

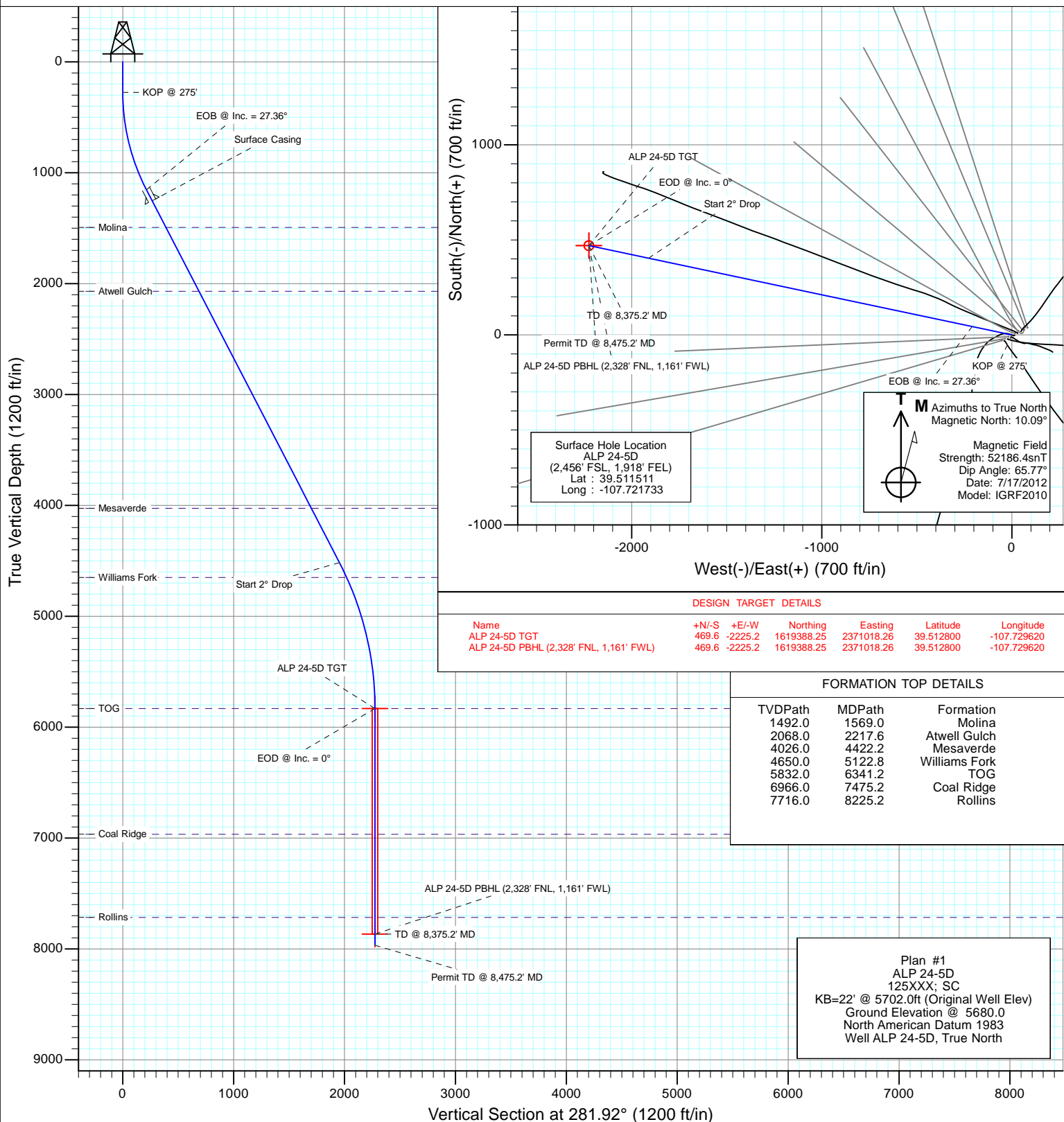


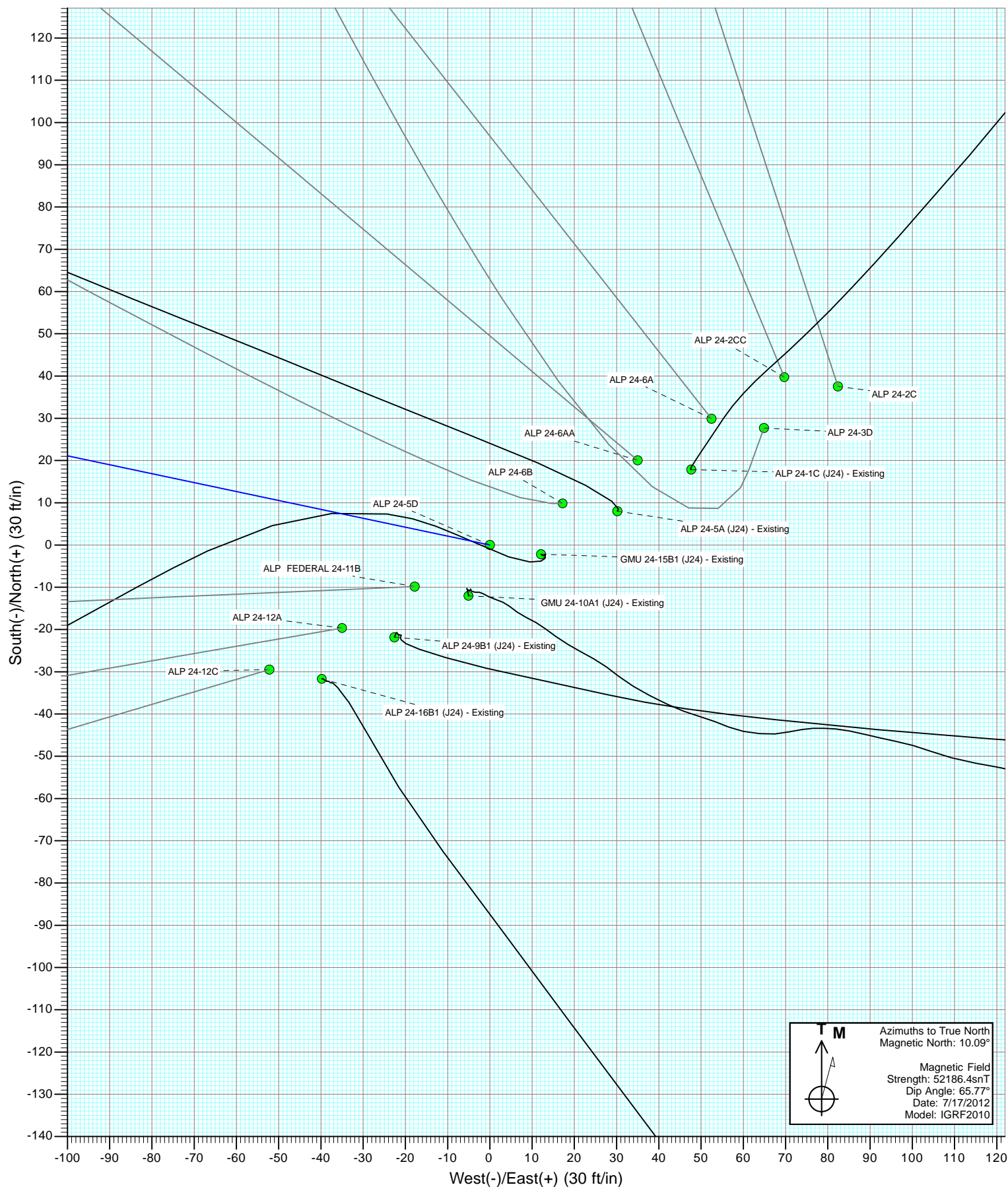
Project: Mamm Creek
Site: J24 Pad
Well: ALP 24-5D
Wellbore: OH
Design: Plan #1



