Ohio Creek
5,800.0	12.70	50.37	5,669.9	755.5	912.4	1,184.6	0.00	0.00	
5,900.0	12.70	50.37	5,767.5	769.5	929.3	1,206.5	0.00	0.00	
6,000.0	12.70	50.37	5,865.1	783.5	946.2	1,228.5	0.00	0.00	
6,100.0	12.70	50.37	5,962.6	797.5	963.2	1,250.5	0.00	0.00	
6,200.0	12.70	50.37	6,060.2	811.6	980.1	1,272.5	0.00	0.00	
6,236.7	12.70	50.37	6,096.0	816.7	986.3	1,280.6	0.00	0.00	Mesa Verde
6,300.0	12.70	50.37	6,157.7	825.6	997.0	1,294.5	0.00	0.00	
6,400.0	12.70	50.37	6,255.3	839.6	1,014.0	1,316.4	0.00	0.00	
6,500.0	12.70	50.37	6,352.8	853.6	1,030.9	1,338.4	0.00	0.00	
6,600.0	12.70	50.37	6,450.4	867.6	1,047.8	1,360.4	0.00	0.00	
6,700.0	12.70	50.37	6,547.9	881.7	1,064.7	1,382.4	0.00	0.00	
6,761.6	12.70	50.37	6,608.0	890.3	1,075.2	1,395.9	0.00	0.00	Williams Fork
6,800.0	12.70	50.37	6,645.5	895.7	1,081.7	1,404.4	0.00	0.00	
6,900.0	12.70	50.37	6,743.0	909.7	1,098.6	1,426.3	0.00	0.00	
7,000.0	12.70	50.37	6,840.6	923.7	1,115.5	1,448.3	0.00	0.00	
7,100.0	12.70	50.37	6,938.2	937.7	1,132.5	1,470.3	0.00	0.00	
7,164.7	12.70	50.37	7,001.3	946.8	1,143.4	1,484.5	0.00	0.00	Start Drop -2.00

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	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	11.99	50.37	7,035.8	951.6	1,149.2	1,492.1	2.00	-2.00	
7,300.0	9.99	50.37	7,133.9	963.8	1,163.9	1,511.1	2.00	-2.00	
7,400.0	7.99	50.37	7,232.7	973.7	1,176.0	1,526.8	2.00	-2.00	
7,500.0	5.99	50.37	7,331.9	981.5	1,185.3	1,538.9	2.00	-2.00	
7,600.0	3.99	50.37	7,431.5	987.1	1,192.0	1,547.6	2.00	-2.00	
7,700.0	1.99	50.37	7,531.4	990.4	1,196.1	1,552.9	2.00	-2.00	
7,799.6	0.00	0.00	7,631.0	991.5	1,197.4	1,554.6	2.00	-2.00	EOD; Inc=0° - Top of Gas - HMU Federal 16-8E
7,800.0	0.00	0.00	7,631.4	991.5	1,197.4	1,554.6	0.00	0.00	
7,900.0	0.00	0.00	7,731.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,000.0	0.00	0.00	7,831.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,100.0	0.00	0.00	7,931.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,200.0	0.00	0.00	8,031.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,300.0	0.00	0.00	8,131.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,400.0	0.00	0.00	8,231.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,500.0	0.00	0.00	8,331.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,600.0	0.00	0.00	8,431.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,700.0	0.00	0.00	8,531.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,800.0	0.00	0.00	8,631.4	991.5	1,197.4	1,554.6	0.00	0.00	
8,900.0	0.00	0.00	8,731.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,000.0	0.00	0.00	8,831.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,015.6	0.00	0.00	8,847.0	991.5	1,197.4	1,554.6	0.00	0.00	Coal Ridge
9,100.0	0.00	0.00	8,931.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,200.0	0.00	0.00	9,031.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,300.0	0.00	0.00	9,131.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,400.0	0.00	0.00	9,231.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,500.0	0.00	0.00	9,331.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,600.0	0.00	0.00	9,431.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,679.6	0.00	0.00	9,511.0	991.5	1,197.4	1,554.6	0.00	0.00	Base Cameo A Coal
9,700.0	0.00	0.00	9,531.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,800.0	0.00	0.00	9,631.4	991.5	1,197.4	1,554.6	0.00	0.00	
9,815.6	0.00	0.00	9,647.0	991.5	1,197.4	1,554.6	0.00	0.00	Rollins
9,900.0	0.00	0.00	9,731.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,000.0	0.00	0.00	9,831.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,100.0	0.00	0.00	9,931.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,200.0	0.00	0.00	10,031.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,241.6	0.00	0.00	10,073.0	991.5	1,197.4	1,554.6	0.00	0.00	Cozzette
10,300.0	0.00	0.00	10,131.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,400.0	0.00	0.00	10,231.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,450.6	0.00	0.00	10,282.0	991.5	1,197.4	1,554.6	0.00	0.00	Corcoran
10,500.0	0.00	0.00	10,331.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,600.0	0.00	0.00	10,431.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,650.6	0.00	0.00	10,482.0	991.5	1,197.4	1,554.6	0.00	0.00	TD @ 10,650.6' MD - HMU Federal 16-8D BHL
10,700.0	0.00	0.00	10,531.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,800.0	0.00	0.00	10,631.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,900.0	0.00	0.00	10,731.4	991.5	1,197.4	1,554.6	0.00	0.00	
10,950.6	0.00	0.00	10,782.0	991.5	1,197.4	1,554.6	0.00	0.00	Permit TD @ 10,950.6' MD

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site:	(J16W)	North Reference:	True
Well:	HMU Fee 16-8D	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
HMU Federal 16-8D TOI	0.00	0.00	7,631.0	991.5	1,197.4	1,595,316.35	2,358,621.94	39.445889	-107.771411
- plan hits target center									
- Circle (radius 25.0)									
HMU Federal 16-8D BHI	0.00	0.00	10,482.0	991.5	1,197.4	1,595,316.35	2,358,621.94	39.445889	-107.771411
- plan hits target center									
- Circle (radius 40.0)									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
1,642.6	1,614.2	Surface Casing		5.500	6.000

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
3,683.3	3,605.0	G Sand				
5,784.7	5,655.0	Ohio Creek				
6,236.7	6,096.0	Mesa Verde				
6,761.6	6,608.0	Williams Fork				
7,799.6	7,631.0	Top of Gas				
9,015.6	8,847.0	Coal Ridge				
9,679.6	9,511.0	Base Cameo A Coal				
9,815.6	9,647.0	Rollins				
10,241.6	10,073.0	Cozzette				
10,450.6	10,282.0	Corcoran				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
200.0	200.0	0.0	0.0	KOP @ 200' MD	
623.2	619.8	29.8	36.0	EOB; Inc=12.70°	
7,164.7	7,001.3	946.8	1,143.4	Start Drop -2.00	
7,799.6	7,631.0	991.5	1,197.4	EOD; Inc=0°	
10,650.6	10,482.0	991.5	1,197.4	TD @ 10,650.6' MD	
10,950.6	10,782.0	991.5	1,197.4	Permit TD @ 10,950.6' MD	

EnCana Oil & Gas (USA) Inc

Mamm Creek

(J16W)

HMU Fee 16-8D

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
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 1,312.5ft	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	10,950.6	Plan #1 (DD)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	Offset	Distance		Separation	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
(J16W)						
Existing 16-11 - DD - DD	0.0	0.0	193.6			
Existing 16-11 - DD - DD	200.0	199.7	193.7	193.1	310.156	ES
Existing 16-11 - DD - DD	3,500.0	3,231.4	1,295.0	1,279.5	83.430	SF
Existing 16-16 - DD - DD	0.0	0.0	209.9			
Existing 16-16 - DD - DD	4,600.0	4,444.4	1,285.3	1,255.7	43.405	SF
Existing 16-9 - DD - DD	206.7	207.3	177.1	176.5	274.004	CC, ES
Existing 16-9 - DD - DD	6,500.0	6,511.8	591.4	551.4	14.768	SF
HMU Federal 16-10A - DD - Plan #1	416.2	415.7	12.1	10.7	8.370	CC, ES, SF
HMU Federal 16-11B - DD - Plan #1	200.0	200.0	26.8	26.2	43.096	CC
HMU Federal 16-11B - DD - Plan #1	218.1	218.0	26.8	26.1	39.000	ES
HMU Federal 16-11B - DD - Plan #1	400.0	397.0	32.6	31.2	23.636	SF
HMU Federal 16-11D - DD - Plan #1	248.1	248.1	11.8	11.0	14.892	CC
HMU Federal 16-11D - DD - Plan #1	300.0	300.0	12.0	11.0	12.233	ES, SF
HMU Federal 16-14A - DD - Plan #1	200.0	200.0	11.6	11.0	18.706	CC, ES
HMU Federal 16-14A - DD - Plan #1	300.0	299.1	16.8	15.9	17.389	SF
HMU Federal 16-14D - DD - Plan #1	200.0	200.0	26.5	25.9	42.719	CC, ES
HMU Federal 16-14D - DD - Plan #1	400.0	399.6	36.2	34.8	27.359	SF
HMU Federal 16-14D2 - DD - Plan #1	200.0	200.0	43.2	42.6	69.494	CC, ES
HMU Federal 16-14D2 - DD - Plan #1	500.0	498.8	64.0	62.3	37.980	SF
HMU Federal 16-14D3 - DD - Plan #1	200.0	200.0	60.2	59.6	96.965	CC, ES
HMU Federal 16-14D3 - DD - Plan #1	500.0	498.8	80.3	78.6	47.342	SF
HMU Federal 16-16B - DD - Plan #1	200.0	200.0	34.0	33.4	54.746	CC, ES
HMU Federal 16-16B - DD - Plan #1	500.0	494.6	62.5	60.6	33.542	SF
HMU Federal 16-6C - DD - Plan #1	200.0	200.0	50.9	50.2	81.842	CC, ES
HMU Federal 16-6C - DD - Plan #1	500.0	494.1	75.7	73.9	43.470	SF
HMU Federal 16-6C2 - DD - Plan #1	200.0	200.0	68.1	67.4	109.528	CC, ES
HMU Federal 16-6C2 - DD - Plan #1	600.0	579.5	130.0	127.7	57.356	SF
HMU Federal 16-9C - DD - Plan #1	200.0	200.0	17.5	16.9	28.223	CC, ES
HMU Federal 16-9C - DD - Plan #1	400.0	399.9	25.4	24.1	18.940	SF
HMU Federal 21-1B - DD - Plan #1	200.0	200.0	84.9	84.3	136.631	CC, ES
HMU Federal 21-1B - DD - Plan #1	600.0	582.9	134.3	132.1	61.855	SF
HMU Federal 21-3A - DD - Plan #1	200.0	200.0	76.9	76.3	123.796	CC, ES
HMU Federal 21-3A - DD - Plan #1	500.0	482.4	118.5	116.8	70.731	SF
NWNE S16-T7S-R93W (B16W Pad)						
Rose Ranch 16-1C - DD - DD	9,909.2	9,720.0	1,185.2	1,125.6	19.898	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	-137.52	-142.8	-130.7	193.6					
100.0	100.0	99.9	99.9	0.1	0.2	-137.43	-142.6	-131.0	193.6	193.3	0.29	660.547		
200.0	200.0	199.7	199.7	0.3	0.3	-137.14	-142.0	-131.8	193.7	193.1	0.62	310.156 ES		
300.0	300.0	300.6	300.6	0.5	0.5	173.12	-140.7	-133.1	196.3	195.3	0.98	200.742		
400.0	399.6	401.9	401.8	0.7	0.7	174.22	-138.1	-134.8	203.4	202.0	1.34	152.291		
500.0	498.8	499.5	499.3	1.0	0.9	175.58	-134.8	-137.1	215.7	214.0	1.69	127.797		
600.0	597.1	595.3	595.0	1.4	1.1	177.13	-131.4	-140.7	234.2	232.1	2.04	114.771		
700.0	694.7	689.0	688.5	1.8	1.3	178.74	-127.9	-145.8	257.6	255.2	2.41	107.093		
800.0	792.2	782.2	781.4	2.2	1.5	-179.73	-124.6	-152.5	282.6	279.9	2.78	101.817		
900.0	889.8	874.5	873.3	2.6	1.7	-178.12	-120.6	-160.9	308.9	305.8	3.16	97.759		
1,000.0	987.3	962.2	960.2	3.0	1.9	-176.61	-116.8	-171.0	337.4	333.8	3.54	95.168		
1,100.0	1,084.9	1,048.8	1,045.9	3.4	2.2	-175.11	-113.3	-183.4	368.3	364.3	3.94	93.378		
1,200.0	1,182.4	1,133.9	1,129.6	3.8	2.5	-173.62	-109.6	-198.1	401.6	397.3	4.36	92.166		
1,300.0	1,280.0	1,221.0	1,214.9	4.3	2.8	-172.05	-105.1	-215.2	436.7	431.9	4.80	90.983		
1,400.0	1,377.5	1,310.0	1,301.7	4.7	3.1	-170.51	-99.8	-234.1	473.2	467.9	5.26	89.933		
1,500.0	1,475.1	1,398.5	1,387.8	5.1	3.5	-169.12	-94.5	-253.9	510.7	505.0	5.73	89.185		
1,600.0	1,572.7	1,487.6	1,474.4	5.5	3.9	-167.88	-89.2	-274.4	549.1	542.9	6.20	88.583		
1,700.0	1,670.2	1,581.1	1,565.1	6.0	4.3	-166.73	-83.5	-296.1	587.7	581.0	6.69	87.891		
1,800.0	1,767.8	1,676.4	1,657.7	6.4	4.7	-165.66	-77.2	-317.9	626.1	618.9	7.19	87.115		
1,900.0	1,865.3	1,770.2	1,748.9	6.8	5.1	-164.74	-70.9	-339.1	664.3	656.6	7.68	86.508		
2,000.0	1,962.9	1,868.3	1,844.3	7.2	5.6	-163.92	-64.4	-360.4	701.9	693.7	8.18	85.808		
2,100.0	2,060.4	1,957.3	1,931.0	7.7	5.9	-163.26	-58.4	-379.7	739.6	731.0	8.66	85.429		
2,200.0	2,158.0	2,056.5	2,027.7	8.1	6.4	-162.57	-51.5	-400.9	777.0	767.9	9.17	84.761		
2,300.0	2,255.5	2,138.0	2,107.1	8.5	6.7	-162.05	-45.6	-418.5	814.6	805.0	9.63	84.606		
2,400.0	2,353.1	2,221.6	2,188.3	8.9	7.1	-161.52	-39.7	-437.6	853.4	843.3	10.10	84.489		
2,500.0	2,450.6	2,315.0	2,278.9	9.4	7.5	-160.99	-33.3	-459.5	892.8	882.2	10.60	84.257		
2,600.0	2,548.2	2,397.4	2,358.7	9.8	7.9	-160.56	-27.7	-478.9	932.5	921.5	11.07	84.240		
2,700.0	2,645.8	2,487.5	2,445.8	10.2	8.4	-160.07	-21.2	-501.2	973.1	961.5	11.57	84.121		
2,800.0	2,743.3	2,584.0	2,539.2	10.6	8.8	-159.62	-14.4	-524.5	1,013.3	1,001.2	12.08	83.906		
2,900.0	2,840.9	2,675.3	2,627.7	11.1	9.3	-159.25	-8.3	-546.2	1,053.3	1,040.7	12.57	83.781		
