

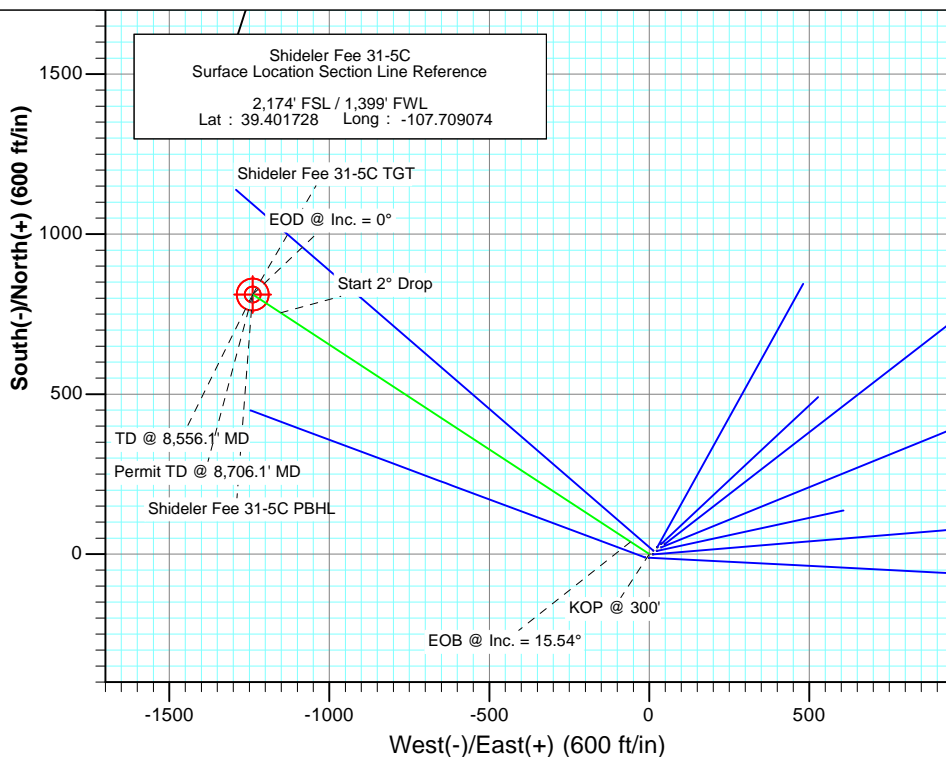
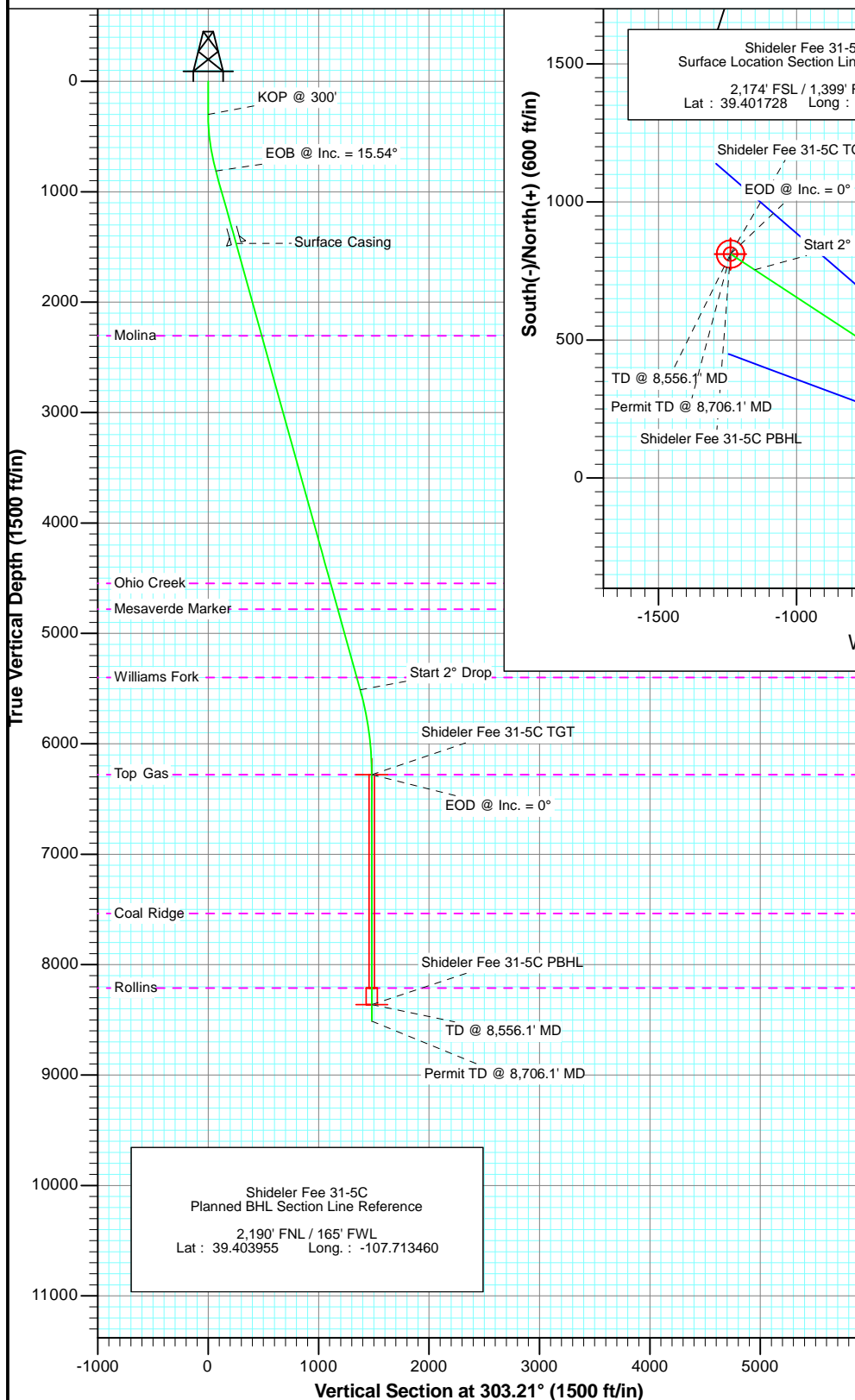


Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-5C
Wellbore: OH
Plan: Plan #1



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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	818.0	15.54	303.21	811.7	38.2	-58.4	3.00	303.21	69.8	
4	5695.1	15.54	303.21	5510.5	753.8	-1151.7	0.00	0.00	1376.5	
5	6472.1	0.00	0.00	6278.0	811.2	-1239.4	2.00	180.00	1481.2	Shideler Fee 31-5C TGT
6	8556.1	0.00	0.00	8362.0	811.2	-1239.4	0.00	0.00	1481.2	Shideler Fee 31-5C PBHL
7	8706.1	0.00	0.00	8512.0	811.2	-1239.4	0.00	0.00	1481.2	



FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
2303.0	2365.9	Molina
4546.0	4694.0	Ohio Creek
4780.0	4936.9	Mesaverde Marker
5400.0	5580.4	Williams Fork
6278.0	6472.1	Top Gas
7537.0	7731.1	Coal Ridge
8212.0	8406.1	Rollins



Azimuths to True North
Magnetic North: 10.10°

Magnetic Field
Strength: 52197.6snT
Dip Angle: 65.71°
Date: 2/8/2012
Model: IGRF200510

DESIGN DETAILS: Plan #1

125XXX; SC
KBE @ 6921.0ft (Original Well Elev)

No Target (Freehand)

