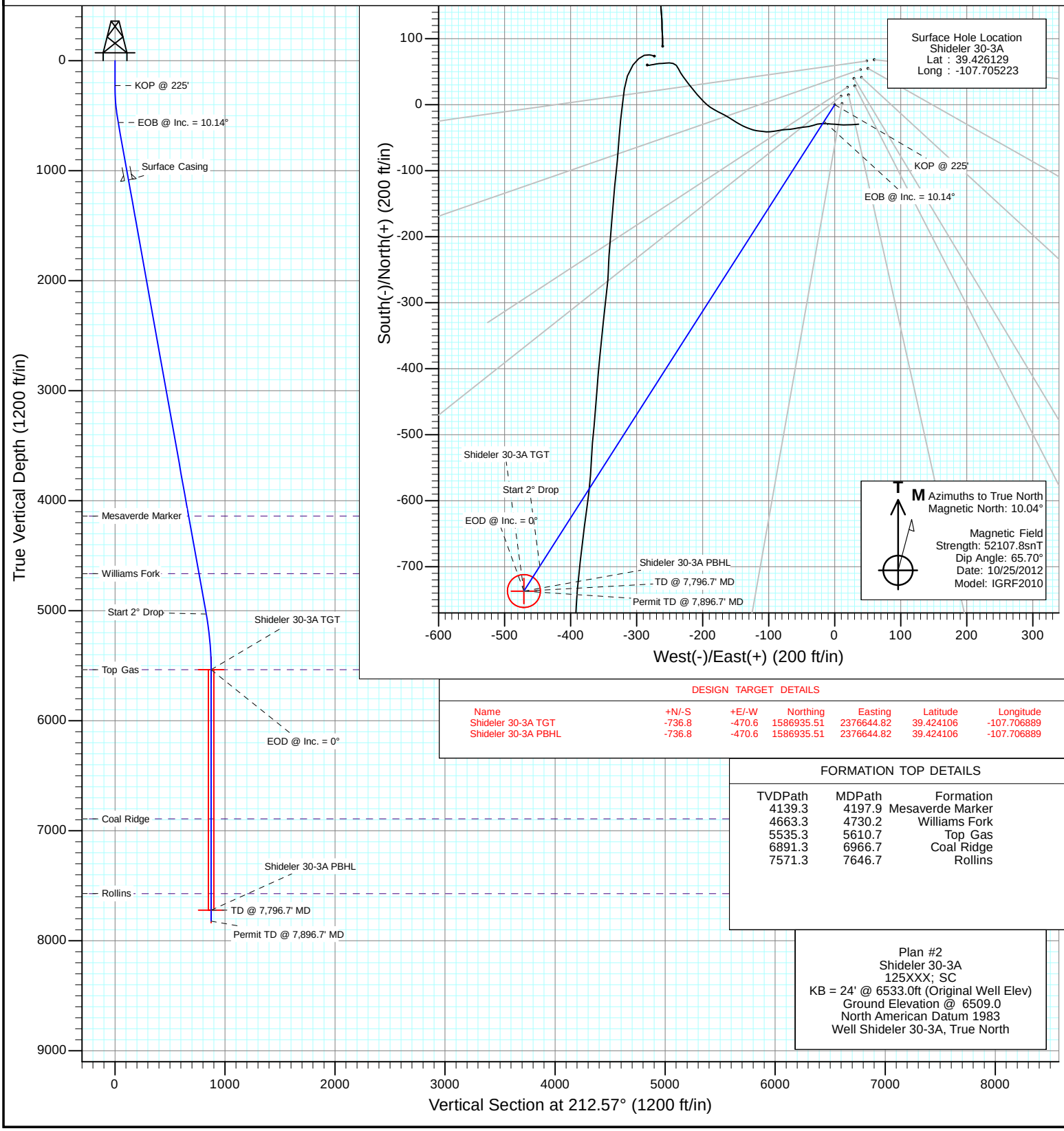
Project: Mamm Creek
Site: O19EB Pad
Well: Shideler 30-3A
Wellbore: OH
Design: Plan #2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	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	563.1	10.14	212.57	561.4	-25.2	-16.1	3.00	212.57	29.9	
4	5103.5	10.14	212.57	5030.7	-699.1	-446.5	0.00	0.00	829.5	
5	5610.7	0.00	0.00	5535.3	-736.8	-470.6	2.00	180.00	874.3	Shideler 30-3A TGT
6	7796.7	0.00	0.00	7721.3	-736.8	-470.6	0.00	0.00	874.3	Shideler 30-3A PBHL
7	7896.7	0.00	0.00	7821.3	-736.8	-470.6	0.00	0.00	874.3	



DESIGN TARGET DETAILS

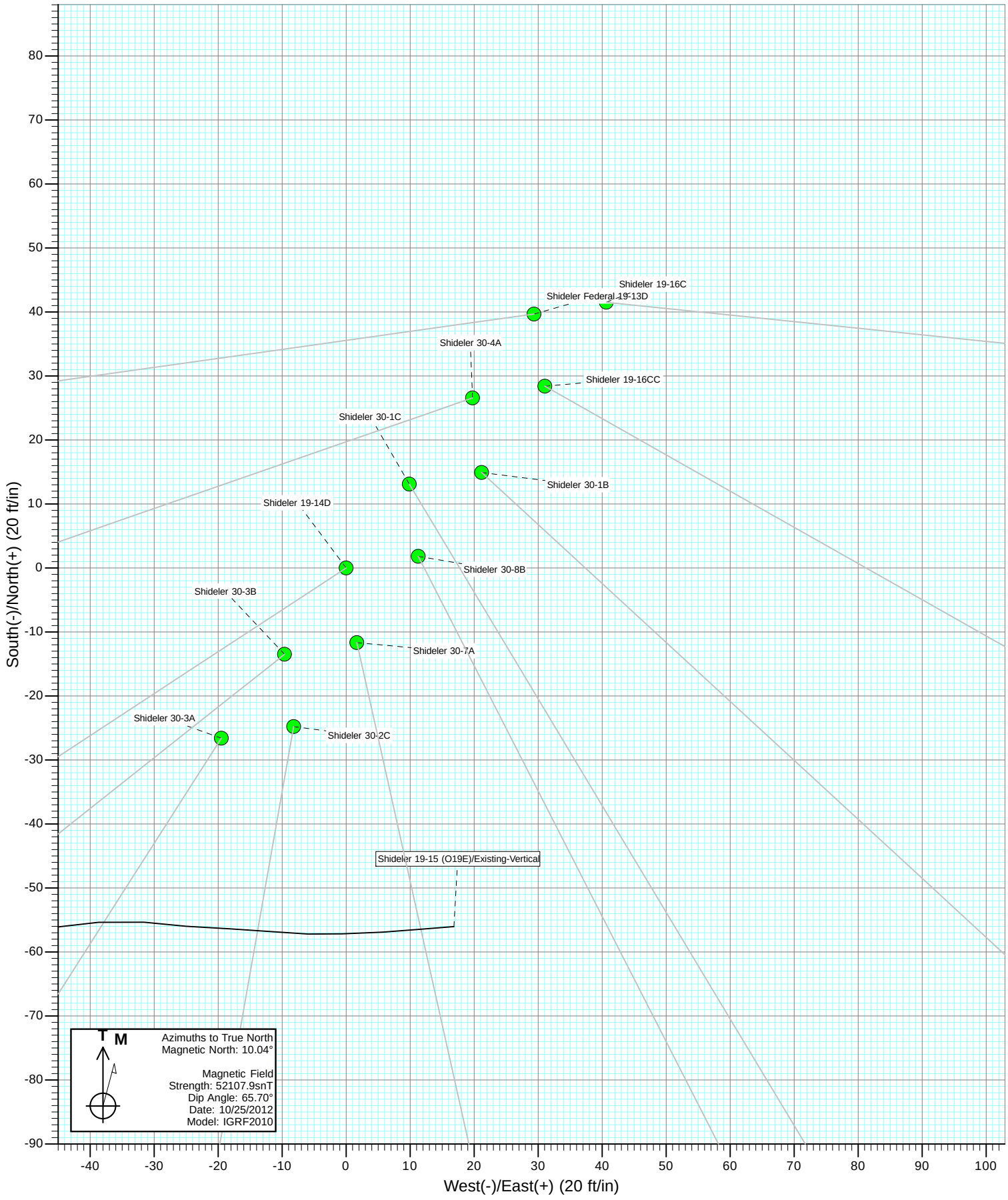
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Shideler 30-3A TGT	-736.8	-470.6	1586935.51	2376644.82	39.424106	-107.706889
Shideler 30-3A PBHL	-736.8	-470.6	1586935.51	2376644.82	39.424106	-107.706889

FORMATION TOP DETAILS

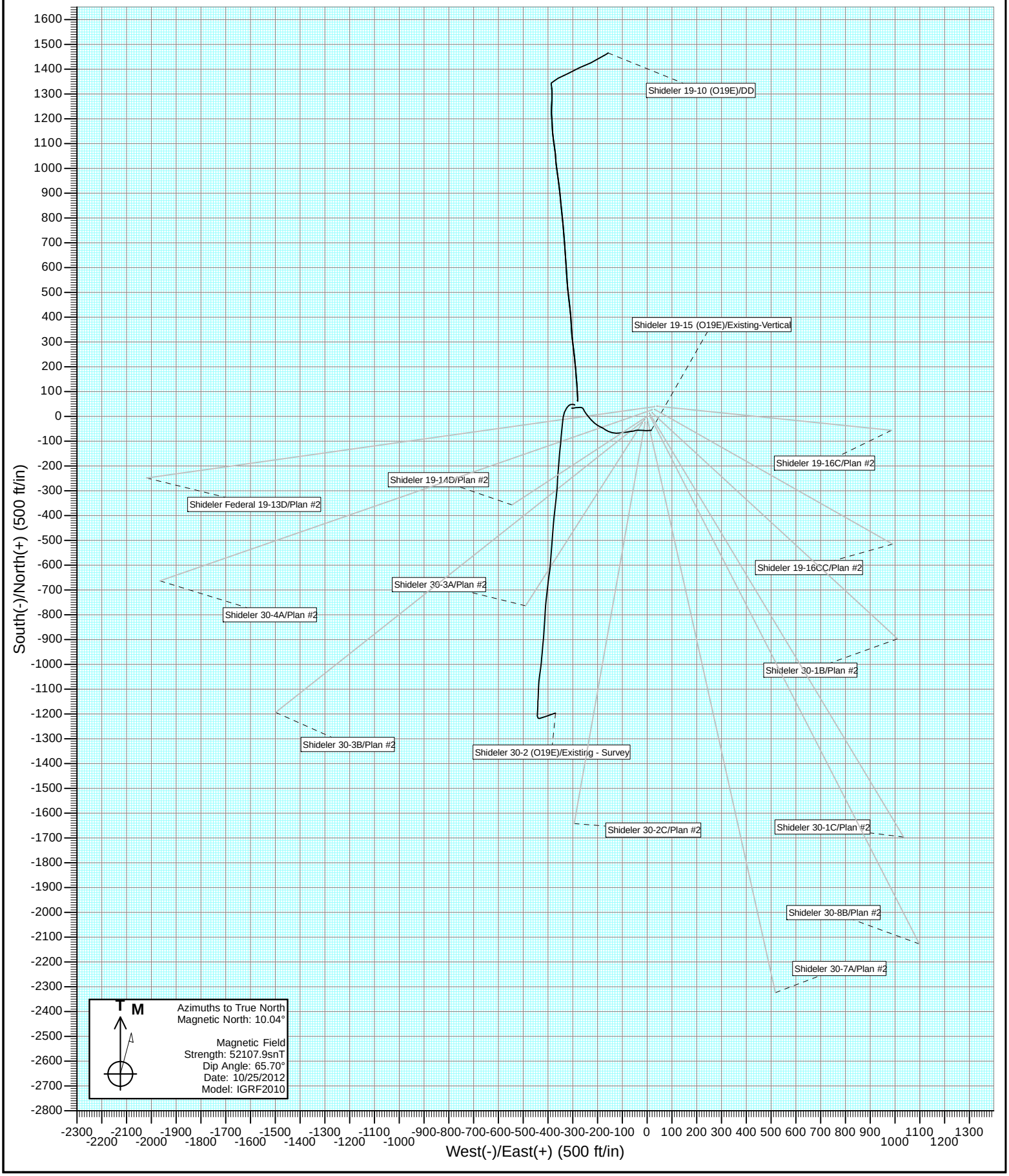
TVDPath	MDPath	Formation
4139.3	4197.9	Mesaverde Marker
4663.3	4730.2	Williams Fork
5535.3	5610.7	Top Gas
6891.3	6966.7	Coal Ridge
7571.3	7646.7	Rollins

Plan #2
Shideler 30-3A
125XXX; SC
KB = 24' @ 6533.0ft (Original Well Elev)
Ground Elevation @ 6509.0
North American Datum 1983
Well Shideler 30-3A, True North