3,000.0	2,938.4	2,760.2	2,709.8	11.5	9.7	-158.91	-2.4	-566.7	1,093.5	1,080.5	13.05	83.823		
3,100.0	3,036.0	2,851.7	2,798.3	11.9	10.1	-158.59	3.4	-589.1	1,134.4	1,120.8	13.54	83.806		
3,200.0	3,133.5	2,952.3	2,895.8	12.3	10.6	-158.28	9.8	-613.1	1,174.6	1,160.6	14.05	83.627		
3,300.0	3,231.1	3,041.0	2,982.0	12.8	11.0	-158.04	15.2	-633.8	1,214.5	1,200.0	14.52	83.625		
3,400.0	3,328.6	3,129.6	3,067.7	13.2	11.4	-157.80	20.8	-655.1	1,255.0	1,240.0	15.00	83.643		
3,500.0	3,426.2	3,231.4	3,166.4	13.6	11.9	-157.53	27.5	-679.1	1,295.0	1,279.5	15.52	83.430 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	-140.94	-163.0	-132.3	209.9					
100.0	100.0	98.0	98.0	0.1	0.2	-140.93	-163.4	-132.6	210.4	210.1	0.29	721.958		
200.0	200.0	195.9	195.9	0.3	0.3	-140.92	-164.4	-133.5	211.9	211.3	0.62	341.023		
300.0	300.0	296.1	296.0	0.5	0.5	168.80	-166.0	-134.7	216.4	215.4	0.96	224.679		
400.0	399.6	395.3	395.2	0.7	0.7	168.95	-167.8	-135.3	225.9	224.6	1.31	172.406		
500.0	498.8	493.1	493.0	1.0	0.8	168.92	-170.9	-134.9	240.9	239.2	1.66	145.361		
600.0	597.1	592.6	592.4	1.4	1.0	168.72	-175.1	-133.4	260.9	258.9	2.01	129.696		
700.0	694.7	691.5	691.1	1.8	1.2	168.50	-179.4	-130.3	283.8	281.4	2.38	119.198		
800.0	792.2	790.8	790.2	2.2	1.4	168.04	-184.4	-125.7	306.3	303.5	2.77	110.548		
900.0	889.8	891.8	890.8	2.6	1.6	167.17	-190.4	-118.3	328.0	324.8	3.19	102.723		
1,000.0	987.3	991.2	989.3	3.0	1.9	165.86	-197.8	-108.1	349.1	345.4	3.65	95.553		
1,100.0	1,084.9	1,091.6	1,088.3	3.4	2.2	164.00	-207.2	-93.8	369.6	365.4	4.19	88.187		
1,200.0	1,182.4	1,190.3	1,184.7	3.8	2.6	161.76	-218.0	-76.0	389.8	385.0	4.79	81.312		
1,300.0	1,280.0	1,285.8	1,277.8	4.3	2.9	159.58	-229.3	-57.4	410.5	405.1	5.43	75.610		
1,400.0	1,377.5	1,380.7	1,369.9	4.7	3.3	157.47	-241.3	-38.3	432.2	426.1	6.10	70.851		
1,500.0	1,475.1	1,476.6	1,462.9	5.1	3.8	155.47	-253.9	-18.5	454.6	447.8	6.80	66.856		
1,600.0	1,572.7	1,574.2	1,557.4	5.5	4.2	153.55	-267.0	2.2	477.5	469.9	7.54	63.332		
1,700.0	1,670.2	1,670.2	1,650.2	6.0	4.6	151.78	-279.8	23.0	500.6	492.3	8.28	60.464		
1,800.0	1,767.8	1,765.8	1,742.8	6.4	5.1	150.21	-292.5	43.3	524.3	515.2	9.02	58.126		
1,900.0	1,865.3	1,862.7	1,836.7	6.8	5.5	148.82	-305.2	63.5	548.2	538.5	9.76	56.162		
2,000.0	1,962.9	1,960.1	1,931.3	7.2	5.9	147.58	-317.6	83.4	572.3	561.8	10.50	54.491		
2,100.0	2,060.4	2,051.8	2,020.3	7.7	6.4	146.50	-329.6	102.0	596.9	585.7	11.22	53.198		
2,200.0	2,158.0	2,148.5	2,114.1	8.1	6.8	145.50	-342.4	121.1	622.0	610.1	11.95	52.054		
2,300.0	2,255.5	2,238.0	2,201.0	8.5	7.2	144.64	-354.9	138.6	648.0	635.4	12.66	51.207		
2,400.0	2,353.1	2,334.0	2,294.1	8.9	7.6	143.78	-368.9	157.4	674.7	661.3	13.39	50.405		
2,500.0	2,450.6	2,424.5	2,381.9	9.4	8.1	143.05	-382.0	174.7	701.6	687.5	14.09	49.806		
2,600.0	2,548.2	2,512.3	2,467.0	9.8	8.5	142.37	-395.7	191.6	729.5	714.8	14.79	49.343		
2,700.0	2,645.8	2,607.6	2,559.3	10.2	8.9	141.68	-411.0	209.8	758.2	742.7	15.51	48.895		
2,800.0	2,743.3	2,705.1	2,653.9	10.6	9.4	141.07	-426.5	227.9	786.7	770.5	16.23	48.476		
2,900.0	2,840.9	2,802.5	2,748.4	11.1	9.8	140.53	-441.6	245.8	815.1	798.2	16.94	48.104		
3,000.0	2,938.4	2,896.0	2,839.0	11.5	10.2	140.01	-456.3	263.5	843.6	825.9	17.67	47.743		
3,100.0	3,036.0	2,992.9	2,932.8	11.9	10.7	139.44	-471.7	282.6	872.2	853.8	18.41	47.386		
3,200.0	3,133.5	3,090.3	3,026.8	12.3	11.2	138.87	-487.0	302.5	900.6	881.5	19.17	46.974		
3,300.0	3,231.1	3,187.2	3,120.3	12.8	11.7	138.27	-502.3	323.2	929.0	909.1	19.94	46.595		
3,400.0	3,328.6	3,284.4	3,214.1	13.2	12.2	137.72	-517.4	343.7	957.3	936.6	20.70	46.253		
3,500.0	3,426.2	3,391.2	3,317.3	13.6	12.7	137.16	-533.3	366.4	985.0	963.5	21.51	45.802		
3,600.0	3,523.7	3,492.2	3,414.8	14.1	13.2	136.65	-547.6	388.2	1,012.0	989.8	22.29	45.409		
3,700.0	3,621.3	3,593.2	3,512.5	14.5	13.7	136.17	-561.4	409.9	1,038.7	1,015.6	23.06	45.034		
3,800.0	3,718.9	3,696.3	3,612.3	14.9	14.1	135.73	-574.8	431.7	1,064.8	1,041.0	23.84	44.663		
3,900.0	3,816.4	3,792.1	3,705.3	15.3	14.6	135.36	-586.7	451.7	1,090.5	1,065.9	24.58	44.360		
4,000.0	3,914.0	3,875.3	3,786.0	15.8	15.0	135.06	-597.8	469.0	1,117.0	1,091.7	25.27	44.207		
4,100.0	4,011.5	3,958.8	3,866.7	16.2	15.4	134.77	-609.9	486.1	1,144.7	1,118.7	25.95	44.108		
4,200.0	4,109.1	4,055.2	3,960.1	16.6	15.8	134.45	-624.2	505.7	1,172.9	1,146.2	26.69	43.950		
4,300.0	4,206.6	4,151.4	4,053.1	17.0	16.3	134.16	-638.5	525.2	1,201.0	1,173.6	27.42	43.799		
4,400.0	4,304.2	4,247.7	4,146.4	17.5	16.8	133.88	-652.8	544.6	1,229.2	1,201.0	28.15	43.663		
4,500.0	4,401.7	4,343.8	4,239.5	17.9	17.2	133.64	-667.0	563.7	1,257.4	1,228.5	28.88	43.544		
4,600.0	4,499.3	4,444.4	4,337.1	18.3	17.7	133.40	-681.5	583.4	1,285.3	1,255.7	29.61	43.405 SF		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		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	-133.67	-122.5	-128.4	177.5					
100.0	100.0	100.3	100.3	0.1	0.2	-133.62	-122.4	-128.4	177.4	177.1	0.29	608.573		
200.0	200.0	200.6	200.6	0.3	0.3	-133.47	-121.8	-128.5	177.1	176.5	0.62	284.561		
206.7	206.7	207.3	207.3	0.3	0.3	176.17	-121.8	-128.6	177.1	176.5	0.65	274.004 CC, ES		
300.0	300.0	301.0	301.0	0.5	0.5	176.21	-121.6	-128.3	179.3	178.4	0.97	184.564		
400.0	399.6	403.0	403.0	0.7	0.7	175.80	-122.0	-126.1	186.0	184.6	1.32	140.543		
500.0	498.8	505.7	505.5	1.0	0.9	175.07	-122.7	-121.9	196.5	194.8	1.68	117.133		
600.0	597.1	610.0	609.7	1.4	1.1	174.25	-122.4	-115.2	210.0	207.9	2.04	102.986		
700.0	694.7	715.9	715.2	1.8	1.3	173.55	-120.3	-106.1	224.4	222.0	2.42	92.803		
800.0	792.2	822.7	821.1	2.2	1.6	172.66	-116.4	-93.6	235.6	232.8	2.81	83.726		
900.0	889.8	928.3	925.6	2.6	1.9	171.79	-110.5	-79.0	244.0	240.8	3.22	75.889		
1,000.0	987.3	1,031.9	1,027.6	3.0	2.2	170.95	-103.3	-63.1	250.4	246.8	3.63	69.059		
1,100.0	1,084.9	1,133.3	1,127.4	3.4	2.6	170.03	-95.7	-46.3	255.7	251.6	4.05	63.186		
1,200.0	1,182.4	1,231.5	1,224.0	3.8	2.9	169.24	-88.4	-30.5	261.3	256.8	4.46	58.527		
1,300.0	1,280.0	1,333.4	1,324.3	4.3	3.2	168.38	-80.9	-13.5	266.7	261.8	4.91	54.351		
1,400.0	1,377.5	1,435.6	1,424.6	4.7	3.6	167.59	-72.5	3.7	271.4	266.0	5.36	50.666		
1,500.0	1,475.1	1,536.9	1,523.9	5.1	4.0	166.82	-63.7	21.4	275.2	269.4	5.82	47.315		
1,600.0	1,572.7	1,636.3	1,621.4	5.5	4.4	165.98	-55.1	39.3	279.0	272.7	6.29	44.360		
1,700.0	1,670.2	1,734.0	1,717.3	6.0	4.7	165.28	-46.8	56.2	283.3	276.5	6.76	41.921		
1,800.0	1,767.8	1,832.1	1,813.7	6.4	5.1	164.62	-39.0	72.6	288.4	281.2	7.23	39.871		
1,900.0	1,865.3	1,930.3	1,910.1	6.8	5.4	163.92	-31.8	89.0	294.1	286.3	7.73	38.035		
2,000.0	1,962.9	2,030.1	2,008.2	7.2	5.8	163.06	-25.3	106.3	300.2	291.9	8.27	36.316		
2,100.0	2,060.4	2,131.0	2,107.3	7.7	6.2	162.15	-18.7	124.2	306.0	297.2	8.82	34.680		
2,200.0	2,158.0	2,230.4	2,204.9	8.1	6.6	161.25	-12.1	142.2	311.7	302.3	9.39	33.187		
2,300.0	2,255.5	2,328.9	2,301.6	8.5	6.9	160.43	-5.7	159.6	317.8	307.9	9.96	31.898		
2,400.0	2,353.1	2,429.7	2,400.6	8.9	7.3	159.54	0.5	177.9	324.0	313.4	10.57	30.641		
2,500.0	2,450.6	2,530.2	2,499.1	9.4	7.7	158.63	6.8	196.4	330.0	318.8	11.20	29.474		
2,600.0	2,548.2	2,631.9	2,598.7	9.8	8.1	157.66	13.4	215.9	335.6	323.7	11.86	28.289		
2,700.0	2,645.8	2,731.2	2,695.9	10.2	8.5	156.68	19.7	235.3	341.2	328.7	12.54	27.214		
2,800.0	2,743.3	2,834.7	2,797.0	10.6	8.9	155.63	26.8	256.1	346.2	332.9	13.26	26.099		
2,900.0	2,840.9	2,933.6	2,893.7	11.1	9.4	154.67	34.0	276.1	350.9	336.9	13.97	25.121		
3,000.0	2,938.4	3,032.5	2,990.4	11.5	9.8	153.82	41.1	295.5	356.0	341.3	14.67	24.275		
3,100.0	3,036.0	3,131.6	3,087.3	11.9	10.1	153.06	48.2	314.5	361.3	346.0	15.36	23.530		
3,200.0	3,133.5	3,230.2	3,184.0	12.3	10.5	152.36	55.2	333.1	367.0	351.0	16.04	22.878		
3,300.0	3,231.1	3,328.4	3,280.2	12.8	10.9	151.75	61.9	351.1	373.1	356.3	16.71	22.321		
3,400.0	3,328.6	3,428.2	3,378.1	13.2	11.3	151.18	68.6	369.1	379.5	362.1	17.40	21.815		
3,500.0	3,426.2	3,528.5	3,476.4	13.6	11.7	150.45	75.1	388.4	385.7	367.6	18.14	21.267		
3,600.0	3,523.7	3,626.1	3,572.0	14.1	12.1	149.82	81.4	406.7	392.1	373.3	18.84	20.809		
3,700.0	3,621.3	3,726.2	3,670.2	14.5	12.5	149.24	87.6	425.1	399.1	379.5	19.56	20.403		
3,800.0	3,718.9	3,828.6	3,770.5	14.9	12.9	148.61	94.3	444.4	405.5	385.2	20.31	19.966		
3,900.0	3,816.4	3,929.0	3,868.8	15.3	13.3	147.99	101.2	463.7	411.5	390.5	21.06	19.541		
4,000.0	3,914.0	4,027.4	3,965.3	15.8	13.6	147.46	108.1	482.1	417.7	395.9	21.78	19.182		
4,100.0	4,011.5	4,123.9	4,059.9	16.2	14.0	147.05	114.5	499.4	424.4	402.0	22.46	18.894		
4,200.0	4,109.1	4,227.1	4,161.3	16.6	14.4	146.59	121.2	518.0	431.3	408.1	23.19	18.599		
4,300.0	4,206.6	4,326.4	4,258.6	17.0	14.8	146.18	128.2	536.0	437.7	413.8	23.90	18.317		
4,400.0	4,304.2	4,425.0	4,355.5	17.5	15.2	145.81	134.9	553.6	444.4	419.8	24.59	18.072		
4,500.0	4,401.7	4,522.7	4,451.4	17.9	15.5	145.49	141.3	570.7	451.5	426.2	25.27	17.868		
4,600.0	4,499.3	4,624.3	4,551.2	18.3	15.9	145.11	147.9	588.9	458.5	432.5	26.00	17.636		
4,700.0	4,596.8	4,722.8	4,647.8	18.7	16.3	144.69	154.2	607.0	465.5	438.7	26.73	17.413		
4,800.0	4,694.4	4,820.5	4,743.7	19.2	16.7	144.30	160.1	624.8	472.9	445.4	27.46	17.220		
4,900.0	4,792.0	4,923.2	4,844.4	19.6	17.1	143.88	166.5	643.7	480.1	451.9	28.22	17.011		
5,000.0	4,889.5	5,023.4	4,942.6	20.0	17.5	143.47	173.0	662.4	487.0	458.0	28.98	16.806		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	4,987.1	5,122.6	5,040.0	20.4	17.8	143.11	179.6	680.5	493.9	464.2	29.71	16.621		
5,200.0	5,084.6	5,220.3	5,135.9	20.9	18.2	142.79	185.8	698.2	501.1	470.7	30.44	16.465		
5,300.0	5,182.2	5,318.9	5,232.6	21.3	18.6	142.49	191.8	715.8	508.6	477.5	31.16	16.325		
5,400.0	5,279.7	5,418.4	5,330.4	21.7	19.0	142.19	197.6	733.6	516.4	484.5	31.89	16.194		
5,500.0	5,377.3	5,520.9	5,431.0	22.2	19.4	141.84	203.9	752.4	523.9	491.2	32.66	16.042		
5,600.0	5,474.8	5,623.7	5,531.6	22.6	19.8	141.42	210.6	772.1	530.7	497.3	33.47	15.857		
5,700.0	5,572.4	5,730.7	5,636.2	23.0	20.2	140.95	218.3	793.3	536.8	502.5	34.32	15.642		
5,800.0	5,669.9	5,831.5	5,734.7	23.4	20.6	140.55	226.8	813.1	541.8	506.7	35.12	15.426		
5,900.0	5,767.5	5,927.1	5,828.2	23.9	21.0	140.21	234.5	831.4	547.3	511.4	35.88	15.252		
6,000.0	5,865.1	6,022.4	5,921.6	24.3	21.4	139.96	241.5	848.9	553.6	517.0	36.60	15.126		
6,100.0	5,962.6	6,117.4	6,015.0	24.7	21.7	139.77	247.8	865.5	560.8	523.5	37.29	15.038		
6,200.0	6,060.2	6,217.2	6,113.0	25.1	22.1	139.58	254.0	883.0	568.4	530.4	38.01	14.955		
6,300.0	6,157.7	6,317.8	6,211.8	25.6	22.5	139.36	260.3	900.9	575.9	537.2	38.74	14.865		
6,400.0	6,255.3	6,416.3	6,308.6	26.0	22.9	139.18	266.6	918.2	583.4	544.0	39.44	14.792		
6,500.0	6,352.8	6,511.8	6,402.7	26.4	23.2	139.15	272.4	933.4	591.4	551.4	40.05	14.768 SF		
6,600.0	6,450.4	6,608.0	6,497.7	26.8	23.5	139.29	278.2	947.0	599.9	559.3	40.56	14.789		
6,700.0	6,547.9	6,703.0	6,591.8	27.3	23.7	139.56	283.4	958.9	609.2	568.2	41.00	14.859		
6,800.0	6,645.5	6,791.9	6,680.1	27.7	24.0	139.92	287.2	968.5	619.8	578.5	41.35	14.990		
6,900.0	6,743.0	6,885.3	6,773.1	28.1	24.2	140.44	290.5	976.8	631.7	590.1	41.62	15.179		
7,000.0	6,840.6	6,975.9	6,863.4	28.5	24.3	141.08	293.1	983.1	644.8	603.0	41.80	15.425		
7,100.0	6,938.2	7,065.9	6,953.3	29.0	24.5	141.82	294.8	987.6	659.2	617.3	41.90	15.731		
