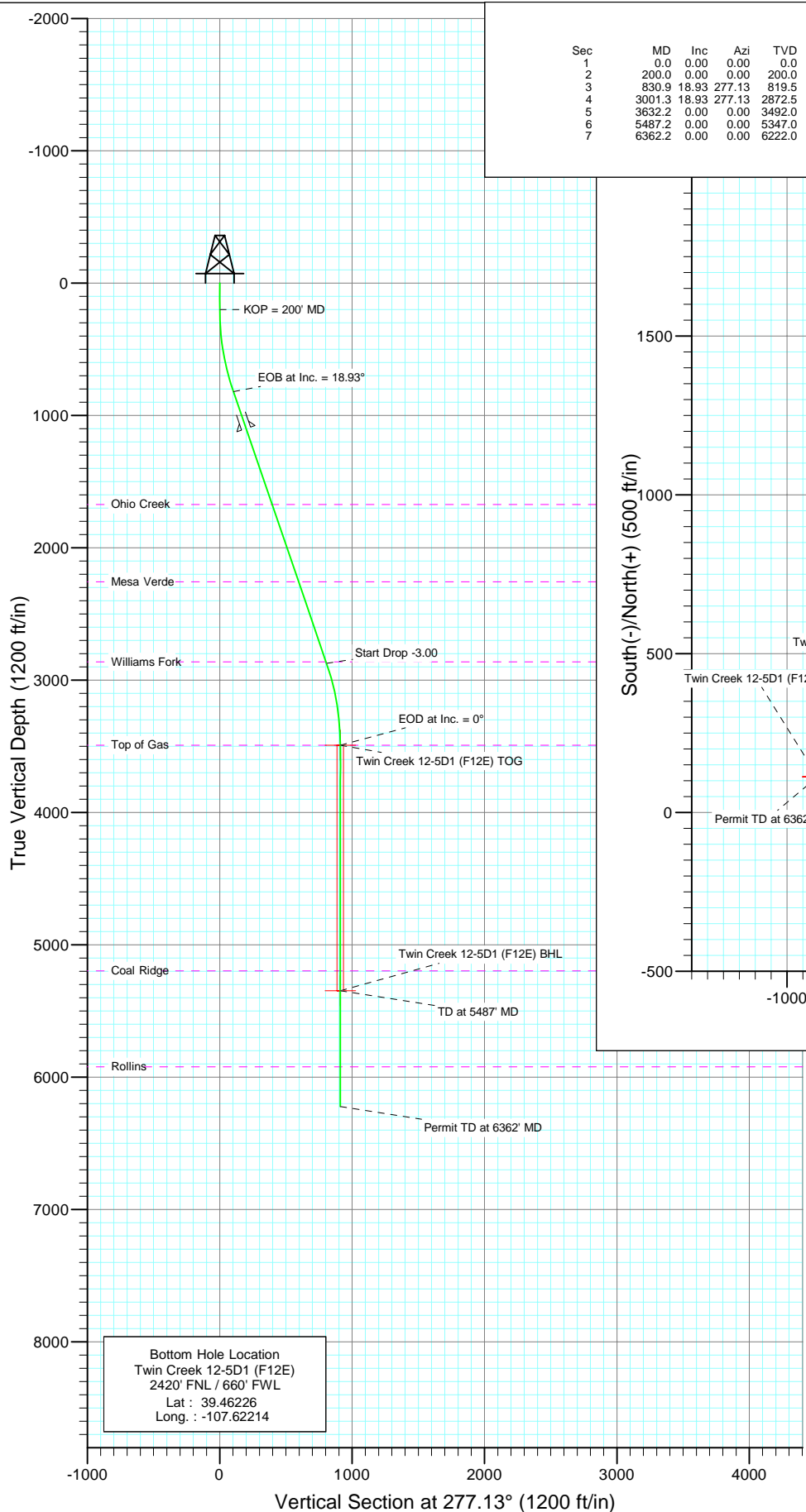
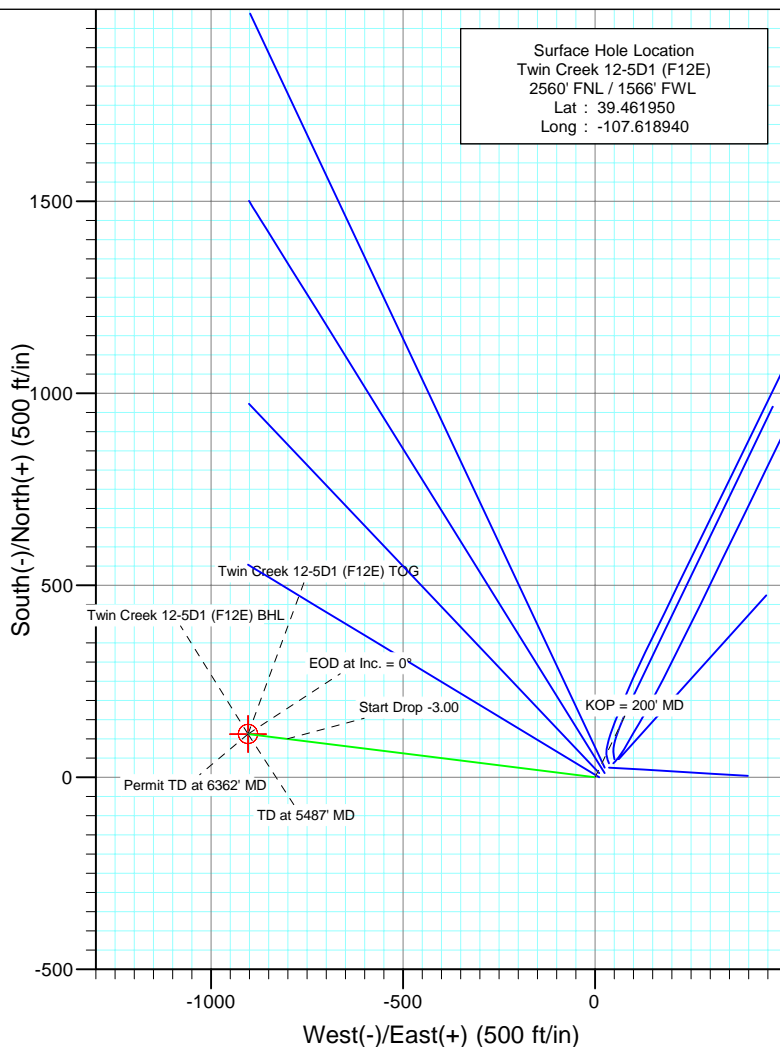




