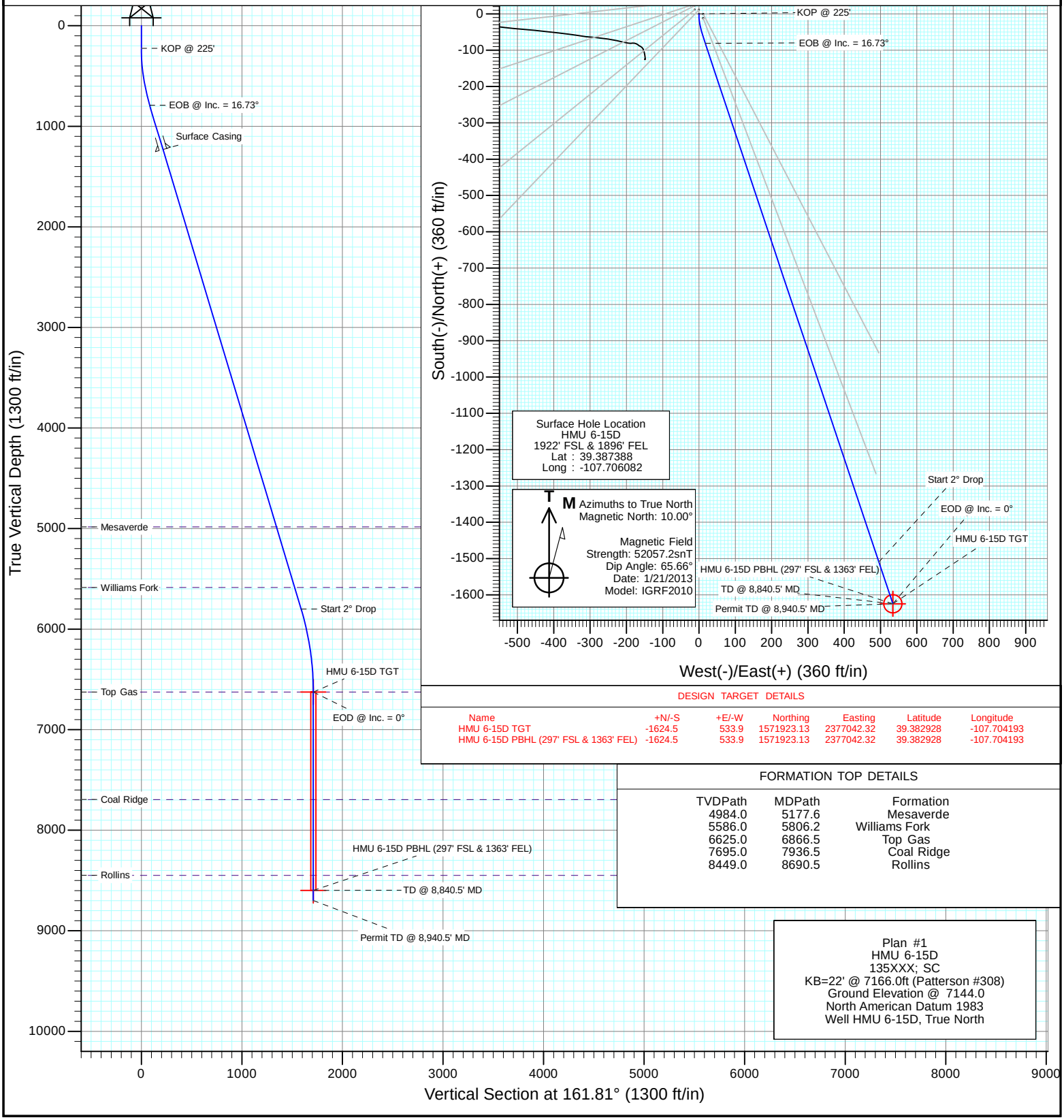
Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-15D
Wellbore: OH
Design: Plan #1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	225.0	0.00	0.00	225.0	0.0	0.0	0.00	0.00	0.0	
3	425.0	6.00	180.00	424.6	-10.5	0.0	3.00	180.00	9.9	
4	798.4	16.73	161.49	790.3	-81.2	17.1	3.00	-28.07	82.5	
5	6029.8	16.73	161.49	5800.2	-1509.4	495.4	0.00	0.00	1588.6	
6	6866.5	0.00	0.00	6625.0	-1624.5	533.9	2.00	180.00	1710.0	HMU 6-15D TGT
7	8840.5	0.00	0.00	8599.0	-1624.5	533.9	0.00	0.00	1710.0	HMU 6-15D PBHL (297' FSL & 1363' FEL)
8	8940.5	0.00	0.00	8699.0	-1624.5	533.9	0.00	0.00	1710.0	



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HMU 6-15D TGT	-1624.5	533.9	1571923.13	2377042.32	39.382928	-107.704193
HMU 6-15D PBHL (297' FSL & 1363' FEL)	-1624.5	533.9	1571923.13	2377042.32	39.382928	-107.704193

FORMATION TOP DETAILS

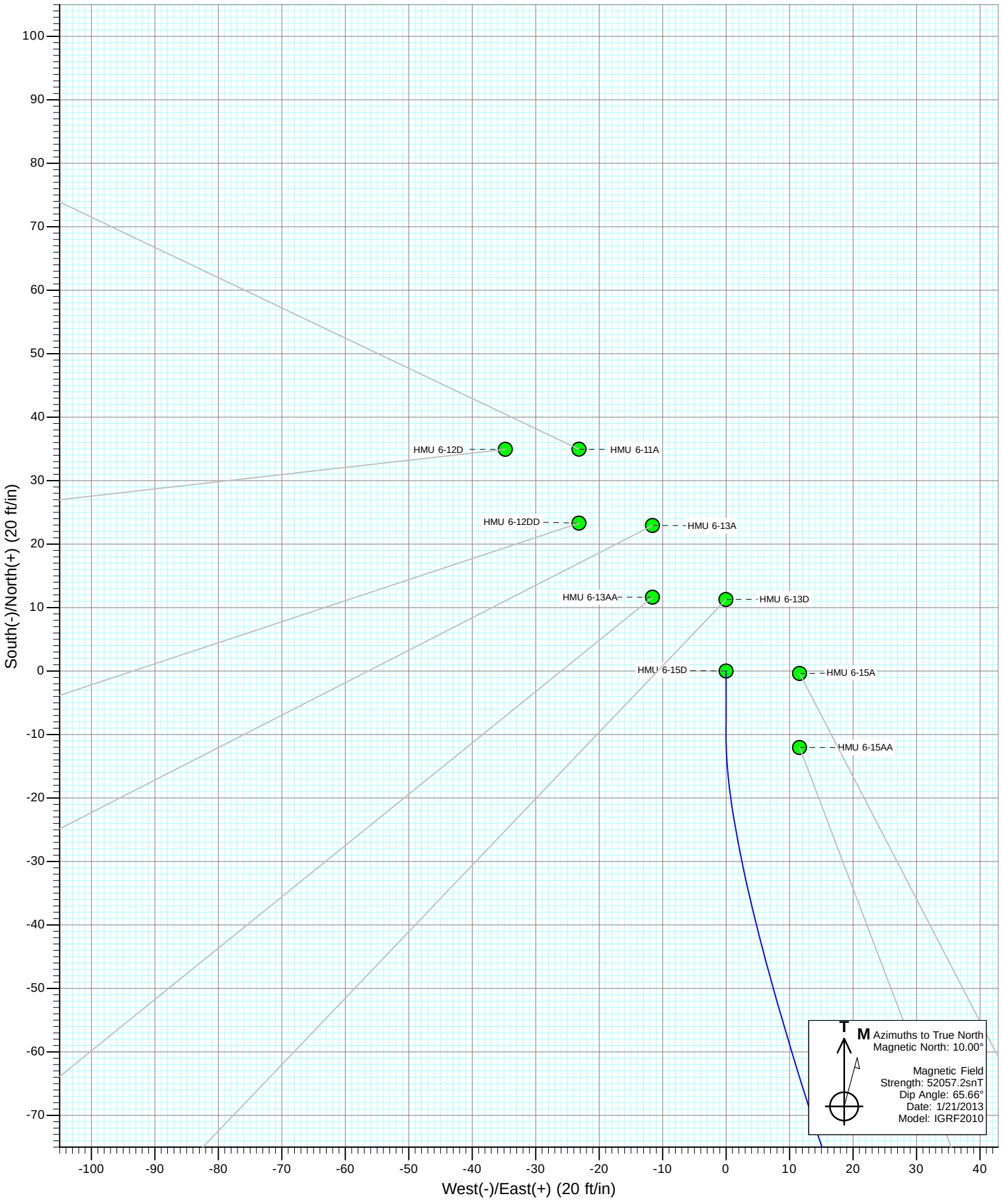
TVDPath	MDPath	Formation
4984.0	5177.6	Mesaverde
5586.0	5806.2	Williams Fork
6625.0	6866.5	Top Gas
7695.0	7936.5	Coal Ridge
8449.0	8690.5	Rollins