7,200.0	7,035.8	7,153.0	7,040.3	29.4	24.5	142.71	295.6	990.1	675.0	633.1	41.91	16.108		
7,300.0	7,133.9	7,249.0	7,136.4	29.7	24.6	143.76	295.7	990.8	690.1	648.3	41.82	16.504		
7,400.0	7,232.7	7,349.5	7,236.9	30.0	24.7	144.61	296.0	991.6	702.4	660.6	41.77	16.813		
7,500.0	7,331.9	7,450.0	7,337.3	30.3	24.8	145.25	296.5	992.3	711.7	669.9	41.79	17.031		
7,600.0	7,431.5	7,551.0	7,438.4	30.5	25.0	145.69	297.3	992.9	718.0	676.1	41.85	17.156		
7,700.0	7,531.4	7,652.5	7,539.8	30.6	25.1	145.93	298.2	993.6	721.3	679.3	41.97	17.186		
7,800.0	7,631.4	7,752.9	7,640.3	30.7	25.2	-163.64	299.3	994.1	721.5	679.4	42.13	17.126		
7,900.0	7,731.4	7,855.5	7,742.8	30.7	25.3	-163.66	300.7	994.8	720.0	677.6	42.37	16.993		
8,000.0	7,831.4	7,949.0	7,836.3	30.8	25.4	-163.69	301.5	995.5	718.9	676.3	42.61	16.871		
8,100.0	7,931.4	8,047.0	7,934.3	30.9	25.5	-163.72	301.9	996.0	718.4	675.5	42.86	16.762		
8,200.0	8,031.4	8,147.1	8,034.4	31.0	25.6	-163.75	302.2	996.4	718.0	674.9	43.10	16.657		
8,300.0	8,131.4	8,246.1	8,133.4	31.1	25.7	-163.77	302.5	996.8	717.5	674.2	43.35	16.554		
8,344.6	8,176.0	8,288.7	8,176.0	31.1	25.7	-163.77	302.6	996.9	717.5	674.0	43.45	16.514		
8,400.0	8,231.4	8,341.8	8,229.1	31.1	25.8	-163.76	302.5	996.7	717.6	674.0	43.57	16.471		
8,500.0	8,331.4	8,439.1	8,326.4	31.2	25.9	-163.76	302.0	996.5	718.1	674.3	43.80	16.397		
8,600.0	8,431.4	8,538.7	8,426.0	31.3	26.0	-163.76	301.4	996.4	718.8	674.8	44.04	16.324		
8,700.0	8,531.4	8,637.5	8,524.8	31.4	26.1	-163.76	300.6	996.1	719.7	675.4	44.27	16.257		
8,800.0	8,631.4	8,737.6	8,624.9	31.5	26.1	-163.74	299.7	995.6	720.6	676.1	44.49	16.196		
8,900.0	8,731.4	8,837.8	8,725.1	31.6	26.2	-163.71	299.0	995.0	721.4	676.7	44.72	16.134		
9,000.0	8,831.4	8,936.1	8,823.4	31.7	26.3	-163.68	298.2	994.4	722.4	677.5	44.94	16.075		
9,100.0	8,931.4	9,034.6	8,921.9	31.7	26.4	-163.67	297.1	993.9	723.6	678.5	45.18	16.018		
9,200.0	9,031.4	9,133.3	9,020.6	31.8	26.5	-163.67	295.8	993.6	725.0	679.6	45.42	15.962		
9,300.0	9,131.4	9,231.2	9,118.5	31.9	26.6	-163.68	294.2	993.3	726.7	681.0	45.67	15.910		
9,400.0	9,231.4	9,329.7	9,217.0	32.0	26.7	-163.68	292.4	992.7	728.6	682.7	45.91	15.869		
9,500.0	9,331.4	9,431.9	9,319.2	32.1	26.8	-163.62	290.8	991.4	730.5	684.3	46.12	15.837		
9,600.0	9,431.4	9,531.4	9,418.6	32.2	26.8	-163.49	289.7	989.4	732.1	685.8	46.30	15.814		
9,700.0	9,531.4	9,626.8	9,514.0	32.3	26.9	-163.32	288.5	986.7	734.1	687.7	46.44	15.809		
9,800.0	9,631.4	9,726.4	9,613.5	32.4	26.9	-163.10	286.9	983.3	736.6	690.0	46.56	15.819		
9,900.0	9,731.4	9,825.2	9,712.2	32.5	27.0	-162.90	285.3	980.1	739.1	692.4	46.70	15.827		
10,000.0	9,831.4	9,955.0	9,742.0	32.5	27.0	-162.84	284.8	979.1	745.0	698.2	46.83	15.907		
10,100.0	9,931.4	9,855.0	9,742.0	32.6	27.0	-162.84	284.8	979.1	763.5	716.5	46.97	16.256		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,200.0	10,031.4	9,855.0	9,742.0	32.7	27.0	-162.84	284.8	979.1	794.2	747.1	47.10	16.862		
10,300.0	10,131.4	9,855.0	9,742.0	32.8	27.0	-162.84	284.8	979.1	835.9	788.6	47.23	17.696		
10,400.0	10,231.4	9,855.0	9,742.0	32.9	27.0	-162.84	284.8	979.1	886.9	839.5	47.37	18.723		
10,500.0	10,331.4	9,855.0	9,742.0	33.0	27.0	-162.84	284.8	979.1	945.7	898.2	47.50	19.909		
10,600.0	10,431.4	9,855.0	9,742.0	33.1	27.0	-162.84	284.8	979.1	1,011.1	963.4	47.64	21.224		
10,700.0	10,531.4	9,855.0	9,742.0	33.2	27.0	-162.84	284.8	979.1	1,081.7	1,034.0	47.77	22.643		
10,800.0	10,631.4	9,855.0	9,742.0	33.3	27.0	-162.84	284.8	979.1	1,156.7	1,108.8	47.91	24.144		
10,900.0	10,731.4	9,855.0	9,742.0	33.4	27.0	-162.84	284.8	979.1	1,235.3	1,187.2	48.05	25.710		
10,950.6	10,782.0	9,855.0	9,742.0	33.5	27.0	-162.84	284.8	979.1	1,276.2	1,228.1	48.12	26.523		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		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	5.65	17.1	1.7	17.2					
100.0	100.0	100.0	100.0	0.1	0.1	5.65	17.1	1.7	17.2	16.9	0.27	63.198		
200.0	200.0	200.0	200.0	0.3	0.3	5.65	17.1	1.7	17.2	16.6	0.62	27.694		
300.0	300.0	300.0	300.0	0.5	0.5	-51.60	17.1	1.7	15.5	14.5	0.98	15.849		
400.0	399.6	399.6	399.6	0.7	0.7	-81.76	17.1	1.7	12.2	10.9	1.37	8.915		
416.2	415.7	415.7	415.7	0.8	0.7	-89.97	17.1	1.7	12.1	10.7	1.45	8.370 CC, ES, SF		
500.0	498.8	498.8	498.8	1.0	0.8	-132.64	17.1	1.7	16.6	14.8	1.75	9.434		
600.0	597.1	598.0	597.9	1.4	1.0	-153.58	19.5	2.6	30.5	28.4	2.08	14.639		
700.0	694.7	697.9	697.6	1.8	1.2	-157.68	26.8	5.2	46.0	43.5	2.46	18.675		
800.0	792.2	797.6	796.6	2.2	1.4	-156.59	37.9	9.3	59.2	56.3	2.90	20.370		
900.0	889.8	896.8	895.0	2.6	1.7	-155.67	49.4	13.5	72.2	68.8	3.37	21.436		
1,000.0	987.3	995.9	993.4	3.0	1.9	-155.02	60.9	17.6	85.2	81.3	3.84	22.187		
1,100.0	1,084.9	1,095.1	1,091.7	3.4	2.2	-154.55	72.4	21.8	98.2	93.8	4.32	22.736		
1,200.0	1,182.4	1,194.2	1,190.1	3.8	2.4	-154.18	83.8	26.0	111.2	106.4	4.80	23.151		
1,300.0	1,280.0	1,293.4	1,288.5	4.3	2.7	-153.90	95.3	30.2	124.2	118.9	5.29	23.474		
1,400.0	1,377.5	1,392.5	1,386.9	4.7	3.0	-153.66	106.8	34.3	137.2	131.4	5.78	23.732		
1,500.0	1,475.1	1,491.7	1,485.3	5.1	3.2	-153.47	118.3	38.5	150.2	144.0	6.28	23.941		
1,600.0	1,572.7	1,590.8	1,583.7	5.5	3.5	-153.31	129.8	42.7	163.3	156.5	6.77	24.113		
1,700.0	1,670.2	1,690.0	1,682.1	6.0	3.8	-153.17	141.2	46.9	176.3	169.0	7.27	24.258		
1,800.0	1,767.8	1,789.1	1,780.5	6.4	4.0	-153.05	152.7	51.1	189.3	181.5	7.76	24.381		
1,900.0	1,865.3	1,888.3	1,878.9	6.8	4.3	-152.95	164.2	55.2	202.3	194.1	8.26	24.486		
2,000.0	1,962.9	1,987.4	1,977.3	7.2	4.6	-152.86	175.7	59.4	215.3	206.6	8.76	24.578		
2,100.0	2,060.4	2,086.6	2,075.7	7.7	4.9	-152.78	187.1	63.6	228.4	219.1	9.26	24.658		
2,200.0	2,158.0	2,185.7	2,174.1	8.1	5.1	-152.71	198.6	67.8	241.4	231.6	9.76	24.728		
2,300.0	2,255.5	2,284.8	2,272.5	8.5	5.4	-152.64	210.1	72.0	254.4	244.2	10.26	24.791		
2,400.0	2,353.1	2,384.0	2,370.8	8.9	5.7	-152.58	221.6	76.1	267.5	256.7	10.76	24.847		
2,500.0	2,450.6	2,483.1	2,469.2	9.4	5.9	-152.53	233.0	80.3	280.5	269.2	11.27	24.897		
2,600.0	2,548.2	2,582.3	2,567.6	9.8	6.2	-152.48	244.5	84.5	293.5	281.7	11.77	24.942		
2,700.0	2,645.8	2,681.4	2,666.0	10.2	6.5	-152.44	256.0	88.7	306.5	294.3	12.27	24.983		
2,800.0	2,743.3	2,780.6	2,764.4	10.6	6.8	-152.40	267.5	92.8	319.6	306.8	12.77	25.021		
2,900.0	2,840.9	2,879.7	2,862.8	11.1	7.0	-152.36	278.9	97.0	332.6	319.3	13.27	25.055		
3,000.0	2,938.4	2,978.9	2,961.2	11.5	7.3	-152.33	290.4	101.2	345.6	331.8	13.78	25.086		
3,100.0	3,036.0	3,078.0	3,059.6	11.9	7.6	-152.30	301.9	105.4	358.6	344.4	14.28	25.115		
3,200.0	3,133.5	3,177.2	3,158.0	12.3	7.9	-152.27	313.4	109.6	371.7	356.9	14.78	25.142		
3,300.0	3,231.1	3,276.3	3,256.4	12.8	8.1	-152.24	324.9	113.7	384.7	369.4	15.29	25.167		
3,400.0	3,328.6	3,375.5	3,354.8	13.2	8.4	-152.21	336.3	117.9	397.7	381.9	15.79	25.190		
3,500.0	3,426.2	3,474.6	3,453.2	13.6	8.7	-152.19	347.8	122.1	410.8	394.5	16.29	25.211		
3,600.0	3,523.7	3,573.8	3,551.6	14.1	9.0	-152.16	359.3	126.3	423.8	407.0	16.80	25.231		
3,700.0	3,621.3	3,672.9	3,649.9	14.5	9.2	-152.14	370.8	130.5	436.8	419.5	17.30	25.250		
3,800.0	3,718.9	3,772.1	3,748.3	14.9	9.5	-152.12	382.2	134.6	449.8	432.0	17.80	25.267		
3,900.0	3,816.4	3,871.2	3,846.7	15.3	9.8	-152.10	393.7	138.8	462.9	444.6	18.31	25.284		
4,000.0	3,914.0	3,970.4	3,945.1	15.8	10.0	-152.09	405.2	143.0	475.9	457.1	18.81	25.299		
4,100.0	4,011.5	4,069.5	4,043.5	16.2	10.3	-152.07	416.7	147.2	488.9	469.6	19.31	25.314		
4,200.0	4,109.1	4,168.7	4,141.9	16.6	10.6	-152.05	428.1	151.3	501.9	482.1	19.82	25.328		
4,300.0	4,206.6	4,267.8	4,240.3	17.0	10.9	-152.04	439.6	155.5	515.0	494.7	20.32	25.341		
4,400.0	4,304.2	4,366.9	4,338.7	17.5	11.1	-152.02	451.1	159.7	528.0	507.2	20.83	25.353		
4,500.0	4,401.7	4,466.1	4,437.1	17.9	11.4	-152.01	462.6	163.9	541.0	519.7	21.33	25.365		
4,600.0	4,499.3	4,565.2	4,535.5	18.3	11.7	-152.00	474.0	168.1	554.1	532.2	21.83	25.376		
4,700.0	4,596.8	4,664.4	4,633.9	18.7	12.0	-151.98	485.5	172.2	567.1	544.7	22.34	25.386		
4,800.0	4,694.4	4,763.5	4,732.3	19.2	12.2	-151.97	497.0	176.4	580.1	557.3	22.84	25.396		
4,900.0	4,792.0	4,862.7	4,830.7	19.6	12.5	-151.96	508.5	180.6	593.1	569.8	23.35	25.406		
5,000.0	4,889.5	4,961.8	4,929.0	20.0	12.8	-151.95	520.0	184.8	606.2	582.3	23.85	25.415		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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				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		
5,100.0	4,987.1	5,061.0	5,027.4	20.4	13.1	-151.94	531.4	189.0	619.2	594.8	24.36	25.424		
5,200.0	5,084.6	5,160.1	5,125.8	20.9	13.3	-151.93	542.9	193.1	632.2	607.4	24.86	25.432		
5,300.0	5,182.2	5,259.3	5,224.2	21.3	13.6	-151.92	554.4	197.3	645.3	619.9	25.36	25.440		
5,400.0	5,279.7	5,358.4	5,322.6	21.7	13.9	-151.91	565.9	201.5	658.3	632.4	25.87	25.448		
5,500.0	5,377.3	5,457.6	5,421.0	22.2	14.2	-151.90	577.3	205.7	671.3	644.9	26.37	25.455		
5,600.0	5,474.8	5,556.7	5,519.4	22.6	14.4	-151.89	588.8	209.9	684.3	657.5	26.88	25.462		
5,700.0	5,572.4	5,655.9	5,617.8	23.0	14.7	-151.88	600.3	214.0	697.4	670.0	27.38	25.469		
5,800.0	5,669.9	5,755.0	5,716.2	23.4	15.0	-151.88	611.8	218.2	710.4	682.5	27.89	25.476		
5,900.0	5,767.5	5,854.2	5,814.6	23.9	15.3	-151.87	623.2	222.4	723.4	695.0	28.39	25.482		
6,000.0	5,865.1	5,953.3	5,913.0	24.3	15.5	-151.86	634.7	226.6	736.5	707.6	28.89	25.488		
6,100.0	5,962.6	6,052.5	6,011.4	24.7	15.8	-151.85	646.2	230.7	749.5	720.1	29.40	25.494		
6,200.0	6,060.2	6,151.6	6,109.8	25.1	16.1	-151.85	657.7	234.9	762.5	732.6	29.90	25.499		
6,300.0	6,157.7	6,250.8	6,208.2	25.6	16.4	-151.84	669.1	239.1	775.5	745.1	30.41	25.505		
6,400.0	6,255.3	6,349.9	6,306.5	26.0	16.6	-151.83	680.6	243.3	788.6	757.7	30.91	25.510		
6,500.0	6,352.8	6,449.0	6,404.9	26.4	16.9	-151.83	692.1	247.5	801.6	770.2	31.42	25.515		
6,600.0	6,450.4	6,548.2	6,503.3	26.8	17.2	-151.82	703.6	251.6	814.6	782.7	31.92	25.520		
6,700.0	6,547.9	6,647.3	6,601.7	27.3	17.5	-151.81	715.0	255.8	827.7	795.2	32.43	25.524		
6,800.0	6,645.5	6,746.5	6,700.1	27.7	17.7	-151.81	726.5	260.0	840.7	807.8	32.93	25.529		
6,900.0	6,743.0	6,845.6	6,798.5	28.1	18.0	-151.80	738.0	264.2	853.7	820.3	33.44	25.533		
7,000.0	6,840.6	6,944.8	6,896.9	28.5	18.3	-151.80	749.5	268.4	866.7	832.8	33.94	25.538		
7,100.0	6,938.2	7,043.9	6,995.3	29.0	18.6	-151.79	761.0	272.5	879.8	845.3	34.44	25.542		
7,200.0	7,035.8	7,143.1	7,093.7	29.4	18.8	-151.82	772.4	276.7	892.6	857.7	34.95	25.537		
7,300.0	7,133.9	7,242.5	7,192.4	29.7	19.1	-151.83	783.9	280.9	903.0	867.6	35.47	25.456		
7,400.0	7,232.7	7,340.3	7,289.4	30.0	19.4	-151.71	795.2	285.0	910.4	874.4	36.00	25.289		
7,500.0	7,331.9	7,425.9	7,374.5	30.3	19.6	-151.59	803.6	288.1	915.7	879.3	36.43	25.136		
7,600.0	7,431.5	7,511.6	7,460.0	30.5	19.7	-151.50	809.6	290.3	919.5	882.7	36.78	24.997		
7,700.0	7,531.4	7,600.0	7,548.3	30.6	19.9	-151.45	813.3	291.6	921.8	884.7	37.07	24.868		
7,800.0	7,631.4	7,683.1	7,631.4	30.7	20.0	-101.06	814.4	292.0	922.5	885.3	37.26	24.756		
7,900.0	7,731.4	7,783.1	7,731.4	30.7	20.1	-101.06	814.4	292.0	922.5	885.0	37.52	24.589		
8,000.0	7,831.4	7,883.1	7,831.4	30.8	20.2	-101.06	814.4	292.0	922.5	884.8	37.77	24.423		
8,100.0	7,931.4	7,983.1	7,931.4	30.9	20.3	-101.06	814.4	292.0	922.5	884.5	38.03	24.259		
8,200.0	8,031.4	8,083.1	8,031.4	31.0	20.4	-101.06	814.4	292.0	922.5	884.2	38.29	24.095		