Project: Mamm Creek
 Site: (F12E)
 Well: Twin Creek 12-5D1 (F12E)
 Wellbore: DD
 Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	830.9	18.93	277.13	819.5	12.8	-102.5	3.00	277.13	103.3	
4	3001.3	18.93	277.13	2872.5	100.1	-801.0	0.00	0.00	807.2	
5	3632.2	0.00	0.00	3492.0	112.9	-903.5	3.00	180.00	910.5	Twin Creek 12-5D1 (F12E) TOG
6	5487.2	0.00	0.00	5347.0	112.9	-903.5	0.00	0.00	910.5	Twin Creek 12-5D1 (F12E) BHL
7	6362.2	0.00	0.00	6222.0	112.9	-903.5	0.00	0.00	910.5	



Azimuths to True North
 Magnetic North: 10.33°

Magnetic Field
 Strength: 52396.6snT
 Dip Angle: 65.81°
 Date: 4/19/2010
 Model: IGRF2010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle
1672.0	1732.1	Ohio Creek	0.00
2257.0	2350.6	Mesa Verde	0.00
2862.0	2990.2	Williams Fork	0.00
3492.0	3632.2	Top of Gas	0.00
5197.0	5337.2	Coal Ridge	0.00
5922.0	6062.2	Rollins	0.00