Plan #1
HMU 6-15D
135XXX; SC
KB=22' @ 7166.0ft (Patterson #308)
Ground Elevation @ 7144.0
North American Datum 1983
Well HMU 6-15D, True North

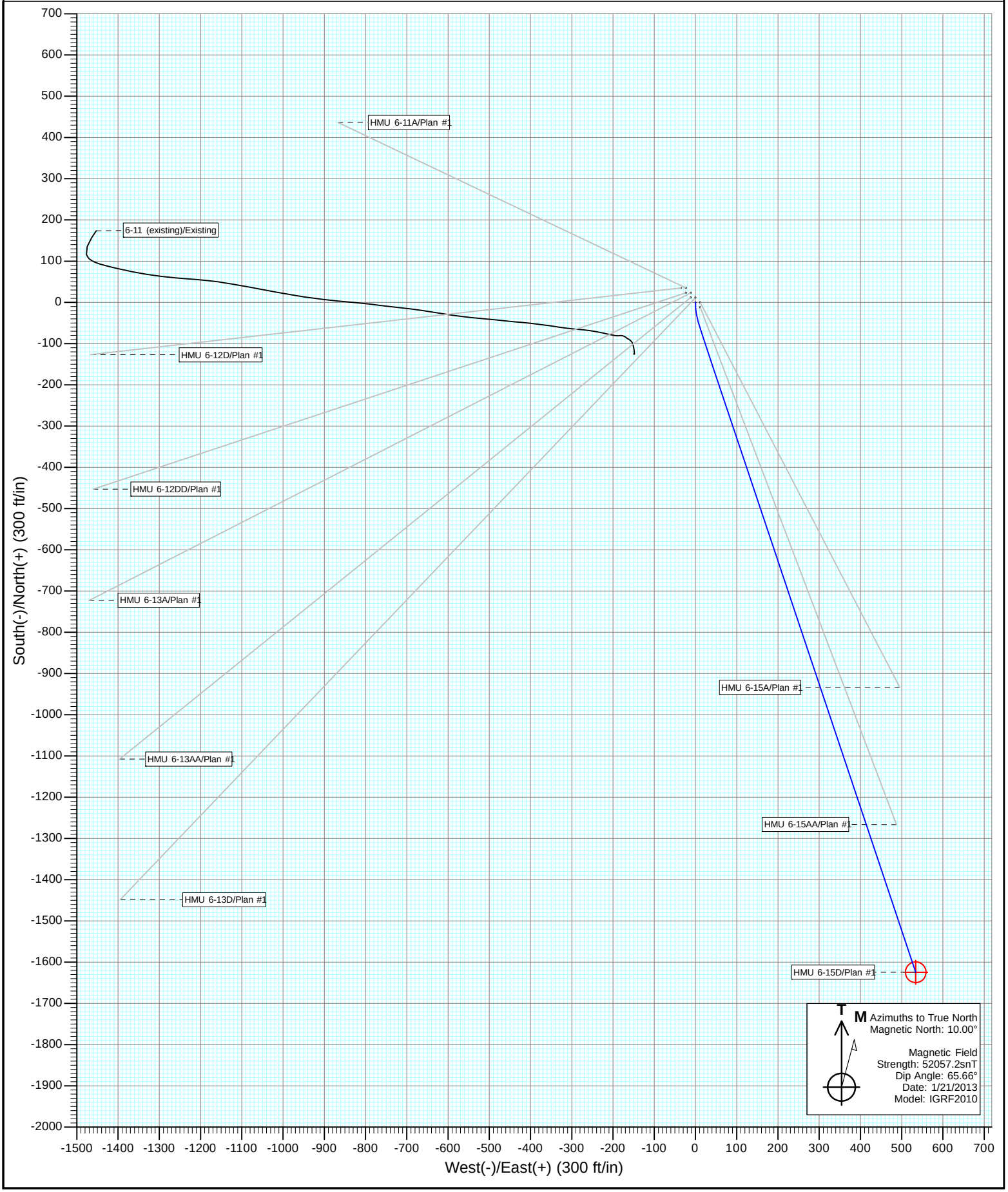
encana

Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-15D
Wellbore: OH
Design: Plan #1

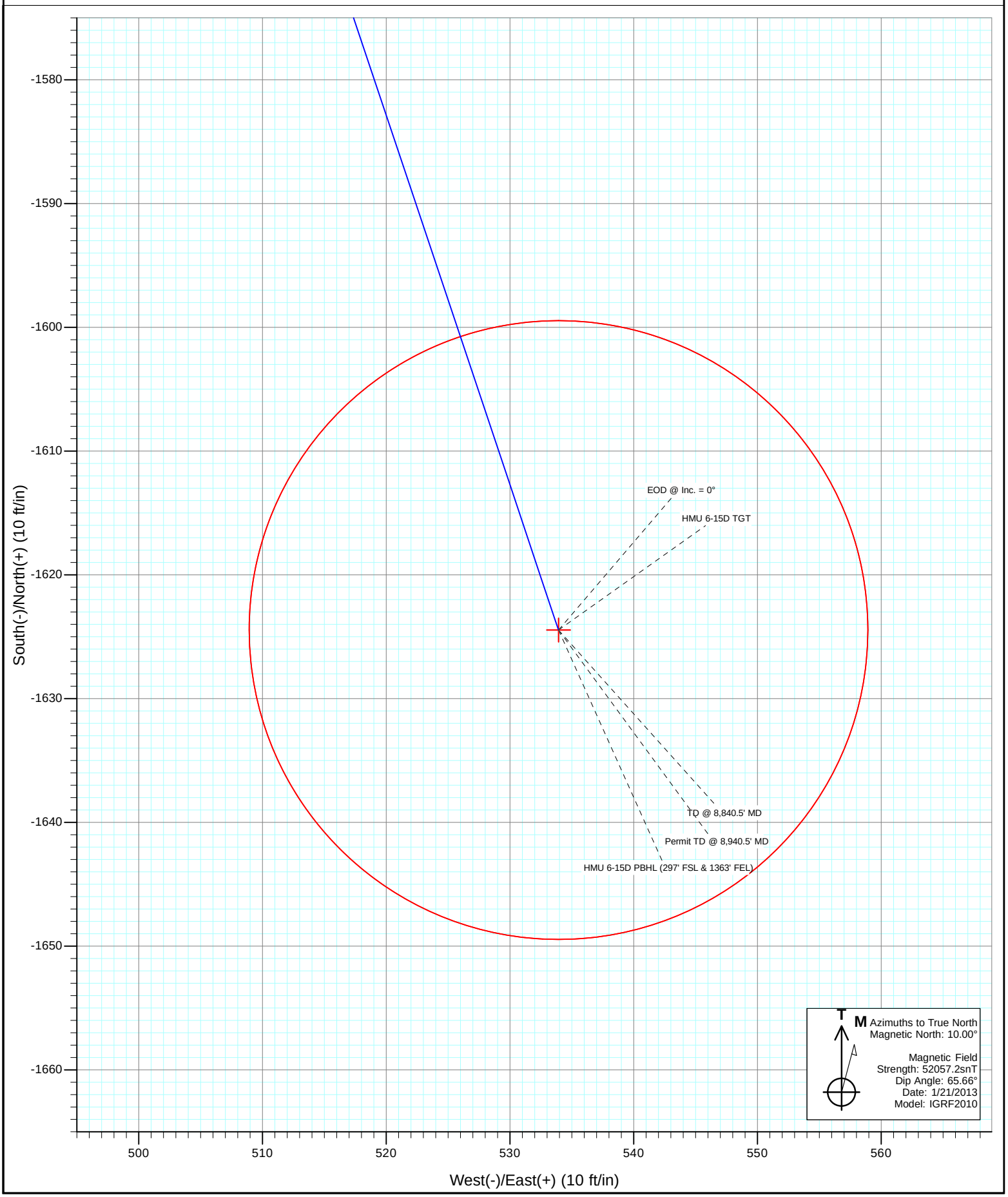
CATHEDRAL



Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-15D
Wellbore: OH
Design: Plan #1



Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-15D
Wellbore: OH
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well HMU 6-15D
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	**North Reference:**	True
Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
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 J6SEB Pad

Site Position:		**Northing:**	1,573,595.87 ft	**Latitude:**	39.387484
From:	Lat/Long	**Easting:**	2,376,514.08 ft	**Longitude:**	-107.706205
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.39 °

Well HMU 6-15D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,573,560.07 ft	**Latitude:**	39.387388
	+E/-W	0.0 ft	**Easting:**	2,376,547.99 ft	**Longitude:**	-107.706082
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	7,144.0 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/21/2013	10.00	65.66	52,057