8,300.0	8,131.4	8,183.1	8,131.4	31.1	20.6	-101.06	814.4	292.0	922.5	884.0	38.55	23.933		
8,400.0	8,231.4	8,283.1	8,231.4	31.1	20.7	-101.06	814.4	292.0	922.5	883.7	38.81	23.773		
8,500.0	8,331.4	8,383.1	8,331.4	31.2	20.8	-101.06	814.4	292.0	922.5	883.5	39.07	23.613		
8,600.0	8,431.4	8,483.1	8,431.4	31.3	20.9	-101.06	814.4	292.0	922.5	883.2	39.33	23.455		
8,700.0	8,531.4	8,583.1	8,531.4	31.4	21.0	-101.06	814.4	292.0	922.5	882.9	39.60	23.298		
8,800.0	8,631.4	8,683.1	8,631.4	31.5	21.2	-101.06	814.4	292.0	922.5	882.7	39.86	23.143		
8,900.0	8,731.4	8,783.1	8,731.4	31.6	21.3	-101.06	814.4	292.0	922.5	882.4	40.13	22.989		
9,000.0	8,831.4	8,883.1	8,831.4	31.7	21.4	-101.06	814.4	292.0	922.5	882.1	40.40	22.836		
9,100.0	8,931.4	8,983.1	8,931.4	31.7	21.5	-101.06	814.4	292.0	922.5	881.9	40.67	22.685		
9,200.0	9,031.4	9,083.1	9,031.4	31.8	21.7	-101.06	814.4	292.0	922.5	881.6	40.94	22.535		
9,300.0	9,131.4	9,183.1	9,131.4	31.9	21.8	-101.06	814.4	292.0	922.5	881.3	41.21	22.386		
9,400.0	9,231.4	9,283.1	9,231.4	32.0	21.9	-101.06	814.4	292.0	922.5	881.0	41.48	22.239		
9,500.0	9,331.4	9,383.1	9,331.4	32.1	22.1	-101.06	814.4	292.0	922.5	880.8	41.76	22.092		
9,600.0	9,431.4	9,483.1	9,431.4	32.2	22.2	-101.06	814.4	292.0	922.5	880.5	42.03	21.948		
9,700.0	9,531.4	9,583.1	9,531.4	32.3	22.3	-101.06	814.4	292.0	922.5	880.2	42.31	21.804		
9,800.0	9,631.4	9,683.1	9,631.4	32.4	22.5	-101.06	814.4	292.0	922.5	879.9	42.59	21.662		
9,900.0	9,731.4	9,783.1	9,731.4	32.5	22.6	-101.06	814.4	292.0	922.5	879.7	42.87	21.521		
10,000.0	9,831.4	9,883.1	9,831.4	32.5	22.7	-101.06	814.4	292.0	922.5	879.4	43.15	21.382		
10,100.0	9,931.4	9,983.1	9,931.4	32.6	22.8	-101.06	814.4	292.0	922.5	879.1	43.43	21.244		
10,200.0	10,031.4	10,083.1	10,031.4	32.7	23.0	-101.06	814.4	292.0	922.5	878.8	43.71	21.107		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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						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	10,131.4	10,098.7	10,047.0	32.8	23.0	-101.06	814.4	292.0	926.4	882.5	43.87	21.116		
10,400.0	10,231.4	10,098.7	10,047.0	32.9	23.0	-101.06	814.4	292.0	940.8	896.8	44.01	21.375		
10,500.0	10,331.4	10,098.7	10,047.0	33.0	23.0	-101.06	814.4	292.0	965.4	921.2	44.15	21.864		
10,600.0	10,431.4	10,098.7	10,047.0	33.1	23.0	-101.06	814.4	292.0	999.4	955.1	44.30	22.562		
10,700.0	10,531.4	10,098.7	10,047.0	33.2	23.0	-101.06	814.4	292.0	1,042.0	997.5	44.44	23.447		
10,800.0	10,631.4	10,098.7	10,047.0	33.3	23.0	-101.06	814.4	292.0	1,092.0	1,047.5	44.58	24.495		
10,900.0	10,731.4	10,098.7	10,047.0	33.4	23.0	-101.06	814.4	292.0	1,148.7	1,103.9	44.73	25.683		
10,950.6	10,782.0	10,098.7	10,047.0	33.5	23.0	-101.06	814.4	292.0	1,179.5	1,134.7	44.80	26.330		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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						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	-11.56	26.2	-5.4	26.8					
100.0	100.0	100.0	100.0	0.1	0.1	-11.56	26.2	-5.4	26.8	26.5	0.27	98.346		
200.0	200.0	200.0	200.0	0.3	0.3	-11.56	26.2	-5.4	26.8	26.2	0.62	43.096 CC		
218.1	218.1	218.0	218.0	0.3	0.3	-62.25	26.3	-5.4	26.8	26.1	0.69	39.000 ES		
300.0	300.0	299.1	299.0	0.5	0.5	-71.41	27.1	-7.8	27.3	26.3	0.98	27.771		
400.0	399.6	397.0	396.6	0.7	0.7	-94.91	29.6	-14.9	32.6	31.2	1.38	23.636 SF		
500.0	498.8	492.5	491.3	1.0	1.0	-116.18	33.6	-26.5	48.9	47.1	1.79	27.328		
600.0	597.1	584.6	582.0	1.4	1.3	-128.38	39.0	-41.8	76.5	74.3	2.21	34.554		
700.0	694.7	674.5	669.6	1.8	1.7	-135.02	45.5	-60.5	112.4	109.8	2.65	42.406		
800.0	792.2	766.7	759.4	2.2	2.1	-138.57	52.6	-80.7	150.3	147.2	3.11	48.295		
900.0	889.8	859.0	849.1	2.6	2.5	-140.70	59.6	-100.9	188.4	184.8	3.58	52.596		
1,000.0	987.3	951.2	938.9	3.0	2.9	-142.11	66.7	-121.1	226.7	222.6	4.06	55.842		
1,100.0	1,084.9	1,043.5	1,028.6	3.4	3.3	-143.11	73.7	-141.3	265.1	260.5	4.54	58.366		
1,200.0	1,182.4	1,135.8	1,118.4	3.8	3.7	-143.86	80.8	-161.5	303.5	298.5	5.03	60.379		
1,300.0	1,280.0	1,228.0	1,208.1	4.3	4.1	-144.45	87.8	-181.7	341.9	336.4	5.51	62.019		
1,400.0	1,377.5	1,320.3	1,297.9	4.7	4.5	-144.91	94.9	-201.9	380.4	374.4	6.00	63.379		
1,500.0	1,475.1	1,412.5	1,387.6	5.1	4.9	-145.29	101.9	-222.1	418.9	412.4	6.49	64.524		
1,600.0	1,572.7	1,504.8	1,477.4	5.5	5.3	-145.60	109.0	-242.3	457.4	450.4	6.98	65.502		
1,700.0	1,670.2	1,597.1	1,567.1	6.0	5.7	-145.87	116.0	-262.5	495.9	488.5	7.47	66.345		
1,800.0	1,767.8	1,689.3	1,656.9	6.4	6.2	-146.10	123.1	-282.7	534.5	526.5	7.97	67.080		
1,900.0	1,865.3	1,781.6	1,746.6	6.8	6.6	-146.30	130.1	-302.9	573.0	564.5	8.46	67.725		
2,000.0	1,962.9	1,873.9	1,836.4	7.2	7.0	-146.47	137.2	-323.1	611.5	602.6	8.95	68.298		
2,100.0	2,060.4	1,966.1	1,926.1	7.7	7.4	-146.62	144.2	-343.3	650.1	640.6	9.45	68.808		
2,200.0	2,158.0	2,058.4	2,015.9	8.1	7.8	-146.75	151.3	-363.5	688.6	678.7	9.94	69.265		
2,300.0	2,255.5	2,150.6	2,105.6	8.5	8.2	-146.88	158.3	-383.7	727.1	716.7	10.44	69.678		
2,400.0	2,353.1	2,242.9	2,195.3	8.9	8.6	-146.98	165.4	-403.9	765.7	754.8	10.93	70.053		
2,500.0	2,450.6	2,335.2	2,285.1	9.4	9.1	-147.08	172.4	-424.1	804.3	792.8	11.43	70.394		
2,600.0	2,548.2	2,427.4	2,374.8	9.8	9.5	-147.17	179.5	-444.3	842.8	830.9	11.92	70.706		
2,700.0	2,645.8	2,519.7	2,464.6	10.2	9.9	-147.25	186.6	-464.4	881.4	868.9	12.41	70.992		
2,800.0	2,743.3	2,612.0	2,554.3	10.6	10.3	-147.33	193.6	-484.6	919.9	907.0	12.91	71.256		
2,900.0	2,840.9	2,704.2	2,644.1	11.1	10.7	-147.40	200.7	-504.8	958.5	945.1	13.41	71.499		
3,000.0	2,938.4	2,796.5	2,733.8	11.5	11.1	-147.46	207.7	-525.0	997.0	983.1	13.90	71.725		
3,100.0	3,036.0	2,888.7	2,823.6	11.9	11.5	-147.52	214.8	-545.2	1,035.6	1,021.2	14.40	71.935		
3,200.0	3,133.5	2,981.0	2,913.3	12.3	12.0	-147.57	221.8	-565.4	1,074.2	1,059.3	14.89	72.131		
3,300.0	3,231.1	3,073.3	3,003.1	12.8	12.4	-147.62	228.9	-585.6	1,112.7	1,097.3	15.39	72.314		
3,400.0	3,328.6	3,165.5	3,092.8	13.2	12.8	-147.67	235.9	-605.8	1,151.3	1,135.4	15.88	72.485		
3,500.0	3,426.2	3,257.8	3,182.6	13.6	13.2	-147.71	243.0	-626.0	1,189.8	1,173.5	16.38	72.645		
3,600.0	3,523.7	3,350.0	3,272.3	14.1	13.6	-147.75	250.0	-646.2	1,228.4	1,211.5	16.87	72.796		
3,700.0	3,621.3	3,442.3	3,362.1	14.5	14.0	-147.79	257.1	-666.4	1,267.0	1,249.6	17.37	72.938		
3,800.0	3,718.9	3,534.6	3,451.8	14.9	14.4	-147.83	264.1	-686.6	1,305.5	1,287.7	17.87	73.072		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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						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	-36.69	9.5	-7.1	11.8					
100.0	100.0	100.0	100.0	0.1	0.1	-36.69	9.5	-7.1	11.8	11.5	0.27	43.397		
200.0	200.0	200.0	200.0	0.3	0.3	-36.69	9.5	-7.1	11.8	11.2	0.62	19.017		
248.1	248.1	248.1	248.1	0.4	0.4	-90.00	9.5	-7.1	11.8	11.0	0.79	14.892 CC		
300.0	300.0	300.0	300.0	0.5	0.5	-99.67	9.5	-7.1	12.0	11.0	0.98	12.233 ES, SF		
400.0	399.6	398.8	398.8	0.7	0.7	-133.49	8.7	-9.5	17.7	16.3	1.35	13.137		
500.0	498.8	495.4	495.1	1.0	0.9	-153.66	6.4	-16.6	35.9	34.2	1.69	21.291		
600.0	597.1	588.4	587.3	1.4	1.1	-161.17	2.7	-27.7	65.2	63.2	2.02	32.305		
700.0	694.7	679.7	677.3	1.8	1.4	-164.46	-2.0	-42.2	102.1	99.7	2.35	43.356		
800.0	792.2	772.3	768.6	2.2	1.7	-166.06	-6.9	-57.2	139.7	137.0	2.70	51.751		
900.0	889.8	864.9	859.8	2.6	2.0	-166.99	-11.9	-72.3	177.3	174.2	3.04	58.231		
1,000.0	987.3	957.6	951.1	3.0	2.3	-167.59	-16.8	-87.4	214.9	211.6	3.39	63.374		
1,100.0	1,084.9	1,050.2	1,042.3	3.4	2.6	-168.01	-21.7	-102.4	252.6	248.9	3.74	67.550		
1,200.0	1,182.4	1,142.8	1,133.6	3.8	2.9	-168.33	-26.6	-117.5	290.3	286.2	4.09	71.009		
1,300.0	1,280.0	1,235.4	1,224.8	4.3	3.3	-168.57	-31.6	-132.5	328.0	323.6	4.44	73.918		
1,400.0	1,377.5	1,328.0	1,316.1	4.7	3.6	-168.76	-36.5	-147.6	365.7	360.9	4.79	76.398		
1,500.0	1,475.1	1,420.6	1,407.3	5.1	3.9	-168.91	-41.4	-162.7	403.4	398.3	5.14	78.538		
1,600.0	1,572.7	1,513.3	1,498.6	5.5	4.2	-169.04	-46.3	-177.7	441.1	435.6	5.49	80.403		
1,700.0	1,670.2	1,605.9	1,589.8	6.0	4.5	-169.15	-51.3	-192.8	478.8	473.0	5.84	82.042		
1,800.0	1,767.8	1,698.5	1,681.1	6.4	4.9	-169.24	-56.2	-207.8	516.5	510.3	6.19	83.495		
1,900.0	1,865.3	1,791.1	1,772.4	6.8	5.2	-169.32	-61.1	-222.9	554.2	547.7	6.54	84.790		
2,000.0	1,962.9	1,883.7	1,863.6	7.2	5.5	-169.39	-66.0	-238.0	591.9	585.0	6.89	85.952		
2,100.0	2,060.4	1,976.3	1,954.9	7.7	5.8	-169.46	-71.0	-253.0	629.6	622.4	7.24	87.002		
2,200.0	2,158.0	2,069.0	2,046.1	8.1	6.1	-169.51	-75.9	-268.1	667.3	659.7	7.59	87.953		
2,300.0	2,255.5	2,161.6	2,137.4	8.5	6.5	-169.56	-80.8	-283.1	705.0	697.1	7.94	88.820		
2,400.0	2,353.1	2,254.2	2,228.6	8.9	6.8	-169.60	-85.7	-298.2	742.7	734.4	8.29	89.613		
2,500.0	2,450.6	2,346.8	2,319.9	9.4	7.1	-169.64	-90.7	-313.3	780.4	771.8	8.64	90.342		
2,600.0	2,548.2	2,439.4	2,411.1	9.8	7.4	-169.68	-95.6	-328.3	818.1	809.1	8.99	91.013		
2,700.0	2,645.8	2,532.1	2,502.4	10.2	7.8	-169.71	-100.5	-343.4	855.8	846.5	9.34	91.634		
2,800.0	2,743.3	2,624.7	2,593.6	10.6	8.1	-169.74	-105.4	-358.5	893.5	883.9	9.69	92.209		
2,900.0	2,840.9	2,717.3	2,684.9	11.1	8.4	-169.77	-110.4	-373.5	931.2	921.2	10.04	92.744		
3,000.0	2,938.4	2,809.9	2,776.1	11.5	8.7	-169.79	-115.3	-388.6	969.0	958.6	10.39	93.243		
3,100.0	3,036.0	2,902.5	2,867.4	11.9	9.0	-169.82	-120.2	-403.6	1,006.7	995.9	10.74	93.709		
3,200.0	3,133.5	2,995.1	2,958.6	12.3	9.4	-169.84	-125.1	-418.7	1,044.4	1,033.3	11.09	94.145		
3,300.0	3,231.1	3,087.8	3,049.9	12.8	9.7	-169.86	-130.1	-433.8	1,082.1	1,070.6	11.44	94.554		
3,400.0	3,328.6	3,180.4	3,141.1	13.2	10.0	-169.88	-135.0	-448.8	1,119.8	1,108.0	11.79	94.939		
3,500.0	3,426.2	3,273.0	3,232.4	13.6	10.3	-169.90	-139.9	-463.9	1,157.5	1,145.3	12.15	95.302		
3,600.0	3,523.7	3,365.6	3,323.6	14.1	10.7	-169.91	-144.8	-478.9	1,195.2	1,182.7	12.50	95.644		
3,700.0	3,621.3	3,458.2	3,414.9	14.5	11.0	-169.93	-149.8	-494.0	1,232.9	1,220.1	12.85	95.967		
3,800.0	3,718.9	3,550.8	3,506.1	14.9	11.3	-169.94	-154.7	-509.1	1,270.6	1,257.4	13.20	96.274		
3,900.0	3,816.4	3,643.5	3,597.4	15.3	11.6	-169.96	-159.6	-524.1	1,308.3	1,294.8	13.55	96.564		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		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	-131.13	-7.6	-8.8	11.6					
100.0	100.0	100.0	100.0	0.1	0.1	-131.13	-7.6	-8.8	11.6	11.4	0.27	42.688		
200.0	200.0	200.0	200.0	0.3	0.3	-131.13	-7.6	-8.8	11.6	11.0	0.62	18.706 CC, ES		
300.0	300.0	299.1	299.1	0.5	0.5	178.89	-9.3	-10.7	16.8	15.9	0.97	17.389 SF		
400.0	399.6	396.7	396.3	0.7	0.7	179.31	-14.2	-16.5	32.4	31.1	1.31	24.725		
500.0	498.8	491.1	490.0	1.0	1.0	179.52	-21.9	-25.7	57.9	56.3	1.64	35.326		
600.0	597.1	584.6	582.2	1.4	1.3	179.61	-31.6	-37.2	91.7	89.8	1.96	46.748		
700.0	694.7	677.3	673.8	1.8	1.6	179.67	-41.2	-48.7	129.1	126.8	2.29	56.362		
800.0	792.2	770.0	765.3	2.2	1.9	179.70	-50.9	-60.2	166.6	164.0	2.62	63.547		
900.0	889.8	862.8	856.7	2.6	2.2	179.72	-60.5	-71.7	204.1	201.1	2.95	69.125		
1,000.0	987.3	955.5	948.2	3.0	2.5	179.74	-70.2	-83.2	241.5	238.3	3.28	73.582		
1,100.0	1,084.9	1,048.2	1,039.7	3.4	2.8	179.75	-79.9	-94.7	279.0	275.4	3.61	77.226		
1,200.0	1,182.4	1,140.9	1,131.2	3.8	3.1	179.76	-89.5	-106.2	316.5	312.6	3.94	80.260		
1,300.0	1,280.0	1,233.6	1,222.7	4.3	3.4	179.76	-99.2	-117.6	354.0	349.7	4.27	82.826		