SECTION DETAILS

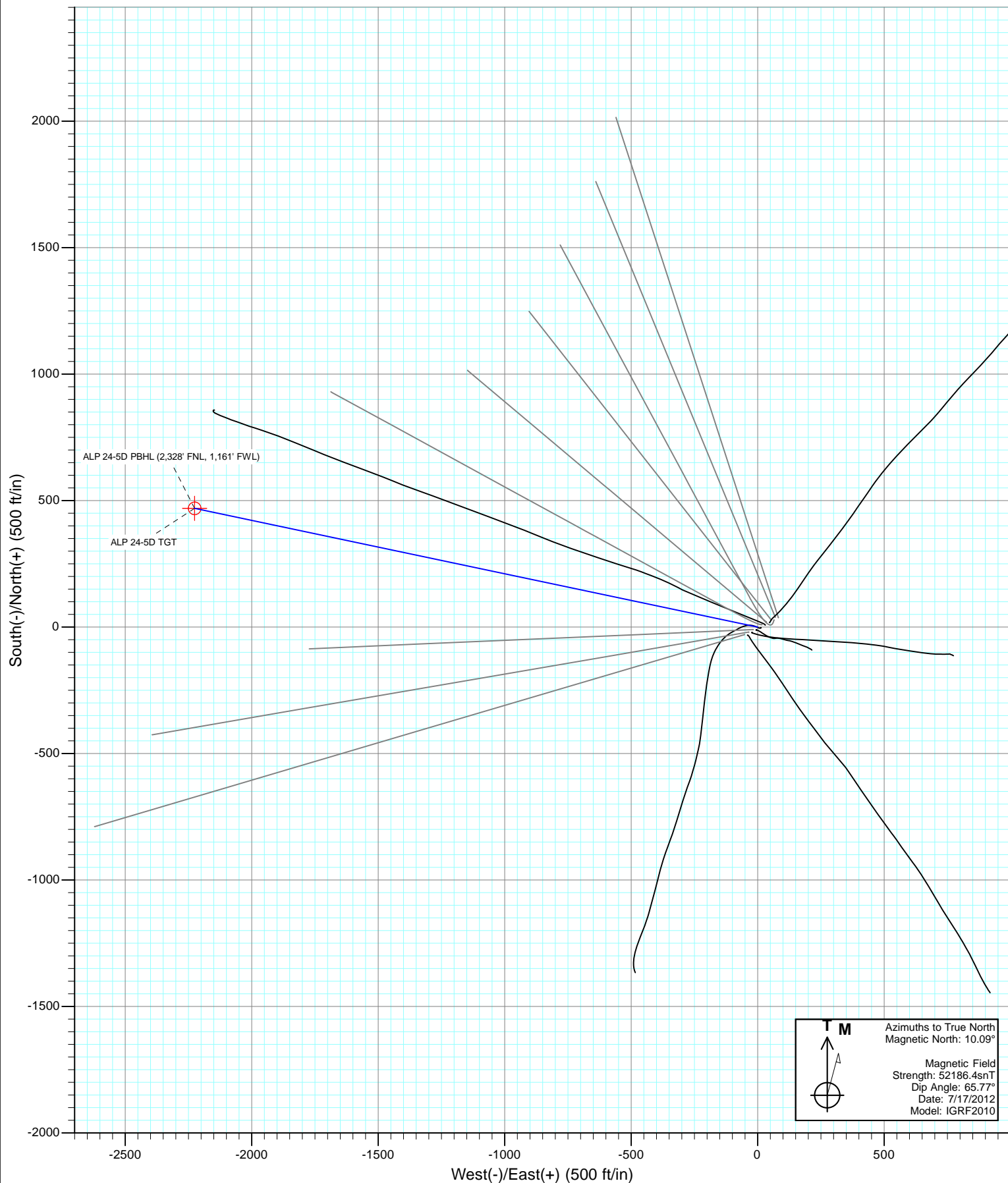
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	275.0	0.00	0.00	275.0	0.0	0.0	0.00	0.00	0.0	
3	1187.0	27.36	281.92	1152.7	44.1	-209.0	3.00	281.92	213.6	
4	4973.2	27.36	281.92	4515.4	403.4	-1911.6	0.00	0.00	1953.7	
5	6341.2	0.00	0.00	5832.0	469.6	-2225.2	2.00	180.00	2274.2	ALP 24-5D TGT
6	8375.2	0.00	0.00	7866.0	469.6	-2225.2	0.00	0.00	2274.2	ALP 24-5D PBHL (2,328' FNL, 1,161' FWL)
7	8475.2	0.00	0.00	7966.0	469.6	-2225.2	0.00	0.00	2274.2	