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	161.81

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	
225.0	0.00	0.00	225.0	0.0	0.0	0.00	0.00	0.00	0.00	
425.0	6.00	180.00	424.6	-10.5	0.0	3.00	3.00	0.00	180.00	
798.4	16.73	161.49	790.3	-81.2	17.1	3.00	2.87	-4.96	-28.07	
6,029.8	16.73	161.49	5,800.2	-1,509.4	495.4	0.00	0.00	0.00	0.00	
6,866.5	0.00	0.00	6,625.0	-1,624.5	533.9	2.00	-2.00	0.00	180.00	HMU 6-15D TGT
8,840.5	0.00	0.00	8,599.0	-1,624.5	533.9	0.00	0.00	0.00	0.00	HMU 6-15D PBHL (29
8,940.5	0.00	0.00	8,699.0	-1,624.5	533.9	0.00	0.00	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well HMU 6-15D
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	**North Reference:**	True
Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
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	
100.0	0.00	0.00	100.0	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	
225.0	0.00	0.00	225.0	0.0	0.0	0.0	0.00	0.00	KOP @ 225'
300.0	2.25	180.00	300.0	-1.5	0.0	1.4	3.00	3.00	
400.0	5.25	180.00	399.8	-8.0	0.0	7.6	3.00	3.00	
425.0	6.00	180.00	424.6	-10.5	0.0	9.9	3.00	3.00	
500.0	8.05	172.42	499.1	-19.6	0.7	18.8	3.00	2.74	
600.0	10.91	166.85	597.7	-35.8	3.8	35.1	3.00	2.86	
700.0	13.83	163.59	695.4	-56.5	9.3	56.5	3.00	2.92	
798.4	16.73	161.49	790.3	-81.2	17.1	82.5	3.00	2.95	EOB @ Inc. = 16.73°
800.0	16.73	161.49	791.8	-81.6	17.3	82.9	0.02	0.02	
900.0	16.73	161.49	887.6	-108.9	26.4	111.7	0.00	0.00	
1,000.0	16.73	161.49	983.3	-136.2	35.6	140.5	0.00	0.00	
1,100.0	16.73	161.49	1,079.1	-163.5	44.7	169.3	0.00	0.00	
1,200.0	16.73	161.49	1,174.9	-190.8	53.8	198.1	0.00	0.00	
1,257.6	16.73	161.49	1,230.0	-206.5	59.1	214.7	0.00	0.00	Surface Casing
1,300.0	16.73	161.49	1,270.6	-218.1	63.0	226.9	0.00	0.00	
1,400.0	16.73	161.49	1,366.4	-245.4	72.1	255.7	0.00	0.00	
1,500.0	16.73	161.49	1,462.2	-272.7	81.3	284.5	0.00	0.00	
1,600.0	16.73	161.49	1,557.9	-300.0	90.4	313.3	0.00	0.00	
1,700.0	16.73	161.49	1,653.7	-327.3	99.6	342.0	0.00	0.00	
1,800.0	16.73	161.49	1,749.5	-354.6	108.7	370.8	0.00	0.00	
1,900.0	16.73	161.49	1,845.2	-381.9	117.8	399.6	0.00	0.00	
2,000.0	16.73	161.49	1,941.0	-409.2	127.0	428.4	0.00	0.00	
2,100.0	16.73	161.49	2,036.8	-436.5	136.1	457.2	0.00	0.00	
2,200.0	16.73	161.49	2,132.5	-463.8	145.3	486.0	0.00	0.00	
2,300.0	16.73	161.49	2,228.3	-491.1	154.4	514.8	0.00	0.00	
2,400.0	16.73	161.49	2,324.1	-518.4	163.6	543.6	0.00	0.00	
2,500.0	16.73	161.49	2,419.8	-545.7	172.7	572.4	0.00	0.00	
2,600.0	16.73	161.49	2,515.6	-573.0	181.8	601.2	0.00	0.00	
2,700.0	16.73	161.49	2,611.4	-600.3	191.0	630.0	0.00	0.00	
2,800.0	16.73	161.49	2,707.1	-627.6	200.1	658.7	0.00	0.00	
2,900.0	16.73	161.49	2,802.9	-654.9	209.3	687.5	0.00	0.00	
3,000.0	16.73	161.49	2,898.6	-682.2	218.4	716.3	0.00	0.00	
3,100.0	16.73	161.49	2,994.4	-709.5	227.6	745.1	0.00	0.00	
3,200.0	16.73	161.49	3,090.2	-736.8	236.7	773.9	0.00	0.00	
3,300.0	16.73	161.49	3,185.9	-764.1	245.8	802.7	0.00	0.00	
3,400.0	16.73	161.49	3,281.7	-791.4	255.0	831.5	0.00	0.00	
3,500.0	16.73	161.49	3,377.5	-818.7	264.1	860.3	0.00	0.00	
3,600.0	16.73	161.49	3,473.2	-846.0	273.3	889.1	0.00	0.00	
3,700.0	16.73	161.49	3,569.0	-873.3	282.4	917.9	0.00	0.00	
3,800.0	16.73	161.49	3,664.8	-900.7	291.5	946.7	0.00	0.00	
3,900.0	16.73	161.49	3,760.5	-928.0	300.7	975.4	0.00	0.00	
4,000.0	16.73	161.49	3,856.3	-955.3	309.8	1,004.2	0.00	0.00	
4,100.0	16.73	161.49	3,952.1	-982.6	319.0	1,033.0	0.00	0.00	
4,200.0	16.73	161.49	4,047.8	-1,009.9	328.1	1,061.8	0.00	0.00	
4,300.0	16.73	161.49	4,143.6	-1,037.2	337.3	1,090.6	0.00	0.00	
4,400.0	16.73	161.49	4,239.4	-1,064.5	346.4	1,119.4	0.00	0.00	
4,500.0	16.73	161.49	4,335.1	-1,091.8	355.5	1,148.2	0.00	0.00	
4,600.0	16.73	161.49	4,430.9	-1,119.1	364.7	1,177.0	0.00	0.00	
4,700.0	16.73	161.49	4,526.7	-1,146.4	373.8	1,205.8	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well HMU 6-15D
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	**North Reference:**	True
Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
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
4,800.0	16.73	161.49	4,622.4	-1,173.7	383.0	1,234.6	0.00	0.00	
4,900.0	16.73	161.49	4,718.2	-1,201.0	392.1	1,263.4	0.00	0.00	
5,000.0	16.73	161.49	4,814.0	-1,228.3	401.3	1,292.1	0.00	0.00	
5,100.0	16.73	161.49	4,909.7	-1,255.6	410.4	1,320.9	0.00	0.00	
5,177.6	16.73	161.49	4,984.0	-1,276.7	417.5	1,343.3	0.00	0.00	Mesaverde
5,200.0	16.73	161.49	5,005.5	-1,282.9	419.5	1,349.7	0.00	0.00	
5,300.0	16.73	161.49	5,101.3	-1,310.2	428.7	1,378.5	0.00	0.00	
5,400.0	16.73	161.49	5,197.0	-1,337.5	437.8	1,407.3	0.00	0.00	
5,500.0	16.73	161.49	5,292.8	-1,364.8	447.0	1,436.1	0.00	0.00	
5,600.0	16.73	161.49	5,388.6	-1,392.1	456.1	1,464.9	0.00	0.00	
5,700.0	16.73	161.49	5,484.3	-1,419.4	465.3	1,493.7	0.00	0.00	
5,800.0	16.73	161.49	5,580.1	-1,446.7	474.4	1,522.5	0.00	0.00	
5,806.2	16.73	161.49	5,586.0	-1,448.4	475.0	1,524.3	0.00	0.00	Williams Fork
5,900.0	16.73	161.49	5,675.8	-1,474.0	483.5	1,551.3	0.00	0.00	
6,000.0	16.73	161.49	5,771.6	-1,501.3	492.7	1,580.1	0.00	0.00	
6,029.8	16.73	161.49	5,800.2	-1,509.4	495.4	1,588.6	0.00	0.00	Start 2° Drop
6,100.0	15.33	161.49	5,867.6	-1,527.8	501.6	1,608.0	2.00	-2.00	
6,200.0	13.33	161.49	5,964.5	-1,551.3	509.4	1,632.8	2.00	-2.00	
6,300.0	11.33	161.49	6,062.2	-1,571.5	516.2	1,654.1	2.00	-2.00	
6,400.0	9.33	161.49	6,160.6	-1,588.5	521.9	1,672.1	2.00	-2.00	
6,500.0	7.33	161.49	6,259.5	-1,602.3	526.5	1,686.5	2.00	-2.00	
6,600.0	5.33	161.49	6,358.9	-1,612.7	530.0	1,697.6	2.00	-2.00	
6,700.0	3.33	161.49	6,458.6	-1,619.9	532.4	1,705.1	2.00	-2.00	
6,800.0	1.33	161.49	6,558.5	-1,623.7	533.7	1,709.2	2.00	-2.00	
6,866.5	0.00	0.00	6,625.0	-1,624.5	533.9	1,710.0	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
6,900.0	0.00	0.00	6,658.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,000.0	0.00	0.00	6,758.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,100.0	0.00	0.00	6,858.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,200.0	0.00	0.00	6,958.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,300.0	0.00	0.00	7,058.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,400.0	0.00	0.00	7,158.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,500.0	0.00	0.00	7,258.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,600.0	0.00	0.00	7,358.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,700.0	0.00	0.00	7,458.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,800.0	0.00	0.00	7,558.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,900.0	0.00	0.00	7,658.5	-1,624.5	533.9	1,710.0	0.00	0.00	
7,936.5	0.00	0.00	7,695.0	-1,624.5	533.9	1,710.0	0.00	0.00	Coal Ridge
8,000.0	0.00	0.00	7,758.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,100.0	0.00	0.00	7,858.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,200.0	0.00	0.00	7,958.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,300.0	0.00	0.00	8,058.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,400.0	0.00	0.00	8,158.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,500.0	0.00	0.00	8,258.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,600.0	0.00	0.00	8,358.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,690.5	0.00	0.00	8,449.0	-1,624.5	533.9	1,710.0	0.00	0.00	Rollins
8,700.0	0.00	0.00	8,458.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,800.0	0.00	0.00	8,558.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,840.5	0.00	0.00	8,599.0	-1,624.5	533.9	1,710.0	0.00	0.00	TD @ 8,840.5' MD
8,900.0	0.00	0.00	8,658.5	-1,624.5	533.9	1,710.0	0.00	0.00	
8,940.5	0.00	0.00	8,699.0	-1,624.5	533.9	1,710.0	0.00	0.00	Permit TD @ 8,940.5' MD