1,400.0	1,377.5	1,326.3	1,314.2	4.7	3.7	179.77	-108.8	-129.1	391.5	386.9	4.60	85.025		
1,500.0	1,475.1	1,419.0	1,405.7	5.1	4.0	179.77	-118.5	-140.6	429.0	424.0	4.93	86.930		
1,600.0	1,572.7	1,511.7	1,497.1	5.5	4.3	179.78	-128.1	-152.1	466.4	461.2	5.26	88.597		
1,700.0	1,670.2	1,604.4	1,588.6	6.0	4.6	179.78	-137.8	-163.6	503.9	498.3	5.60	90.067		
1,800.0	1,767.8	1,697.1	1,680.1	6.4	4.9	179.78	-147.5	-175.1	541.4	535.5	5.93	91.373		
1,900.0	1,865.3	1,789.8	1,771.6	6.8	5.2	179.79	-157.1	-186.6	578.9	572.6	6.26	92.542		
2,000.0	1,962.9	1,882.6	1,863.1	7.2	5.5	179.79	-166.8	-198.1	616.4	609.8	6.59	93.594		
2,100.0	2,060.4	1,975.3	1,954.6	7.7	5.8	179.79	-176.4	-209.6	653.9	646.9	6.92	94.545		
2,200.0	2,158.0	2,068.0	2,046.1	8.1	6.2	179.79	-186.1	-221.1	691.3	684.1	7.25	95.410		
2,300.0	2,255.5	2,160.7	2,137.5	8.5	6.5	179.79	-195.7	-232.5	728.8	721.3	7.58	96.200		
2,400.0	2,353.1	2,253.4	2,229.0	8.9	6.8	179.79	-205.4	-244.0	766.3	758.4	7.91	96.924		
2,500.0	2,450.6	2,346.1	2,320.5	9.4	7.1	179.79	-215.1	-255.5	803.8	795.6	8.24	97.590		
2,600.0	2,548.2	2,438.8	2,412.0	9.8	7.4	179.80	-224.7	-267.0	841.3	832.7	8.57	98.204		
2,700.0	2,645.8	2,531.5	2,503.5	10.2	7.7	179.80	-234.4	-278.5	878.8	869.9	8.90	98.774		
2,800.0	2,743.3	2,624.2	2,595.0	10.6	8.0	179.80	-244.0	-290.0	916.2	907.0	9.23	99.302		
2,900.0	2,840.9	2,716.9	2,686.5	11.1	8.3	179.80	-253.7	-301.5	953.7	944.2	9.56	99.794		
3,000.0	2,938.4	2,809.6	2,777.9	11.5	8.6	179.80	-263.3	-313.0	991.2	981.3	9.89	100.253		
3,100.0	3,036.0	2,902.4	2,869.4	11.9	8.9	179.80	-273.0	-324.5	1,028.7	1,018.5	10.22	100.683		
3,200.0	3,133.5	2,995.1	2,960.9	12.3	9.2	179.80	-282.7	-336.0	1,066.2	1,055.6	10.55	101.086		
3,300.0	3,231.1	3,087.8	3,052.4	12.8	9.6	179.80	-292.3	-347.4	1,103.7	1,092.8	10.88	101.464		
3,400.0	3,328.6	3,180.5	3,143.9	13.2	9.9	179.80	-302.0	-358.9	1,141.1	1,129.9	11.21	101.820		
3,500.0	3,426.2	3,273.2	3,235.4	13.6	10.2	179.80	-311.6	-370.4	1,178.6	1,167.1	11.54	102.156		
3,600.0	3,523.7	3,365.9	3,326.9	14.1	10.5	179.80	-321.3	-381.9	1,216.1	1,204.2	11.87	102.473		
3,700.0	3,621.3	3,458.6	3,418.4	14.5	10.8	179.80	-330.9	-393.4	1,253.6	1,241.4	12.20	102.772		
3,800.0	3,718.9	3,551.3	3,509.8	14.9	11.1	179.80	-340.6	-404.9	1,291.1	1,278.6	12.53	103.057		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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					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	-156.82	-24.4	-10.4	26.5					
100.0	100.0	100.0	100.0	0.1	0.1	-156.82	-24.4	-10.4	26.5	26.3	0.27	97.486		
200.0	200.0	200.0	200.0	0.3	0.3	-156.82	-24.4	-10.4	26.5	25.9	0.62	42.719 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	155.15	-24.4	-10.4	28.9	27.9	0.97	29.753		
400.0	399.6	399.6	399.6	0.7	0.7	160.31	-24.4	-10.4	36.2	34.8	1.32	27.359 SF		
500.0	498.8	498.8	498.8	1.0	0.8	165.39	-24.4	-10.4	48.7	47.0	1.67	29.165		
600.0	597.1	597.1	597.1	1.4	1.0	169.26	-24.4	-10.4	66.5	64.5	2.01	33.115		
700.0	694.7	694.7	694.7	1.8	1.2	171.88	-24.4	-10.4	88.0	85.7	2.35	37.496		
800.0	792.2	792.2	792.2	2.2	1.3	173.50	-24.4	-10.4	109.8	107.1	2.69	40.826		
900.0	889.8	889.8	889.8	2.6	1.5	174.58	-24.4	-10.4	131.7	128.7	3.03	43.425		
1,000.0	987.3	987.3	987.3	3.0	1.7	175.36	-24.4	-10.4	153.6	150.2	3.38	45.506		
1,100.0	1,084.9	1,077.7	1,077.7	3.4	1.8	175.84	-25.6	-11.5	177.2	173.5	3.71	47.822		
1,200.0	1,182.4	1,165.0	1,164.8	3.8	2.0	176.07	-29.9	-15.0	205.3	201.3	4.03	50.912		
1,300.0	1,280.0	1,249.9	1,249.2	4.3	2.2	176.13	-36.9	-20.9	237.6	233.3	4.35	54.568		
1,400.0	1,377.5	1,332.1	1,330.5	4.7	2.4	176.08	-46.5	-29.0	274.0	269.3	4.67	58.652		
1,500.0	1,475.1	1,412.0	1,408.8	5.1	2.6	175.96	-58.3	-38.9	314.3	309.3	4.98	63.076		
1,600.0	1,572.7	1,502.1	1,496.8	5.5	2.9	175.82	-73.1	-51.3	356.5	351.2	5.31	67.093		
1,700.0	1,670.2	1,592.8	1,585.4	6.0	3.2	175.71	-88.0	-63.8	398.7	393.0	5.64	70.626		
1,800.0	1,767.8	1,683.4	1,674.0	6.4	3.5	175.61	-102.8	-76.2	440.8	434.9	5.98	73.767		
1,900.0	1,865.3	1,774.1	1,762.5	6.8	3.8	175.54	-117.7	-88.7	483.0	476.7	6.31	76.581		
2,000.0	1,962.9	1,864.8	1,851.1	7.2	4.2	175.48	-132.6	-101.2	525.2	518.6	6.64	79.115		
2,100.0	2,060.4	1,955.4	1,939.6	7.7	4.5	175.42	-147.4	-113.7	567.4	560.4	6.97	81.408		
2,200.0	2,158.0	2,046.1	2,028.2	8.1	4.9	175.38	-162.3	-126.1	609.6	602.3	7.30	83.494		
2,300.0	2,255.5	2,136.8	2,116.8	8.5	5.2	175.34	-177.2	-138.6	651.8	644.1	7.63	85.400		
2,400.0	2,353.1	2,227.4	2,205.3	8.9	5.6	175.30	-192.0	-151.1	693.9	686.0	7.96	87.146		
2,500.0	2,450.6	2,318.1	2,293.9	9.4	5.9	175.27	-206.9	-163.6	736.1	727.8	8.29	88.753		
2,600.0	2,548.2	2,408.8	2,382.5	9.8	6.3	175.24	-221.7	-176.0	778.3	769.7	8.63	90.237		
2,700.0	2,645.8	2,499.4	2,471.0	10.2	6.7	175.22	-236.6	-188.5	820.5	811.5	8.96	91.611		
2,800.0	2,743.3	2,590.1	2,559.6	10.6	7.0	175.20	-251.5	-201.0	862.7	853.4	9.29	92.885		
2,900.0	2,840.9	2,680.8	2,648.2	11.1	7.4	175.17	-266.3	-213.5	904.9	895.3	9.62	94.072		
3,000.0	2,938.4	2,771.4	2,736.7	11.5	7.7	175.16	-281.2	-225.9	947.1	937.1	9.95	95.180		
3,100.0	3,036.0	2,862.1	2,825.3	11.9	8.1	175.14	-296.1	-238.4	989.2	979.0	10.28	96.217		
3,200.0	3,133.5	2,952.8	2,913.9	12.3	8.5	175.12	-310.9	-250.9	1,031.4	1,020.8	10.61	97.189		
3,300.0	3,231.1	3,043.4	3,002.4	12.8	8.9	175.11	-325.8	-263.3	1,073.6	1,062.7	10.94	98.102		
3,400.0	3,328.6	3,134.1	3,091.0	13.2	9.2	175.10	-340.7	-275.8	1,115.8	1,104.5	11.28	98.962		
3,500.0	3,426.2	3,224.8	3,179.6	13.6	9.6	175.08	-355.5	-288.3	1,158.0	1,146.4	11.61	99.773		
3,600.0	3,523.7	3,315.4	3,268.1	14.1	10.0	175.07	-370.4	-300.8	1,200.2	1,188.2	11.94	100.539		
3,700.0	3,621.3	3,406.1	3,356.7	14.5	10.3	175.06	-385.3	-313.2	1,242.4	1,230.1	12.27	101.263		
3,800.0	3,718.9	3,496.7	3,445.2	14.9	10.7	175.05	-400.1	-325.7	1,284.5	1,271.9	12.60	101.949		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	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	-164.06	-41.5	-11.9	43.2						
100.0	100.0	100.0	100.0	0.1	0.1	-164.06	-41.5	-11.9	43.2	42.9	0.27	158.590			
200.0	200.0	200.0	200.0	0.3	0.3	-164.06	-41.5	-11.9	43.2	42.6	0.62	69.494 CC, ES			
300.0	300.0	300.0	300.0	0.5	0.5	147.40	-41.5	-11.9	45.4	44.4	0.97	46.657			
400.0	399.6	399.6	399.6	0.7	0.7	151.95	-41.5	-11.9	52.1	50.8	1.33	39.255			
500.0	498.8	498.8	498.8	1.0	0.8	157.31	-41.5	-11.9	64.0	62.3	1.68	37.980 SF			
600.0	597.1	597.1	597.1	1.4	1.0	162.12	-41.5	-11.9	81.1	79.1	2.03	39.908			
700.0	694.7	694.7	694.7	1.8	1.2	165.84	-41.5	-11.9	102.2	99.8	2.38	42.980			
800.0	792.2	792.2	792.2	2.2	1.3	168.33	-41.5	-11.9	123.6	120.9	2.72	45.439			
900.0	889.8	889.8	889.8	2.6	1.5	170.08	-41.5	-11.9	145.2	142.2	3.06	47.420			
1,000.0	987.3	987.3	987.3	3.0	1.7	171.38	-41.5	-11.9	166.9	163.5	3.40	49.039			
1,100.0	1,084.9	1,077.3	1,077.3	3.4	1.8	172.22	-42.8	-12.7	190.4	186.7	3.73	50.988			
1,200.0	1,182.4	1,164.2	1,164.0	3.8	2.0	172.66	-47.5	-15.6	218.2	214.2	4.06	53.735			
1,300.0	1,280.0	1,248.8	1,248.1	4.3	2.2	172.82	-55.2	-20.5	250.3	245.9	4.39	57.056			
1,400.0	1,377.5	1,330.8	1,329.1	4.7	2.4	172.79	-65.7	-27.2	286.3	281.6	4.71	60.805			
1,500.0	1,475.1	1,410.0	1,406.9	5.1	2.6	172.64	-78.5	-35.3	326.2	321.2	5.03	64.885			
1,600.0	1,572.7	1,493.5	1,488.0	5.5	2.9	172.40	-95.1	-45.8	369.8	364.5	5.36	69.044			
1,700.0	1,670.2	1,574.0	1,565.8	6.0	3.2	172.17	-112.4	-56.8	415.3	409.7	5.68	73.081			
1,800.0	1,767.8	1,663.0	1,651.9	6.4	3.6	171.96	-131.6	-69.0	461.0	454.9	6.02	76.523			
1,900.0	1,865.3	1,751.9	1,737.9	6.8	3.9	171.78	-150.8	-81.2	506.6	500.2	6.36	79.597			
2,000.0	1,962.9	1,840.9	1,823.9	7.2	4.3	171.64	-170.1	-93.3	552.2	545.5	6.71	82.356			
2,100.0	2,060.4	1,929.9	1,909.9	7.7	4.7	171.52	-189.3	-105.5	597.9	590.8	7.05	84.847			
2,200.0	2,158.0	2,018.9	1,995.9	8.1	5.1	171.41	-208.5	-117.7	643.5	636.1	7.39	87.107			
2,300.0	2,255.5	2,107.8	2,082.0	8.5	5.5	171.32	-227.7	-129.9	689.1	681.4	7.73	89.166			
2,400.0	2,353.1	2,196.8	2,168.0	8.9	5.9	171.24	-246.9	-142.0	734.8	726.7	8.07	91.048			
2,500.0	2,450.6	2,285.8	2,254.0	9.4	6.3	171.17	-266.1	-154.2	780.4	772.0	8.41	92.773			
2,600.0	2,548.2	2,374.8	2,340.0	9.8	6.7	171.11	-285.3	-166.4	826.1	817.3	8.75	94.364			
2,700.0	2,645.8	2,463.7	2,426.0	10.2	7.1	171.05	-304.5	-178.5	871.7	862.6	9.10	95.836			
2,800.0	2,743.3	2,552.7	2,512.1	10.6	7.5	171.00	-323.7	-190.7	917.3	907.9	9.44	97.201			
2,900.0	2,840.9	2,641.7	2,598.1	11.1	7.9	170.96	-342.9	-202.9	963.0	953.2	9.78	98.470			
3,000.0	2,938.4	2,730.6	2,684.1	11.5	8.4	170.91	-362.1	-215.1	1,008.6	998.5	10.12	99.653			
3,100.0	3,036.0	2,819.6	2,770.1	11.9	8.8	170.88	-381.3	-227.2	1,054.3	1,043.8	10.46	100.759			
3,200.0	3,133.5	2,908.6	2,856.1	12.3	9.2	170.84	-400.5	-239.4	1,099.9	1,089.1	10.81	101.795			
3,300.0	3,231.1	2,997.6	2,942.2	12.8	9.6	170.81	-419.7	-251.6	1,145.5	1,134.4	11.15	102.766			
3,400.0	3,328.6	3,086.5	3,028.2	13.2	10.0	170.78	-438.9	-263.7	1,191.2	1,179.7	11.49	103.679			
3,500.0	3,426.2	3,175.5	3,114.2	13.6	10.5	170.75	-458.1	-275.9	1,236.8	1,225.0	11.83	104.538			
3,600.0	3,523.7	3,264.5	3,200.2	14.1	10.9	170.73	-477.3	-288.1	1,282.5	1,270.3	12.17	105.350			

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		
0.0	0.0	0.0	0.0	0.0	0.0	-166.72	-58.6	-13.8	60.2					
100.0	100.0	100.0	100.0	0.1	0.1	-166.72	-58.6	-13.8	60.2	60.0	0.27	221.280		
200.0	200.0	200.0	200.0	0.3	0.3	-166.72	-58.6	-13.8	60.2	59.6	0.62	96.965 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	144.32	-58.6	-13.8	62.4	61.4	0.97	64.104		
400.0	399.6	399.6	399.6	0.7	0.7	148.02	-58.6	-13.8	68.9	67.6	1.33	51.716		
500.0	498.8	498.8	498.8	1.0	0.8	152.79	-58.6	-13.8	80.3	78.6	1.70	47.342 SF		
600.0	597.1	592.3	592.3	1.4	1.0	157.26	-60.6	-14.8	99.2	97.2	2.05	48.463		
700.0	694.7	682.9	682.6	1.8	1.2	160.76	-66.4	-17.8	126.7	124.3	2.39	53.000		
800.0	792.2	770.8	769.9	2.2	1.4	162.87	-75.7	-22.5	159.0	156.3	2.73	58.268		
900.0	889.8	856.0	853.9	2.6	1.6	164.08	-88.1	-28.8	195.7	192.7	3.07	63.855		
1,000.0	987.3	938.1	934.2	3.0	1.9	164.76	-103.2	-36.5	236.5	233.1	3.40	69.582		
1,100.0	1,084.9	1,017.0	1,010.8	3.4	2.3	165.11	-120.7	-45.4	281.0	277.3	3.73	75.387		
1,200.0	1,182.4	1,100.1	1,090.4	3.8	2.7	165.29	-141.4	-55.9	328.5	324.5	4.07	80.779		
1,300.0	1,280.0	1,187.9	1,174.6	4.3	3.1	165.42	-163.7	-67.2	376.4	371.9	4.42	85.211		
1,400.0	1,377.5	1,275.7	1,258.8	4.7	3.5	165.53	-185.9	-78.5	424.2	419.4	4.77	88.981		
1,500.0	1,475.1	1,363.5	1,343.0	5.1	4.0	165.61	-208.1	-89.8	472.0	466.9	5.12	92.224		
1,600.0	1,572.7	1,451.3	1,427.2	5.5	4.4	165.68	-230.4	-101.1	519.9	514.4	5.47	95.040		
1,700.0	1,670.2	1,539.1	1,511.4	6.0	4.8	165.73	-252.6	-112.4	567.7	561.9	5.82	97.506		
1,800.0	1,767.8	1,626.9	1,595.6	6.4	5.3	165.78	-274.8	-123.7	615.6	609.4	6.18	99.683		
1,900.0	1,865.3	1,714.7	1,679.8	6.8	5.8	165.82	-297.1	-135.0	663.4	656.9	6.53	101.618		
2,000.0	1,962.9	1,802.6	1,764.0	7.2	6.2	165.86	-319.3	-146.3	711.3	704.4	6.88	103.349		
2,100.0	2,060.4	1,890.4	1,848.2	7.7	6.7	165.89	-341.5	-157.6	759.1	751.9	7.24	104.904		
2,200.0	2,158.0	1,978.2	1,932.4	8.1	7.1	165.91	-363.8	-168.9	807.0	799.4	7.59	106.311		
2,300.0	2,255.5	2,066.0	2,016.6	8.5	7.6	165.94	-386.0	-180.2	854.8	846.9	7.95	107.589		
2,400.0	2,353.1	2,153.8	2,100.8	8.9	8.0	165.96	-408.2	-191.5	902.7	894.4	8.30	108.756		