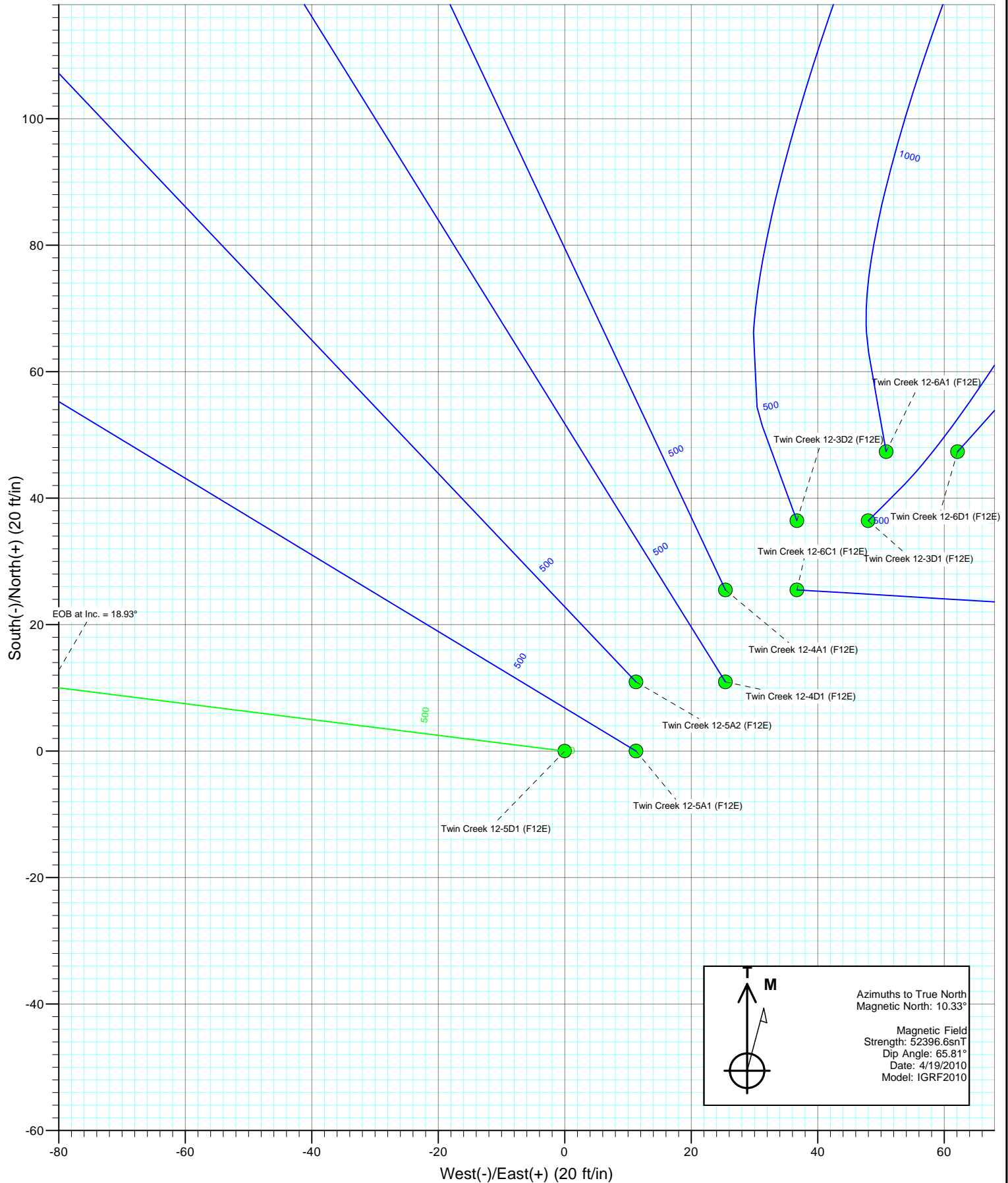
DESIGN DETAILS: Plan #1

1051XX; KR
 KBE @ 6167.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Twin Creek 12-5D1 (F12E) BH#277.13	Slot		0.0	0.0	0.0