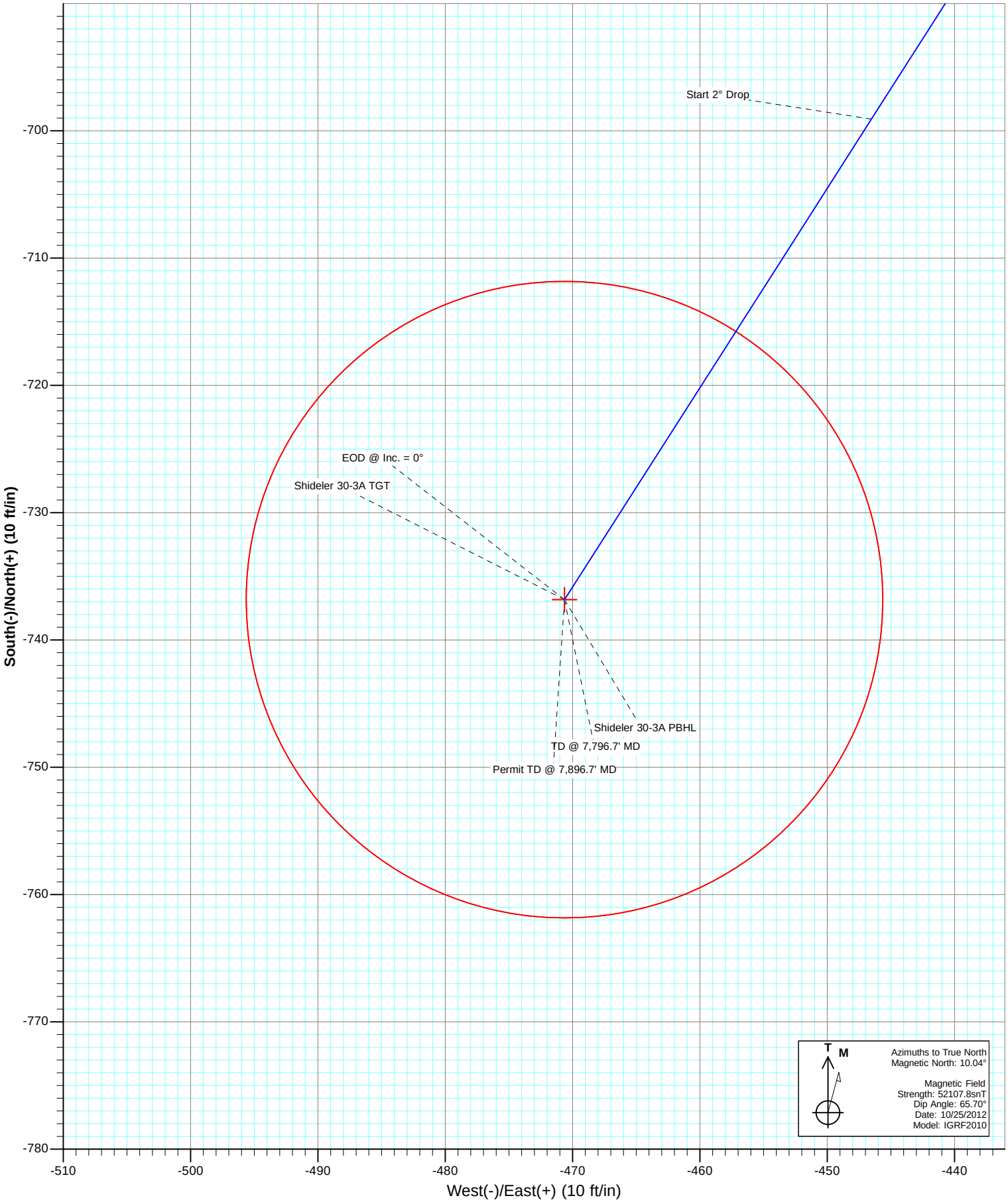
Project: Mamm Creek
Site: O19EB Pad
Well:
Wellbore:
Design:



Project: Mamm Creek
Site: O19EB Pad
Well:
Wellbore:
Design:



Project: Mamm Creek
Site: O19EB Pad
Well: Shideler 30-3A
Wellbore: OH
Plan: Plan #2



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site:	O19EB Pad	**North Reference:**	True
Well:	Shideler 30-3A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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 O19EB Pad

Site Position:		**Northing:**	1,587,688.01 ft	**Latitude:**	39.426206
From:	Lat/Long	**Easting:**	2,377,164.37 ft	**Longitude:**	-107.705115
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.39 °

Well Shideler 30-3A

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,587,660.70 ft	**Latitude:**	39.426129
	+E/-W	0.0 ft	**Easting:**	2,377,133.19 ft	**Longitude:**	-107.705223
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,509.0 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	10/25/2012	10.04	65.70	52,108

Design Plan #2

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	212.57

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
225.0	0.00	0.00	225.0	0.0	0.0	0.00	0.00	0.00	0.00	
563.1	10.14	212.57	561.4	-25.2	-16.1	3.00	3.00	0.00	212.57	
5,103.5	10.14	212.57	5,030.7	-699.1	-446.5	0.00	0.00	0.00	0.00	
5,610.7	0.00	0.00	5,535.3	-736.8	-470.6	2.00	-2.00	0.00	180.00	Shideler 30-3A TGT
7,796.7	0.00	0.00	7,721.3	-736.8	-470.6	0.00	0.00	0.00	0.00	Shideler 30-3A PBHL
7,896.7	0.00	0.00	7,821.3	-736.8	-470.6	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site:	O19EB Pad	**North Reference:**	True
Well:	Shideler 30-3A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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	212.57	300.0	-1.2	-0.8	1.5	3.00	3.00	
400.0	5.25	212.57	399.8	-6.8	-4.3	8.0	3.00	3.00	
500.0	8.25	212.57	499.1	-16.7	-10.6	19.8	3.00	3.00	
563.1	10.14	212.57	561.4	-25.2	-16.1	29.9	3.00	3.00	EOB @ Inc. = 10.14°
600.0	10.14	212.57	597.7	-30.6	-19.6	36.3	0.00	0.00	
700.0	10.14	212.57	696.1	-45.5	-29.0	54.0	0.00	0.00	
800.0	10.14	212.57	794.5	-60.3	-38.5	71.6	0.00	0.00	
900.0	10.14	212.57	893.0	-75.2	-48.0	89.2	0.00	0.00	
1,000.0	10.14	212.57	991.4	-90.0	-57.5	106.8	0.00	0.00	
1,095.1	10.14	212.57	1,085.0	-104.1	-66.5	123.5	0.00	0.00	Surface Casing
1,100.0	10.14	212.57	1,089.8	-104.8	-67.0	124.4	0.00	0.00	
1,200.0	10.14	212.57	1,188.3	-119.7	-76.4	142.0	0.00	0.00	
1,300.0	10.14	212.57	1,286.7	-134.5	-85.9	159.6	0.00	0.00	
1,400.0	10.14	212.57	1,385.2	-149.4	-95.4	177.2	0.00	0.00	
1,500.0	10.14	212.57	1,483.6	-164.2	-104.9	194.9	0.00	0.00	
1,600.0	10.14	212.57	1,582.0	-179.1	-114.4	212.5	0.00	0.00	
1,700.0	10.14	212.57	1,680.5	-193.9	-123.9	230.1	0.00	0.00	
1,800.0	10.14	212.57	1,778.9	-208.7	-133.3	247.7	0.00	0.00	
1,900.0	10.14	212.57	1,877.3	-223.6	-142.8	265.3	0.00	0.00	
2,000.0	10.14	212.57	1,975.8	-238.4	-152.3	282.9	0.00	0.00	
2,100.0	10.14	212.57	2,074.2	-253.3	-161.8	300.5	0.00	0.00	
2,200.0	10.14	212.57	2,172.6	-268.1	-171.3	318.1	0.00	0.00	
2,300.0	10.14	212.57	2,271.1	-283.0	-180.7	335.8	0.00	0.00	
2,400.0	10.14	212.57	2,369.5	-297.8	-190.2	353.4	0.00	0.00	
2,500.0	10.14	212.57	2,468.0	-312.7	-199.7	371.0	0.00	0.00	
2,600.0	10.14	212.57	2,566.4	-327.5	-209.2	388.6	0.00	0.00	
2,700.0	10.14	212.57	2,664.8	-342.3	-218.7	406.2	0.00	0.00	
2,800.0	10.14	212.57	2,763.3	-357.2	-228.1	423.8	0.00	0.00	
2,900.0	10.14	212.57	2,861.7	-372.0	-237.6	441.4	0.00	0.00	
3,000.0	10.14	212.57	2,960.1	-386.9	-247.1	459.0	0.00	0.00	
3,100.0	10.14	212.57	3,058.6	-401.7	-256.6	476.7	0.00	0.00	
3,200.0	10.14	212.57	3,157.0	-416.6	-266.1	494.3	0.00	0.00	
3,300.0	10.14	212.57	3,255.5	-431.4	-275.5	511.9	0.00	0.00	
3,400.0	10.14	212.57	3,353.9	-446.2	-285.0	529.5	0.00	0.00	
3,500.0	10.14	212.57	3,452.3	-461.1	-294.5	547.1	0.00	0.00	
3,600.0	10.14	212.57	3,550.8	-475.9	-304.0	564.7	0.00	0.00	
3,700.0	10.14	212.57	3,649.2	-490.8	-313.5	582.3	0.00	0.00	
3,800.0	10.14	212.57	3,747.6	-505.6	-322.9	599.9	0.00	0.00	
3,900.0	10.14	212.57	3,846.1	-520.5	-332.4	617.6	0.00	0.00	
4,000.0	10.14	212.57	3,944.5	-535.3	-341.9	635.2	0.00	0.00	
4,100.0	10.14	212.57	4,042.9	-550.1	-351.4	652.8	0.00	0.00	
4,197.9	10.14	212.57	4,139.3	-564.7	-360.7	670.0	0.00	0.00	Mesaverde Marker
4,200.0	10.14	212.57	4,141.4	-565.0	-360.9	670.4	0.00	0.00	
4,300.0	10.14	212.57	4,239.8	-579.8	-370.3	688.0	0.00	0.00	
4,400.0	10.14	212.57	4,338.3	-594.7	-379.8	705.6	0.00	0.00	
4,500.0	10.14	212.57	4,436.7	-609.5	-389.3	723.2	0.00	0.00	
4,600.0	10.14	212.57	4,535.1	-624.4	-398.8	740.8	0.00	0.00	
4,700.0	10.14	212.57	4,633.6	-639.2	-408.3	758.5	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site:	O19EB Pad	**North Reference:**	True
Well:	Shideler 30-3A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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
4,730.2	10.14	212.57	4,663.3	-643.7	-411.1	763.8	0.00	0.00	Williams Fork
4,800.0	10.14	212.57	4,732.0	-654.0	-417.7	776.1	0.00	0.00	
4,900.0	10.14	212.57	4,830.4	-668.9	-427.2	793.7	0.00	0.00	
5,000.0	10.14	212.57	4,928.9	-683.7	-436.7	811.3	0.00	0.00	
5,103.5	10.14	212.57	5,030.7	-699.1	-446.5	829.5	0.00	0.00	Start 2° Drop
5,200.0	8.21	212.57	5,126.0	-712.1	-454.8	844.9	2.00	-2.00	
5,300.0	6.21	212.57	5,225.2	-722.6	-461.6	857.5	2.00	-2.00	
5,400.0	4.21	212.57	5,324.8	-730.3	-466.5	866.6	2.00	-2.00	
5,500.0	2.21	212.57	5,424.6	-735.0	-469.5	872.2	2.00	-2.00	
5,600.0	0.21	212.57	5,524.6	-736.8	-470.6	874.3	2.00	-2.00	
5,610.7	0.00	0.00	5,535.3	-736.8	-470.6	874.3	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
5,700.0	0.00	0.00	5,624.6	-736.8	-470.6	874.3	0.00	0.00	
5,800.0	0.00	0.00	5,724.6	-736.8	-470.6	874.3	0.00	0.00	
5,900.0	0.00	0.00	5,824.6	-736.8	-470.6	874.3	0.00	0.00	
6,000.0	0.00	0.00	5,924.6	-736.8	-470.6	874.3	0.00	0.00	
6,100.0	0.00	0.00	6,024.6	-736.8	-470.6	874.3	0.00	0.00	
6,200.0	0.00	0.00	6,124.6	-736.8	-470.6	874.3	0.00	0.00	
6,300.0	0.00	0.00	6,224.6	-736.8	-470.6	874.3	0.00	0.00	
6,400.0	0.00	0.00	6,324.6	-736.8	-470.6	874.3	0.00	0.00	
6,500.0	0.00	0.00	6,424.6	-736.8	-470.6	874.3	0.00	0.00	
6,600.0	0.00	0.00	6,524.6	-736.8	-470.6	874.3	0.00	0.00	
6,700.0	0.00	0.00	6,624.6	-736.8	-470.6	874.3	0.00	0.00	
6,800.0	0.00	0.00	6,724.6	-736.8	-470.6	874.3	0.00	0.00	
6,900.0	0.00	0.00	6,824.6	-736.8	-470.6	874.3	0.00	0.00	
6,966.7	0.00	0.00	6,891.3	-736.8	-470.6	874.3	0.00	0.00	Coal Ridge
7,000.0	0.00	0.00	6,924.6	-736.8	-470.6	874.3	0.00	0.00	
7,100.0	0.00	0.00	7,024.6	-736.8	-470.6	874.3	0.00	0.00	
7,200.0	0.00	0.00	7,124.6	-736.8	-470.6	874.3	0.00	0.00	
7,300.0	0.00	0.00	7,224.6	-736.8	-470.6	874.3	0.00	0.00	
7,400.0	0.00	0.00	7,324.6	-736.8	-470.6	874.3	0.00	0.00	
7,500.0	0.00	0.00	7,424.6	-736.8	-470.6	874.3	0.00	0.00	
7,600.0	0.00	0.00	7,524.6	-736.8	-470.6	874.3	0.00	0.00	
7,646.7	0.00	0.00	7,571.3	-736.8	-470.6	874.3	0.00	0.00	Rollins
7,700.0	0.00	0.00	7,624.6	-736.8	-470.6	874.3	0.00	0.00	
7,796.7	0.00	0.00	7,721.3	-736.8	-470.6	874.3	0.00	0.00	TD @ 7,796.7' MD
7,800.0	0.00	0.00	7,724.6	-736.8	-470.6	874.3	0.00	0.00	
7,896.7	0.00	0.00	7,821.3	-736.8	-470.6	874.3	0.00	0.00	Permit TD @ 7,896.7' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Shideler 30-3A PBHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,721.3	-736.8	-470.6	1,586,935.51	2,376,644.82	39.424106	-107.706889
Shideler 30-3A TGT - plan hits target center - Point	0.00	0.00	5,535.3	-736.8	-470.6	1,586,935.51	2,376,644.82	39.424106	-107.706889