2,500.0	2,450.6	2,241.6	2,185.0	9.4	8.5	165.98	-430.5	-202.8	950.5	941.9	8.65	109.826		
2,600.0	2,548.2	2,329.4	2,269.2	9.8	9.0	166.00	-452.7	-214.1	998.4	989.4	9.01	110.809		
2,700.0	2,645.8	2,417.2	2,353.4	10.2	9.4	166.01	-474.9	-225.4	1,046.2	1,036.8	9.36	111.717		
2,800.0	2,743.3	2,505.0	2,437.6	10.6	9.9	166.03	-497.1	-236.7	1,094.1	1,084.3	9.72	112.556		
2,900.0	2,840.9	2,592.8	2,521.7	11.1	10.3	166.04	-519.4	-248.0	1,141.9	1,131.8	10.08	113.335		
3,000.0	2,938.4	2,680.7	2,605.9	11.5	10.8	166.05	-541.6	-259.3	1,189.7	1,179.3	10.43	114.060		
3,100.0	3,036.0	2,768.5	2,690.1	11.9	11.3	166.06	-563.8	-270.6	1,237.6	1,226.8	10.79	114.736		
3,200.0	3,133.5	2,856.3	2,774.3	12.3	11.7	166.08	-586.1	-281.9	1,285.4	1,274.3	11.14	115.368		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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			
0.0	0.0	0.0	0.0	0.0	0.0	-174.76	-33.9	-3.1	34.0						
100.0	100.0	100.0	100.0	0.1	0.1	-174.76	-33.9	-3.1	34.0	33.7	0.27	124.934			
200.0	200.0	200.0	200.0	0.3	0.3	-174.76	-33.9	-3.1	34.0	33.4	0.62	54.746	CC, ES		
300.0	300.0	299.0	299.0	0.5	0.5	134.23	-35.4	-1.0	37.2	36.2	0.98	37.992			
400.0	399.6	397.4	397.0	0.7	0.7	132.81	-39.9	5.1	46.7	45.3	1.38	33.812			
500.0	498.8	494.6	493.5	1.0	1.0	131.33	-47.2	15.3	62.5	60.6	1.86	33.542	SF		
600.0	597.1	592.2	589.8	1.4	1.3	131.17	-56.3	27.8	83.4	81.0	2.41	34.641			
700.0	694.7	689.4	685.7	1.8	1.6	132.75	-65.4	40.4	106.7	103.7	2.98	35.807			
800.0	792.2	786.6	781.7	2.2	1.9	133.89	-74.5	53.0	130.2	126.6	3.56	36.528			
900.0	889.8	883.7	877.6	2.6	2.2	134.68	-83.7	65.5	153.7	149.6	4.15	37.009			
1,000.0	987.3	980.9	973.5	3.0	2.5	135.26	-92.8	78.1	177.2	172.5	4.75	37.349			
1,100.0	1,084.9	1,078.1	1,069.4	3.4	2.9	135.70	-101.9	90.7	200.8	195.5	5.34	37.603			
1,200.0	1,182.4	1,175.3	1,165.4	3.8	3.2	136.05	-111.0	103.2	224.4	218.4	5.94	37.798			
1,300.0	1,280.0	1,272.4	1,261.3	4.3	3.5	136.34	-120.1	115.8	247.9	241.4	6.53	37.952			
1,400.0	1,377.5	1,369.6	1,357.2	4.7	3.8	136.57	-129.2	128.3	271.5	264.4	7.13	38.078			
1,500.0	1,475.1	1,466.8	1,453.2	5.1	4.1	136.77	-138.3	140.9	295.1	287.3	7.73	38.182			
1,600.0	1,572.7	1,564.0	1,549.1	5.5	4.5	136.94	-147.4	153.5	318.7	310.3	8.33	38.269			
1,700.0	1,670.2	1,661.1	1,645.0	6.0	4.8	137.08	-156.6	166.0	342.2	333.3	8.93	38.343			
1,800.0	1,767.8	1,758.3	1,740.9	6.4	5.1	137.21	-165.7	178.6	365.8	356.3	9.52	38.407			
1,900.0	1,865.3	1,855.5	1,836.9	6.8	5.4	137.32	-174.8	191.2	389.4	379.3	10.12	38.463			
2,000.0	1,962.9	1,952.7	1,932.8	7.2	5.7	137.42	-183.9	203.7	413.0	402.3	10.72	38.512			
2,100.0	2,060.4	2,049.9	2,028.7	7.7	6.1	137.50	-193.0	216.3	436.6	425.2	11.32	38.555			
2,200.0	2,158.0	2,147.0	2,124.7	8.1	6.4	137.58	-202.1	228.9	460.2	448.2	11.92	38.593			
2,300.0	2,255.5	2,244.2	2,220.6	8.5	6.7	137.65	-211.2	241.4	483.7	471.2	12.52	38.628			
2,400.0	2,353.1	2,341.4	2,316.5	8.9	7.0	137.72	-220.3	254.0	507.3	494.2	13.12	38.659			
2,500.0	2,450.6	2,438.6	2,412.4	9.4	7.3	137.78	-229.4	266.5	530.9	517.2	13.72	38.687			
2,600.0	2,548.2	2,535.7	2,508.4	9.8	7.7	137.83	-238.6	279.1	554.5	540.2	14.32	38.713			
2,700.0	2,645.8	2,632.9	2,604.3	10.2	8.0	137.88	-247.7	291.7	578.1	563.2	14.92	38.736			
2,800.0	2,743.3	2,730.1	2,700.2	10.6	8.3	137.93	-256.8	304.2	601.7	586.2	15.52	38.758			
2,900.0	2,840.9	2,827.3	2,796.2	11.1	8.6	137.97	-265.9	316.8	625.3	609.2	16.12	38.778			
3,000.0	2,938.4	2,924.4	2,892.1	11.5	8.9	138.01	-275.0	329.4	648.9	632.2	16.73	38.796			
3,100.0	3,036.0	3,021.6	2,988.0	11.9	9.3	138.04	-284.1	341.9	672.5	655.1	17.33	38.813			
3,200.0	3,133.5	3,118.8	3,084.0	12.3	9.6	138.08	-293.2	354.5	696.1	678.1	17.93	38.829			
3,300.0	3,231.1	3,216.0	3,179.9	12.8	9.9	138.11	-302.3	367.0	719.7	701.1	18.53	38.843			
3,400.0	3,328.6	3,313.1	3,275.8	13.2	10.2	138.14	-311.5	379.6	743.2	724.1	19.13	38.857			
3,500.0	3,426.2	3,410.3	3,371.7	13.6	10.5	138.17	-320.6	392.2	766.8	747.1	19.73	38.870			
3,600.0	3,523.7	3,507.5	3,467.7	14.1	10.9	138.19	-329.7	404.7	790.4	770.1	20.33	38.882			
3,700.0	3,621.3	3,604.7	3,563.6	14.5	11.2	138.22	-338.8	417.3	814.0	793.1	20.93	38.893			
3,800.0	3,718.9	3,701.9	3,659.5	14.9	11.5	138.24	-347.9	429.9	837.6	816.1	21.53	38.904			
3,900.0	3,816.4	3,799.0	3,755.5	15.3	11.8	138.26	-357.0	442.4	861.2	839.1	22.13	38.914			
4,000.0	3,914.0	3,896.2	3,851.4	15.8	12.2	138.28	-366.1	455.0	884.8	862.1	22.73	38.924			
4,100.0	4,011.5	3,993.4	3,947.3	16.2	12.5	138.30	-375.2	467.6	908.4	885.1	23.33	38.933			
4,200.0	4,109.1	4,090.6	4,043.2	16.6	12.8	138.32	-384.4	480.1	932.0	908.1	23.93	38.941			
4,300.0	4,206.6	4,187.7	4,139.2	17.0	13.1	138.34	-393.5	492.7	955.6	931.1	24.53	38.949			
4,400.0	4,304.2	4,284.9	4,235.1	17.5	13.4	138.36	-402.6	505.2	979.2	954.0	25.14	38.957			
4,500.0	4,401.7	4,382.1	4,331.0	17.9	13.8	138.37	-411.7	517.8	1,002.8	977.0	25.74	38.964			
4,600.0	4,499.3	4,479.3	4,427.0	18.3	14.1	138.39	-420.8	530.4	1,026.4	1,000.0	26.34	38.971			
4,700.0	4,596.8	4,576.4	4,522.9	18.7	14.4	138.40	-429.9	542.9	1,050.0	1,023.0	26.94	38.978			
4,800.0	4,694.4	4,673.6	4,618.8	19.2	14.7	138.42	-439.0	555.5	1,073.6	1,046.0	27.54	38.984			
4,900.0	4,792.0	4,770.8	4,714.7	19.6	15.0	138.43	-448.1	568.1	1,097.1	1,069.0	28.14	38.990			
5,000.0	4,889.5	4,868.0	4,810.7	20.0	15.4	138.44	-457.3	580.6	1,120.7	1,092.0	28.74	38.996			
5,100.0	4,987.1	4,965.1	4,906.6	20.4	15.7	138.45	-466.4	593.2	1,144.3	1,115.0	29.34	39.001			

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		
5,200.0	5,084.6	5,062.3	5,002.5	20.9	16.0	138.47	-475.5	605.8	1,167.9	1,138.0	29.94	39.007		
5,300.0	5,182.2	5,159.5	5,098.5	21.3	16.3	138.48	-484.6	618.3	1,191.5	1,161.0	30.54	39.012		
5,400.0	5,279.7	5,256.7	5,194.4	21.7	16.7	138.49	-493.7	630.9	1,215.1	1,184.0	31.14	39.017		
5,500.0	5,377.3	5,353.9	5,290.3	22.2	17.0	138.50	-502.8	643.4	1,238.7	1,207.0	31.74	39.021		
5,600.0	5,474.8	5,451.0	5,386.3	22.6	17.3	138.51	-511.9	656.0	1,262.3	1,230.0	32.35	39.026		
5,700.0	5,572.4	5,548.2	5,482.2	23.0	17.6	138.52	-521.0	668.6	1,285.9	1,253.0	32.95	39.030		
5,800.0	5,669.9	5,645.4	5,578.1	23.4	17.9	138.53	-530.1	681.1	1,309.5	1,275.9	33.55	39.034		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		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	-174.58	-50.6	-4.8	50.9						
100.0	100.0	100.0	100.0	0.1	0.1	-174.58	-50.6	-4.8	50.9	50.6	0.27	186.767			
200.0	200.0	200.0	200.0	0.3	0.3	-174.58	-50.6	-4.8	50.9	50.2	0.62	81.842 CC, ES			
300.0	300.0	300.0	300.0	0.5	0.5	137.01	-50.6	-4.8	52.7	51.8	0.97	54.150			
400.0	399.6	397.6	397.5	0.7	0.7	140.20	-52.6	-3.3	60.4	59.1	1.34	45.117			
500.0	498.8	494.1	493.8	1.0	0.9	141.97	-58.6	1.1	75.7	73.9	1.74	43.470 SF			
600.0	597.1	588.7	587.6	1.4	1.1	142.53	-68.2	8.1	98.2	96.0	2.20	44.643			
700.0	694.7	681.1	678.6	1.8	1.4	142.36	-81.1	17.7	126.6	123.9	2.72	46.580			
800.0	792.2	773.0	768.2	2.2	1.8	141.11	-97.4	29.7	158.0	154.7	3.28	48.134			
900.0	889.8	867.6	860.2	2.6	2.2	139.96	-115.0	42.7	190.3	186.4	3.88	49.070			
1,000.0	987.3	962.2	952.2	3.0	2.6	139.15	-132.7	55.8	222.5	218.1	4.48	49.680			
1,100.0	1,084.9	1,056.8	1,044.3	3.4	3.0	138.54	-150.4	68.8	254.8	249.7	5.09	50.096			
1,200.0	1,182.4	1,151.4	1,136.3	3.8	3.4	138.07	-168.0	81.8	287.2	281.5	5.70	50.395			
1,300.0	1,280.0	1,246.0	1,228.3	4.3	3.8	137.69	-185.7	94.9	319.5	313.2	6.31	50.618			
1,400.0	1,377.5	1,340.6	1,320.3	4.7	4.2	137.38	-203.3	107.9	351.8	344.9	6.93	50.790			
1,500.0	1,475.1	1,435.2	1,412.4	5.1	4.6	137.13	-221.0	120.9	384.2	376.7	7.54	50.925			
1,600.0	1,572.7	1,529.8	1,504.4	5.5	5.0	136.91	-238.7	134.0	416.6	408.4	8.16	51.034			
1,700.0	1,670.2	1,624.4	1,596.4	6.0	5.5	136.73	-256.3	147.0	448.9	440.2	8.78	51.124			
1,800.0	1,767.8	1,719.0	1,688.5	6.4	5.9	136.57	-274.0	160.0	481.3	471.9	9.40	51.198			
1,900.0	1,865.3	1,813.7	1,780.5	6.8	6.3	136.43	-291.6	173.1	513.7	503.7	10.02	51.261			
2,000.0	1,962.9	1,908.3	1,872.5	7.2	6.7	136.30	-309.3	186.1	546.1	535.4	10.64	51.315			
2,100.0	2,060.4	2,002.9	1,964.5	7.7	7.1	136.19	-327.0	199.1	578.4	567.2	11.26	51.361			
2,200.0	2,158.0	2,097.5	2,056.6	8.1	7.6	136.10	-344.6	212.2	610.8	598.9	11.88	51.401			
2,300.0	2,255.5	2,192.1	2,148.6	8.5	8.0	136.01	-362.3	225.2	643.2	630.7	12.50	51.437			
2,400.0	2,353.1	2,286.7	2,240.6	8.9	8.4	135.93	-380.0	238.2	675.6	662.4	13.13	51.468			
2,500.0	2,450.6	2,381.3	2,332.6	9.4	8.8	135.86	-397.6	251.3	708.0	694.2	13.75	51.496			
2,600.0	2,548.2	2,475.9	2,424.7	9.8	9.2	135.79	-415.3	264.3	740.3	726.0	14.37	51.521			
2,700.0	2,645.8	2,570.5	2,516.7	10.2	9.6	135.73	-432.9	277.3	772.7	757.7	14.99	51.543			
2,800.0	2,743.3	2,665.1	2,608.7	10.6	10.1	135.67	-450.6	290.4	805.1	789.5	15.61	51.563			
2,900.0	2,840.9	2,759.7	2,700.7	11.1	10.5	135.62	-468.3	303.4	837.5	821.3	16.24	51.582			
3,000.0	2,938.4	2,854.3	2,792.8	11.5	10.9	135.58	-485.9	316.4	869.9	853.0	16.86	51.598			
3,100.0	3,036.0	2,948.9	2,884.8	11.9	11.3	135.53	-503.6	329.5	902.3	884.8	17.48	51.614			
3,200.0	3,133.5	3,043.6	2,976.8	12.3	11.7	135.49	-521.2	342.5	934.7	916.6	18.10	51.628			
3,300.0	3,231.1	3,138.2	3,068.9	12.8	12.2	135.45	-538.9	355.5	967.0	948.3	18.73	51.641			
3,400.0	3,328.6	3,232.8	3,160.9	13.2	12.6	135.42	-556.6	368.6	999.4	980.1	19.35	51.653			
3,500.0	3,426.2	3,327.4	3,252.9	13.6	13.0	135.38	-574.2	381.6	1,031.8	1,011.9	19.97	51.664			
3,600.0	3,523.7	3,422.0	3,344.9	14.1	13.4	135.35	-591.9	394.6	1,064.2	1,043.6	20.59	51.674			
3,700.0	3,621.3	3,516.6	3,437.0	14.5	13.8	135.32	-609.5	407.7	1,096.6	1,075.4	21.22	51.684			
3,800.0	3,718.9	3,611.2	3,529.0	14.9	14.3	135.29	-627.2	420.7	1,129.0	1,107.2	21.84	51.693			
3,900.0	3,816.4	3,705.8	3,621.0	15.3	14.7	135.27	-644.9	433.7	1,161.4	1,138.9	22.46	51.701			
4,000.0	3,914.0	3,800.4	3,713.0	15.8	15.1	135.24	-662.5	446.8	1,193.8	1,170.7	23.09	51.709			
4,100.0	4,011.5	3,895.0	3,805.1	16.2	15.5	135.22	-680.2	459.8	1,226.2	1,202.5	23.71	51.717			
4,200.0	4,109.1	3,989.6	3,897.1	16.6	15.9	135.20	-697.9	472.8	1,258.6	1,234.2	24.33	51.724			
4,300.0	4,206.6	4,084.2	3,989.1	17.0	16.4	135.18	-715.5	485.8	1,290.9	1,266.0	24.96	51.730			

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	-174.52	-67.7	-6.5	68.1					
100.0	100.0	100.0	100.0	0.1	0.1	-174.52	-67.7	-6.5	68.1	67.8	0.27	249.949		
200.0	200.0	200.0	200.0	0.3	0.3	-174.52	-67.7	-6.5	68.1	67.4	0.62	109.528 CC, ES		
300.0	300.0	297.0	297.0	0.5	0.5	135.31	-69.9	-5.3	72.0	71.0	0.97	74.059		
400.0	399.6	393.2	392.8	0.7	0.7	135.78	-76.2	-1.6	83.7	82.4	1.35	61.976		
500.0	498.8	487.6	486.5	1.0	1.0	136.26	-86.4	4.3	103.1	101.3	1.78	58.006		
600.0	597.1	579.5	577.0	1.4	1.3	136.58	-100.3	12.3	130.0	127.7	2.27	57.356 SF		
700.0	694.7	668.5	663.8	1.8	1.7	136.89	-117.2	22.1	163.0	160.2	2.81	58.094		
800.0	792.2	759.3	751.6	2.2	2.1	136.56	-137.5	33.9	198.9	195.5	3.38	58.921		
900.0	889.8	852.6	841.6	2.6	2.5	136.27	-158.5	46.1	235.1	231.1	3.96	59.310		
1,000.0	987.3	945.8	931.6	3.0	3.0	136.06	-179.6	58.2	271.3	266.7	4.56	59.512		
1,100.0	1,084.9	1,039.0	1,021.5	3.4	3.4	135.89	-200.7	70.4	307.5	302.3	5.16	59.618		
1,200.0	1,182.4	1,132.2	1,111.5	3.8	3.9	135.76	-221.8	82.6	343.7	337.9	5.76	59.672		
1,300.0	1,280.0	1,225.4	1,201.5	4.3	4.3	135.66	-242.8	94.8	379.9	373.5	6.36	59.695		
1,400.0	1,377.5	1,318.6	1,291.5	4.7	4.8	135.57	-263.9	107.0	416.1	409.1	6.97	59.701		