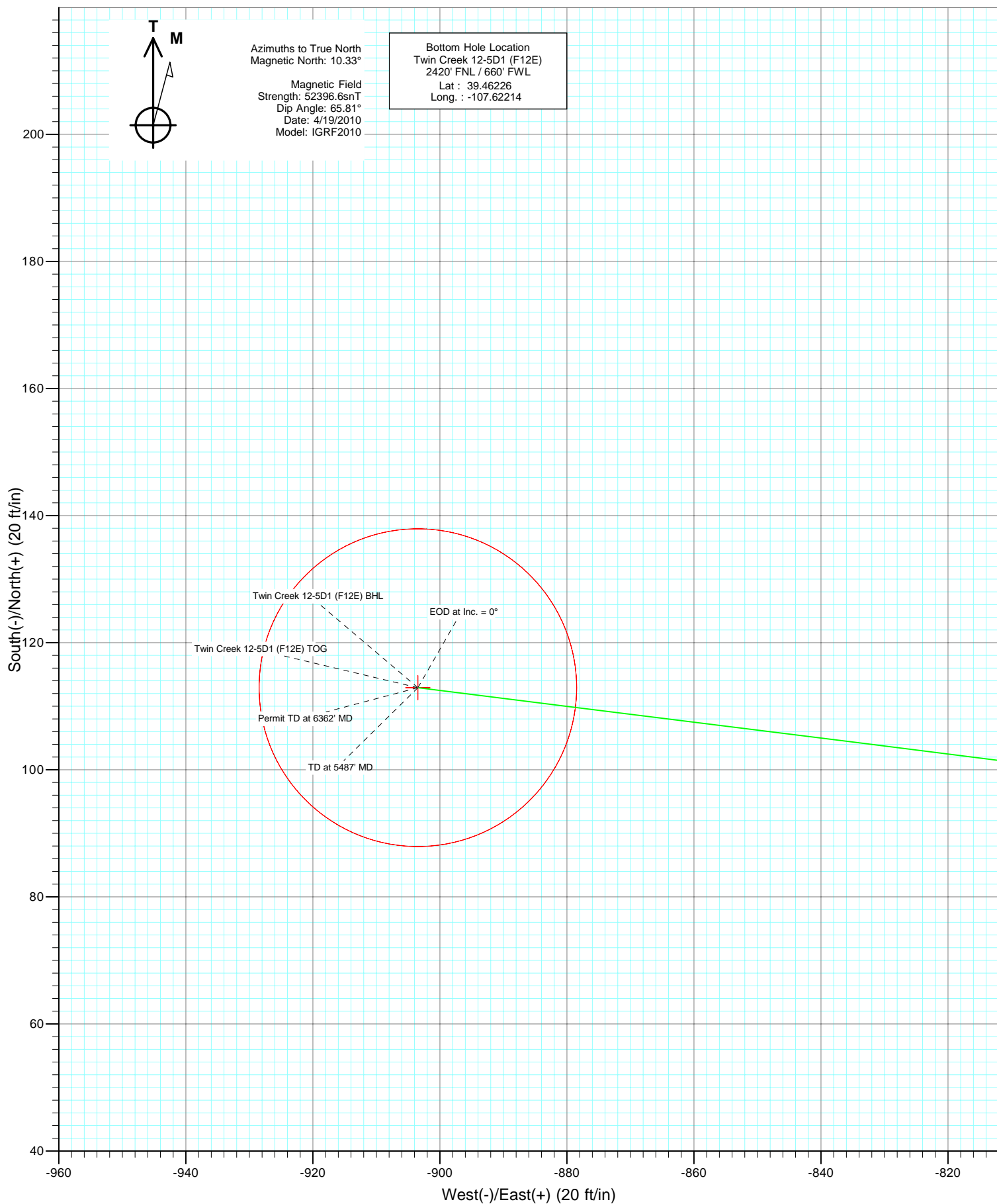


Project: Mamm Creek
Site: (F12E)
Well: Twin Creek 12-5D1 (F12E)
Wellbore: DD
Design: Plan #1





Project: Mamm Creek
Site: (F12E)
Well: Twin Creek 12-5D1 (F12E)
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Twin Creek 12-5D1 (F12E)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6167.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6167.0ft (Original Well Elev)
Site:	(F12E)	North Reference:	True
Well:	Twin Creek 12-5D1 (F12E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project	Mamm Creek		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		(F12E)			
Site Position:		Northing:	1,600,159.70 ft	Latitude:	39.462050
From:	Lat/Long	Easting:	2,401,852.74 ft	Longitude:	-107.618770
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.34 °

Well	Twin Creek 12-5D1 (F12E)					
Well Position	+N/-S	0.0 ft	Northing:	1,600,124.40 ft	Latitude:	39.461950
	+E/-W	0.0 ft	Easting:	2,401,803.90 ft	Longitude:	-107.618940
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,145.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/19/2010	10.33	65.81	52,397