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site:	O19EB Pad	**North Reference:**	True
Well:	Shideler 30-3A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,095.1	1,085.0	Surface Casing		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,197.9	4,139.3	Mesaverde Marker			
4,730.2	4,663.3	Williams Fork			
5,610.7	5,535.3	Top Gas			
6,966.7	6,891.3	Coal Ridge			
7,646.7	7,571.3	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'
563.1	561.4	-25.2	-16.1	EOB @ Inc. = 10.14°
5,103.5	5,030.7	-699.1	-446.5	Start 2° Drop
5,610.7	5,535.3	-736.8	-470.6	EOD @ Inc. = 0°
7,796.7	7,721.3	-736.8	-470.6	TD @ 7,796.7' MD
7,896.7	7,821.3	-736.8	-470.6	Permit TD @ 7,896.7' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
O19EB Pad
Shideler 30-3A
OH
Plan #2

Anticollision Report

13 November, 2012

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Reference	Plan #2		
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** 11/13/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,896.7	Plan #2 (OH)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
O19E Pad						
Shideler 19-10 (O19E) - DD - DD	458.4	476.2	274.3	272.6	165.360	CC, ES
Shideler 19-10 (O19E) - DD - DD	1,200.0	1,119.4	405.9	400.5	74.954	SF
Shideler 19-10 (O19E) - Surveys - Surveys	458.4	476.2	274.3	272.6	165.360	CC, ES
Shideler 19-10 (O19E) - Surveys - Surveys	1,200.0	1,119.4	405.9	400.5	74.954	SF
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,377.3	1,404.5	246.3	240.0	39.299	CC
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,400.0	1,426.8	246.3	240.0	38.679	ES
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	2,300.0	2,312.3	292.2	282.6	30.454	SF
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	2,289.5	2,314.5	194.7	182.0	15.373	CC
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	2,300.0	2,324.8	194.7	182.0	15.356	ES
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	6,811.3	6,933.3	449.4	419.2	14.878	SF
O19EB Pad						
(Existing Offset) Shideler 19-6D - Existing - Existing						Out of range
Shideler 19-14D - OH - Plan #2	200.0	200.0	33.0	32.4	53.663	CC, ES
Shideler 19-14D - OH - Plan #2	7,896.7	7,863.6	410.5	376.5	12.059	SF
Shideler 19-16C - OH - Plan #2	200.0	200.0	90.9	90.3	147.929	CC, ES
Shideler 19-16C - OH - Plan #2	1,700.0	1,619.5	495.2	488.0	68.464	SF
Shideler 19-16CC - OH - Plan #2	200.0	200.0	74.7	74.1	121.608	CC, ES
Shideler 19-16CC - OH - Plan #2	1,300.0	1,254.4	313.0	306.9	51.003	SF
Shideler 30-1B - OH - Plan #2	200.0	200.0	58.1	57.5	94.610	CC, ES
Shideler 30-1B - OH - Plan #2	1,000.0	974.1	189.5	184.9	41.022	SF
Shideler 30-1C - OH - Plan #2	100.0	100.0	49.4	49.1	186.169	CC
Shideler 30-1C - OH - Plan #2	229.7	230.0	49.5	48.8	68.673	ES
Shideler 30-1C - OH - Plan #2	800.0	791.2	117.4	113.5	30.309	SF
Shideler 30-2C - OH - Plan #2	200.0	200.0	11.4	10.8	18.629	CC
Shideler 30-2C - OH - Plan #2	300.0	300.2	11.6	10.7	11.961	ES
Shideler 30-2C - OH - Plan #2	500.0	500.0	18.5	16.5	9.546	SF
Shideler 30-3B - OH - Plan #2	419.5	421.1	14.5	13.1	10.347	CC, ES
Shideler 30-3B - OH - Plan #2	700.0	702.2	21.8	18.4	6.465	SF
Shideler 30-4A - OH - Plan #2	200.0	200.0	66.1	65.5	107.598	CC
Shideler 30-4A - OH - Plan #2	300.0	302.2	66.3	65.4	68.517	ES
Shideler 30-4A - OH - Plan #2	1,000.0	1,004.8	105.5	99.5	17.528	SF
Shideler 30-7A - OH - Plan #2	200.0	200.0	25.9	25.3	42.191	CC, ES
Shideler 30-7A - OH - Plan #2	800.0	796.9	76.8	73.0	19.986	SF
Shideler 30-8B - OH - Plan #2	200.0	200.0	41.9	41.3	68.193	CC
Shideler 30-8B - OH - Plan #2	212.0	212.1	41.9	41.3	63.783	ES
Shideler 30-8B - OH - Plan #2	800.0	790.2	111.6	107.7	28.572	SF
Shideler Federal 19-13D - OH - Plan #2	300.0	303.0	82.0	81.0	84.166	CC, ES
Shideler Federal 19-13D - OH - Plan #2	1,000.0	997.9	145.8	139.8	24.273	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19E Pad - Shideler 19-10 (O19E) - DD - DD

Survey Program: 154--MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	23.9	23.9	0.0	0.0	-71.20	88.6	-260.3	275.0				
100.0	100.0	123.5	123.5	0.1	0.2	-71.18	88.8	-260.4	275.1	274.8	0.33	837.021	
200.0	200.0	223.1	223.1	0.3	0.4	-71.11	89.1	-260.5	275.3	274.7	0.67	409.307	
300.0	300.0	322.8	322.8	0.5	0.5	76.74	89.8	-260.7	275.4	274.3	1.02	268.900	
400.0	399.8	421.4	421.3	0.7	0.7	78.48	91.8	-260.6	274.6	273.2	1.40	195.581	
458.4	457.8	476.2	476.1	0.8	0.8	80.17	94.3	-260.4	274.3	272.6	1.66	165.360	CC, ES
500.0	499.1	514.8	514.6	1.0	0.9	81.69	96.8	-260.4	274.5	272.6	1.84	148.971	
600.0	597.7	607.0	606.4	1.3	1.1	86.38	105.6	-260.8	277.5	275.1	2.36	117.795	
700.0	696.1	695.0	693.5	1.6	1.4	91.60	118.1	-261.4	285.4	282.5	2.90	98.423	
800.0	794.5	778.3	775.3	1.9	1.6	96.78	133.5	-262.0	299.0	295.5	3.45	86.752	
900.0	893.0	861.9	856.8	2.3	2.0	101.87	152.1	-263.3	318.8	314.8	3.98	80.043	
1,000.0	991.4	946.9	939.1	2.6	2.4	106.71	173.5	-265.1	344.0	339.5	4.49	76.563	
1,100.0	1,089.8	1,033.6	1,022.6	3.0	2.8	111.18	196.9	-267.0	373.4	368.4	4.97	75.092	
1,200.0	1,188.3	1,119.4	1,104.9	3.3	3.2	115.08	221.1	-268.9	405.9	400.5	5.41	74.954	SF
1,300.0	1,286.7	1,204.0	1,185.7	3.7	3.7	118.43	245.9	-271.3	441.3	435.4	5.83	75.749	
1,400.0	1,385.2	1,292.1	1,269.6	4.0	4.1	121.42	272.5	-274.1	478.9	472.7	6.21	77.062	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19E Pad - Shideler 19-10 (O19E) - Surveys - Surveys

Survey Program: 154-MWD2, 1295-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	23.9	23.9	0.0	0.0	-71.20	88.6	-260.3	275.0				
100.0	100.0	123.5	123.5	0.1	0.2	-71.18	88.8	-260.4	275.1	274.8	0.33	837.021	
200.0	200.0	223.1	223.1	0.3	0.4	-71.11	89.1	-260.5	275.3	274.7	0.67	409.307	
300.0	300.0	322.8	322.8	0.5	0.5	76.74	89.8	-260.7	275.4	274.3	1.02	268.900	
400.0	399.8	421.4	421.3	0.7	0.7	78.48	91.8	-260.6	274.6	273.2	1.40	195.581	
458.4	457.8	476.2	476.1	0.8	0.8	80.17	94.3	-260.4	274.3	272.6	1.66	165.360	CC, ES
500.0	499.1	514.8	514.6	1.0	0.9	81.69	96.8	-260.4	274.5	272.6	1.84	148.971	
600.0	597.7	607.0	606.4	1.3	1.1	86.38	105.6	-260.8	277.5	275.1	2.36	117.795	
700.0	696.1	695.0	693.5	1.6	1.4	91.60	118.1	-261.4	285.4	282.5	2.90	98.423	
800.0	794.5	778.3	775.3	1.9	1.6	96.78	133.5	-262.0	299.0	295.5	3.45	86.752	
900.0	893.0	861.9	856.8	2.3	2.0	101.87	152.1	-263.3	318.8	314.8	3.98	80.043	
1,000.0	991.4	946.9	939.1	2.6	2.4	106.71	173.5	-265.1	344.0	339.5	4.49	76.563	
1,100.0	1,089.8	1,033.6	1,022.6	3.0	2.8	111.18	196.9	-267.0	373.4	368.4	4.97	75.092	
1,200.0	1,188.3	1,119.4	1,104.9	3.3	3.2	115.08	221.1	-268.9	405.9	400.5	5.41	74.954	SF
1,300.0	1,286.7	1,204.0	1,185.7	3.7	3.7	118.43	245.9	-271.3	441.3	435.4	5.83	75.749	
1,400.0	1,385.2	1,292.1	1,269.6	4.0	4.1	121.42	272.5	-274.1	478.9	472.7	6.21	77.062	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19E Pad - Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertical