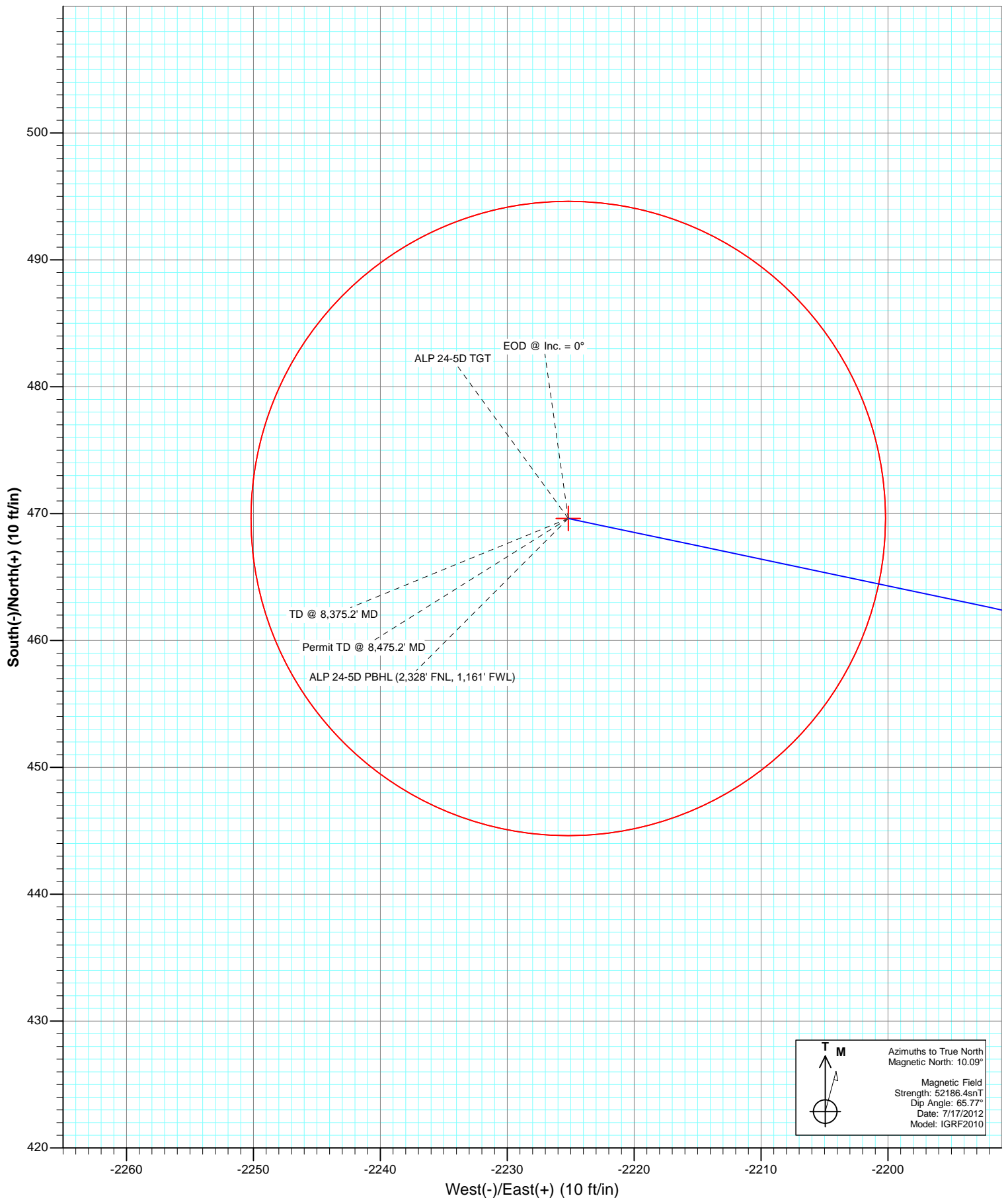






Project: Mamm Creek
Site: J24 Pad
Well: ALP 24-5D
Wellbore: OH
Design: Plan #1





Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well ALP 24-5D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Site:	J24 Pad	North Reference:	True
Well:	ALP 24-5D	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		J24 Pad			
Site Position:		Northing:	1,618,899.86 ft	Latitude:	39.511614
From:	Lat/Long	Easting:	2,373,314.58 ft	Longitude:	-107.721441
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.40 °