Azimuth
303.21

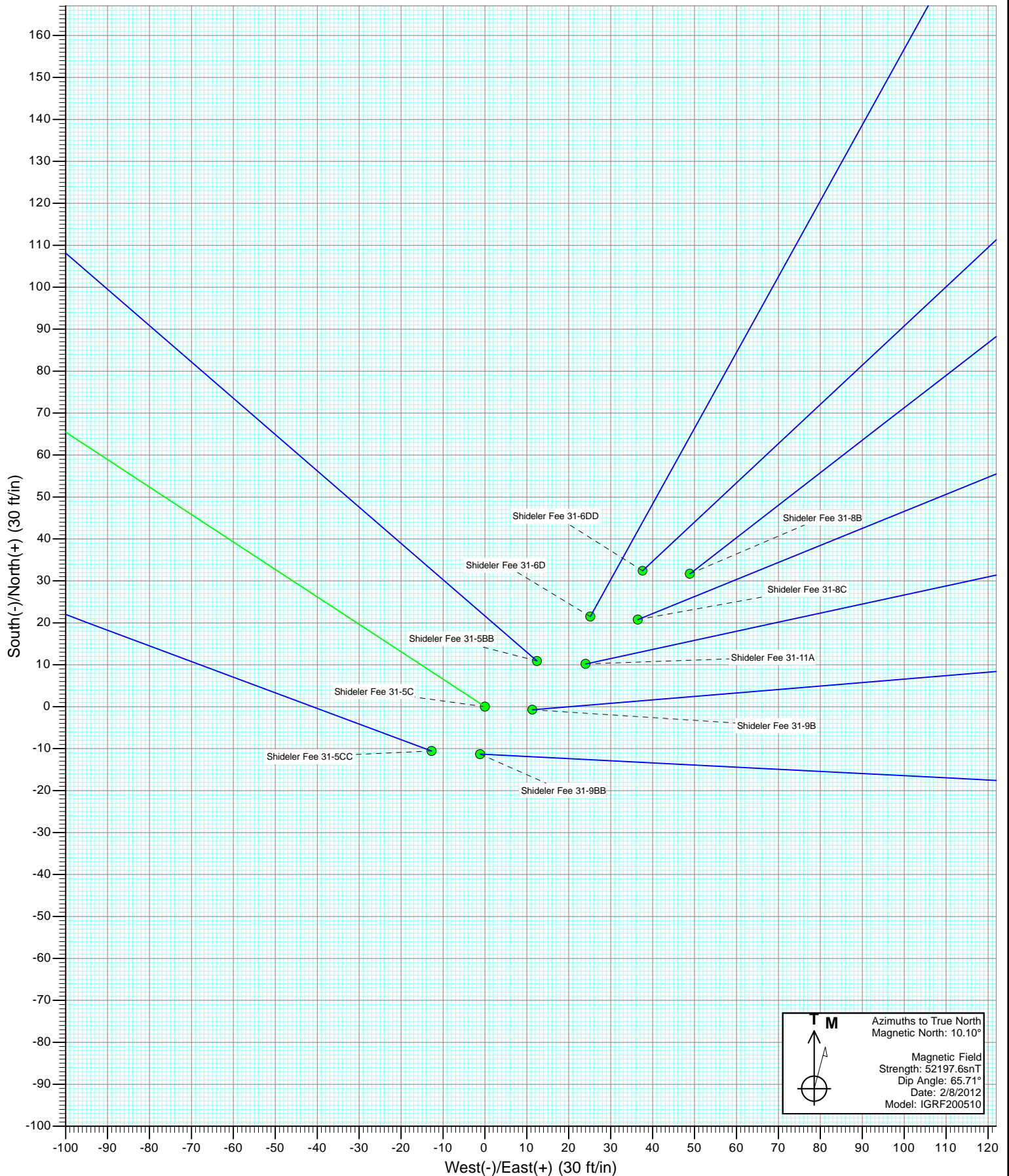
Origin Type
Slot

N/S
0.0

E/W
0.0