Survey Program: 100-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	24.3	24.3	0.0	0.0	-78.03	60.1	-283.6	289.9				
100.0	100.0	125.5	125.5	0.1	0.2	-78.02	60.1	-283.3	289.6	289.2	0.33	884.948	
200.0	200.0	226.5	226.5	0.3	0.4	-78.06	59.8	-282.7	288.9	288.3	0.68	425.858	
300.0	300.0	328.3	328.3	0.5	0.6	69.72	59.7	-281.4	287.2	286.2	1.03	278.107	
400.0	399.8	429.4	429.4	0.7	0.7	71.22	59.9	-279.6	283.3	281.9	1.41	200.776	
500.0	499.1	530.9	530.8	1.0	0.9	73.95	60.4	-277.0	277.4	275.5	1.84	150.359	
600.0	597.7	631.3	631.2	1.3	1.1	77.83	61.0	-273.4	270.0	267.7	2.34	115.525	
700.0	696.1	730.4	730.2	1.6	1.3	82.05	61.9	-269.1	263.2	260.3	2.85	92.291	
800.0	794.5	829.5	829.2	1.9	1.5	86.39	62.2	-264.5	257.3	253.9	3.38	76.179	
900.0	893.0	927.3	926.9	2.3	1.7	90.89	62.7	-259.7	252.8	248.9	3.91	64.723	
1,000.0	991.4	1,026.1	1,025.5	2.6	1.9	95.62	63.2	-254.5	249.8	245.4	4.43	56.350	
1,100.0	1,089.8	1,125.8	1,125.1	3.0	2.0	100.45	63.2	-248.9	247.9	242.9	4.95	50.079	
1,200.0	1,188.3	1,225.7	1,224.8	3.3	2.2	105.17	62.2	-243.3	247.1	241.7	5.45	45.380	
1,300.0	1,286.7	1,327.5	1,326.4	3.7	2.4	109.35	58.2	-238.8	246.5	240.6	5.92	41.652	
1,377.3	1,362.9	1,404.5	1,403.2	4.0	2.6	112.17	53.9	-236.2	246.3	240.0	6.27	39.299	CC
1,400.0	1,385.2	1,426.8	1,425.5	4.0	2.6	112.97	52.5	-235.6	246.3	240.0	6.37	38.679	ES
1,500.0	1,483.6	1,525.1	1,523.6	4.4	2.8	116.54	46.9	-232.4	247.2	240.4	6.80	36.336	
1,600.0	1,582.0	1,623.5	1,621.7	4.7	3.0	120.16	41.7	-228.9	249.2	242.0	7.22	34.533	
1,700.0	1,680.5	1,722.0	1,720.1	5.1	3.2	123.76	36.5	-225.4	252.3	244.7	7.61	33.154	
1,800.0	1,778.9	1,820.1	1,818.0	5.4	3.4	127.38	31.8	-221.3	256.6	248.6	7.98	32.151	
1,900.0	1,877.3	1,919.3	1,917.0	5.8	3.6	130.87	26.8	-217.4	261.8	253.4	8.33	31.419	
2,000.0	1,975.8	2,016.9	2,014.4	6.2	3.8	134.14	22.1	-213.6	268.1	259.4	8.67	30.933	
2,100.0	2,074.2	2,115.8	2,113.1	6.5	4.0	137.31	17.4	-209.7	275.3	266.4	8.99	30.639	
2,200.0	2,172.6	2,214.4	2,211.5	6.9	4.2	140.29	12.7	-205.9	283.3	274.0	9.30	30.481	
2,300.0	2,271.1	2,312.3	2,309.3	7.2	4.4	143.15	8.1	-201.8	292.2	282.6	9.59	30.454	SF
2,400.0	2,369.5	2,410.6	2,407.3	7.6	4.6	145.92	3.7	-197.4	301.9	292.0	9.89	30.542	
2,500.0	2,468.0	2,508.2	2,504.7	7.9	4.8	148.54	-0.5	-192.7	312.5	302.3	10.17	30.724	
2,600.0	2,566.4	2,603.9	2,600.2	8.3	5.0	150.98	-4.1	-187.8	324.2	313.8	10.45	31.021	
2,700.0	2,664.8	2,701.8	2,697.9	8.6	5.2	153.33	-7.4	-182.6	337.0	326.3	10.73	31.396	
2,800.0	2,763.3	2,797.8	2,793.7	9.0	5.4	155.49	-10.2	-177.4	350.7	339.7	11.02	31.832	
2,900.0	2,861.7	2,896.7	2,892.5	9.3	5.6	157.56	-13.0	-171.9	365.1	353.8	11.30	32.293	
3,000.0	2,960.1	2,994.8	2,990.3	9.7	5.8	159.47	-15.8	-166.4	379.8	368.2	11.60	32.747	
3,100.0	3,058.6	3,096.3	3,091.6	10.0	6.0	161.37	-19.3	-160.3	394.5	382.6	11.90	33.148	
3,200.0	3,157.0	3,193.9	3,189.0	10.4	6.2	163.05	-22.9	-154.6	409.2	397.0	12.20	33.545	
3,300.0	3,255.5	3,291.3	3,286.2	10.8	6.4	164.52	-26.2	-149.6	424.3	411.8	12.51	33.929	
3,400.0	3,353.9	3,388.7	3,383.4	11.1	6.6	165.91	-29.4	-144.3	440.0	427.2	12.82	34.319	
3,500.0	3,452.3	3,484.5	3,479.0	11.5	6.8	167.16	-32.1	-139.2	456.2	443.1	13.13	34.733	
3,600.0	3,550.8	3,581.1	3,575.4	11.8	7.0	168.28	-34.3	-134.3	473.1	459.6	13.45	35.161	
3,700.0	3,649.2	3,678.1	3,672.3	12.2	7.2	169.30	-36.2	-129.5	490.4	476.6	13.78	35.591	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19E Pad - Shideler 30-2 (O19E) - Existing - Survey - Existing - Survey

Survey Program: 164-MWD2

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	23.9	23.9	0.0	0.0	-74.94	73.4	-272.8	282.6				
100.0	100.0	123.4	123.4	0.1	0.2	-74.92	73.5	-273.0	282.7	282.4	0.33	857.541	
200.0	200.0	219.7	219.7	0.3	0.4	-74.88	73.9	-273.4	283.2	282.6	0.67	424.740	
300.0	300.0	309.9	309.8	0.5	0.5	72.74	74.6	-276.1	286.0	285.0	1.00	285.734	
400.0	399.8	400.9	400.6	0.7	0.7	73.61	75.7	-282.3	290.9	289.5	1.36	213.269	
500.0	499.1	502.2	501.5	1.0	0.9	74.85	73.7	-291.2	295.5	293.7	1.81	163.497	
600.0	597.7	606.7	605.3	1.3	1.2	76.05	65.9	-300.8	297.8	295.4	2.36	126.065	
700.0	696.1	716.3	713.5	1.6	1.5	76.46	51.7	-310.5	297.8	294.8	3.01	99.008	
800.0	794.5	831.9	826.9	1.9	1.9	75.94	30.4	-317.4	293.4	289.6	3.75	78.292	
900.0	893.0	938.1	929.9	2.3	2.3	74.45	4.8	-320.9	284.6	280.1	4.52	62.963	
1,000.0	991.4	1,038.4	1,026.5	2.6	2.8	72.43	-21.9	-323.8	275.1	269.9	5.29	52.027	
1,100.0	1,089.8	1,138.6	1,123.1	3.0	3.2	70.35	-48.3	-326.4	265.6	259.6	6.05	43.883	
1,200.0	1,188.3	1,238.7	1,219.8	3.3	3.7	68.26	-74.2	-328.3	256.0	249.2	6.81	37.591	
1,300.0	1,286.7	1,335.1	1,312.7	3.7	4.1	65.86	-100.1	-330.7	247.2	239.7	7.57	32.670	
1,400.0	1,385.2	1,436.2	1,409.9	4.0	4.6	63.04	-127.7	-333.3	238.9	230.6	8.31	28.741	
1,500.0	1,483.6	1,534.6	1,504.5	4.4	5.1	60.14	-154.4	-335.6	230.9	221.9	9.03	25.578	
1,600.0	1,582.0	1,633.3	1,599.4	4.7	5.6	56.96	-181.5	-338.1	223.8	214.1	9.70	23.073	
1,700.0	1,680.5	1,733.4	1,695.7	5.1	6.1	53.54	-209.0	-340.4	217.2	206.9	10.33	21.032	
1,800.0	1,778.9	1,833.9	1,792.3	5.4	6.6	49.97	-236.3	-342.1	210.9	200.0	10.89	19.356	
1,900.0	1,877.3	1,932.7	1,887.8	5.8	7.0	46.56	-261.9	-343.2	204.5	193.1	11.39	17.950	
2,000.0	1,975.8	2,028.8	1,980.5	6.2	7.5	43.20	-286.7	-345.8	200.4	188.5	11.84	16.930	
2,100.0	2,074.2	2,128.1	2,076.3	6.5	8.0	39.48	-312.9	-348.7	197.5	185.2	12.21	16.170	
2,200.0	2,172.6	2,226.9	2,171.4	6.9	8.5	35.49	-339.4	-351.4	195.4	182.9	12.49	15.638	
2,289.5	2,260.7	2,314.5	2,255.6	7.2	9.0	31.73	-363.7	-353.8	194.7	182.0	12.67	15.373	CC
2,300.0	2,271.1	2,324.8	2,265.4	7.2	9.0	31.28	-366.5	-354.1	194.7	182.0	12.68	15.356	ES
2,400.0	2,369.5	2,423.9	2,360.4	7.6	9.5	26.85	-394.7	-356.9	195.6	182.9	12.76	15.332	
2,500.0	2,468.0	2,524.9	2,457.4	7.9	10.0	22.45	-422.7	-359.2	196.9	184.1	12.77	15.419	
2,600.0	2,566.4	2,624.1	2,552.9	8.3	10.5	18.27	-449.7	-361.0	198.4	185.7	12.74	15.576	
2,700.0	2,664.8	2,721.9	2,647.0	8.6	11.0	14.33	-476.2	-363.3	201.4	188.7	12.69	15.870	
2,800.0	2,763.3	2,822.1	2,743.4	9.0	11.5	10.53	-503.3	-366.0	205.6	193.0	12.65	16.260	
2,900.0	2,861.7	2,924.1	2,841.8	9.3	12.0	6.82	-530.0	-368.0	209.4	196.8	12.61	16.613	
3,000.0	2,960.1	3,021.9	2,936.4	9.7	12.5	3.36	-555.1	-369.4	213.4	200.8	12.60	16.939	
3,100.0	3,058.6	3,119.0	3,030.0	10.0	13.0	0.11	-580.8	-371.4	219.1	206.5	12.61	17.374	
3,200.0	3,157.0	3,216.6	3,124.0	10.4	13.5	-2.77	-606.8	-374.6	226.3	213.6	12.69	17.829	
3,300.0	3,255.5	3,315.6	3,219.2	10.8	13.9	-5.42	-633.3	-378.4	234.5	221.6	12.84	18.264	
3,400.0	3,353.9	3,414.1	3,314.0	11.1	14.5	-8.03	-660.1	-381.5	243.1	230.1	13.02	18.676	
3,500.0	3,452.3	3,512.2	3,408.3	11.5	15.0	-10.47	-687.0	-384.6	252.6	239.3	13.25	19.068	
3,600.0	3,550.8	3,613.9	3,506.1	11.8	15.5	-12.84	-714.8	-387.7	262.2	248.7	13.53	19.385	
3,700.0	3,649.2	3,716.2	3,604.8	12.2	16.0	-15.09	-741.5	-390.2	271.0	257.1	13.86	19.547	
3,800.0	3,747.6	3,815.4	3,700.7	12.5	16.4	-17.32	-767.0	-391.6	279.4	265.2	14.25	19.617	
3,900.0	3,846.1	3,912.0	3,793.8	12.9	16.9	-19.38	-792.4	-393.0	288.9	274.2	14.67	19.690	
4,000.0	3,944.5	4,006.4	3,884.6	13.2	17.4	-21.22	-818.2	-394.8	299.8	284.7	15.13	19.814	
4,100.0	4,042.9	4,105.4	3,979.6	13.6	17.9	-22.99	-846.0	-396.9	311.8	296.2	15.64	19.940	
4,200.0	4,141.4	4,208.0	4,078.3	13.9	18.4	-24.69	-874.1	-399.0	323.4	307.2	16.19	19.974	
4,300.0	4,239.8	4,303.3	4,169.9	14.3	18.9	-26.10	-900.2	-401.3	335.3	318.6	16.74	20.031	
4,400.0	4,338.3	4,406.2	4,268.9	14.7	19.4	-27.53	-928.3	-403.7	347.3	330.0	17.34	20.027	
4,500.0	4,436.7	4,505.2	4,364.3	15.0	19.9	-28.80	-954.9	-406.1	358.9	341.0	17.95	20.001	
4,600.0	4,535.1	4,604.4	4,459.8	15.4	20.4	-29.94	-981.4	-408.8	370.7	352.2	18.56	19.976	
4,700.0	4,633.6	4,703.1	4,554.8	15.7	20.9	-30.88	-1,007.7	-412.3	382.6	363.4	19.16	19.967	
4,800.0	4,732.0	4,799.9	4,647.9	16.1	21.4	-31.72	-1,034.0	-416.0	395.1	375.3	19.75	20.000	
4,900.0	4,830.4	4,899.7	4,744.0	16.4	21.9	-32.80	-1,061.2	-417.9	407.6	387.2	20.42	19.964	
5,000.0	4,928.9	4,998.5	4,839.0	16.8	22.4	-33.88	-1,088.1	-419.1	420.4	399.3	21.11	19.918	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19E Pad - Shideler 30-2 (O19E) - Existing - Survey - Existing - Survey