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well HMU 6-15D
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Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	**North Reference:**	True
Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
HMU 6-15D PBHL (297' - plan hits target center - Circle (radius 25.0)	0.00	0.00	8,599.0	-1,624.5	533.9	1,571,923.13	2,377,042.32	39.382928	-107.704193
HMU 6-15D TGT - plan hits target center - Point	0.00	0.00	6,625.0	-1,624.5	533.9	1,571,923.13	2,377,042.32	39.382928	-107.704193

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,257.6	1,230.0	Surface Casing		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,177.6	4,984.0	Mesaverde			
5,806.2	5,586.0	Williams Fork			
6,866.5	6,625.0	Top Gas			
7,936.5	7,695.0	Coal Ridge			
8,690.5	8,449.0	Rollins			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
225.0	225.0	0.0	0.0	KOP @ 225'
798.4	790.3	-81.2	17.1	EOB @ Inc. = 16.73°
6,029.8	5,800.2	-1,509.4	495.4	Start 2° Drop
6,866.5	6,625.0	-1,624.5	533.9	EOD @ Inc. = 0°
8,840.5	8,599.0	-1,624.5	533.9	TD @ 8,840.5' MD
8,940.5	8,699.0	-1,624.5	533.9	Permit TD @ 8,940.5' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
J6SEB Pad
HMU 6-15D
OH
Plan #1

Anticollision Report

21 January, 2013

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 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 500.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 1/21/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	8,940.5	Plan #1 (OH)	MWD	Geolink MWD

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
J6SE						
6-11 (existing) - Existing - Existing	676.8	646.2	167.4	164.6	59.636	CC, ES
6-11 (existing) - Existing - Existing	1,000.0	952.2	202.1	197.4	43.198	SF
J6SEB Pad						
HMU 6-11A - OH - Plan #1	200.0	200.0	41.9	41.3	67.509	CC
HMU 6-11A - OH - Plan #1	200.4	200.4	41.9	41.3	67.361	ES
HMU 6-11A - OH - Plan #1	400.0	396.4	53.6	52.2	40.405	SF
HMU 6-12D - OH - Plan #1	200.0	200.0	49.3	48.7	79.336	CC, ES
HMU 6-12D - OH - Plan #1	500.0	492.3	78.1	76.3	43.519	SF
HMU 6-12DD - OH - Plan #1	200.0	200.0	32.9	32.2	52.899	CC, ES
HMU 6-12DD - OH - Plan #1	400.0	398.2	42.1	40.8	31.020	SF
HMU 6-13A - OH - Plan #1	200.0	200.0	25.7	25.1	41.366	CC, ES
HMU 6-13A - OH - Plan #1	400.0	399.8	32.8	31.5	24.600	SF
HMU 6-13AA - OH - Plan #1	200.0	200.0	16.4	15.8	26.452	CC, ES
HMU 6-13AA - OH - Plan #1	400.0	399.7	22.7	21.4	16.791	SF
HMU 6-13D - OH - Plan #1	200.0	200.0	11.3	10.7	18.165	CC, ES
HMU 6-13D - OH - Plan #1	300.0	300.0	12.8	11.8	13.155	SF
HMU 6-15A - OH - Plan #1	249.9	249.9	11.6	10.8	14.545	CC
HMU 6-15A - OH - Plan #1	300.0	300.0	11.6	10.7	11.963	ES
HMU 6-15A - OH - Plan #1	400.0	399.8	13.8	12.5	10.254	SF
HMU 6-15AA - OH - Plan #1	200.0	200.0	16.7	16.1	26.876	CC
HMU 6-15AA - OH - Plan #1	1,100.0	1,094.8	22.8	15.8	3.240	ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SE - 6-11 (existing) - Existing - Existing