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	277.13

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
830.9	18.93	277.13	819.5	12.8	-102.5	3.00	3.00	0.00	277.13	
3,001.3	18.93	277.13	2,872.5	100.1	-801.0	0.00	0.00	0.00	0.00	
3,632.2	0.00	0.00	3,492.0	112.9	-903.5	3.00	-3.00	0.00	180.00	Twin Creek 12-5D1 (F
5,487.2	0.00	0.00	5,347.0	112.9	-903.5	0.00	0.00	0.00	0.00	Twin Creek 12-5D1 (F
6,362.2	0.00	0.00	6,222.0	112.9	-903.5	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Twin Creek 12-5D1 (F12E)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6167.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6167.0ft (Original Well Elev)
Site:	(F12E)	North Reference:	True
Well:	Twin Creek 12-5D1 (F12E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
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	KOP = 200' MD
300.0	3.00	277.13	300.0	0.3	-2.6	2.6	3.00	3.00	
400.0	6.00	277.13	399.6	1.3	-10.4	10.5	3.00	3.00	
500.0	9.00	277.13	498.8	2.9	-23.3	23.5	3.00	3.00	
600.0	12.00	277.13	597.1	5.2	-41.4	41.7	3.00	3.00	
700.0	15.00	277.13	694.3	8.1	-64.6	65.1	3.00	3.00	
800.0	18.00	277.13	790.2	11.6	-92.8	93.5	3.00	3.00	
830.9	18.93	277.13	819.5	12.8	-102.5	103.3	3.00	3.00	EOB at Inc. = 18.93°
900.0	18.93	277.13	884.9	15.6	-124.7	125.7	0.00	0.00	
1,000.0	18.93	277.13	979.4	19.6	-156.9	158.1	0.00	0.00	
1,100.0	18.93	277.13	1,074.0	23.6	-189.1	190.5	0.00	0.00	
1,127.4	18.93	277.13	1,100.0	24.7	-197.9	199.4	0.00	0.00	Surface Casing
1,200.0	18.93	277.13	1,168.6	27.7	-221.3	223.0	0.00	0.00	
1,300.0	18.93	277.13	1,263.2	31.7	-253.4	255.4	0.00	0.00	
1,400.0	18.93	277.13	1,357.8	35.7	-285.6	287.9	0.00	0.00	
1,500.0	18.93	277.13	1,452.4	39.7	-317.8	320.3	0.00	0.00	
1,600.0	18.93	277.13	1,547.0	43.8	-350.0	352.7	0.00	0.00	
1,700.0	18.93	277.13	1,641.6	47.8	-382.2	385.2	0.00	0.00	
1,732.1	18.93	277.13	1,672.0	49.1	-392.5	395.6	0.00	0.00	Ohio Creek
1,800.0	18.93	277.13	1,736.2	51.8	-414.4	417.6	0.00	0.00	
1,900.0	18.93	277.13	1,830.8	55.8	-446.6	450.0	0.00	0.00	
2,000.0	18.93	277.13	1,925.4	59.8	-478.7	482.5	0.00	0.00	
2,100.0	18.93	277.13	2,020.0	63.9	-510.9	514.9	0.00	0.00	
2,200.0	18.93	277.13	2,114.6	67.9	-543.1	547.3	0.00	0.00	
2,300.0	18.93	277.13	2,209.2	71.9	-575.3	579.8	0.00	0.00	
2,350.6	18.93	277.13	2,257.0	74.0	-591.6	596.2	0.00	0.00	Mesa Verde
2,400.0	18.93	277.13	2,303.8	75.9	-607.5	612.2	0.00	0.00	
2,500.0	18.93	277.13	2,398.3	80.0	-639.7	644.7	0.00	0.00	
2,600.0	18.93	277.13	2,492.9	84.0	-671.9	677.1	0.00	0.00	
2,700.0	18.93	277.13	2,587.5	88.0	-704.0	709.5	0.00	0.00	
2,800.0	18.93	277.13	2,682.1	92.0	-736.2	742.0	0.00	0.00	
2,900.0	18.93	277.13	2,776.7	96.1	-768.4	774.4	0.00	0.00	
2,990.2	18.93	277.13	2,862.0	99.7	-797.4	803.6	0.00	0.00	Williams Fork
3,000.0	18.93	277.13	2,871.3	100.1	-800.6	806.8	0.00	0.00	
3,001.3	18.93	277.13	2,872.5	100.1	-801.0	807.2	0.00	0.00	Start Drop -3.00
3,100.0	15.97	277.13	2,966.7	103.8	-830.4	836.8	3.00	-3.00	
3,200.0	12.97	277.13	3,063.5	106.9	-855.2	861.8	3.00	-3.00	
3,300.0	9.97	277.13	3,161.5	109.4	-874.9	881.7	3.00	-3.00	
3,400.0	6.97	277.13	3,260.4	111.2	-889.5	896.4	3.00	-3.00	
3,500.0	3.97	277.13	3,359.9	112.4	-898.9	905.9	3.00	-3.00	
3,600.0	0.97	277.13	3,459.8	112.9	-903.2	910.2	3.00	-3.00	