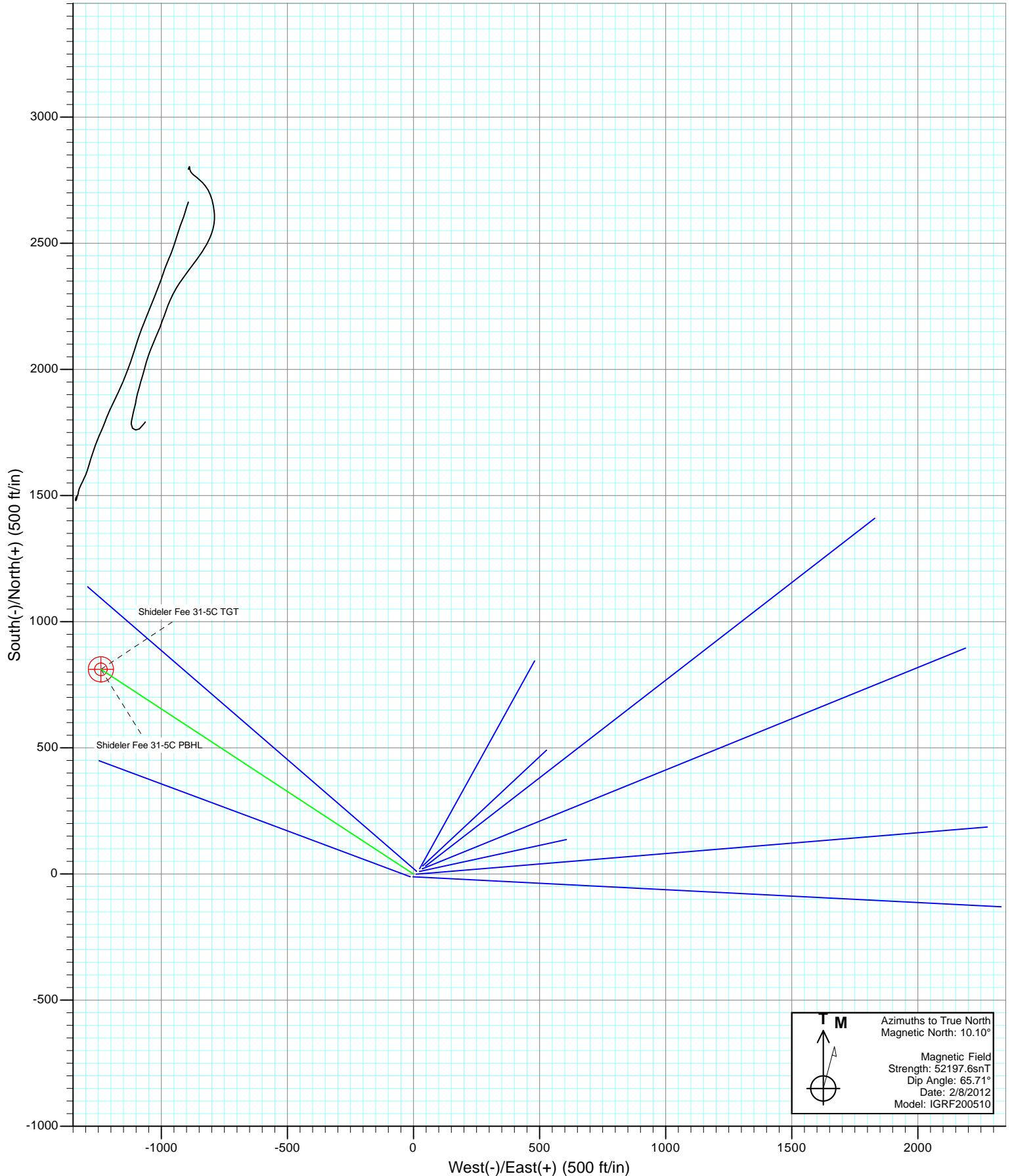


Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-5C
Wellbore: OH
Design: Plan #1