Well	ALP 24-5D					
Well Position	+N/-S	0.0 ft	Northing:	1,618,864.35 ft	Latitude:	39.511511
	+E/-W	0.0 ft	Easting:	2,373,231.30 ft	Longitude:	-107.721733
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,680.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/17/2012	10.09	65.77	52,186

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	281.92

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	
275.0	0.00	0.00	275.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,187.0	27.36	281.92	1,152.7	44.1	-209.0	3.00	3.00	0.00	281.92	
4,973.2	27.36	281.92	4,515.4	403.4	-1,911.6	0.00	0.00	0.00	0.00	
6,341.2	0.00	0.00	5,832.0	469.6	-2,225.2	2.00	-2.00	0.00	180.00	ALP 24-5D TGT
8,375.2	0.00	0.00	7,866.0	469.6	-2,225.2	0.00	0.00	0.00	0.00	ALP 24-5D PBHL (2,3
8,475.2	0.00	0.00	7,966.0	469.6	-2,225.2	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 ALP 24-5D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Site:	J24 Pad	North Reference:	True
Well:	ALP 24-5D	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	
275.0	0.00	0.00	275.0	0.0	0.0	0.0	0.00	0.00	KOP @ 275'
300.0	0.75	281.92	300.0	0.0	-0.2	0.2	3.00	3.00	
400.0	3.75	281.92	399.9	0.8	-4.0	4.1	3.00	3.00	
500.0	6.75	281.92	499.5	2.7	-13.0	13.2	3.00	3.00	
600.0	9.75	281.92	598.4	5.7	-27.0	27.6	3.00	3.00	
700.0	12.75	281.92	696.5	9.7	-46.1	47.1	3.00	3.00	
800.0	15.75	281.92	793.4	14.8	-70.2	71.7	3.00	3.00	
900.0	18.75	281.92	888.9	20.9	-99.2	101.4	3.00	3.00	
1,000.0	21.75	281.92	982.7	28.1	-133.0	136.0	3.00	3.00	
1,100.0	24.75	281.92	1,074.6	36.2	-171.7	175.4	3.00	3.00	
1,187.0	27.36	281.92	1,152.7	44.1	-209.0	213.6	3.00	3.00	EOB @ Inc. = 27.36°
1,200.0	27.36	281.92	1,164.3	45.4	-214.9	219.6	0.00	0.00	
1,300.0	27.36	281.92	1,253.1	54.8	-259.9	265.6	0.00	0.00	Surface Casing
1,400.0	27.36	281.92	1,341.9	64.3	-304.8	311.5	0.00	0.00	
1,500.0	27.36	281.92	1,430.7	73.8	-349.8	357.5	0.00	0.00	
1,569.0	27.36	281.92	1,492.0	80.4	-380.8	389.2	0.00	0.00	Molina
1,600.0	27.36	281.92	1,519.5	83.3	-394.8	403.5	0.00	0.00	