1,500.0	1,475.1	1,411.8	1,381.5	5.1	5.2	135.50	-285.0	119.2	452.3	444.7	7.58	59.697		
1,600.0	1,572.7	1,505.1	1,471.4	5.5	5.7	135.44	-306.0	131.4	488.5	480.3	8.18	59.687		
1,700.0	1,670.2	1,598.3	1,561.4	6.0	6.1	135.38	-327.1	143.6	524.7	515.9	8.79	59.674		
1,800.0	1,767.8	1,691.5	1,651.4	6.4	6.6	135.34	-348.2	155.8	560.9	551.5	9.40	59.658		
1,900.0	1,865.3	1,784.7	1,741.4	6.8	7.1	135.30	-369.2	168.0	597.1	587.1	10.01	59.642		
2,000.0	1,962.9	1,877.9	1,831.4	7.2	7.5	135.26	-390.3	180.2	633.3	622.7	10.62	59.625		
2,100.0	2,060.4	1,971.1	1,921.3	7.7	8.0	135.23	-411.4	192.4	669.5	658.3	11.23	59.608		
2,200.0	2,158.0	2,064.4	2,011.3	8.1	8.4	135.20	-432.5	204.6	705.7	693.9	11.84	59.592		
2,300.0	2,255.5	2,157.6	2,101.3	8.5	8.9	135.17	-453.5	216.7	741.9	729.5	12.45	59.576		
2,400.0	2,353.1	2,250.8	2,191.3	8.9	9.3	135.15	-474.6	228.9	778.1	765.1	13.06	59.561		
2,500.0	2,450.6	2,344.0	2,281.3	9.4	9.8	135.13	-495.7	241.1	814.3	800.7	13.68	59.546		
2,600.0	2,548.2	2,437.2	2,371.2	9.8	10.3	135.11	-516.7	253.3	850.6	836.3	14.29	59.532		
2,700.0	2,645.8	2,530.4	2,461.2	10.2	10.7	135.09	-537.8	265.5	886.8	871.9	14.90	59.519		
2,800.0	2,743.3	2,623.6	2,551.2	10.6	11.2	135.07	-558.9	277.7	923.0	907.5	15.51	59.506		
2,900.0	2,840.9	2,716.9	2,641.2	11.1	11.6	135.06	-579.9	289.9	959.2	943.1	16.12	59.494		
3,000.0	2,938.4	2,810.1	2,731.2	11.5	12.1	135.04	-601.0	302.1	995.4	978.6	16.73	59.482		
3,100.0	3,036.0	2,903.3	2,821.1	11.9	12.6	135.03	-622.1	314.3	1,031.6	1,014.2	17.35	59.471		
3,200.0	3,133.5	2,996.5	2,911.1	12.3	13.0	135.02	-643.2	326.5	1,067.8	1,049.8	17.96	59.461		
3,300.0	3,231.1	3,089.7	3,001.1	12.8	13.5	135.01	-664.2	338.7	1,104.0	1,085.4	18.57	59.451		
3,400.0	3,328.6	3,182.9	3,091.1	13.2	13.9	135.00	-685.3	350.9	1,140.2	1,121.0	19.18	59.441		
3,500.0	3,426.2	3,276.1	3,181.1	13.6	14.4	134.99	-706.4	363.1	1,176.4	1,156.6	19.79	59.432		
3,600.0	3,523.7	3,369.4	3,271.0	14.1	14.8	134.98	-727.4	375.3	1,212.6	1,192.2	20.41	59.423		
3,700.0	3,621.3	3,462.6	3,361.0	14.5	15.3	134.97	-748.5	387.4	1,248.8	1,227.8	21.02	59.415		
3,800.0	3,718.9	3,555.8	3,451.0	14.9	15.8	134.96	-769.6	399.6	1,285.0	1,263.4	21.63	59.406		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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		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	-175.38	-17.5	-1.4	17.5					
100.0	100.0	100.0	100.0	0.1	0.1	-175.38	-17.5	-1.4	17.5	17.3	0.27	64.406		
200.0	200.0	200.0	200.0	0.3	0.3	-175.38	-17.5	-1.4	17.5	16.9	0.62	28.223 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	139.74	-17.5	-1.4	19.5	18.5	0.97	19.983		
400.0	399.6	399.9	399.8	0.7	0.7	145.21	-17.8	1.2	25.4	24.1	1.34	18.940 SF		
500.0	498.8	499.7	499.3	1.0	0.9	144.59	-18.7	8.9	34.9	33.1	1.76	19.802		
600.0	597.1	598.9	597.8	1.4	1.1	142.93	-20.0	20.7	48.1	45.8	2.25	21.330		
700.0	694.7	697.6	695.8	1.8	1.4	143.83	-21.4	32.7	64.1	61.3	2.76	23.214		
800.0	792.2	796.3	793.7	2.2	1.6	144.46	-22.8	44.6	80.3	77.0	3.28	24.465		
900.0	889.8	895.0	891.7	2.6	1.9	144.89	-24.2	56.6	96.5	92.7	3.81	25.334		
1,000.0	987.3	993.6	989.6	3.0	2.2	145.19	-25.6	68.6	112.6	108.3	4.34	25.970		
1,100.0	1,084.9	1,092.3	1,087.5	3.4	2.4	145.41	-27.0	80.5	128.8	124.0	4.87	26.453		
1,200.0	1,182.4	1,191.0	1,185.5	3.8	2.7	145.59	-28.4	92.5	145.0	139.6	5.40	26.832		
1,300.0	1,280.0	1,289.7	1,283.4	4.3	3.0	145.73	-29.8	104.5	161.2	155.3	5.94	27.137		
1,400.0	1,377.5	1,388.4	1,381.4	4.7	3.2	145.84	-31.2	116.5	177.4	170.9	6.48	27.387		
1,500.0	1,475.1	1,487.0	1,479.3	5.1	3.5	145.94	-32.6	128.4	193.6	186.6	7.02	27.596		
1,600.0	1,572.7	1,585.7	1,577.3	5.5	3.8	146.02	-34.0	140.4	209.8	202.2	7.55	27.773		
1,700.0	1,670.2	1,684.4	1,675.2	6.0	4.0	146.09	-35.4	152.4	226.0	217.9	8.09	27.925		
1,800.0	1,767.8	1,783.1	1,773.1	6.4	4.3	146.15	-36.7	164.3	242.2	233.5	8.63	28.056		
1,900.0	1,865.3	1,881.8	1,871.1	6.8	4.6	146.20	-38.1	176.3	258.4	249.2	9.17	28.171		
2,000.0	1,962.9	1,980.4	1,969.0	7.2	4.9	146.25	-39.5	188.3	274.5	264.8	9.71	28.273		
2,100.0	2,060.4	2,079.1	2,067.0	7.7	5.1	146.29	-40.9	200.2	290.7	280.5	10.25	28.363		
2,200.0	2,158.0	2,177.8	2,164.9	8.1	5.4	146.33	-42.3	212.2	306.9	296.1	10.79	28.444		
2,300.0	2,255.5	2,276.5	2,262.8	8.5	5.7	146.36	-43.7	224.2	323.1	311.8	11.33	28.517		
2,400.0	2,353.1	2,375.2	2,360.8	8.9	5.9	146.39	-45.1	236.2	339.3	327.4	11.87	28.582		
2,500.0	2,450.6	2,473.8	2,458.7	9.4	6.2	146.42	-46.5	248.1	355.5	343.1	12.41	28.642		
2,600.0	2,548.2	2,572.5	2,556.7	9.8	6.5	146.44	-47.9	260.1	371.7	358.7	12.95	28.697		
2,700.0	2,645.8	2,671.2	2,654.6	10.2	6.8	146.46	-49.3	272.1	387.9	374.4	13.49	28.747		
2,800.0	2,743.3	2,769.9	2,752.6	10.6	7.0	146.48	-50.7	284.0	404.1	390.0	14.03	28.792		
2,900.0	2,840.9	2,868.6	2,850.5	11.1	7.3	146.50	-52.1	296.0	420.3	405.7	14.58	28.835		
3,000.0	2,938.4	2,967.2	2,948.4	11.5	7.6	146.52	-53.4	308.0	436.5	421.3	15.12	28.874		
3,100.0	3,036.0	3,065.9	3,046.4	11.9	7.9	146.54	-54.8	320.0	452.7	437.0	15.66	28.910		
3,200.0	3,133.5	3,164.6	3,144.3	12.3	8.1	146.55	-56.2	331.9	468.8	452.6	16.20	28.944		
3,300.0	3,231.1	3,263.3	3,242.3	12.8	8.4	146.57	-57.6	343.9	485.0	468.3	16.74	28.976		
3,400.0	3,328.6	3,362.0	3,340.2	13.2	8.7	146.58	-59.0	355.9	501.2	484.0	17.28	29.005		
3,500.0	3,426.2	3,460.6	3,438.1	13.6	8.9	146.59	-60.4	367.8	517.4	499.6	17.82	29.033		
3,600.0	3,523.7	3,559.3	3,536.1	14.1	9.2	146.61	-61.8	379.8	533.6	515.3	18.36	29.059		
3,700.0	3,621.3	3,658.0	3,634.0	14.5	9.5	146.62	-63.2	391.8	549.8	530.9	18.90	29.083		
3,800.0	3,718.9	3,756.7	3,732.0	14.9	9.8	146.63	-64.6	403.8	566.0	546.6	19.45	29.106		
3,900.0	3,816.4	3,855.4	3,829.9	15.3	10.0	146.64	-66.0	415.7	582.2	562.2	19.99	29.128		
4,000.0	3,914.0	3,954.0	3,927.9	15.8	10.3	146.65	-67.4	427.7	598.4	577.9	20.53	29.149		
4,100.0	4,011.5	4,052.7	4,025.8	16.2	10.6	146.66	-68.8	439.7	614.6	593.5	21.07	29.168		
4,200.0	4,109.1	4,151.4	4,123.7	16.6	10.9	146.66	-70.1	451.6	630.8	609.2	21.61	29.187		
4,300.0	4,206.6	4,250.1	4,221.7	17.0	11.1	146.67	-71.5	463.6	647.0	624.8	22.15	29.204		
4,400.0	4,304.2	4,348.8	4,319.6	17.5	11.4	146.68	-72.9	475.6	663.2	640.5	22.69	29.221		
4,500.0	4,401.7	4,447.4	4,417.6	17.9	11.7	146.69	-74.3	487.5	679.4	656.1	23.24	29.237		
4,600.0	4,499.3	4,546.1	4,515.5	18.3	11.9	146.69	-75.7	499.5	695.5	671.8	23.78	29.252		
4,700.0	4,596.8	4,644.8	4,613.4	18.7	12.2	146.70	-77.1	511.5	711.7	687.4	24.32	29.266		
4,800.0	4,694.4	4,743.5	4,711.4	19.2	12.5	146.71	-78.5	523.5	727.9	703.1	24.86	29.280		
4,900.0	4,792.0	4,842.2	4,809.3	19.6	12.8	146.71	-79.9	535.4	744.1	718.7	25.40	29.293		
5,000.0	4,889.5	4,940.8	4,907.3	20.0	13.0	146.72	-81.3	547.4	760.3	734.4	25.94	29.306		
5,100.0	4,987.1	5,039.5	5,005.2	20.4	13.3	146.72	-82.7	559.4	776.5	750.0	26.49	29.318		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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			
5,200.0	5,084.6	5,138.2	5,103.2	20.9	13.6	146.73	-84.1	571.3	792.7	765.7	27.03	29.330		
5,300.0	5,182.2	5,236.9	5,201.1	21.3	13.9	146.73	-85.5	583.3	808.9	781.3	27.57	29.341		
5,400.0	5,279.7	5,335.6	5,299.0	21.7	14.1	146.74	-86.8	595.3	825.1	797.0	28.11	29.352		
5,500.0	5,377.3	5,434.2	5,397.0	22.2	14.4	146.74	-88.2	607.3	841.3	812.6	28.65	29.362		
5,600.0	5,474.8	5,532.9	5,494.9	22.6	14.7	146.75	-89.6	619.2	857.5	828.3	29.19	29.372		
5,700.0	5,572.4	5,631.6	5,592.9	23.0	14.9	146.75	-91.0	631.2	873.7	843.9	29.74	29.381		
5,800.0	5,669.9	5,730.3	5,690.8	23.4	15.2	146.76	-92.4	643.2	889.9	859.6	30.28	29.390		
5,900.0	5,767.5	5,829.0	5,788.7	23.9	15.5	146.76	-93.8	655.1	906.0	875.2	30.82	29.399		
6,000.0	5,865.1	5,927.6	5,886.7	24.3	15.8	146.76	-95.2	667.1	922.2	890.9	31.36	29.408		
6,100.0	5,962.6	6,026.3	5,984.6	24.7	16.0	146.77	-96.6	679.1	938.4	906.5	31.90	29.416		
6,200.0	6,060.2	6,125.0	6,082.6	25.1	16.3	146.77	-98.0	691.1	954.6	922.2	32.44	29.424		
6,300.0	6,157.7	6,223.7	6,180.5	25.6	16.6	146.78	-99.4	703.0	970.8	937.8	32.99	29.432		
6,400.0	6,255.3	6,322.4	6,278.5	26.0	16.9	146.78	-100.8	715.0	987.0	953.5	33.53	29.439		
6,500.0	6,352.8	6,421.0	6,376.4	26.4	17.1	146.78	-102.2	727.0	1,003.2	969.1	34.07	29.446		
6,600.0	6,450.4	6,519.7	6,474.3	26.8	17.4	146.79	-103.5	738.9	1,019.4	984.8	34.61	29.453		
6,700.0	6,547.9	6,618.4	6,572.3	27.3	17.7	146.79	-104.9	750.9	1,035.6	1,000.4	35.15	29.460		
6,800.0	6,645.5	6,715.7	6,668.9	27.7	17.9	146.80	-106.3	762.7	1,051.8	1,016.1	35.68	29.477		
6,900.0	6,743.0	6,807.7	6,760.4	28.1	18.1	146.91	-107.4	771.8	1,068.4	1,032.3	36.12	29.576		
7,000.0	6,840.6	6,900.0	6,852.5	28.5	18.3	147.18	-108.1	777.9	1,085.7	1,049.2	36.48	29.761		
7,100.0	6,938.2	6,990.3	6,942.7	29.0	18.4	147.58	-108.5	781.2	1,103.6	1,066.9	36.75	30.033		
7,200.0	7,035.8	7,083.3	7,035.8	29.4	18.5	148.18	-108.5	781.7	1,122.0	1,085.1	36.95	30.364		
7,300.0	7,133.9	7,181.5	7,133.9	29.7	18.7	148.86	-108.5	781.7	1,138.4	1,101.2	37.14	30.650		
7,400.0	7,232.7	7,280.3	7,232.7	30.0	18.8	149.40	-108.5	781.7	1,151.8	1,114.5	37.33	30.853		
7,500.0	7,331.9	7,379.5	7,331.9	30.3	18.9	149.81	-108.5	781.7	1,162.3	1,124.8	37.53	30.974		
7,600.0	7,431.5	7,479.1	7,431.5	30.5	19.0	150.10	-108.5	781.7	1,169.9	1,132.2	37.72	31.014		
7,700.0	7,531.4	7,579.0	7,531.4	30.6	19.1	150.27	-108.5	781.7	1,174.4	1,136.5	37.92	30.972		
7,800.0	7,631.4	7,679.0	7,631.4	30.7	19.3	-159.30	-108.5	781.7	1,175.9	1,137.8	38.12	30.851		
7,900.0	7,731.4	7,779.0	7,731.4	30.7	19.4	-159.30	-108.5	781.7	1,175.9	1,137.6	38.36	30.652		
8,000.0	7,831.4	7,879.0	7,831.4	30.8	19.5	-159.30	-108.5	781.7	1,175.9	1,137.3	38.61	30.455		
8,100.0	7,931.4	7,979.0	7,931.4	30.9	19.6	-159.30	-108.5	781.7	1,175.9	1,137.1	38.86	30.258		
8,200.0	8,031.4	8,079.0	8,031.4	31.0	19.7	-159.30	-108.5	781.7	1,175.9	1,136.8	39.11	30.063		
8,300.0	8,131.4	8,179.0	8,131.4	31.1	19.9	-159.30	-108.5	781.7	1,175.9	1,136.6	39.37	29.870		
8,400.0	8,231.4	8,279.0	8,231.4	31.1	20.0	-159.30	-108.5	781.7	1,175.9	1,136.3	39.62	29.677		
8,500.0	8,331.4	8,379.0	8,331.4	31.2	20.1	-159.30	-108.5	781.7	1,175.9	1,136.0	39.88	29.487		
8,600.0	8,431.4	8,479.0	8,431.4	31.3	20.2	-159.30	-108.5	781.7	1,175.9	1,135.8	40.14	29.297		
8,700.0	8,531.4	8,579.0	8,531.4	31.4	20.4	-159.30	-108.5	781.7	1,175.9	1,135.5	40.40	29.109		
8,800.0	8,631.4	8,679.0	8,631.4	31.5	20.5	-159.30	-108.5	781.7	1,175.9	1,135.3	40.66	28.922		
8,900.0	8,731.4	8,779.0	8,731.4	31.6	20.6	-159.30	-108.5	781.7	1,175.9	1,135.0	40.92	28.737		
9,000.0	8,831.4	8,879.0	8,831.4	31.7	20.8	-159.30	-108.5	781.7	1,175.9	1,134.7	41.18	28.554		
9,100.0	8,931.4	8,979.0	8,931.4	31.7	20.9	-159.30	-108.5	781.7	1,175.9	1,134.5	41.45	28.372		
9,200.0	9,031.4	9,079.0	9,031.4	31.8	21.0	-159.30	-108.5	781.7	1,175.9	1,134.2	41.71	28.191		
9,300.0	9,131.4	9,179.0	9,131.4	31.9	21.2	-159.30	-108.5	781.7	1,175.9	1,133.9	41.98	28.012		
9,400.0	9,231.4	9,279.0	9,231.4	32.0	21.3	-159.30	-108.5	781.7	1,175.9	1,133.7	42.25	27.834		
9,500.0	9,331.4	9,379.0	9,331.4	32.1	21.4	-159.30	-108.5	781.7	1,175.9	1,133.4	42.52	27.657		
9,600.0	9,431.4	9,479.0	9,431.4	32.2	21.6	-159.30	-108.5	781.7	1,175.9	1,133.1	42.79	27.483		
9,700.0	9,531.4	9,579.0	9,531.4	32.3	21.7	-159.30	-108.5	781.7	1,175.9	1,132.9	43.06	27.309		