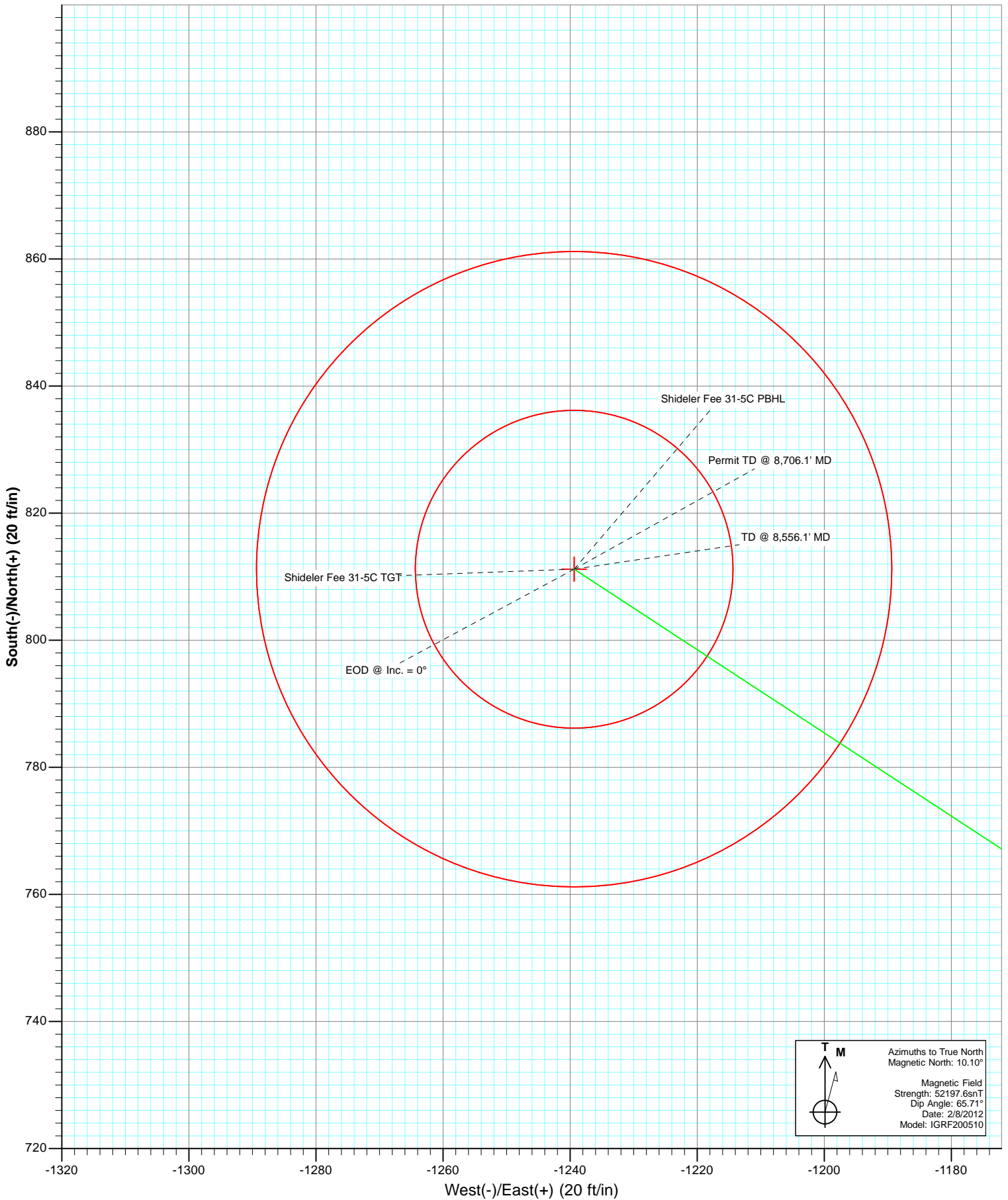


Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-5C
Wellbore: OH
Design: Plan #1





Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-5C
Wellbore: OH
Plan: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Shideler Fee 31-5C
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6921.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6921.0ft (Original Well Elev)
Site:	K31E Pad	North Reference:	True
Well:	Shideler Fee 31-5C	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		K31E Pad			
Site Position:		Northing:	1,578,791.89 ft	Latitude:	39.401699
From:	Lat/Long	Easting:	2,375,816.61 ft	Longitude:	-107.709119
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Shideler Fee 31-5C					
Well Position	+N/-S	0.0 ft	Northing:	1,578,802.13 ft	Latitude:	39.401728
	+E/-W	0.0 ft	Easting:	2,375,829.58 ft	Longitude:	-107.709074
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,899.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/8/2012	10.10	65.71	52,198