1,700.0	27.36	281.92	1,608.3	92.8	-439.7	449.4	0.00	0.00	
1,800.0	27.36	281.92	1,697.2	102.3	-484.7	495.4	0.00	0.00	
1,900.0	27.36	281.92	1,786.0	111.8	-529.7	541.3	0.00	0.00	
2,000.0	27.36	281.92	1,874.8	121.3	-574.6	587.3	0.00	0.00	
2,100.0	27.36	281.92	1,963.6	130.8	-619.6	633.2	0.00	0.00	
2,200.0	27.36	281.92	2,052.4	140.3	-664.6	679.2	0.00	0.00	
2,217.6	27.36	281.92	2,068.0	141.9	-672.5	687.3	0.00	0.00	Atwell Gulch
2,300.0	27.36	281.92	2,141.2	149.7	-709.5	725.2	0.00	0.00	
2,400.0	27.36	281.92	2,230.0	159.2	-754.5	771.1	0.00	0.00	
2,500.0	27.36	281.92	2,318.9	168.7	-799.5	817.1	0.00	0.00	
2,600.0	27.36	281.92	2,407.7	178.2	-844.4	863.0	0.00	0.00	
2,700.0	27.36	281.92	2,496.5	187.7	-889.4	909.0	0.00	0.00	
2,800.0	27.36	281.92	2,585.3	197.2	-934.4	955.0	0.00	0.00	
2,900.0	27.36	281.92	2,674.1	206.7	-979.3	1,000.9	0.00	0.00	
3,000.0	27.36	281.92	2,762.9	216.2	-1,024.3	1,046.9	0.00	0.00	
3,100.0	27.36	281.92	2,851.7	225.7	-1,069.3	1,092.8	0.00	0.00	
3,200.0	27.36	281.92	2,940.5	235.2	-1,114.2	1,138.8	0.00	0.00	
3,300.0	27.36	281.92	3,029.4	244.6	-1,159.2	1,184.7	0.00	0.00	
3,400.0	27.36	281.92	3,118.2	254.1	-1,204.2	1,230.7	0.00	0.00	
3,500.0	27.36	281.92	3,207.0	263.6	-1,249.2	1,276.7	0.00	0.00	
3,600.0	27.36	281.92	3,295.8	273.1	-1,294.1	1,322.6	0.00	0.00	
3,700.0	27.36	281.92	3,384.6	282.6	-1,339.1	1,368.6	0.00	0.00	
3,800.0	27.36	281.92	3,473.4	292.1	-1,384.1	1,414.5	0.00	0.00	
3,900.0	27.36	281.92	3,562.2	301.6	-1,429.0	1,460.5	0.00	0.00	
4,000.0	27.36	281.92	3,651.1	311.1	-1,474.0	1,506.5	0.00	0.00	
4,100.0	27.36	281.92	3,739.9	320.6	-1,519.0	1,552.4	0.00	0.00	
4,200.0	27.36	281.92	3,828.7	330.1	-1,563.9	1,598.4	0.00	0.00	
4,300.0	27.36	281.92	3,917.5	339.6	-1,608.9	1,644.3	0.00	0.00	
4,400.0	27.36	281.92	4,006.3	349.0	-1,653.9	1,690.3	0.00	0.00	
4,422.2	27.36	281.92	4,026.0	351.1	-1,663.8	1,700.5	0.00	0.00	Mesaverde
4,500.0	27.36	281.92	4,095.1	358.5	-1,698.8	1,736.3	0.00	0.00	
4,600.0	27.36	281.92	4,183.9	368.0	-1,743.8	1,782.2	0.00	0.00	