Survey Program: 164-MWD2

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,027.3	5,108.6	4,945.1	17.1	22.9	-35.04	-1,117.2	-420.4	432.6	410.8	21.86	19.791	
5,200.0	5,126.0	5,236.2	5,069.8	17.4	23.4	-36.38	-1,144.6	-421.3	441.2	418.6	22.66	19.470	
5,300.0	5,225.2	5,353.7	5,185.8	17.7	23.8	-37.28	-1,163.6	-422.3	447.2	423.9	23.30	19.191	
5,400.0	5,324.8	5,481.5	5,312.7	17.9	24.0	-37.97	-1,178.3	-423.0	451.6	427.7	23.87	18.921	
5,500.0	5,424.6	5,599.7	5,430.7	18.0	24.2	-38.46	-1,184.5	-422.8	452.2	427.9	24.31	18.604	
5,600.0	5,524.6	5,703.5	5,534.4	18.1	24.3	-38.77	-1,188.1	-421.5	454.1	429.5	24.63	18.437	
5,700.0	5,624.6	5,809.2	5,640.1	18.2	24.4	173.51	-1,190.5	-419.0	456.7	431.7	24.98	18.280	
5,800.0	5,724.6	5,916.8	5,747.6	18.3	24.5	173.10	-1,191.3	-415.7	457.8	432.4	25.38	18.039	
5,900.0	5,824.6	6,019.2	5,849.9	18.4	24.5	172.62	-1,190.7	-411.9	457.7	431.9	25.76	17.764	
6,000.0	5,924.6	6,120.7	5,951.3	18.5	24.5	172.06	-1,189.7	-407.4	457.2	431.1	26.17	17.471	
6,100.0	6,024.6	6,222.2	6,052.6	18.6	24.5	171.40	-1,188.2	-402.3	456.5	429.9	26.60	17.159	
6,200.0	6,124.6	6,323.6	6,153.8	18.7	24.6	170.64	-1,186.2	-396.6	455.5	428.4	27.06	16.830	
6,300.0	6,224.6	6,424.8	6,254.9	18.8	24.6	169.79	-1,183.8	-390.1	454.2	426.7	27.55	16.487	
6,400.0	6,324.6	6,524.7	6,354.4	18.9	24.6	168.87	-1,181.1	-383.2	452.8	424.8	28.04	16.148	
6,500.0	6,424.6	6,624.1	6,453.5	19.0	24.7	167.90	-1,178.4	-376.0	451.6	423.1	28.55	15.821	
6,600.0	6,524.6	6,723.4	6,552.6	19.1	24.7	166.87	-1,175.7	-368.3	450.7	421.6	29.06	15.506	
6,700.0	6,624.6	6,822.7	6,651.5	19.2	24.7	165.79	-1,173.0	-360.2	449.9	420.3	29.60	15.202	
6,800.0	6,724.6	6,922.0	6,750.4	19.3	24.7	164.66	-1,170.2	-351.8	449.4	419.3	30.14	14.910	
6,811.3	6,735.9	6,933.3	6,761.6	19.4	24.8	164.53	-1,169.9	-350.8	449.4	419.2	30.20	14.878	SF
6,900.0	6,824.6	6,945.0	6,773.3	19.5	24.8	164.40	-1,169.6	-349.8	455.6	425.2	30.36	15.004	
7,000.0	6,924.6	6,945.0	6,773.3	19.6	24.8	164.40	-1,169.6	-349.8	482.3	451.8	30.49	15.818	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 19-14D - OH - Plan #2

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	36.24	26.6	19.5	33.0				
100.0	100.0	100.0	100.0	0.1	0.1	36.24	26.6	19.5	33.0	32.7	0.27	124.271	
200.0	200.0	200.0	200.0	0.3	0.3	36.24	26.6	19.5	33.0	32.4	0.61	53.663	CC, ES
300.0	300.0	300.8	300.8	0.5	0.5	-176.89	26.2	18.9	33.8	32.9	0.96	35.058	
400.0	399.8	402.5	402.3	0.7	0.7	179.38	23.3	14.4	35.5	34.1	1.32	26.900	
500.0	499.1	504.1	503.3	1.0	0.9	172.69	17.3	5.4	37.8	36.1	1.69	22.387	
600.0	597.7	603.8	602.2	1.3	1.2	166.32	10.1	-5.7	43.3	41.2	2.10	20.672	
700.0	696.1	703.5	701.0	1.6	1.5	161.82	2.9	-16.7	50.2	47.7	2.54	19.773	
800.0	794.5	803.2	799.8	1.9	1.7	158.41	-4.3	-27.7	57.3	54.3	3.01	19.051	
900.0	893.0	902.9	898.7	2.3	2.0	155.77	-11.5	-38.7	64.6	61.1	3.50	18.465	
1,000.0	991.4	1,002.6	997.5	2.6	2.3	153.66	-18.7	-49.7	72.0	68.0	4.00	17.986	
1,100.0	1,089.8	1,102.3	1,096.3	3.0	2.6	151.95	-25.9	-60.8	79.4	74.9	4.52	17.592	
1,200.0	1,188.3	1,202.0	1,195.1	3.3	2.9	150.53	-33.1	-71.8	87.0	81.9	5.04	17.264	
1,300.0	1,286.7	1,301.7	1,293.9	3.7	3.2	149.34	-40.3	-82.8	94.5	89.0	5.56	16.988	
1,400.0	1,385.2	1,401.4	1,392.8	4.0	3.5	148.32	-47.6	-93.8	102.1	96.0	6.10	16.754	
1,500.0	1,483.6	1,501.1	1,491.6	4.4	3.7	147.45	-54.8	-104.8	109.7	103.1	6.63	16.553	
1,600.0	1,582.0	1,600.8	1,590.4	4.7	4.0	146.69	-62.0	-115.9	117.4	110.2	7.17	16.379	
1,700.0	1,680.5	1,700.5	1,689.2	5.1	4.3	146.02	-69.2	-126.9	125.1	117.4	7.71	16.227	
1,800.0	1,778.9	1,800.2	1,788.0	5.4	4.6	145.43	-76.4	-137.9	132.7	124.5	8.25	16.093	
1,900.0	1,877.3	1,899.9	1,886.9	5.8	4.9	144.91	-83.6	-148.9	140.4	131.6	8.79	15.975	
2,000.0	1,975.8	1,999.5	1,985.7	6.2	5.2	144.44	-90.8	-159.9	148.1	138.8	9.33	15.870	
2,100.0	2,074.2	2,099.2	2,084.5	6.5	5.5	144.01	-98.0	-171.0	155.9	146.0	9.88	15.776	
2,200.0	2,172.6	2,198.9	2,183.3	6.9	5.8	143.63	-105.2	-182.0	163.6	153.2	10.43	15.691	
2,300.0	2,271.1	2,298.6	2,282.2	7.2	6.0	143.28	-112.5	-193.0	171.3	160.3	10.97	15.614	
2,400.0	2,369.5	2,398.3	2,381.0	7.6	6.3	142.96	-119.7	-204.0	179.0	167.5	11.52	15.544	
2,500.0	2,468.0	2,498.0	2,479.8	7.9	6.6	142.67	-126.9	-215.0	186.8	174.7	12.07	15.480	
2,600.0	2,566.4	2,597.7	2,578.6	8.3	6.9	142.40	-134.1	-226.1	194.5	181.9	12.61	15.421	
2,700.0	2,664.8	2,697.4	2,677.4	8.6	7.2	142.15	-141.3	-237.1	202.3	189.1	13.16	15.368	
2,800.0	2,763.3	2,797.1	2,776.3	9.0	7.5	141.92	-148.5	-248.1	210.0	196.3	13.71	15.318	
2,900.0	2,861.7	2,896.8	2,875.1	9.3	7.8	141.70	-155.7	-259.1	217.8	203.5	14.26	15.272	
3,000.0	2,960.1	2,996.5	2,973.9	9.7	8.1	141.50	-162.9	-270.1	225.5	210.7	14.81	15.230	
3,100.0	3,058.6	3,096.2	3,072.7	10.0	8.4	141.32	-170.2	-281.2	233.3	217.9	15.36	15.190	
3,200.0	3,157.0	3,195.9	3,171.6	10.4	8.6	141.14	-177.4	-292.2	241.1	225.1	15.91	15.153	
3,300.0	3,255.5	3,295.6	3,270.4	10.8	8.9	140.98	-184.6	-303.2	248.8	232.4	16.46	15.119	
3,400.0	3,353.9	3,395.3	3,369.2	11.1	9.2	140.83	-191.8	-314.2	256.6	239.6	17.01	15.086	
3,500.0	3,452.3	3,495.0	3,468.0	11.5	9.5	140.68	-199.0	-325.3	264.3	246.8	17.56	15.056	
3,600.0	3,550.8	3,594.7	3,566.8	11.8	9.8	140.55	-206.2	-336.3	272.1	254.0	18.11	15.027	
3,700.0	3,649.2	3,694.4	3,665.7	12.2	10.1	140.42	-213.4	-347.3	279.9	261.2	18.66	15.001	
3,800.0	3,747.6	3,794.1	3,764.5	12.5	10.4	140.30	-220.6	-358.3	287.7	268.5	19.21	14.975	
3,900.0	3,846.1	3,893.8	3,863.3	12.9	10.7	140.18	-227.8	-369.3	295.4	275.7	19.76	14.951	
4,000.0	3,944.5	3,993.5	3,962.1	13.2	11.0	140.07	-235.1	-380.4	303.2	282.9	20.31	14.928	
4,100.0	4,042.9	4,093.2	4,061.0	13.6	11.3	139.97	-242.3	-391.4	311.0	290.1	20.86	14.907	
4,200.0	4,141.4	4,192.9	4,159.8	13.9	11.5	139.87	-249.5	-402.4	318.8	297.3	21.41	14.887	
4,300.0	4,239.8	4,292.6	4,258.6	14.3	11.8	139.77	-256.7	-413.4	326.5	304.6	21.96	14.867	
4,400.0	4,338.3	4,392.2	4,357.4	14.7	12.1	139.68	-263.9	-424.4	334.3	311.8	22.51	14.849	
4,500.0	4,436.7	4,491.9	4,456.2	15.0	12.4	139.60	-271.1	-435.5	342.1	319.0	23.07	14.831	
4,600.0	4,535.1	4,591.6	4,555.1	15.4	12.7	139.52	-278.3	-446.5	349.9	326.3	23.62	14.814	
4,700.0	4,633.6	4,691.3	4,653.9	15.7	13.0	139.44	-285.5	-457.5	357.7	333.5	24.17	14.798	
4,800.0	4,732.0	4,791.0	4,752.7	16.1	13.3	139.36	-292.7	-468.5	365.4	340.7	24.72	14.783	
4,900.0	4,830.4	4,890.7	4,851.5	16.4	13.6	139.29	-300.0	-479.5	373.2	347.9	25.27	14.768	
5,000.0	4,928.9	4,990.4	4,950.4	16.8	13.9	139.22	-307.2	-490.6	381.0	355.2	25.82	14.754	
5,100.0	5,027.3	5,090.1	5,049.2	17.1	14.1	139.16	-314.4	-501.6	388.8	362.4	26.37	14.741	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 19-14D - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,126.0	5,185.8	5,144.1	17.4	14.4	139.15	-320.8	-511.4	395.7	368.8	26.87	14.726	
5,300.0	5,225.2	5,280.1	5,238.0	17.7	14.6	139.21	-325.6	-518.7	401.4	374.1	27.27	14.717	
5,400.0	5,324.8	5,374.3	5,332.1	17.9	14.7	139.35	-328.6	-523.3	405.8	378.2	27.58	14.712	
5,500.0	5,424.6	5,468.6	5,426.3	18.0	14.9	139.57	-329.9	-525.3	408.9	381.1	27.81	14.708	
5,600.0	5,524.6	5,566.9	5,524.6	18.1	15.0	139.76	-330.0	-525.4	410.5	382.5	27.99	14.665	
5,700.0	5,624.6	5,666.9	5,624.6	18.2	15.1	-7.67	-330.0	-525.4	410.5	382.3	28.23	14.541	
5,800.0	5,724.6	5,766.9	5,724.6	18.3	15.2	-7.67	-330.0	-525.4	410.5	382.0	28.48	14.415	
5,900.0	5,824.6	5,866.9	5,824.6	18.4	15.3	-7.67	-330.0	-525.4	410.5	381.8	28.73	14.291	
6,000.0	5,924.6	5,966.9	5,924.6	18.5	15.4	-7.67	-330.0	-525.4	410.5	381.5	28.98	14.168	
6,100.0	6,024.6	6,066.9	6,024.6	18.6	15.6	-7.67	-330.0	-525.4	410.5	381.3	29.23	14.046	
6,200.0	6,124.6	6,166.9	6,124.6	18.7	15.7	-7.67	-330.0	-525.4	410.5	381.0	29.48	13.925	
6,300.0	6,224.6	6,266.9	6,224.6	18.8	15.8	-7.67	-330.0	-525.4	410.5	380.8	29.74	13.806	
6,400.0	6,324.6	6,366.9	6,324.6	18.9	15.9	-7.67	-330.0	-525.4	410.5	380.5	29.99	13.687	
6,500.0	6,424.6	6,466.9	6,424.6	19.0	16.0	-7.67	-330.0	-525.4	410.5	380.3	30.25	13.570	
6,600.0	6,524.6	6,566.9	6,524.6	19.1	16.2	-7.67	-330.0	-525.4	410.5	380.0	30.51	13.454	
6,700.0	6,624.6	6,666.9	6,624.6	19.2	16.3	-7.67	-330.0	-525.4	410.5	379.7	30.78	13.339	
6,800.0	6,724.6	6,766.9	6,724.6	19.3	16.4	-7.67	-330.0	-525.4	410.5	379.5	31.04	13.225	
6,900.0	6,824.6	6,866.9	6,824.6	19.5	16.5	-7.67	-330.0	-525.4	410.5	379.2	31.31	13.113	
7,000.0	6,924.6	6,966.9	6,924.6	19.6	16.7	-7.67	-330.0	-525.4	410.5	378.9	31.58	13.001	
7,100.0	7,024.6	7,066.9	7,024.6	19.7	16.8	-7.67	-330.0	-525.4	410.5	378.7	31.84	12.892	
7,200.0	7,124.6	7,166.9	7,124.6	19.8	16.9	-7.67	-330.0	-525.4	410.5	378.4	32.12	12.783	
7,300.0	7,224.6	7,266.9	7,224.6	19.9	17.0	-7.67	-330.0	-525.4	410.5	378.1	32.39	12.675	
7,400.0	7,324.6	7,366.9	7,324.6	20.0	17.2	-7.67	-330.0	-525.4	410.5	377.9	32.66	12.569	
7,500.0	7,424.6	7,466.9	7,424.6	20.1	17.3	-7.67	-330.0	-525.4	410.5	377.6	32.94	12.464	
7,600.0	7,524.6	7,566.9	7,524.6	20.2	17.4	-7.67	-330.0	-525.4	410.5	377.3	33.21	12.360	
7,700.0	7,624.6	7,666.9	7,624.6	20.3	17.6	-7.67	-330.0	-525.4	410.5	377.0	33.49	12.258	
7,800.0	7,724.6	7,766.9	7,724.6	20.5	17.7	-7.67	-330.0	-525.4	410.5	376.8	33.77	12.156	
7,896.7	7,821.3	7,863.6	7,821.3	20.6	17.8	-7.67	-330.0	-525.4	410.5	376.5	34.04	12.059 SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 19-16C - OH - Plan #2