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	303.21

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
818.0	15.54	303.21	811.7	38.2	-58.4	3.00	3.00	0.00	303.21	
5,695.1	15.54	303.21	5,510.5	753.8	-1,151.7	0.00	0.00	0.00	0.00	
6,472.1	0.00	0.00	6,278.0	811.2	-1,239.4	2.00	-2.00	0.00	180.00	Shideler Fee 31-5C T
8,556.1	0.00	0.00	8,362.0	811.2	-1,239.4	0.00	0.00	0.00	0.00	Shideler Fee 31-5C P
8,706.1	0.00	0.00	8,512.0	811.2	-1,239.4	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 Fee 31-5C
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6921.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6921.0ft (Original Well Elev)
Site:	K31E Pad	North Reference:	True
Well:	Shideler Fee 31-5C	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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	3.00	303.21	400.0	1.4	-2.2	2.6	3.00	3.00	
500.0	6.00	303.21	499.6	5.7	-8.8	10.5	3.00	3.00	
600.0	9.00	303.21	598.8	12.9	-19.7	23.5	3.00	3.00	
700.0	12.00	303.21	697.1	22.9	-34.9	41.7	3.00	3.00	
800.0	15.00	303.21	794.3	35.6	-54.5	65.1	3.00	3.00	
818.0	15.54	303.21	811.7	38.2	-58.4	69.8	3.00	3.00	EOB @ Inc. = 15.54°
900.0	15.54	303.21	890.7	50.3	-76.8	91.8	0.00	0.00	
1,000.0	15.54	303.21	987.0	64.9	-99.2	118.6	0.00	0.00	
1,100.0	15.54	303.21	1,083.4	79.6	-121.6	145.4	0.00	0.00	
1,200.0	15.54	303.21	1,179.7	94.3	-144.1	172.2	0.00	0.00	
1,300.0	15.54	303.21	1,276.1	109.0	-166.5	199.0	0.00	0.00	
1,400.0	15.54	303.21	1,372.4	123.6	-188.9	225.7	0.00	0.00	
1,500.0	15.54	303.21	1,468.7	138.3	-211.3	252.5	0.00	0.00	Surface Casing
1,600.0	15.54	303.21	1,565.1	153.0	-233.7	279.3	0.00	0.00	
1,700.0	15.54	303.21	1,661.4	167.6	-256.1	306.1	0.00	0.00	
1,800.0	15.54	303.21	1,757.8	182.3	-278.6	332.9	0.00	0.00	
1,900.0	15.54	303.21	1,854.1	197.0	-301.0	359.7	0.00	0.00	
2,000.0	15.54	303.21	1,950.5	211.7	-323.4	386.5	0.00	0.00	
2,100.0	15.54	303.21	2,046.8	226.3	-345.8	413.3	0.00	0.00	
2,200.0	15.54	303.21	2,143.1	241.0	-368.2	440.1	0.00	0.00	
2,300.0	15.54	303.21	2,239.5	255.7	-390.6	466.9	0.00	0.00	
2,365.9	15.54	303.21	2,303.0	265.4	-405.4	484.5	0.00	0.00	Molina
2,400.0	15.54	303.21	2,335.8	270.4	-413.1	493.7	0.00	0.00	
2,500.0	15.54	303.21	2,432.2	285.0	-435.5	520.5	0.00	0.00	
2,600.0	15.54	303.21	2,528.5	299.7	-457.9	547.2	0.00	0.00	
2,700.0	15.54	303.21	2,624.9	314.4	-480.3	574.0	0.00	0.00	
2,800.0	15.54	303.21	2,721.2	329.0	-502.7	600.8	0.00	0.00	
2,900.0	15.54	303.21	2,817.6	343.7	-525.1	627.6	0.00	0.00	
3,000.0	15.54	303.21	2,913.9	358.4	-547.6	654.4	0.00	0.00	
3,100.0	15.54	303.21	3,010.2	373.1	-570.0	681.2	0.00	0.00	
3,200.0	15.54	303.21	3,106.6	387.7	-592.4	708.0	0.00	0.00	
3,300.0	15.54	303.21	3,202.9	402.4	-614.8	734.8	0.00	0.00	
3,400.0	15.54	303.21	3,299.3	417.1	-637.2	761.6	0.00	0.00	
3,500.0	15.54	303.21	3,395.6	431.8	-659.6	788.4	0.00	0.00	
3,600.0	15.54	303.21	3,492.0	446.4	-682.1	815.2	0.00	0.00	