Cathedral Energy Services

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Project:	Mamm Creek	MD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Site:	J24 Pad	North Reference:	True
Well:	ALP 24-5D	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
4,700.0	27.36	281.92	4,272.7	377.5	-1,788.8	1,828.2	0.00	0.00	
4,800.0	27.36	281.92	4,361.6	387.0	-1,833.7	1,874.1	0.00	0.00	
4,900.0	27.36	281.92	4,450.4	396.5	-1,878.7	1,920.1	0.00	0.00	
4,973.2	27.36	281.92	4,515.4	403.4	-1,911.6	1,953.7	0.00	0.00	Start 2° Drop
5,000.0	26.82	281.92	4,539.2	406.0	-1,923.6	1,965.9	2.00	-2.00	
5,100.0	24.82	281.92	4,629.3	415.0	-1,966.2	2,009.5	2.00	-2.00	
5,122.8	24.37	281.92	4,650.0	416.9	-1,975.5	2,019.0	2.00	-2.00	Williams Fork
5,200.0	22.82	281.92	4,720.7	423.3	-2,005.7	2,049.9	2.00	-2.00	
5,300.0	20.82	281.92	4,813.6	431.0	-2,042.1	2,087.1	2.00	-2.00	
5,400.0	18.82	281.92	4,907.6	438.0	-2,075.3	2,121.0	2.00	-2.00	
5,500.0	16.82	281.92	5,002.8	444.3	-2,105.2	2,151.6	2.00	-2.00	
5,600.0	14.82	281.92	5,099.0	449.9	-2,131.9	2,178.8	2.00	-2.00	
5,700.0	12.82	281.92	5,196.1	454.9	-2,155.3	2,202.7	2.00	-2.00	
5,800.0	10.82	281.92	5,294.0	459.1	-2,175.3	2,223.2	2.00	-2.00	
5,900.0	8.82	281.92	5,392.5	462.6	-2,192.0	2,240.3	2.00	-2.00	
6,000.0	6.82	281.92	5,491.6	465.4	-2,205.3	2,253.9	2.00	-2.00	
6,100.0	4.82	281.92	5,591.1	467.5	-2,215.3	2,264.1	2.00	-2.00	
6,200.0	2.82	281.92	5,690.8	468.9	-2,221.8	2,270.7	2.00	-2.00	
6,300.0	0.82	281.92	5,790.8	469.6	-2,224.9	2,273.9	2.00	-2.00	
6,341.2	0.00	0.00	5,832.0	469.6	-2,225.2	2,274.2	2.00	-2.00	EOD @ Inc. = 0° - TOG
6,400.0	0.00	0.00	5,890.8	469.6	-2,225.2	2,274.2	0.00	0.00	
6,500.0	0.00	0.00	5,990.8	469.6	-2,225.2	2,274.2	0.00	0.00	
6,600.0	0.00	0.00	6,090.8	469.6	-2,225.2	2,274.2	0.00	0.00	
6,700.0	0.00	0.00	6,190.8	469.6	-2,225.2	2,274.2	0.00	0.00	
6,800.0	0.00	0.00	6,290.8	469.6	-2,225.2	2,274.2	0.00	0.00	
6,900.0	0.00	0.00	6,390.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,000.0	0.00	0.00	6,490.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,100.0	0.00	0.00	6,590.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,200.0	0.00	0.00	6,690.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,300.0	0.00	0.00	6,790.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,400.0	0.00	0.00	6,890.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,475.2	0.00	0.00	6,966.0	469.6	-2,225.2	2,274.2	0.00	0.00	Coal Ridge
7,500.0	0.00	0.00	6,990.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,600.0	0.00	0.00	7,090.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,700.0	0.00	0.00	7,190.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,800.0	0.00	0.00	7,290.8	469.6	-2,225.2	2,274.2	0.00	0.00	
7,900.0	0.00	0.00	7,390.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,000.0	0.00	0.00	7,490.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,100.0	0.00	0.00	7,590.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,200.0	0.00	0.00	7,690.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,225.2	0.00	0.00	7,716.0	469.6	-2,225.2	2,274.2	0.00	0.00	Rollins
8,300.0	0.00	0.00	7,790.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,375.2	0.00	0.00	7,866.0	469.6	-2,225.2	2,274.2	0.00	0.00	TD @ 8,375.2' MD
8,400.0	0.00	0.00	7,890.8	469.6	-2,225.2	2,274.2	0.00	0.00	
8,475.2	0.00	0.00	7,966.0	469.6	-2,225.2	2,274.2	0.00	0.00	Permit TD @ 8,475.2' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well ALP 24-5D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KB=22' @ 5702.0ft (Original Well Elev)
Site:	J24 Pad	North Reference:	True
Well:	ALP 24-5D	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)		
ALP 24-5D TGT	0.00	0.00	5,832.0	469.6	-2,225.2	1,619,388.25	2,371,018.26	39.512800	-107.729620
- plan hits target center									
- Point									
ALP 24-5D PBHL (2,328	0.00	0.00	7,866.0	469.6	-2,225.2	1,619,388.25	2,371,018.26	39.512800	-107.729620
- plan hits target center									
- Circle (radius 25.0)									

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(ft)	(ft)	Name	(in)	(in)
1,300.0	1,253.1	Surface Casing		

Formations						
Measured Depth	Vertical Depth			Dip	Dip Direction	
(ft)	(ft)	Name	Lithology	(°)	(°)	
1,569.0	1,492.0	Molina				
2,217.6	2,068.0	Atwell Gulch				
4,422.2	4,026.0	Mesaverde				
5,122.8	4,650.0	Williams Fork				
6,341.2	5,832.0	TOG				
7,475.2	6,966.0	Coal Ridge				
8,225.2	7,716.0	Rollins				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
275.0	275.0	0.0	0.0	KOP @ 275'
1,187.0	1,152.7	44.1	-209.0	EOB @ Inc. = 27.36°
4,973.2	4,515.4	403.4	-1,911.6	Start 2° Drop
6,341.2	5,832.0	469.6	-2,225.2	EOD @ Inc. = 0°
8,375.2	7,866.0	469.6	-2,225.2	TD @ 8,375.2' MD
8,475.2	7,966.0	469.6	-2,225.2	Permit TD @ 8,475.2' MD