9,800.0	9,631.4	9,679.0	9,631.4	32.4	21.8	-159.30	-108.5	781.7	1,175.9	1,132.6	43.33	27.137		
9,900.0	9,731.4	9,779.0	9,731.4	32.5	22.0	-159.30	-108.5	781.7	1,175.9	1,132.3	43.61	26.967		
10,000.0	9,831.4	9,879.0	9,831.4	32.5	22.1	-159.30	-108.5	781.7	1,175.9	1,132.0	43.88	26.798		
10,100.0	9,931.4	9,979.0	9,931.4	32.6	22.2	-159.30	-108.5	781.7	1,175.9	1,131.8	44.16	26.631		
10,200.0	10,031.4	10,079.0	10,031.4	32.7	22.4	-159.30	-108.5	781.7	1,175.9	1,131.5	44.43	26.465		
10,300.0	10,131.4	10,084.6	10,037.0	32.8	22.4	-159.30	-108.5	781.7	1,179.7	1,135.1	44.58	26.462		

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 Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
10,400.0	10,231.4	10,084.6	10,037.0	32.9	22.4	-159.30	-108.5	781.7	1,191.9	1,147.2	44.72	26.652		
10,500.0	10,331.4	10,084.6	10,037.0	33.0	22.4	-159.30	-108.5	781.7	1,212.2	1,167.3	44.86	27.022		
10,600.0	10,431.4	10,084.6	10,037.0	33.1	22.4	-159.30	-108.5	781.7	1,240.3	1,195.3	45.00	27.562		
10,700.0	10,531.4	10,084.6	10,037.0	33.2	22.4	-159.30	-108.5	781.7	1,275.6	1,230.5	45.14	28.258		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design (J16W) - HMU Federal 21-1B - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		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			
0.0	0.0	0.0	0.0	0.0	0.0	-174.46	-84.5	-8.2	84.9					
100.0	100.0	100.0	100.0	0.1	0.1	-174.46	-84.5	-8.2	84.9	84.6	0.27	311.799		
200.0	200.0	200.0	200.0	0.3	0.3	-174.46	-84.5	-8.2	84.9	84.3	0.62	136.631 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	136.34	-84.5	-8.2	86.8	85.8	0.97	89.086		
400.0	399.6	395.8	395.8	0.7	0.7	138.54	-86.6	-7.1	94.6	93.3	1.34	70.789		
500.0	498.8	490.4	490.1	1.0	0.9	140.35	-93.0	-3.9	110.5	108.8	1.73	63.860		
600.0	597.1	582.9	581.9	1.4	1.1	141.55	-103.2	1.3	134.3	132.1	2.17	61.855 SF		
700.0	694.7	672.9	670.5	1.8	1.4	142.31	-116.9	8.2	164.4	161.7	2.65	61.980		
800.0	792.2	760.8	756.3	2.2	1.8	142.11	-133.8	16.8	198.0	194.8	3.17	62.380		
900.0	889.8	846.3	838.9	2.6	2.2	141.30	-153.7	26.9	234.8	231.1	3.73	62.962		
1,000.0	987.3	932.4	921.0	3.0	2.6	140.17	-176.8	38.6	274.7	270.4	4.31	63.687		
1,100.0	1,084.9	1,023.7	1,007.8	3.4	3.1	139.17	-202.0	51.3	315.3	310.4	4.92	64.081		
1,200.0	1,182.4	1,115.0	1,094.6	3.8	3.6	138.40	-227.2	64.1	356.0	350.4	5.53	64.359		
1,300.0	1,280.0	1,206.2	1,181.4	4.3	4.1	137.78	-252.4	76.8	396.7	390.5	6.14	64.566		
1,400.0	1,377.5	1,297.5	1,268.2	4.7	4.6	137.28	-277.6	89.6	437.4	430.6	6.76	64.726		
1,500.0	1,475.1	1,388.7	1,354.9	5.1	5.2	136.87	-302.8	102.4	478.2	470.8	7.37	64.854		
1,600.0	1,572.7	1,480.0	1,441.7	5.5	5.7	136.52	-328.0	115.1	518.9	511.0	7.99	64.959		
1,700.0	1,670.2	1,571.3	1,528.5	6.0	6.2	136.22	-353.2	127.9	559.7	551.1	8.61	65.047		
1,800.0	1,767.8	1,662.5	1,615.3	6.4	6.7	135.96	-378.4	140.6	600.5	591.3	9.22	65.122		
1,900.0	1,865.3	1,753.8	1,702.1	6.8	7.2	135.73	-403.6	153.4	641.4	631.5	9.84	65.187		
2,000.0	1,962.9	1,845.1	1,788.9	7.2	7.7	135.54	-428.8	166.2	682.2	671.7	10.46	65.243		
2,100.0	2,060.4	1,936.3	1,875.7	7.7	8.3	135.36	-453.9	178.9	723.0	711.9	11.07	65.292		
2,200.0	2,158.0	2,027.6	1,962.4	8.1	8.8	135.20	-479.1	191.7	763.8	752.2	11.69	65.336		
2,300.0	2,255.5	2,118.9	2,049.2	8.5	9.3	135.06	-504.3	204.4	804.7	792.4	12.31	65.375		
2,400.0	2,353.1	2,210.1	2,136.0	8.9	9.8	134.93	-529.5	217.2	845.5	832.6	12.93	65.410		
2,500.0	2,450.6	2,301.4	2,222.8	9.4	10.3	134.82	-554.7	229.9	886.4	872.8	13.54	65.442		
2,600.0	2,548.2	2,392.7	2,309.6	9.8	10.9	134.71	-579.9	242.7	927.2	913.1	14.16	65.471		
2,700.0	2,645.8	2,483.9	2,396.4	10.2	11.4	134.62	-605.1	255.5	968.1	953.3	14.78	65.497		
2,800.0	2,743.3	2,575.2	2,483.2	10.6	11.9	134.53	-630.3	268.2	1,008.9	993.5	15.40	65.521		
2,900.0	2,840.9	2,666.5	2,569.9	11.1	12.4	134.44	-655.5	281.0	1,049.8	1,033.8	16.02	65.544		
3,000.0	2,938.4	2,757.7	2,656.7	11.5	13.0	134.37	-680.7	293.7	1,090.6	1,074.0	16.63	65.564		
3,100.0	3,036.0	2,849.0	2,743.5	11.9	13.5	134.30	-705.9	306.5	1,131.5	1,114.2	17.25	65.583		
3,200.0	3,133.5	2,940.2	2,830.3	12.3	14.0	134.23	-731.1	319.3	1,172.3	1,154.5	17.87	65.601		
3,300.0	3,231.1	3,031.5	2,917.1	12.8	14.5	134.17	-756.2	332.0	1,213.2	1,194.7	18.49	65.617		
3,400.0	3,328.6	3,122.8	3,003.9	13.2	15.0	134.11	-781.4	344.8	1,254.1	1,234.9	19.11	65.633		
3,500.0	3,426.2	3,214.0	3,090.7	13.6	15.6	134.06	-806.6	357.5	1,294.9	1,275.2	19.73	65.647		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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	-168.56	-75.4	-15.3	76.9							
100.0	100.0	100.0	100.0	0.1	0.1	-168.56	-75.4	-15.3	76.9	76.6	0.27	282.509				
200.0	200.0	200.0	200.0	0.3	0.3	-168.56	-75.4	-15.3	76.9	76.3	0.62	123.796	CC, ES			
300.0	300.0	296.0	295.9	0.5	0.5	142.43	-77.6	-16.2	81.4	80.5	0.97	84.281				
400.0	399.6	390.5	390.2	0.7	0.7	145.72	-84.1	-19.0	95.2	93.9	1.32	72.202				
500.0	498.8	482.4	481.3	1.0	0.9	149.39	-94.6	-23.4	118.5	116.8	1.67	70.731	SF			
600.0	597.1	570.3	568.0	1.4	1.3	152.50	-108.3	-29.3	151.1	149.1	2.03	74.434				
700.0	694.7	654.0	649.7	1.8	1.6	155.08	-124.8	-36.3	191.4	189.0	2.38	80.434				
800.0	792.2	734.3	727.4	2.2	2.0	156.76	-143.7	-44.3	236.0	233.2	2.72	86.597				
900.0	889.8	813.5	803.1	2.6	2.4	157.86	-165.2	-53.5	284.2	281.1	3.07	92.618				
1,000.0	987.3	900.4	885.7	3.0	2.9	158.69	-189.8	-64.0	333.6	330.2	3.43	97.392				
1,100.0	1,084.9	987.2	968.3	3.4	3.4	159.31	-214.3	-74.4	383.1	379.4	3.79	101.207				
1,200.0	1,182.4	1,074.0	1,050.9	3.8	3.9	159.79	-238.9	-84.9	432.7	428.5	4.15	104.333				
1,300.0	1,280.0	1,160.9	1,133.6	4.3	4.3	160.17	-263.4	-95.3	482.2	477.7	4.51	106.936				
1,400.0	1,377.5	1,247.7	1,216.2	4.7	4.8	160.48	-288.0	-105.8	531.7	526.9	4.87	109.132				
1,500.0	1,475.1	1,334.5	1,298.8	5.1	5.3	160.73	-312.5	-116.2	581.3	576.0	5.24	111.008				
1,600.0	1,572.7	1,421.3	1,381.5	5.5	5.8	160.95	-337.1	-126.7	630.8	625.2	5.60	112.627				
1,700.0	1,670.2	1,508.2	1,464.1	6.0	6.3	161.14	-361.6	-137.1	680.4	674.4	5.97	114.037				
1,800.0	1,767.8	1,595.0	1,546.7	6.4	6.8	161.29	-386.2	-147.6	730.0	723.7	6.33	115.276				
1,900.0	1,865.3	1,681.8	1,629.3	6.8	7.3	161.43	-410.7	-158.1	779.6	772.9	6.70	116.372				
2,000.0	1,962.9	1,768.7	1,712.0	7.2	7.8	161.56	-435.3	-168.5	829.1	822.1	7.07	117.349				
2,100.0	2,060.4	1,855.5	1,794.6	7.7	8.3	161.67	-459.8	-179.0	878.7	871.3	7.43	118.226				
2,200.0	2,158.0	1,942.3	1,877.2	8.1	8.7	161.76	-484.4	-189.4	928.3	920.5	7.80	119.016				
2,300.0	2,255.5	2,029.2	1,959.9	8.5	9.2	161.85	-508.9	-199.9	977.9	969.7	8.17	119.732				
2,400.0	2,353.1	2,116.0	2,042.5	8.9	9.7	161.93	-533.5	-210.3	1,027.5	1,018.9	8.54	120.383				
2,500.0	2,450.6	2,202.8	2,125.1	9.4	10.2	162.00	-558.0	-220.8	1,077.1	1,068.2	8.90	120.979				
2,600.0	2,548.2	2,289.7	2,207.7	9.8	10.7	162.07	-582.6	-231.2	1,126.7	1,117.4	9.27	121.525				
2,700.0	2,645.8	2,376.5	2,290.4	10.2	11.2	162.13	-607.2	-241.7	1,176.3	1,166.6	9.64	122.027				
2,800.0	2,743.3	2,463.3	2,373.0	10.6	11.7	162.18	-631.7	-252.2	1,225.8	1,215.8	10.01	122.491				
2,900.0	2,840.9	2,550.1	2,455.6	11.1	12.2	162.23	-656.3	-262.6	1,275.4	1,265.1	10.38	122.921				

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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 NWNE S16-T7S-R93W (B16W Pad) - Rose Ranch 16-1C - DD - DD													Offset Site Error: 0.0 ft	
Survey Program: 111-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		
7,100.0	6,938.2	7,024.7	6,826.5	29.0	31.2	-61.01	2,215.0	928.8	1,298.3	1,245.8	52.54	24.709		
7,200.0	7,035.8	7,109.7	6,910.2	29.4	31.4	-61.04	2,210.3	942.8	1,279.3	1,226.1	53.21	24.042		
7,300.0	7,133.9	7,195.0	6,994.4	29.7	31.7	-60.86	2,206.3	955.5	1,262.7	1,208.9	53.86	23.444		
7,400.0	7,232.7	7,285.7	7,084.3	30.0	31.9	-60.67	2,202.5	967.3	1,248.6	1,194.2	54.44	22.937		
7,500.0	7,331.9	7,376.2	7,174.2	30.3	32.2	-60.48	2,198.9	977.3	1,236.8	1,181.9	54.93	22.517		
7,600.0	7,431.5	7,461.0	7,258.6	30.5	32.3	-60.29	2,196.2	985.1	1,227.8	1,172.5	55.32	22.195		
7,700.0	7,531.4	7,553.3	7,350.6	30.6	32.5	-60.09	2,193.7	991.7	1,221.3	1,165.7	55.64	21.951		
7,800.0	7,631.4	7,637.0	7,434.1	30.7	32.6	-9.51	2,192.0	996.3	1,217.5	1,161.6	55.87	21.793		
7,900.0	7,731.4	7,732.0	7,529.0	30.7	32.7	-9.36	2,190.5	999.7	1,215.4	1,159.3	56.07	21.677		
8,000.0	7,831.4	7,819.8	7,616.8	30.8	32.8	-9.30	2,189.6	1,001.1	1,214.1	1,157.8	56.24	21.589		
8,100.0	7,931.4	7,921.6	7,718.6	30.9	32.9	-9.27	2,188.9	1,001.9	1,213.3	1,156.9	56.42	21.504		
8,200.0	8,031.4	8,017.3	7,814.3	31.0	33.0	-9.23	2,188.3	1,002.9	1,212.5	1,155.9	56.61	21.420		
8,300.0	8,131.4	8,119.9	7,916.9	31.1	33.1	-9.18	2,187.8	1,004.2	1,211.9	1,155.1	56.80	21.334		
8,400.0	8,231.4	8,225.2	8,022.2	31.1	33.2	-9.13	2,186.9	1,005.2	1,210.9	1,153.9	57.00	21.245		
8,500.0	8,331.4	8,329.6	8,126.6	31.2	33.3	-9.11	2,185.4	1,005.9	1,209.3	1,152.1	57.18	21.150		
8,600.0	8,431.4	8,422.6	8,219.6	31.3	33.3	-9.16	2,184.1	1,005.1	1,208.1	1,150.8	57.33	21.074		
8,700.0	8,531.4	8,522.5	8,319.4	31.4	33.4	-9.24	2,182.8	1,003.5	1,207.1	1,149.6	57.49	20.998		
8,800.0	8,631.4	8,622.1	8,419.0	31.5	33.5	-9.27	2,181.8	1,003.2	1,206.1	1,148.4	57.67	20.915		
8,900.0	8,731.4	8,721.8	8,518.8	31.6	33.6	-9.27	2,180.9	1,003.4	1,205.2	1,147.3	57.85	20.832		
9,000.0	8,831.4	8,824.8	8,621.8	31.7	33.7	-9.27	2,179.8	1,003.5	1,204.1	1,146.1	58.04	20.748		
9,100.0	8,931.4	8,932.0	8,728.9	31.7	33.8	-9.29	2,178.2	1,003.2	1,202.7	1,144.5	58.21	20.659		
9,200.0	9,031.4	9,024.7	8,821.6	31.8	33.8	-9.35	2,176.4	1,002.2	1,201.0	1,142.6	58.37	20.574		
9,300.0	9,131.4	9,118.8	8,915.6	31.9	33.9	-9.43	2,175.4	1,000.7	1,200.2	1,141.7	58.53	20.507		
9,400.0	9,231.4	9,230.9	9,027.8	32.0	33.9	-9.56	2,173.8	998.2	1,199.2	1,140.5	58.69	20.434		
9,500.0	9,331.4	9,348.2	9,145.0	32.1	34.0	-9.69	2,170.6	996.1	1,196.8	1,137.9	58.86	20.333		
9,600.0	9,431.4	9,449.5	9,246.2	32.2	34.1	-9.77	2,167.1	994.9	1,193.5	1,134.5	59.03	20.220		
9,700.0	9,531.4	9,545.8	9,342.4	32.3	34.2	-9.84	2,163.9	994.0	1,190.4	1,131.2	59.20	20.109		
9,800.0	9,631.4	9,641.9	9,438.5	32.4	34.3	-9.90	2,161.1	993.2	1,187.7	1,128.3	59.38	20.003		
9,900.0	9,731.4	9,720.0	9,516.6	32.5	34.4	-9.91	2,158.9	993.3	1,185.2	1,125.6	59.55	19.902		
9,909.2	9,740.6	9,720.0	9,516.6	32.5	34.4	-9.91	2,158.9	993.3	1,185.2	1,125.6	59.56	19.898 CC, ES, SF		
10,000.0	9,831.4	9,720.0	9,516.6	32.5	34.4	-9.91	2,158.9	993.3	1,188.6	1,129.0	59.66	19.925		
10,100.0	9,931.4	9,720.0	9,516.6	32.6	34.4	-9.91	2,158.9	993.3	1,200.4	1,140.7	59.76	20.088		
10,200.0	10,031.4	9,720.0	9,516.6	32.7	34.4	-9.91	2,158.9	993.3	1,220.3	1,160.5	59.86	20.385		
10,300.0	10,131.4	9,720.0	9,516.6	32.8	34.4	-9.91	2,158.9	993.3	1,247.9	1,188.0	59.97	20.810		
10,400.0	10,231.4	9,720.0	9,516.6	32.9	34.4	-9.91	2,158.9	993.3	1,282.8	1,222.7	60.07	21.354		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well HMU Fee 16-8D
Project:	Mamm Creek	TVD Reference:	WELL @ 7667.0ft (Original Well Elev)
Reference Site:	(J16W)	MD Reference:	WELL @ 7667.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HMU Fee 16-8D	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 WELL @ 7667.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: HMU Fee 16-8D
 Coordinate System is US State Plane 1983, Colorado Central Zone
 Grid Convergence at Surface is: -1.44°