3,700.0	15.54	303.21	3,588.3	461.1	-704.5	842.0	0.00	0.00	
3,800.0	15.54	303.21	3,684.7	475.8	-726.9	868.8	0.00	0.00	
3,900.0	15.54	303.21	3,781.0	490.4	-749.3	895.5	0.00	0.00	
4,000.0	15.54	303.21	3,877.3	505.1	-771.7	922.3	0.00	0.00	
4,100.0	15.54	303.21	3,973.7	519.8	-794.1	949.1	0.00	0.00	
4,200.0	15.54	303.21	4,070.0	534.5	-816.6	975.9	0.00	0.00	
4,300.0	15.54	303.21	4,166.4	549.1	-839.0	1,002.7	0.00	0.00	
4,400.0	15.54	303.21	4,262.7	563.8	-861.4	1,029.5	0.00	0.00	
4,500.0	15.54	303.21	4,359.1	578.5	-883.8	1,056.3	0.00	0.00	
4,600.0	15.54	303.21	4,455.4	593.1	-906.2	1,083.1	0.00	0.00	
4,694.0	15.54	303.21	4,546.0	606.9	-927.3	1,108.3	0.00	0.00	Ohio Creek
4,700.0	15.54	303.21	4,551.8	607.8	-928.6	1,109.9	0.00	0.00	
4,800.0	15.54	303.21	4,648.1	622.5	-951.1	1,136.7	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6921.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6921.0ft (Original Well Elev)
Site:	K31E Pad	North Reference:	True
Well:	Shideler Fee 31-5C	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
4,900.0	15.54	303.21	4,744.4	637.2	-973.5	1,163.5	0.00	0.00	
4,936.9	15.54	303.21	4,780.0	642.6	-981.8	1,173.4	0.00	0.00	Mesaverde Marker
5,000.0	15.54	303.21	4,840.8	651.8	-995.9	1,190.3	0.00	0.00	
5,100.0	15.54	303.21	4,937.1	666.5	-1,018.3	1,217.0	0.00	0.00	
5,200.0	15.54	303.21	5,033.5	681.2	-1,040.7	1,243.8	0.00	0.00	
5,300.0	15.54	303.21	5,129.8	695.9	-1,063.2	1,270.6	0.00	0.00	
5,400.0	15.54	303.21	5,226.2	710.5	-1,085.6	1,297.4	0.00	0.00	
5,500.0	15.54	303.21	5,322.5	725.2	-1,108.0	1,324.2	0.00	0.00	
5,580.4	15.54	303.21	5,400.0	737.0	-1,126.0	1,345.8	0.00	0.00	Williams Fork
5,600.0	15.54	303.21	5,418.8	739.9	-1,130.4	1,351.0	0.00	0.00	
5,695.1	15.54	303.21	5,510.5	753.8	-1,151.7	1,376.5	0.00	0.00	Start 2° Drop
5,700.0	15.44	303.21	5,515.2	754.5	-1,152.8	1,377.8	2.00	-2.00	
5,800.0	13.44	303.21	5,612.0	768.2	-1,173.7	1,402.7	2.00	-2.00	
5,900.0	11.44	303.21	5,709.7	780.0	-1,191.7	1,424.3	2.00	-2.00	
6,000.0	9.44	303.21	5,808.0	789.9	-1,206.9	1,442.4	2.00	-2.00	
6,100.0	7.44	303.21	5,906.9	798.0	-1,219.2	1,457.1	2.00	-2.00	
6,200.0	5.44	303.21	6,006.3	804.1	-1,228.5	1,468.3	2.00	-2.00	
6,300.0	3.44	303.21	6,106.0	808.4	-1,235.0	1,476.0	2.00	-2.00	
6,400.0	1.44	303.21	6,205.9	810.7	-1,238.6	1,480.3	2.00	-2.00	
6,472.1	0.00	0.00	6,278.0	811.2	-1,239.4	1,481.2	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
6,500.0	0.00	0.00	6,305.9	811.2	-1,239.4	1,481.2	0.00	0.00	
6,600.0	0.00	0.00	6,405.9	811.2	-1,239.4	1,481.2	0.00	0.00	
6,700.0	0.00	0.00	6,505.9	811.2	-1,239.4	1,481.2	0.00	0.00	
6,800.0	0.00	0.00	6,605.9	811.2	-1,239.4	1,481.2	0.00	0.00	