Offset Site Error: 0.0 ft

Survey Program: 160-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-130.07	-125.1	-148.8	196.2				
100.0	100.0	74.6	74.6	0.1	0.1	-130.06	-125.0	-148.6	194.2	193.9	0.25	761.688	
200.0	200.0	176.1	176.1	0.3	0.3	-129.98	-124.1	-148.0	193.2	192.6	0.60	323.745	
300.0	300.0	277.6	277.6	0.5	0.5	51.02	-121.4	-147.9	190.4	189.5	0.97	197.003	
400.0	399.8	378.3	378.1	0.7	0.7	54.18	-116.2	-148.7	184.0	182.6	1.36	135.472	
500.0	499.1	476.6	476.2	0.9	0.9	67.00	-109.9	-150.0	175.8	174.0	1.80	97.598	
600.0	597.7	573.8	573.2	1.3	1.1	79.83	-103.6	-151.3	169.3	167.0	2.34	72.467	
676.8	672.8	646.2	645.5	1.6	1.2	89.00	-99.5	-152.5	167.4	164.6	2.81	59.636	CC, ES
700.0	695.4	668.1	667.3	1.7	1.3	91.73	-98.4	-153.0	167.6	164.7	2.95	56.858	
800.0	791.8	761.4	760.5	2.2	1.5	103.26	-94.4	-155.4	173.2	169.6	3.60	48.145	
900.0	887.6	855.7	854.7	2.7	1.6	112.46	-91.5	-158.5	185.8	181.6	4.18	44.492	
1,000.0	983.3	952.2	951.1	3.2	1.8	120.30	-89.8	-161.1	202.1	197.4	4.68	43.198	SF
1,100.0	1,079.1	1,046.4	1,045.3	3.7	2.0	126.72	-88.4	-163.6	221.5	216.4	5.12	43.261	
1,200.0	1,174.9	1,139.5	1,138.3	4.2	2.1	132.11	-86.5	-166.4	243.9	238.4	5.52	44.200	
1,300.0	1,270.6	1,231.3	1,230.0	4.8	2.3	136.64	-83.9	-169.9	269.2	263.3	5.88	45.782	
1,400.0	1,366.4	1,326.0	1,324.6	5.3	2.5	140.32	-81.7	-174.6	296.5	290.3	6.23	47.627	
1,500.0	1,462.2	1,425.6	1,424.2	5.8	2.7	143.46	-80.4	-178.9	323.7	317.2	6.57	49.309	
1,600.0	1,557.9	1,523.9	1,522.4	6.3	2.8	145.95	-80.4	-182.6	350.5	343.5	6.91	50.743	
1,700.0	1,653.7	1,618.3	1,616.7	6.9	3.0	147.96	-80.9	-186.0	377.3	370.1	7.25	52.055	
1,800.0	1,749.5	1,706.9	1,705.1	7.4	3.2	149.54	-81.0	-190.3	405.7	398.1	7.59	53.439	
1,900.0	1,845.2	1,793.3	1,791.4	7.9	3.3	150.83	-80.3	-195.9	436.1	428.1	7.94	54.937	
2,000.0	1,941.0	1,875.0	1,872.8	8.5	3.5	151.83	-79.0	-202.8	468.6	460.3	8.29	56.541	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-11A - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-33.54	35.0	-23.2	41.9				
100.0	100.0	100.0	100.0	0.1	0.1	-33.54	35.0	-23.2	41.9	41.7	0.27	154.059	
200.0	200.0	200.0	200.0	0.3	0.3	-33.54	35.0	-23.2	41.9	41.3	0.62	67.509	CC
200.4	200.4	200.4	200.4	0.3	0.3	146.46	35.0	-23.2	41.9	41.3	0.62	67.361	ES
300.0	300.0	299.0	299.0	0.5	0.5	147.05	35.2	-23.7	43.7	42.8	0.97	45.109	
400.0	399.8	396.4	396.3	0.7	0.7	147.82	37.4	-28.2	53.6	52.2	1.33	40.405	SF
500.0	499.1	492.0	491.4	0.9	0.9	155.34	41.5	-37.0	72.2	70.5	1.70	42.568	
600.0	597.7	586.7	585.0	1.3	1.2	159.77	47.4	-49.3	99.5	97.4	2.08	47.881	
700.0	695.4	681.2	678.5	1.7	1.4	162.39	53.5	-62.1	132.1	129.7	2.46	53.678	
800.0	791.8	773.8	770.1	2.2	1.7	164.22	59.4	-74.6	169.7	166.9	2.84	59.704	
900.0	887.6	865.5	860.8	2.7	2.0	164.25	65.3	-87.0	209.6	206.3	3.25	64.569	
1,000.0	983.3	957.2	951.4	3.2	2.3	164.26	71.2	-99.3	249.5	245.8	3.65	68.319	
1,100.0	1,079.1	1,048.9	1,042.1	3.7	2.6	164.27	77.1	-111.7	289.4	285.3	4.06	71.293	
1,200.0	1,174.9	1,140.6	1,132.8	4.2	2.8	164.28	83.0	-124.1	329.2	324.8	4.47	73.708	
1,300.0	1,270.6	1,232.3	1,223.5	4.8	3.1	164.29	88.9	-136.5	369.1	364.3	4.88	75.705	
1,400.0	1,366.4	1,324.1	1,314.1	5.3	3.4	164.29	94.8	-148.9	409.0	403.7	5.29	77.385	
1,500.0	1,462.2	1,415.8	1,404.8	5.8	3.7	164.30	100.7	-161.2	448.9	443.2	5.70	78.816	
1,600.0	1,557.9	1,507.5	1,495.5	6.3	4.0	164.30	106.5	-173.6	488.8	482.7	6.11	80.050	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-12D - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-44.85	34.9	-34.8	49.3				
100.0	100.0	100.0	100.0	0.1	0.1	-44.85	34.9	-34.8	49.3	49.0	0.27	181.049	
200.0	200.0	200.0	200.0	0.3	0.3	-44.85	34.9	-34.8	49.3	48.7	0.62	79.336	CC, ES
300.0	300.0	298.3	298.3	0.5	0.5	134.03	34.7	-37.3	51.9	51.0	0.97	53.353	
400.0	399.8	396.0	395.7	0.7	0.7	132.69	33.8	-44.7	61.4	60.0	1.36	45.161	
500.0	499.1	492.3	491.1	0.9	1.0	138.83	32.4	-56.9	78.1	76.3	1.79	43.519	SF
600.0	597.7	586.1	583.5	1.3	1.3	142.39	30.6	-73.4	102.8	100.5	2.28	45.022	
700.0	695.4	678.3	673.4	1.7	1.7	143.71	28.3	-93.7	135.2	132.3	2.81	48.048	
800.0	791.8	771.0	763.6	2.2	2.1	144.89	25.9	-114.9	172.7	169.3	3.38	51.118	
900.0	887.6	862.8	852.9	2.7	2.5	144.98	23.5	-135.9	212.3	208.4	3.98	53.403	
1,000.0	983.3	954.6	942.2	3.2	2.9	145.04	21.2	-156.9	252.0	247.4	4.58	55.000	
1,100.0	1,079.1	1,046.4	1,031.5	3.7	3.3	145.09	18.8	-178.0	291.7	286.5	5.19	56.170	
1,200.0	1,174.9	1,138.2	1,120.9	4.2	3.7	145.12	16.4	-199.0	331.3	325.5	5.81	57.062	
1,300.0	1,270.6	1,230.0	1,210.2	4.8	4.1	145.15	14.0	-220.0	371.0	364.6	6.42	57.761	
1,400.0	1,366.4	1,321.8	1,299.5	5.3	4.5	145.17	11.7	-241.0	410.6	403.6	7.04	58.323	
1,500.0	1,462.2	1,413.6	1,388.9	5.8	4.9	145.19	9.3	-262.0	450.3	442.6	7.66	58.784	
1,600.0	1,557.9	1,505.4	1,478.2	6.3	5.3	145.20	6.9	-283.1	489.9	481.7	8.28	59.169	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-12DD - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-44.84	23.3	-23.2	32.9				
100.0	100.0	100.0	100.0	0.1	0.1	-44.84	23.3	-23.2	32.9	32.6	0.27	120.718	
200.0	200.0	200.0	200.0	0.3	0.3	-44.84	23.3	-23.2	32.9	32.2	0.62	52.899	CC, ES
300.0	300.0	299.4	299.4	0.5	0.5	134.68	22.9	-24.6	34.6	33.6	0.97	35.538	
400.0	399.8	398.2	397.9	0.7	0.7	133.01	20.8	-30.6	42.1	40.8	1.36	31.020	SF
500.0	499.1	495.9	495.0	0.9	0.9	138.12	17.3	-41.4	56.1	54.3	1.80	31.159	
600.0	597.7	591.8	589.5	1.3	1.3	140.44	12.3	-56.5	77.5	75.2	2.31	33.488	
700.0	695.4	684.9	680.4	1.7	1.7	140.70	6.0	-75.5	106.3	103.4	2.90	36.664	
800.0	791.8	778.1	770.9	2.2	2.1	140.85	-1.2	-97.0	141.3	137.8	3.53	40.014	
900.0	887.6	871.0	860.9	2.7	2.5	140.45	-8.3	-118.6	178.5	174.3	4.20	42.485	
1,000.0	983.3	963.8	950.9	3.2	2.9	140.18	-15.4	-140.1	215.6	210.7	4.88	44.183	
1,100.0	1,079.1	1,056.7	1,041.0	3.7	3.3	140.00	-22.6	-161.6	252.7	247.2	5.57	45.412	
1,200.0	1,174.9	1,149.5	1,131.0	4.2	3.8	139.86	-29.7	-183.1	289.9	283.6	6.26	46.338	
1,300.0	1,270.6	1,242.3	1,221.1	4.8	4.2	139.75	-36.8	-204.6	327.0	320.0	6.95	47.058	
1,400.0	1,366.4	1,335.2	1,311.1	5.3	4.6	139.67	-44.0	-226.1	364.1	356.5	7.64	47.634	
1,500.0	1,462.2	1,428.0	1,401.1	5.8	5.1	139.60	-51.1	-247.6	401.3	392.9	8.34	48.104	
1,600.0	1,557.9	1,520.9	1,491.2	6.3	5.5	139.54	-58.2	-269.1	438.4	429.4	9.04	48.494	