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	41.46	68.1	60.2	90.9				
100.0	100.0	100.0	100.0	0.1	0.1	41.46	68.1	60.2	90.9	90.6	0.27	342.573	
200.0	200.0	200.0	200.0	0.3	0.3	41.46	68.1	60.2	90.9	90.3	0.61	147.929	CC, ES
300.0	300.0	298.6	298.6	0.5	0.5	-170.93	68.0	60.8	92.7	91.7	0.96	96.474	
400.0	399.8	395.2	395.0	0.7	0.7	-169.20	67.5	65.7	102.2	100.9	1.31	77.774	
500.0	499.1	490.0	489.3	1.0	0.9	-166.41	66.6	75.1	119.9	118.2	1.69	71.023	
600.0	597.7	582.1	580.4	1.3	1.2	-163.45	65.2	88.8	145.7	143.6	2.10	69.513	
700.0	696.1	673.2	669.8	1.6	1.5	-160.54	63.3	106.5	175.8	173.3	2.53	69.417	
800.0	794.5	767.8	762.3	1.9	1.9	-158.13	61.3	126.1	207.2	204.2	2.99	69.260	
900.0	893.0	862.5	854.9	2.3	2.2	-156.35	59.3	145.7	238.9	235.4	3.46	69.116	
1,000.0	991.4	957.1	947.4	2.6	2.6	-154.99	57.3	165.3	270.7	266.8	3.92	68.987	
1,100.0	1,089.8	1,051.7	1,040.0	3.0	3.0	-153.92	55.3	184.9	302.6	298.2	4.39	68.876	
1,200.0	1,188.3	1,146.3	1,132.5	3.3	3.4	-153.04	53.3	204.5	334.6	329.7	4.86	68.780	
1,300.0	1,286.7	1,241.0	1,225.1	3.7	3.8	-152.33	51.2	224.1	366.7	361.3	5.34	68.697	
1,400.0	1,385.2	1,335.6	1,317.7	4.0	4.1	-151.72	49.2	243.7	398.8	392.9	5.81	68.626	
1,500.0	1,483.6	1,430.2	1,410.2	4.4	4.5	-151.21	47.2	263.3	430.9	424.6	6.28	68.565	
1,600.0	1,582.0	1,524.9	1,502.8	4.7	4.9	-150.77	45.2	282.9	463.0	456.3	6.76	68.511	
1,700.0	1,680.5	1,619.5	1,595.3	5.1	5.3	-150.38	43.2	302.5	495.2	488.0	7.23	68.464	SF

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 19-16CC - OH - Plan #2

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	42.59	55.0	50.6	74.7				
100.0	100.0	100.0	100.0	0.1	0.1	42.59	55.0	50.6	74.7	74.4	0.27	281.617	
200.0	200.0	200.0	200.0	0.3	0.3	42.59	55.0	50.6	74.7	74.1	0.61	121.608	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-170.16	55.0	50.6	76.2	75.2	0.96	79.085	
400.0	399.8	398.8	398.7	0.7	0.7	-169.16	53.7	52.8	83.2	81.9	1.31	63.289	
500.0	499.1	496.5	496.2	1.0	0.9	-165.98	50.0	59.4	96.7	95.0	1.69	57.126	
600.0	597.7	592.4	591.3	1.3	1.1	-161.93	44.0	70.0	116.8	114.6	2.13	54.940	
700.0	696.1	686.7	684.0	1.6	1.4	-157.50	35.8	84.5	140.2	137.5	2.63	53.335	
800.0	794.5	779.8	774.8	1.9	1.8	-152.92	25.5	102.7	166.5	163.3	3.19	52.228	
900.0	893.0	874.0	866.0	2.3	2.2	-148.94	13.9	123.1	194.8	191.0	3.77	51.659	
1,000.0	991.4	969.1	958.1	2.6	2.7	-145.94	2.3	143.7	223.8	219.5	4.36	51.314	
1,100.0	1,089.8	1,064.2	1,050.3	3.0	3.1	-143.62	-9.4	164.3	253.3	248.3	4.95	51.127	
1,200.0	1,188.3	1,159.3	1,142.4	3.3	3.6	-141.79	-21.0	184.9	283.1	277.5	5.55	51.036	
1,300.0	1,286.7	1,254.4	1,234.5	3.7	4.0	-140.30	-32.6	205.4	313.0	306.9	6.14	51.003	SF
1,400.0	1,385.2	1,349.6	1,326.6	4.0	4.4	-139.07	-44.3	226.0	343.2	336.5	6.73	51.004	
1,500.0	1,483.6	1,444.7	1,418.8	4.4	4.9	-138.04	-55.9	246.6	373.5	366.1	7.32	51.026	
1,600.0	1,582.0	1,539.8	1,510.9	4.7	5.3	-137.17	-67.6	267.2	403.8	395.9	7.91	51.062	
1,700.0	1,680.5	1,634.9	1,603.0	5.1	5.8	-136.42	-79.2	287.7	434.2	425.7	8.50	51.104	
1,800.0	1,778.9	1,730.0	1,695.1	5.4	6.2	-135.76	-90.9	308.3	464.7	455.6	9.09	51.151	
1,900.0	1,877.3	1,825.1	1,787.3	5.8	6.7	-135.19	-102.5	328.9	495.3	485.6	9.67	51.199	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-1B - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	44.41	41.5	40.7	58.1				
100.0	100.0	100.0	100.0	0.1	0.1	44.41	41.5	40.7	58.1	57.9	0.27	219.096	
200.0	200.0	200.0	200.0	0.3	0.3	44.41	41.5	40.7	58.1	57.5	0.61	94.610	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-168.44	41.5	40.7	59.6	58.6	0.96	61.850	
400.0	399.8	399.7	399.7	0.7	0.7	-168.26	40.5	41.8	66.0	64.7	1.31	50.294	
500.0	499.1	498.7	498.5	1.0	0.9	-165.17	36.2	46.5	77.8	76.1	1.69	46.173	
600.0	597.7	596.5	595.6	1.3	1.1	-160.67	28.5	54.8	95.0	92.9	2.12	44.888	
700.0	696.1	693.0	690.7	1.6	1.4	-155.40	17.6	66.7	114.7	112.1	2.64	43.510	
800.0	794.5	787.9	783.4	1.9	1.8	-149.78	3.7	81.7	136.7	133.4	3.24	42.153	
900.0	893.0	880.9	873.1	2.3	2.2	-144.25	-12.9	99.8	161.6	157.7	3.92	41.226	
1,000.0	991.4	974.1	961.9	2.6	2.7	-139.12	-32.0	120.5	189.5	184.9	4.62	41.022	SF
1,100.0	1,089.8	1,068.7	1,052.0	3.0	3.3	-135.14	-51.7	141.8	218.8	213.4	5.32	41.111	
1,200.0	1,188.3	1,163.4	1,142.1	3.3	3.8	-132.10	-71.3	163.2	248.8	242.8	6.01	41.371	
1,300.0	1,286.7	1,258.0	1,232.1	3.7	4.3	-129.71	-91.0	184.5	279.3	272.6	6.70	41.703	
1,400.0	1,385.2	1,352.6	1,322.2	4.0	4.8	-127.78	-110.7	205.9	310.2	302.8	7.38	42.060	
1,500.0	1,483.6	1,447.3	1,412.3	4.4	5.4	-126.21	-130.3	227.2	341.3	333.3	8.05	42.416	
1,600.0	1,582.0	1,541.9	1,502.4	4.7	5.9	-124.90	-150.0	248.5	372.7	364.0	8.72	42.760	
1,700.0	1,680.5	1,636.6	1,592.5	5.1	6.5	-123.78	-169.6	269.9	404.2	394.8	9.38	43.085	
1,800.0	1,778.9	1,731.2	1,682.6	5.4	7.0	-122.83	-189.3	291.2	435.8	425.7	10.04	43.391	
1,900.0	1,877.3	1,825.9	1,772.6	5.8	7.5	-122.01	-209.0	312.6	467.5	456.8	10.70	43.676	
2,000.0	1,975.8	1,920.5	1,862.7	6.2	8.1	-121.29	-228.6	333.9	499.3	487.9	11.36	43.942	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-1C - OH - Plan #2