6,900.0	0.00	0.00	6,705.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,000.0	0.00	0.00	6,805.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,100.0	0.00	0.00	6,905.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,200.0	0.00	0.00	7,005.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,300.0	0.00	0.00	7,105.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,400.0	0.00	0.00	7,205.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,500.0	0.00	0.00	7,305.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,600.0	0.00	0.00	7,405.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,700.0	0.00	0.00	7,505.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,731.1	0.00	0.00	7,537.0	811.2	-1,239.4	1,481.2	0.00	0.00	Coal Ridge
7,800.0	0.00	0.00	7,605.9	811.2	-1,239.4	1,481.2	0.00	0.00	
7,900.0	0.00	0.00	7,705.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,000.0	0.00	0.00	7,805.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,100.0	0.00	0.00	7,905.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,200.0	0.00	0.00	8,005.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,300.0	0.00	0.00	8,105.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,400.0	0.00	0.00	8,205.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,406.1	0.00	0.00	8,212.0	811.2	-1,239.4	1,481.2	0.00	0.00	Rollins
8,500.0	0.00	0.00	8,305.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,556.1	0.00	0.00	8,362.0	811.2	-1,239.4	1,481.2	0.00	0.00	TD @ 8,556.1' MD
8,600.0	0.00	0.00	8,405.9	811.2	-1,239.4	1,481.2	0.00	0.00	
8,706.1	0.00	0.00	8,512.0	811.2	-1,239.4	1,481.2	0.00	0.00	Permit TD @ 8,706.1' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Shideler Fee 31-5C
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6921.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6921.0ft (Original Well Elev)
Site:	K31E Pad	North Reference:	True
Well:	Shideler Fee 31-5C	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Shideler Fee 31-5C TGT	0.00	0.00	6,278.0	811.2	-1,239.4	1,579,643.21	2,374,610.32	39.403955	-107.713460
- plan hits target center									
- Circle (radius 25.0)									
Shideler Fee 31-5C PBI-	0.00	0.00	8,362.0	811.2	-1,239.4	1,579,643.21	2,374,610.32	39.403955	-107.713460
- plan hits target center									
- Circle (radius 50.0)									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)	Name		(in)	(in)
1,500.0	1,468.7	Surface Casing		0.000	0.000

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)	Name	Lithology		(°)	(°)
2,365.9	2,303.0	Molina				
4,694.0	4,546.0	Ohio Creek				
4,936.9	4,780.0	Mesaverde Marker				
5,580.4	5,400.0	Williams Fork				
6,472.1	6,278.0	Top Gas				
7,731.1	7,537.0	Coal Ridge				
8,406.1	8,212.0	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
300.0	300.0	0.0	0.0	KOP @ 300'	
818.0	811.7	38.2	-58.4	EOB @ Inc. = 15.54°	
5,695.1	5,510.5	753.8	-1,151.7	Start 2° Drop	
6,472.1	6,278.0	811.2	-1,239.4	EOD @ Inc. = 0°	
8,556.1	8,362.0	811.2	-1,239.4	TD @ 8,556.1' MD	
8,706.1	8,512.0	811.2	-1,239.4	Permit TD @ 8,706.1' MD	