1,700.0	1,653.7	1,613.7	1,581.2	6.9	5.9	139.49	-65.3	-290.6	475.5	465.8	9.74	48.823	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-13A - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-26.80	22.9	-11.6	25.7				
100.0	100.0	100.0	100.0	0.1	0.1	-26.80	22.9	-11.6	25.7	25.4	0.27	94.400	
200.0	200.0	200.0	200.0	0.3	0.3	-26.80	22.9	-11.6	25.7	25.1	0.62	41.366	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	154.25	22.9	-11.7	27.0	26.1	0.97	27.840	
400.0	399.8	399.8	399.7	0.7	0.7	152.29	21.1	-15.2	32.8	31.5	1.33	24.600	SF
500.0	499.1	499.0	498.5	0.9	0.9	154.06	17.0	-23.3	43.7	42.0	1.75	25.003	
600.0	597.7	596.8	595.3	1.3	1.2	152.14	10.6	-35.7	60.9	58.7	2.24	27.160	
700.0	695.4	692.5	689.2	1.7	1.5	148.88	2.2	-52.1	85.1	82.3	2.83	30.045	
800.0	791.8	785.3	779.3	2.2	2.0	145.92	-7.9	-71.9	116.4	112.9	3.51	33.133	
900.0	887.6	878.6	869.1	2.7	2.4	142.72	-19.3	-94.1	151.3	147.1	4.25	35.621	
1,000.0	983.3	972.0	959.1	3.2	2.9	140.71	-30.7	-116.4	186.6	181.6	5.00	37.322	
1,100.0	1,079.1	1,065.4	1,049.1	3.7	3.3	139.33	-42.0	-138.6	222.0	216.2	5.76	38.545	
1,200.0	1,174.9	1,158.8	1,139.2	4.2	3.8	138.34	-53.4	-160.9	257.4	250.9	6.52	39.463	
1,300.0	1,270.6	1,252.2	1,229.2	4.8	4.2	137.58	-64.8	-183.1	292.9	285.6	7.29	40.174	
1,400.0	1,366.4	1,345.7	1,319.2	5.3	4.7	136.99	-76.2	-205.4	328.5	320.4	8.06	40.740	
1,500.0	1,462.2	1,439.1	1,409.2	5.8	5.2	136.51	-87.6	-227.6	364.0	355.2	8.84	41.201	
1,600.0	1,557.9	1,532.5	1,499.2	6.3	5.7	136.12	-98.9	-249.9	399.6	390.0	9.61	41.583	
1,700.0	1,653.7	1,625.9	1,589.2	6.9	6.1	135.79	-110.3	-272.2	435.2	424.8	10.39	41.904	
1,800.0	1,749.5	1,719.4	1,679.3	7.4	6.6	135.52	-121.7	-294.4	470.8	459.7	11.16	42.179	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-13AA - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-44.83	11.7	-11.6	16.4				
100.0	100.0	100.0	100.0	0.1	0.1	-44.83	11.7	-11.6	16.4	16.2	0.27	60.365	
200.0	200.0	200.0	200.0	0.3	0.3	-44.83	11.7	-11.6	16.4	15.8	0.62	26.452	CC, ES
300.0	300.0	299.9	299.9	0.5	0.5	136.41	11.2	-12.1	17.6	16.6	0.97	18.059	
400.0	399.8	399.7	399.6	0.7	0.7	134.55	8.0	-16.1	22.7	21.4	1.35	16.791	SF
500.0	499.1	499.0	498.3	0.9	0.9	137.40	1.5	-24.2	32.6	30.8	1.80	18.084	
600.0	597.7	597.1	595.2	1.3	1.2	137.01	-8.1	-36.1	48.5	46.2	2.35	20.621	
700.0	695.4	693.5	689.5	1.7	1.6	135.32	-20.6	-51.5	70.8	67.8	3.01	23.490	
800.0	791.8	787.6	780.5	2.2	2.1	133.67	-35.6	-70.0	99.3	95.6	3.78	26.268	
900.0	887.6	881.6	870.5	2.7	2.5	131.16	-52.7	-91.2	131.5	126.9	4.61	28.541	
1,000.0	983.3	976.1	960.9	3.2	3.0	129.57	-70.0	-112.6	163.8	158.4	5.45	30.065	
1,100.0	1,079.1	1,070.7	1,051.4	3.7	3.5	128.50	-87.3	-134.0	196.3	190.0	6.30	31.151	
1,200.0	1,174.9	1,165.2	1,141.8	4.2	4.1	127.73	-104.6	-155.5	228.7	221.6	7.16	31.960	
1,300.0	1,270.6	1,259.7	1,232.2	4.8	4.6	127.15	-122.0	-176.9	261.3	253.2	8.02	32.583	
1,400.0	1,366.4	1,354.3	1,322.7	5.3	5.1	126.71	-139.3	-198.3	293.8	284.9	8.88	33.078	
1,500.0	1,462.2	1,448.8	1,413.1	5.8	5.6	126.35	-156.6	-219.7	326.3	316.6	9.75	33.479	
1,600.0	1,557.9	1,543.4	1,503.6	6.3	6.1	126.05	-173.9	-241.1	358.9	348.3	10.61	33.811	
1,700.0	1,653.7	1,637.9	1,594.0	6.9	6.6	125.81	-191.2	-262.6	391.4	379.9	11.48	34.090	
1,800.0	1,749.5	1,732.4	1,684.4	7.4	7.1	125.60	-208.5	-284.0	424.0	411.6	12.35	34.327	
1,900.0	1,845.2	1,827.0	1,774.9	7.9	7.7	125.42	-225.8	-305.4	456.5	443.3	13.22	34.531	
2,000.0	1,941.0	1,921.5	1,865.3	8.5	8.2	125.27	-243.2	-326.8	489.1	475.0	14.09	34.709	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-13D - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	11.3	0.0	11.3				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	11.3	0.0	11.3	11.0	0.27	41.454	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	11.3	0.0	11.3	10.7	0.62	18.165	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	180.00	11.3	0.0	12.8	11.8	0.97	13.155	SF
400.0	399.8	400.4	400.4	0.7	0.7	174.01	9.4	-1.8	17.5	16.2	1.32	13.241	
500.0	499.1	500.6	500.3	0.9	0.9	168.64	3.7	-7.3	24.6	22.9	1.71	14.436	
600.0	597.7	600.2	598.9	1.3	1.1	159.22	-5.7	-16.3	36.1	33.9	2.19	16.486	
700.0	695.4	698.5	695.6	1.7	1.5	150.63	-18.7	-28.6	53.5	50.7	2.82	18.972	
800.0	791.8	795.1	789.5	2.2	1.9	144.38	-34.8	-44.1	77.2	73.6	3.59	21.480	
900.0	887.6	890.0	880.6	2.7	2.4	138.22	-54.1	-62.4	104.6	100.2	4.49	23.297	
1,000.0	983.3	983.9	969.5	3.2	3.0	132.75	-76.2	-83.5	134.1	128.6	5.46	24.582	
1,100.0	1,079.1	1,078.7	1,058.7	3.7	3.5	128.86	-99.1	-105.5	164.7	158.2	6.43	25.625	
1,200.0	1,174.9	1,173.4	1,148.0	4.2	4.1	126.18	-122.1	-127.4	195.7	188.3	7.39	26.482	
1,300.0	1,270.6	1,268.1	1,237.2	4.8	4.7	124.24	-145.1	-149.4	227.1	218.7	8.35	27.186	
1,400.0	1,366.4	1,362.8	1,326.4	5.3	5.3	122.77	-168.1	-171.3	258.6	249.3	9.31	27.769	
1,500.0	1,462.2	1,457.5	1,415.7	5.8	5.8	121.61	-191.0	-193.3	290.2	279.9	10.27	28.259	
1,600.0	1,557.9	1,552.3	1,504.9	6.3	6.4	120.69	-214.0	-215.2	321.9	310.7	11.23	28.674	
1,700.0	1,653.7	1,647.0	1,594.1	6.9	7.0	119.92	-237.0	-237.2	353.7	341.5	12.18	29.031	
1,800.0	1,749.5	1,741.7	1,683.3	7.4	7.6	119.29	-260.0	-259.1	385.5	372.4	13.14	29.340	
1,900.0	1,845.2	1,836.4	1,772.6	7.9	8.2	118.75	-282.9	-281.1	417.4	403.3	14.10	29.610	
2,000.0	1,941.0	1,931.1	1,861.8	8.5	8.8	118.29	-305.9	-303.0	449.3	434.2	15.05	29.848	
2,100.0	2,036.8	2,025.9	1,951.0	9.0	9.4	117.89	-328.9	-325.0	481.2	465.2	16.01	30.059	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-15A - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	91.80	-0.4	11.6	11.6				
100.0	100.0	100.0	100.0	0.1	0.1	91.80	-0.4	11.6	11.6	11.3	0.27	42.582	
200.0	200.0	200.0	200.0	0.3	0.3	91.80	-0.4	11.6	11.6	11.0	0.62	18.659	
249.9	249.9	249.9	249.9	0.4	0.4	-90.61	-0.4	11.6	11.6	10.8	0.80	14.545	CC
300.0	300.0	300.0	300.0	0.5	0.5	-95.46	-0.4	11.6	11.6	10.7	0.97	11.963	ES
400.0	399.8	399.8	399.8	0.7	0.7	-117.27	-1.7	12.3	13.8	12.5	1.35	10.254	SF
500.0	499.1	499.7	499.4	0.9	0.9	-122.11	-7.5	15.3	19.0	17.2	1.76	10.761	
600.0	597.7	599.8	598.9	1.3	1.1	-123.41	-17.9	20.7	24.6	22.4	2.27	10.866	
700.0	695.4	699.9	697.6	1.7	1.4	-125.05	-32.6	28.3	30.6	27.7	2.85	10.712	