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	36.50	39.7	29.4	49.4				
100.0	100.0	100.0	100.0	0.1	0.1	36.50	39.7	29.4	49.4	49.1	0.27	186.169	CC
200.0	200.0	200.0	200.0	0.3	0.3	36.50	39.7	29.4	49.4	48.8	0.61	80.391	
229.7	229.7	230.0	230.0	0.4	0.4	-175.83	39.5	29.5	49.5	48.8	0.72	68.673	ES
300.0	300.0	300.9	300.9	0.5	0.5	-173.35	37.4	30.7	49.9	48.9	0.97	51.307	
400.0	399.8	401.4	401.0	0.7	0.7	-166.20	30.6	34.8	54.1	52.8	1.37	39.575	
500.0	499.1	500.9	499.7	1.0	1.0	-157.04	19.4	41.5	63.4	61.6	1.84	34.494	
600.0	597.7	599.2	596.3	1.3	1.4	-148.33	4.1	50.8	78.4	76.0	2.42	32.406	
700.0	696.1	696.1	690.5	1.6	1.8	-140.06	-15.2	62.3	96.4	93.3	3.11	30.991	
800.0	794.5	791.2	781.8	1.9	2.3	-132.25	-38.1	76.1	117.4	113.5	3.87	30.309	SF
900.0	893.0	884.1	869.6	2.3	2.9	-125.21	-64.3	91.7	142.1	137.4	4.67	30.443	
1,000.0	991.4	974.5	953.5	2.6	3.5	-119.07	-93.2	109.1	170.8	165.4	5.46	31.293	
1,100.0	1,089.8	1,062.2	1,033.2	3.0	4.2	-113.80	-124.4	127.8	203.8	197.5	6.23	32.709	
1,200.0	1,188.3	1,150.6	1,112.1	3.3	4.9	-109.24	-158.6	148.3	240.5	233.5	6.96	34.532	
1,300.0	1,286.7	1,241.9	1,193.4	3.7	5.7	-105.68	-194.2	169.6	278.6	270.9	7.68	36.279	
1,400.0	1,385.2	1,333.1	1,274.6	4.0	6.4	-102.97	-229.8	191.0	317.4	309.0	8.37	37.896	
1,500.0	1,483.6	1,424.3	1,355.8	4.4	7.2	-100.85	-265.4	212.4	356.7	347.6	9.06	39.368	
1,600.0	1,582.0	1,515.5	1,437.1	4.7	7.9	-99.14	-301.0	233.7	396.3	386.6	9.74	40.699	
1,700.0	1,680.5	1,606.8	1,518.3	5.1	8.7	-97.74	-336.6	255.1	436.2	425.8	10.41	41.901	
1,800.0	1,778.9	1,698.0	1,599.5	5.4	9.4	-96.57	-372.2	276.4	476.2	465.2	11.08	42.988	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-2C - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	80.84	1.8	11.3	11.4				
100.0	100.0	100.0	100.0	0.1	0.1	80.84	1.8	11.3	11.4	11.2	0.27	43.142	
200.0	200.0	200.0	200.0	0.3	0.3	80.84	1.8	11.3	11.4	10.8	0.61	18.629	CC
242.6	242.6	242.7	242.7	0.4	0.4	-130.81	1.4	11.2	11.5	10.8	0.77	15.022	
300.0	300.0	300.2	300.1	0.5	0.5	-124.91	-0.8	10.8	11.6	10.7	0.97	11.961	ES
400.0	399.8	400.2	399.8	0.7	0.7	-115.27	-8.5	9.5	13.9	12.5	1.39	9.968	
500.0	499.1	500.0	498.8	1.0	1.0	-107.59	-21.3	7.2	18.5	16.5	1.93	9.546	SF
600.0	597.7	599.6	596.7	1.3	1.4	-102.06	-39.2	4.1	25.1	22.5	2.60	9.671	
700.0	696.1	698.8	693.1	1.6	1.8	-92.09	-61.9	0.0	33.6	30.2	3.33	10.073	
800.0	794.5	796.9	787.2	1.9	2.3	-80.40	-89.3	-4.8	45.1	41.0	4.02	11.216	
900.0	893.0	894.1	879.0	2.3	2.9	-70.08	-120.8	-10.4	60.8	56.2	4.58	13.269	
1,000.0	991.4	992.2	971.1	2.6	3.5	-63.38	-153.9	-16.2	78.7	73.6	5.10	15.444	
1,100.0	1,089.8	1,090.2	1,063.3	3.0	4.1	-59.19	-186.9	-22.0	97.2	91.6	5.61	17.349	
1,200.0	1,188.3	1,188.3	1,155.4	3.3	4.7	-56.34	-219.9	-27.9	116.1	110.0	6.12	18.984	
1,300.0	1,286.7	1,286.3	1,247.6	3.7	5.3	-54.29	-252.9	-33.7	135.2	128.6	6.63	20.385	
1,400.0	1,385.2	1,384.4	1,339.7	4.0	5.9	-52.75	-286.0	-39.5	154.4	147.3	7.15	21.593	
1,500.0	1,483.6	1,482.5	1,431.9	4.4	6.5	-51.56	-319.0	-45.4	173.7	166.0	7.67	22.641	
1,600.0	1,582.0	1,580.5	1,524.0	4.7	7.1	-50.60	-352.0	-51.2	193.1	184.9	8.20	23.558	
1,700.0	1,680.5	1,678.6	1,616.2	5.1	7.7	-49.81	-385.1	-57.0	212.5	203.7	8.72	24.366	
1,800.0	1,778.9	1,776.7	1,708.3	5.4	8.3	-49.16	-418.1	-62.9	231.9	222.6	9.24	25.082	
1,900.0	1,877.3	1,874.7	1,800.5	5.8	8.9	-48.61	-451.1	-68.7	251.3	241.6	9.77	25.721	
2,000.0	1,975.8	1,972.8	1,892.6	6.2	9.5	-48.13	-484.1	-74.5	270.8	260.5	10.30	26.294	
2,100.0	2,074.2	2,070.9	1,984.8	6.5	10.2	-47.72	-517.2	-80.4	290.3	279.5	10.83	26.812	
2,200.0	2,172.6	2,168.9	2,076.9	6.9	10.8	-47.37	-550.2	-86.2	309.8	298.4	11.35	27.281	
2,300.0	2,271.1	2,267.0	2,169.1	7.2	11.4	-47.05	-583.2	-92.0	329.3	317.4	11.88	27.708	
2,400.0	2,369.5	2,365.0	2,261.2	7.6	12.0	-46.77	-616.2	-97.9	348.8	336.4	12.41	28.099	
2,500.0	2,468.0	2,463.1	2,353.4	7.9	12.6	-46.52	-649.3	-103.7	368.3	355.4	12.94	28.457	
2,600.0	2,566.4	2,561.2	2,445.5	8.3	13.2	-46.29	-682.3	-109.5	387.9	374.4	13.47	28.788	
2,700.0	2,664.8	2,659.2	2,537.7	8.6	13.8	-46.09	-715.3	-115.4	407.4	393.4	14.00	29.093	
2,800.0	2,763.3	2,757.3	2,629.8	9.0	14.4	-45.91	-748.4	-121.2	426.9	412.4	14.53	29.375	
2,900.0	2,861.7	2,855.4	2,722.0	9.3	15.0	-45.74	-781.4	-127.0	446.5	431.4	15.06	29.638	
3,000.0	2,960.1	2,953.4	2,814.1	9.7	15.6	-45.58	-814.4	-132.9	466.0	450.4	15.59	29.882	
3,100.0	3,058.6	3,051.5	2,906.3	10.0	16.2	-45.44	-847.4	-138.7	485.6	469.4	16.13	30.111	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-3B - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	37.02	13.1	9.9	16.4				
100.0	100.0	100.0	100.0	0.1	0.1	37.02	13.1	9.9	16.4	16.2	0.27	61.902	
200.0	200.0	200.0	200.0	0.3	0.3	37.02	13.1	9.9	16.4	15.8	0.61	26.731	
300.0	300.0	300.8	300.8	0.5	0.5	-178.48	11.5	7.8	15.4	14.4	0.97	15.907	
400.0	399.8	401.5	401.1	0.7	0.7	171.37	6.5	1.6	14.6	13.2	1.33	10.989	
419.5	419.2	421.1	420.7	0.7	0.8	168.52	5.2	-0.1	14.5	13.1	1.41	10.347	CC, ES
500.0	499.1	502.0	500.8	1.0	1.0	154.65	-1.7	-8.8	15.2	13.4	1.77	8.576	
600.0	597.7	602.3	599.4	1.3	1.4	135.93	-13.1	-23.2	18.0	15.5	2.44	7.370	
700.0	696.1	702.2	696.4	1.6	1.8	112.17	-27.7	-41.6	21.8	18.4	3.37	6.465	SF
800.0	794.5	801.1	791.2	1.9	2.4	87.44	-45.2	-63.6	29.5	25.3	4.19	7.037	
900.0	893.0	898.4	883.0	2.3	3.0	68.92	-65.3	-89.1	43.4	38.7	4.69	9.248	
1,000.0	991.4	995.0	972.4	2.6	3.7	57.13	-87.9	-117.6	63.0	58.0	5.03	12.542	
1,100.0	1,089.8	1,092.3	1,062.3	3.0	4.3	50.69	-111.1	-146.8	84.7	79.3	5.38	15.726	
1,200.0	1,188.3	1,189.6	1,152.1	3.3	5.0	46.89	-134.3	-176.0	106.9	101.1	5.78	18.491	
1,300.0	1,286.7	1,286.9	1,242.0	3.7	5.7	44.40	-157.4	-205.3	129.5	123.3	6.21	20.864	
1,400.0	1,385.2	1,384.2	1,331.9	4.0	6.4	42.65	-180.6	-234.5	152.2	145.5	6.64	22.907	
1,500.0	1,483.6	1,481.5	1,421.7	4.4	7.1	41.35	-203.8	-263.7	175.0	167.9	7.09	24.677	
1,600.0	1,582.0	1,578.8	1,511.6	4.7	7.8	40.36	-227.0	-293.0	197.9	190.3	7.55	26.223	
1,700.0	1,680.5	1,676.1	1,601.4	5.1	8.5	39.57	-250.1	-322.2	220.8	212.8	8.00	27.582	
1,800.0	1,778.9	1,773.4	1,691.3	5.4	9.2	38.93	-273.3	-351.4	243.7	235.3	8.47	28.786	
1,900.0	1,877.3	1,870.6	1,781.2	5.8	9.9	38.39	-296.5	-380.7	266.7	257.8	8.93	29.859	
2,000.0	1,975.8	1,967.9	1,871.0	6.2	10.6	37.95	-319.7	-409.9	289.7	280.3	9.40	30.822	
2,100.0	2,074.2	2,065.2	1,960.9	6.5	11.3	37.57	-342.8	-439.1	312.7	302.9	9.87	31.689	
2,200.0	2,172.6	2,162.5	2,050.7	6.9	12.0	37.24	-366.0	-468.4	335.7	325.4	10.34	32.475	
2,300.0	2,271.1	2,259.8	2,140.6	7.2	12.7	36.95	-389.2	-497.6	358.8	348.0	10.81	33.191	
2,400.0	2,369.5	2,357.1	2,230.5	7.6	13.4	36.70	-412.4	-526.8	381.8	370.5	11.28	33.844	
2,500.0	2,468.0	2,454.4	2,320.3	7.9	14.1	36.48	-435.5	-556.1	404.9	393.1	11.75	34.444	
2,600.0	2,566.4	2,551.7	2,410.2	8.3	14.8	36.28	-458.7	-585.3	427.9	415.7	12.23	34.996	
2,700.0	2,664.8	2,649.0	2,500.0	8.6	15.5	36.10	-481.9	-614.5	451.0	438.3	12.70	35.506	
2,800.0	2,763.3	2,746.3	2,589.9	9.0	16.2	35.94	-505.1	-643.8	474.0	460.8	13.17	35.978	
2,900.0	2,861.7	2,843.6	2,679.8	9.3	16.9	35.79	-528.2	-673.0	497.1	483.4	13.65	36.417	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-4A - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	36.44	53.2	39.3	66.1				
100.0	100.0	100.0	100.0	0.1	0.1	36.44	53.2	39.3	66.1	65.8	0.27	249.173	
200.0	200.0	200.0	200.0	0.3	0.3	36.44	53.2	39.3	66.1	65.5	0.61	107.598	CC
300.0	300.0	302.2	302.2	0.5	0.5	-176.98	52.7	37.8	66.3	65.4	0.97	68.517	ES
400.0	399.8	405.0	404.7	0.7	0.7	179.34	50.4	31.3	67.5	66.2	1.33	50.599	
500.0	499.1	507.4	506.4	1.0	1.0	173.09	46.3	19.6	70.3	68.5	1.74	40.407	
600.0	597.7	609.3	606.7	1.3	1.3	165.02	40.5	2.9	75.2	72.9	2.24	33.537	
700.0	696.1	710.5	705.3	1.6	1.8	155.08	33.0	-18.7	79.7	76.8	2.92	27.271	
800.0	794.5	810.5	801.4	1.9	2.3	143.20	24.0	-44.9	84.8	81.0	3.83	22.139	
900.0	893.0	908.8	894.3	2.3	2.9	130.07	13.4	-75.1	92.7	87.8	4.91	18.865	
1,000.0	991.4	1,004.8	983.3	2.6	3.6	117.01	1.7	-109.1	105.5	99.5	6.02	17.528	SF
1,100.0	1,089.8	1,099.3	1,069.2	3.0	4.4	105.31	-11.2	-146.2	124.3	117.3	6.99	17.798	
1,200.0	1,188.3	1,194.3	1,155.3	3.3	5.1	96.47	-24.5	-184.2	147.5	139.8	7.79	18.944	
1,300.0	1,286.7	1,289.3	1,241.3	3.7	5.9	90.05	-37.7	-222.2	173.3	164.8	8.49	20.404	
1,400.0	1,385.2	1,384.3	1,327.4	4.0	6.6	85.29	-50.9	-260.3	200.6	191.4	9.14	21.930	
1,500.0	1,483.6	1,479.3	1,413.5	4.4	7.4	81.66	-64.1	-298.3	228.8	219.1	9.77	23.417	
1,600.0	1,582.0	1,574.4	1,499.5	4.7	8.2	78.83	-77.3	-336.4	257.8	247.4	10.39	24.821	
1,700.0	1,680.5	1,669.4	1,585.6	5.1	8.9	76.57	-90.5	-374.4	287.2	276.2	10.99	26.126	
1,800.0	1,778.9	1,764.4	1,671.6	5.4	9.7	74.72	-103.8	-412.5	316.9	305.3	11.60	27.330	
1,900.0	1,877.3	1,859.4	1,757.7	5.8	10.5	73.19	-117.0	-450.5	346.9	334.7	12.20	28.439	
2,000.0	1,975.8	1,954.4	1,843.7	6.2	11.3	71.91	-130.2	-488.6	377.1	364.3	12.80	29.460	
2,100.0	2,074.2	2,049.4	1,929.8	6.5	12.0	70.81	-143.4	-526.6	407.5	394.1	13.40	30.399	
2,200.0	2,172.6	2,144.5	2,015.9	6.9	12.8	69.87	-156.6	-564.6	437.9	423.9	14.01	31.265	
2,300.0	2,271.1	2,239.5	2,101.9	7.2	13.6	69.04	-169.8	-602.7	468.5	453.9	14.61	32.065	
2,400.0	2,369.5	2,334.5	2,188.0	7.6	14.3	68.32	-183.1	-640.7	499.1	483.9	15.21	32.805	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-7A - OH - Plan #2