800.0	791.8	799.4	795.5	2.2	1.7	-131.72	-48.2	36.4	38.7	35.3	3.39	11.401	
900.0	887.6	898.7	893.3	2.7	2.1	-139.81	-63.7	44.4	49.0	45.2	3.83	12.774	
1,000.0	983.3	998.0	991.0	3.2	2.4	-145.03	-79.2	52.5	59.9	55.7	4.26	14.068	
1,100.0	1,079.1	1,097.3	1,088.7	3.7	2.7	-148.62	-94.8	60.5	71.2	66.5	4.68	15.221	
1,200.0	1,174.9	1,196.6	1,186.4	4.2	3.1	-151.23	-110.3	68.6	82.7	77.6	5.09	16.232	
1,300.0	1,270.6	1,295.8	1,284.2	4.8	3.4	-153.19	-125.8	76.6	94.3	88.8	5.51	17.117	
1,400.0	1,366.4	1,395.1	1,381.9	5.3	3.8	-154.73	-141.4	84.7	106.0	100.0	5.92	17.892	
1,500.0	1,462.2	1,494.4	1,479.6	5.8	4.1	-155.95	-156.9	92.7	117.7	111.4	6.34	18.576	
1,600.0	1,557.9	1,593.7	1,577.4	6.3	4.5	-156.96	-172.4	100.7	129.5	122.7	6.75	19.182	
1,700.0	1,653.7	1,692.9	1,675.1	6.9	4.8	-157.80	-187.9	108.8	141.3	134.2	7.17	19.721	
1,800.0	1,749.5	1,792.2	1,772.8	7.4	5.2	-158.51	-203.5	116.8	153.2	145.6	7.58	20.205	
1,900.0	1,845.2	1,891.5	1,870.5	7.9	5.5	-159.11	-219.0	124.9	165.0	157.0	8.00	20.641	
2,000.0	1,941.0	1,990.8	1,968.3	8.5	5.9	-159.64	-234.5	132.9	176.9	168.5	8.41	21.035	
2,100.0	2,036.8	2,090.1	2,066.0	9.0	6.2	-160.10	-250.0	141.0	188.8	180.0	8.83	21.393	
2,200.0	2,132.5	2,189.3	2,163.7	9.5	6.6	-160.50	-265.6	149.0	200.7	191.5	9.24	21.720	
2,300.0	2,228.3	2,288.6	2,261.4	10.1	6.9	-160.86	-281.1	157.1	212.7	203.0	9.66	22.019	
2,400.0	2,324.1	2,387.9	2,359.2	10.6	7.3	-161.18	-296.6	165.1	224.6	214.5	10.07	22.294	
2,500.0	2,419.8	2,487.2	2,456.9	11.1	7.6	-161.47	-312.1	173.2	236.5	226.0	10.49	22.548	
2,600.0	2,515.6	2,586.5	2,554.6	11.7	8.0	-161.73	-327.7	181.2	248.4	237.5	10.90	22.783	
2,700.0	2,611.4	2,685.7	2,652.3	12.2	8.3	-161.97	-343.2	189.3	260.4	249.1	11.32	23.001	
2,800.0	2,707.1	2,785.0	2,750.1	12.7	8.7	-162.18	-358.7	197.3	272.3	260.6	11.74	23.203	
2,900.0	2,802.9	2,884.3	2,847.8	13.3	9.0	-162.38	-374.3	205.4	284.3	272.1	12.15	23.392	
3,000.0	2,898.6	2,983.6	2,945.5	13.8	9.4	-162.56	-389.8	213.4	296.2	283.7	12.57	23.569	
3,100.0	2,994.4	3,082.9	3,043.3	14.3	9.7	-162.73	-405.3	221.5	308.2	295.2	12.98	23.734	
3,200.0	3,090.2	3,182.1	3,141.0	14.9	10.1	-162.89	-420.8	229.5	320.1	306.7	13.40	23.889	
3,300.0	3,185.9	3,281.4	3,238.7	15.4	10.4	-163.03	-436.4	237.5	332.1	318.3	13.82	24.035	
3,400.0	3,281.7	3,380.7	3,336.4	15.9	10.8	-163.17	-451.9	245.6	344.1	329.8	14.23	24.173	
3,500.0	3,377.5	3,480.0	3,434.2	16.5	11.1	-163.29	-467.4	253.6	356.0	341.4	14.65	24.303	
3,600.0	3,473.2	3,579.2	3,531.9	17.0	11.5	-163.41	-482.9	261.7	368.0	352.9	15.07	24.425	
3,700.0	3,569.0	3,678.5	3,629.6	17.5	11.8	-163.52	-498.5	269.7	380.0	364.5	15.48	24.541	
3,800.0	3,664.8	3,777.8	3,727.3	18.1	12.2	-163.62	-514.0	277.8	391.9	376.0	15.90	24.651	
3,900.0	3,760.5	3,877.1	3,825.1	18.6	12.5	-163.72	-529.5	285.8	403.9	387.6	16.31	24.756	
4,000.0	3,856.3	3,976.4	3,922.8	19.1	12.9	-163.81	-545.1	293.9	415.9	399.1	16.73	24.855	
4,100.0	3,952.1	4,075.6	4,020.5	19.7	13.2	-163.89	-560.6	301.9	427.8	410.7	17.15	24.950	
4,200.0	4,047.8	4,174.9	4,118.2	20.2	13.6	-163.98	-576.1	310.0	439.8	422.2	17.56	25.040	
4,300.0	4,143.6	4,274.2	4,216.0	20.7	13.9	-164.05	-591.6	318.0	451.8	433.8	17.98	25.126	
4,400.0	4,239.4	4,373.5	4,313.7	21.3	14.3	-164.13	-607.2	326.1	463.7	445.3	18.40	25.208	
4,500.0	4,335.1	4,472.8	4,411.4	21.8	14.6	-164.20	-622.7	334.1	475.7	456.9	18.81	25.287	
4,600.0	4,430.9	4,572.0	4,509.1	22.3	15.0	-164.26	-638.2	342.2	487.7	468.5	19.23	25.362	
4,700.0	4,526.7	4,671.3	4,606.9	22.9	15.3	-164.33	-653.7	350.2	499.7	480.0	19.65	25.434	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-15AA - OH - Plan #1 — **Offset Site Error:** 0.0 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	136.06	-12.0	11.6	16.7				
100.0	100.0	100.0	100.0	0.1	0.1	136.06	-12.0	11.6	16.7	16.4	0.27	61.333	
200.0	200.0	200.0	200.0	0.3	0.3	136.06	-12.0	11.6	16.7	16.1	0.62	26.876	CC
300.0	300.0	299.2	299.1	0.5	0.5	-43.92	-14.4	12.5	18.0	17.1	0.97	18.556	
400.0	399.8	398.2	397.9	0.7	0.7	-47.95	-21.6	15.2	20.5	19.2	1.35	15.250	
500.0	499.1	497.2	496.0	0.9	1.0	-45.67	-33.6	19.8	23.9	22.1	1.78	13.435	
600.0	597.7	596.0	593.2	1.3	1.3	-43.08	-50.3	26.1	27.0	24.7	2.29	11.810	
700.0	695.4	695.6	690.3	1.7	1.7	-42.61	-70.7	33.8	28.8	25.9	2.89	9.984	
800.0	791.8	795.5	787.7	2.2	2.1	-48.80	-91.5	41.7	26.7	22.9	3.73	7.148	
900.0	887.6	895.3	885.0	2.7	2.6	-62.80	-112.2	49.6	23.5	18.7	4.88	4.823	
1,000.0	983.3	995.0	982.3	3.2	3.0	-79.73	-132.9	57.4	22.1	16.0	6.10	3.632	
1,016.7	999.4	1,011.7	998.6	3.3	3.0	-82.70	-136.4	58.7	22.1	15.8	6.29	3.519	
1,100.0	1,079.1	1,094.8	1,079.5	3.7	3.4	-97.17	-153.6	65.3	22.8	15.8	7.05	3.240	ES, SF
1,200.0	1,174.9	1,194.5	1,176.8	4.2	3.8	-112.30	-174.3	73.1	25.5	17.9	7.59	3.354	
1,300.0	1,270.6	1,294.3	1,274.1	4.8	4.2	-123.99	-195.1	81.0	29.5	21.6	7.85	3.756	
1,400.0	1,366.4	1,394.1	1,371.4	5.3	4.7	-132.61	-215.8	88.9	34.4	26.4	8.00	4.301	
1,500.0	1,462.2	1,493.8	1,468.6	5.8	5.1	-138.98	-236.5	96.7	39.9	31.8	8.14	4.903	
1,600.0	1,557.9	1,593.6	1,565.9	6.3	5.5	-143.76	-257.2	104.6	45.8	37.5	8.30	5.516	
1,700.0	1,653.7	1,693.4	1,663.2	6.9	5.9	-147.43	-277.9	112.4	51.9	43.4	8.49	6.112	
1,800.0	1,749.5	1,793.1	1,760.4	7.4	6.4	-150.32	-298.7	120.3	58.2	49.5	8.71	6.679	
1,900.0	1,845.2	1,892.9	1,857.7	7.9	6.8	-152.64	-319.4	128.1	64.6	55.7	8.96	7.212	
2,000.0	1,941.0	1,992.7	1,955.0	8.5	7.2	-154.54	-340.1	136.0	71.1	61.9	9.22	7.710	
2,100.0	2,036.8	2,092.4	2,052.3	9.0	7.6	-156.12	-360.8	143.9	77.7	68.2	9.50	8.172	
2,200.0	2,132.5	2,192.2	2,149.5	9.5	8.0	-157.45	-381.5	151.7	84.3	74.5	9.80	8.602	
2,300.0	2,228.3	2,291.9	2,246.8	10.1	8.5	-158.59	-402.3	159.6	90.9	80.8	10.10	9.000	
2,400.0	2,324.1	2,391.7	2,344.1	10.6	8.9	-159.57	-423.0	167.4	97.6	87.2	10.42	9.371	
2,500.0	2,419.8	2,491.5	2,441.3	11.1	9.3	-160.43	-443.7	175.3	104.3	93.6	10.74	9.715	
2,600.0	2,515.6	2,591.2	2,538.6	11.7	9.7	-161.18	-464.4	183.1	111.0	100.0	11.06	10.036	
2,700.0	2,611.4	2,691.0	2,635.9	12.2	10.2	-161.85	-485.1	191.0	117.8	106.4	11.40	10.335	
2,800.0	2,707.1	2,790.8	2,733.2	12.7	10.6	-162.45	-505.8	198.9	124.5	112.8	11.73	10.614	
2,900.0	2,802.9	2,890.5	2,830.4	13.3	11.0	-162.98	-526.6	206.7	131.3	119.2	12.07	10.876	
3,000.0	2,898.6	2,990.3	2,927.7	13.8	11.4	-163.46	-547.3	214.6	138.1	125.7	12.42	11.121	
3,100.0	2,994.4	3,090.0	3,025.0	14.3	11.9	-163.90	-568.0	222.4	144.9	132.1	12.76	11.351	
3,200.0	3,090.2	3,189.8	3,122.2	14.9	12.3	-164.30	-588.7	230.3	151.7	138.6	13.11	11.567	
3,300.0	3,185.9	3,289.6	3,219.5	15.4	12.7	-164.66	-609.4	238.1	158.5	145.0	13.46	11.771	
3,400.0	3,281.7	3,389.3	3,316.8	15.9	13.1	-164.99	-630.2	246.0	165.3	151.5	13.82	11.963	
3,500.0	3,377.5	3,489.1	3,414.1	16.5	13.6	-165.30	-650.9	253.9	172.1	157.9	14.17	12.145	
3,600.0	3,473.2	3,588.9	3,511.3	17.0	14.0	-165.58	-671.6	261.7	178.9	164.4	14.53	12.317	
3,700.0	3,569.0	3,688.6	3,608.6	17.5	14.4	-165.84	-692.3	269.6	185.8	170.9	14.88	12.479	
3,800.0	3,664.8	3,788.4	3,705.9	18.1	14.8	-166.09	-713.0	277.4	192.6	177.3	15.24	12.634	
3,900.0	3,760.5	3,888.2	3,803.1	18.6	15.3	-166.32	-733.8	285.3	199.4	183.8	15.60	12.781	
4,000.0	3,856.3	3,987.9	3,900.4	19.1	15.7	-166.53	-754.5	293.1	206.2	190.3	15.96	12.920	
4,100.0	3,952.1	4,087.7	3,997.7	19.7	16.1	-166.73	-775.2	301.0	213.1	196.7	16.32	13.053	
4,200.0	4,047.8	4,187.4	4,095.0	20.2	16.5	-166.91	-795.9	308.9	219.9	203.2	16.69	13.179	
4,300.0	4,143.6	4,287.2	4,192.2	20.7	17.0	-167.09	-816.6	316.7	226.8	209.7	17.05	13.300	
4,400.0	4,239.4	4,387.0	4,289.5	21.3	17.4	-167.25	-837.4	324.6	233.6	216.2	17.41	13.415	
4,500.0	4,335.1	4,486.7	4,386.8	21.8	17.8	-167.41	-858.1	332.4	240.4	222.7	17.78	13.526	
4,600.0	4,430.9	4,586.5	4,484.0	22.3	18.2	-167.56	-878.8	340.3	247.3	229.1	18.14	13.631	
4,700.0	4,526.7	4,686.3	4,581.3	22.9	18.7	-167.69	-899.5	348.2	254.1	235.6	18.51	13.732	
4,800.0	4,622.4	4,786.0	4,678.6	23.4	19.1	-167.83	-920.2	356.0	261.0	242.1	18.87	13.829	
4,900.0	4,718.2	4,885.8	4,775.9	23.9	19.5	-167.95	-941.0	363.9	267.8	248.6	19.24	13.922	
5,000.0	4,814.0	4,985.6	4,873.1	24.5	19.9	-168.07	-961.7	371.7	274.7	255.1	19.60	14.011	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design J6SEB Pad - HMU 6-15AA - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,909.7	5,085.3	4,970.4	25.0	20.4	-168.18	-982.4	379.6	281.5	261.6	19.97	14.097	
5,200.0	5,005.5	5,185.1	5,067.7	25.5	20.8	-168.29	-1,003.1	387.4	288.4	268.0	20.34	14.180	
5,300.0	5,101.3	5,284.8	5,164.9	26.1	21.2	-168.39	-1,023.8	395.3	295.2	274.5	20.70	14.259	
5,400.0	5,197.0	5,384.6	5,262.2	26.6	21.6	-168.49	-1,044.6	403.2	302.1	281.0	21.07	14.336	
5,500.0	5,292.8	5,484.4	5,359.5	27.1	22.1	-168.58	-1,065.3	411.0	308.9	287.5	21.44	14.410	
5,600.0	5,388.6	5,584.1	5,456.8	27.7	22.5	-168.67	-1,086.0	418.9	315.8	294.0	21.81	14.481	
5,700.0	5,484.3	5,683.9	5,554.0	28.2	22.9	-168.76	-1,106.7	426.7	322.7	300.5	22.18	14.549	
5,800.0	5,580.1	5,783.7	5,651.3	28.7	23.3	-168.84	-1,127.4	434.6	329.5	307.0	22.55	14.616	
5,900.0	5,675.8	5,883.4	5,748.6	29.3	23.8	-168.92	-1,148.1	442.4	336.4	313.5	22.91	14.680	
6,000.0	5,771.6	5,983.2	5,845.8	29.8	24.2	-169.00	-1,168.9	450.3	343.2	319.9	23.28	14.742	
6,100.0	5,867.6	6,083.0	5,943.2	30.3	24.6	-169.06	-1,189.6	458.2	349.2	325.6	23.67	14.755	
6,200.0	5,964.5	6,177.4	6,035.3	30.7	25.0	-169.03	-1,208.8	465.5	352.4	328.3	24.06	14.646	
6,300.0	6,062.2	6,266.6	6,122.9	31.1	25.3	-169.00	-1,224.8	471.5	354.8	330.4	24.42	14.530	
6,400.0	6,160.6	6,355.8	6,210.9	31.5	25.6	-168.97	-1,238.1	476.6	356.9	332.1	24.75	14.417	
6,500.0	6,259.5	6,445.0	6,299.3	31.7	25.8	-168.95	-1,248.9	480.7	358.5	333.4	25.06	14.308	
6,600.0	6,358.9	6,534.1	6,388.0	31.9	26.0	-168.93	-1,257.2	483.8	359.7	334.4	25.33	14.201	
6,700.0	6,458.6	6,623.2	6,476.9	32.1	26.1	-168.92	-1,262.8	485.9	360.6	335.0	25.58	14.097	
6,800.0	6,558.5	6,712.3	6,565.9	32.2	26.2	-168.91	-1,265.8	487.1	361.0	335.2	25.80	13.993	
6,900.0	6,658.5	6,804.9	6,658.5	32.3	26.3	-7.42	-1,266.4	487.3	361.1	335.0	26.04	13.867	
7,000.0	6,758.5	6,904.9	6,758.5	32.3	26.4	-7.42	-1,266.4	487.3	361.1	334.7	26.36	13.699	
7,100.0	6,858.5	7,004.9	6,858.5	32.4	26.5	-7.42	-1,266.4	487.3	361.1	334.4	26.68	13.534	
7,200.0	6,958.5	7,104.9	6,958.5	32.5	26.5	-7.42	-1,266.4	487.3	361.1	334.1	27.00	13.373	
7,300.0	7,058.5	7,204.9	7,058.5	32.5	26.6	-7.42	-1,266.4	487.3	361.1	333.7	27.32	13.215	
7,400.0	7,158.5	7,304.9	7,158.5	32.6	26.7	-7.42	-1,266.4	487.3	361.1	333.4	27.64	13.061	
7,500.0	7,258.5	7,404.9	7,258.5	32.7	26.8	-7.42	-1,266.4	487.3	361.1	333.1	27.97	12.910	
7,600.0	7,358.5	7,504.9	7,358.5	32.7	26.9	-7.42	-1,266.4	487.3	361.1	332.8	28.29	12.762	
7,700.0	7,458.5	7,604.9	7,458.5	32.8	27.0	-7.42	-1,266.4	487.3	361.1	332.4	28.62	12.617	
7,800.0	7,558.5	7,704.9	7,558.5	32.9	27.0	-7.42	-1,266.4	487.3	361.1	332.1	28.94	12.476	
7,900.0	7,658.5	7,804.9	7,658.5	33.0	27.1	-7.42	-1,266.4	487.3	361.1	331.8	29.27	12.337	
8,000.0	7,758.5	7,904.9	7,758.5	33.0	27.2	-7.42	-1,266.4	487.3	361.1	331.5	29.59	12.201	
8,100.0	7,858.5	8,004.9	7,858.5	33.1	27.3	-7.42	-1,266.4	487.3	361.1	331.1	29.92	12.068	
8,200.0	7,958.5	8,104.9	7,958.5	33.2	27.4	-7.42	-1,266.4	487.3	361.1	330.8	30.25	11.937	
8,300.0	8,058.5	8,204.9	8,058.5	33.2	27.5	-7.42	-1,266.4	487.3	361.1	330.5	30.58	11.809	
8,400.0	8,158.5	8,304.9	8,158.5	33.3	27.6	-7.42	-1,266.4	487.3	361.1	330.2	30.90	11.684	
8,500.0	8,258.5	8,404.9	8,258.5	33.4	27.7	-7.42	-1,266.4	487.3	361.1	329.8	31.23	11.561	
8,600.0	8,358.5	8,504.9	8,358.5	33.5	27.8	-7.42	-1,266.4	487.3	361.1	329.5	31.56	11.440	
8,700.0	8,458.5	8,604.9	8,458.5	33.6	27.9	-7.42	-1,266.4	487.3	361.1	329.2	31.89	11.322	
8,800.0	8,558.5	8,704.9	8,558.5	33.6	28.0	-7.42	-1,266.4	487.3	361.1	328.8	32.22	11.206	
8,900.0	8,658.5	8,804.9	8,658.5	33.7	28.0	-7.42	-1,266.4	487.3	361.1	328.5	32.55	11.092	
8,940.5	8,699.0	8,845.4	8,699.0	33.7	28.1	-7.42	-1,266.4	487.3	361.1	328.4	32.68	11.047	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well HMU 6-15D
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Reference Site:	J6SEB Pad	**MD Reference:**	KB=22' @ 7166.0ft (Patterson #308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	HMU 6-15D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=22' @ 7166.0ft (Patterson #308)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinates are relative to: HMU 6-15D
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.39°