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	54.82	14.9	21.2	25.9				
100.0	100.0	100.0	100.0	0.1	0.1	54.82	14.9	21.2	25.9	25.7	0.27	97.705	
200.0	200.0	200.0	200.0	0.3	0.3	54.82	14.9	21.2	25.9	25.3	0.61	42.191	CC, ES
300.0	300.0	300.3	300.3	0.5	0.5	-157.63	14.3	21.3	27.0	26.1	0.96	28.029	
400.0	399.8	400.7	400.5	0.7	0.7	-153.20	9.1	22.5	31.2	29.8	1.34	23.323	
500.0	499.1	500.8	500.0	1.0	0.9	-146.12	-1.1	24.8	38.7	36.9	1.78	21.735	
600.0	597.7	600.3	598.3	1.3	1.2	-138.89	-16.3	28.2	49.8	47.5	2.34	21.255	
700.0	696.1	699.1	695.0	1.6	1.6	-130.38	-36.4	32.6	62.4	59.3	3.04	20.486	
800.0	794.5	796.9	789.4	1.9	2.1	-121.10	-61.0	38.1	76.8	73.0	3.84	19.986	SF
900.0	893.0	893.0	880.9	2.3	2.6	-112.10	-89.7	44.6	94.5	89.8	4.68	20.191	
1,000.0	991.4	987.1	969.0	2.6	3.2	-103.99	-122.2	51.8	116.1	110.6	5.49	21.152	
1,100.0	1,089.8	1,078.8	1,053.1	3.0	3.9	-97.03	-157.9	59.8	142.2	136.0	6.25	22.766	
1,200.0	1,188.3	1,167.8	1,132.9	3.3	4.6	-91.22	-196.2	68.3	172.9	165.9	6.94	24.895	
1,300.0	1,286.7	1,253.8	1,208.3	3.7	5.4	-86.43	-236.7	77.4	208.0	200.4	7.58	27.419	
1,400.0	1,385.2	1,339.4	1,281.4	4.0	6.2	-82.38	-280.0	87.0	247.2	239.0	8.18	30.235	
1,500.0	1,483.6	1,429.6	1,358.1	4.4	7.0	-79.14	-326.4	97.4	288.1	279.3	8.76	32.889	
1,600.0	1,582.0	1,519.8	1,434.7	4.7	7.9	-76.69	-372.8	107.8	329.5	320.2	9.34	35.297	
1,700.0	1,680.5	1,610.0	1,511.3	5.1	8.7	-74.78	-419.2	118.1	371.4	361.5	9.91	37.472	
1,800.0	1,778.9	1,700.2	1,588.0	5.4	9.5	-73.25	-465.6	128.5	413.5	403.0	10.48	39.437	
1,900.0	1,877.3	1,790.4	1,664.6	5.8	10.4	-72.01	-512.0	138.8	455.8	444.7	11.06	41.213	
2,000.0	1,975.8	1,880.6	1,741.3	6.2	11.2	-70.97	-558.4	149.2	498.3	486.6	11.64	42.825	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler 30-8B - OH - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	47.30	28.4	30.8	41.9				
100.0	100.0	100.0	100.0	0.1	0.1	47.30	28.4	30.8	41.9	41.6	0.27	157.921	
200.0	200.0	200.0	200.0	0.3	0.3	47.30	28.4	30.8	41.9	41.3	0.61	68.193	CC
212.0	212.0	212.1	212.1	0.3	0.3	-165.22	28.4	30.8	41.9	41.3	0.66	63.783	ES
300.0	300.0	300.5	300.5	0.5	0.5	-162.34	26.1	32.0	42.7	41.7	0.97	43.868	
400.0	399.8	400.6	400.3	0.7	0.7	-155.38	19.0	35.6	47.5	46.1	1.37	34.627	
500.0	499.1	499.9	498.7	1.0	1.0	-147.12	7.5	41.5	57.4	55.6	1.85	30.968	
600.0	597.7	598.1	595.2	1.3	1.4	-139.72	-8.4	49.6	72.7	70.2	2.45	29.668	
700.0	696.1	694.9	689.4	1.6	1.8	-132.45	-28.4	59.8	90.7	87.6	3.15	28.834	
800.0	794.5	790.2	780.8	1.9	2.3	-125.34	-52.2	71.9	111.6	107.7	3.91	28.572	SF
900.0	893.0	883.3	868.8	2.3	2.9	-118.80	-79.3	85.8	136.0	131.3	4.69	29.001	
1,000.0	991.4	974.1	953.0	2.6	3.5	-113.01	-109.4	101.2	164.4	158.9	5.47	30.058	
1,100.0	1,089.8	1,062.1	1,033.1	3.0	4.2	-108.01	-141.9	117.8	196.8	190.6	6.22	31.628	
1,200.0	1,188.3	1,147.1	1,108.8	3.3	4.9	-103.74	-176.5	135.4	233.3	226.4	6.94	33.601	
1,300.0	1,286.7	1,229.0	1,180.0	3.7	5.7	-100.11	-212.6	153.9	273.8	266.2	7.63	35.877	
1,400.0	1,385.2	1,309.9	1,248.4	4.0	6.4	-96.94	-250.8	173.4	318.2	309.9	8.29	38.364	
1,500.0	1,483.6	1,394.6	1,319.3	4.4	7.3	-94.19	-292.2	194.5	364.7	355.8	8.94	40.808	
1,600.0	1,582.0	1,481.8	1,392.1	4.7	8.1	-91.98	-334.8	216.3	411.9	402.3	9.58	42.997	
1,700.0	1,680.5	1,568.9	1,465.0	5.1	9.0	-90.22	-377.5	238.1	459.5	449.2	10.21	44.982	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design O19EB Pad - Shideler Federal 19-13D - OH - Plan #2

Survey Program: 0-MWD

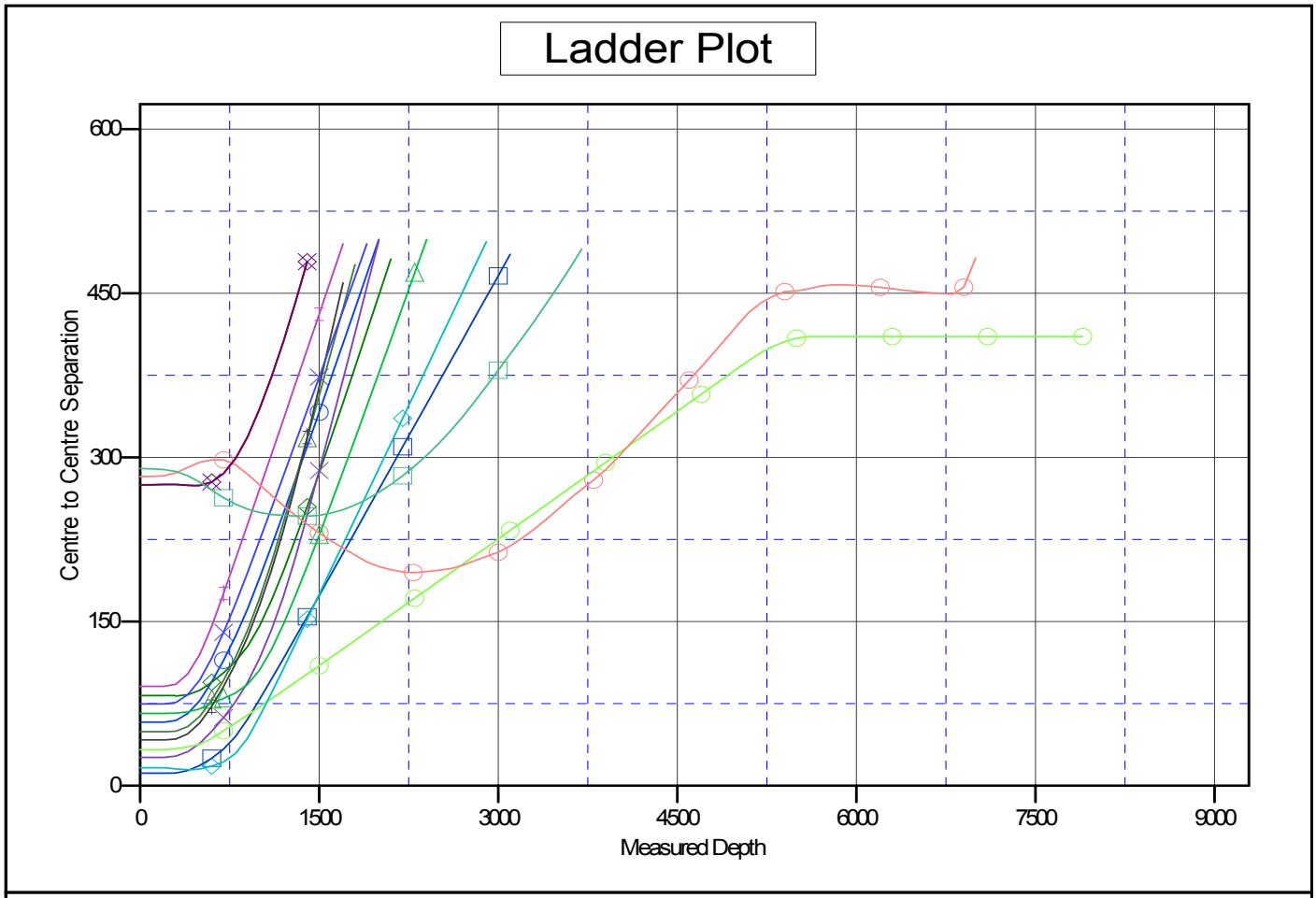
Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	36.40	66.3	48.9	82.4				
100.0	100.0	100.0	100.0	0.1	0.1	36.40	66.3	48.9	82.4	82.1	0.27	310.426	
200.0	200.0	200.0	200.0	0.3	0.3	36.40	66.3	48.9	82.4	81.7	0.61	134.048	
292.0	292.0	294.9	294.8	0.5	0.5	-177.42	66.0	46.5	82.4	81.5	0.94	87.259	
300.0	300.0	303.0	303.0	0.5	0.5	-177.63	65.9	46.1	82.0	81.0	0.97	84.166	CC, ES
400.0	399.8	405.7	405.4	0.7	0.7	178.00	64.7	37.9	83.2	81.9	1.36	61.268	
500.0	499.1	507.8	506.5	1.0	1.0	171.21	62.8	24.4	87.2	85.4	1.80	48.327	
600.0	597.7	609.0	605.8	1.3	1.4	162.96	60.2	5.7	94.6	92.3	2.36	40.023	
700.0	696.1	709.0	703.0	1.6	1.9	153.59	56.9	-17.9	103.2	100.1	3.09	33.389	
800.0	794.5	807.5	797.3	1.9	2.4	143.37	53.0	-46.0	113.6	109.6	3.98	28.514	
900.0	893.0	903.9	888.1	2.3	3.1	133.00	48.5	-78.1	127.3	122.3	4.98	25.552	
1,000.0	991.4	997.9	974.9	2.6	3.8	123.17	43.4	-113.8	145.8	139.8	6.01	24.273	SF
1,100.0	1,089.8	1,091.0	1,059.4	3.0	4.5	114.45	38.0	-152.6	169.3	162.4	6.95	24.355	
1,200.0	1,188.3	1,185.0	1,144.5	3.3	5.3	107.69	32.5	-192.1	196.1	188.3	7.81	25.120	
1,300.0	1,286.7	1,279.0	1,229.5	3.7	6.0	102.54	26.9	-231.7	224.9	216.3	8.59	26.169	
1,400.0	1,385.2	1,373.0	1,314.6	4.0	6.8	98.55	21.3	-271.2	255.0	245.7	9.34	27.309	
1,500.0	1,483.6	1,466.9	1,399.7	4.4	7.5	95.39	15.8	-310.7	286.0	276.0	10.05	28.448	
1,600.0	1,582.0	1,560.9	1,484.8	4.7	8.3	92.84	10.2	-350.3	317.7	307.0	10.75	29.543	
1,700.0	1,680.5	1,654.9	1,569.9	5.1	9.1	90.76	4.7	-389.8	349.9	338.4	11.44	30.577	
1,800.0	1,778.9	1,748.9	1,654.9	5.4	9.8	89.02	-0.9	-429.3	382.4	370.2	12.12	31.542	
1,900.0	1,877.3	1,842.9	1,740.0	5.8	10.6	87.55	-6.4	-468.8	415.1	402.3	12.80	32.440	
2,000.0	1,975.8	1,936.8	1,825.1	6.2	11.4	86.29	-12.0	-508.4	448.1	434.6	13.47	33.272	
2,100.0	2,074.2	2,030.8	1,910.2	6.5	12.2	85.21	-17.5	-547.9	481.3	467.1	14.14	34.044	

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 Shideler 30-3A
Project:	Mamm Creek	**TVD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Reference Site:	O19EB Pad	**MD Reference:**	KB = 24' @ 6533.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Shideler 30-3A	**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 #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB = 24' @ 6533.0ft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Shideler 30-3A
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.39°