3,632.2	0.00	0.00	3,492.0	112.9	-903.5	910.5	3.00	-3.00	EOD at Inc. = 0° - Top of Gas - Twin Creek 12-
3,700.0	0.00	0.00	3,559.8	112.9	-903.5	910.5	0.00	0.00	
3,800.0	0.00	0.00	3,659.8	112.9	-903.5	910.5	0.00	0.00	
3,900.0	0.00	0.00	3,759.8	112.9	-903.5	910.5	0.00	0.00	
4,000.0	0.00	0.00	3,859.8	112.9	-903.5	910.5	0.00	0.00	
4,100.0	0.00	0.00	3,959.8	112.9	-903.5	910.5	0.00	0.00	
4,200.0	0.00	0.00	4,059.8	112.9	-903.5	910.5	0.00	0.00	
4,300.0	0.00	0.00	4,159.8	112.9	-903.5	910.5	0.00	0.00	
4,400.0	0.00	0.00	4,259.8	112.9	-903.5	910.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Twin Creek 12-5D1 (F12E)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6167.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6167.0ft (Original Well Elev)
Site:	(F12E)	North Reference:	True
Well:	Twin Creek 12-5D1 (F12E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,500.0	0.00	0.00	4,359.8	112.9	-903.5	910.5	0.00	0.00	
4,600.0	0.00	0.00	4,459.8	112.9	-903.5	910.5	0.00	0.00	
4,700.0	0.00	0.00	4,559.8	112.9	-903.5	910.5	0.00	0.00	
4,800.0	0.00	0.00	4,659.8	112.9	-903.5	910.5	0.00	0.00	
4,900.0	0.00	0.00	4,759.8	112.9	-903.5	910.5	0.00	0.00	
5,000.0	0.00	0.00	4,859.8	112.9	-903.5	910.5	0.00	0.00	
5,100.0	0.00	0.00	4,959.8	112.9	-903.5	910.5	0.00	0.00	
5,200.0	0.00	0.00	5,059.8	112.9	-903.5	910.5	0.00	0.00	
5,300.0	0.00	0.00	5,159.8	112.9	-903.5	910.5	0.00	0.00	
5,337.2	0.00	0.00	5,197.0	112.9	-903.5	910.5	0.00	0.00	Coal Ridge
5,400.0	0.00	0.00	5,259.8	112.9	-903.5	910.5	0.00	0.00	
5,487.2	0.00	0.00	5,347.0	112.9	-903.5	910.5	0.00	0.00	TD at 5487' MD - Twin Creek 12-5D1 (F12E) BI
5,500.0	0.00	0.00	5,359.8	112.9	-903.5	910.5	0.00	0.00	
5,600.0	0.00	0.00	5,459.8	112.9	-903.5	910.5	0.00	0.00	
5,700.0	0.00	0.00	5,559.8	112.9	-903.5	910.5	0.00	0.00	
5,800.0	0.00	0.00	5,659.8	112.9	-903.5	910.5	0.00	0.00	
5,900.0	0.00	0.00	5,759.8	112.9	-903.5	910.5	0.00	0.00	
6,000.0	0.00	0.00	5,859.8	112.9	-903.5	910.5	0.00	0.00	
6,062.2	0.00	0.00	5,922.0	112.9	-903.5	910.5	0.00	0.00	Rollins
6,100.0	0.00	0.00	5,959.8	112.9	-903.5	910.5	0.00	0.00	
6,200.0	0.00	0.00	6,059.8	112.9	-903.5	910.5	0.00	0.00	
6,300.0	0.00	0.00	6,159.8	112.9	-903.5	910.5	0.00	0.00	
6,362.2	0.00	0.00	6,222.0	112.9	-903.5	910.5	0.00	0.00	Permit TD at 6362' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Twin Creek 12-5D1 (F12	0.00	0.00	5,347.0	112.9	-903.5	1,600,258.38	2,400,903.31	39.462260	-107.622140
- plan hits target center									
- Circle (radius 25.0)									
Twin Creek 12-5D1 (F12	0.00	0.00	3,492.0	112.9	-903.5	1,600,258.38	2,400,903.31	39.462260	-107.622140
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,127.4	1,100.0	Surface Casing	0.000	0.000	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6167.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 6167.0ft (Original Well Elev)
Site:	(F12E)	North Reference:	True
Well:	Twin Creek 12-5D1 (F12E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,732.1	1,672.0	Ohio Creek		0.00		
2,350.6	2,257.0	Mesa Verde		0.00		
2,990.2	2,862.0	Williams Fork		0.00		
3,632.2	3,492.0	Top of Gas		0.00		
5,337.2	5,197.0	Coal Ridge		0.00		
6,062.2	5,922.0	Rollins		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP = 200' MD	
830.9	819.5	12.8	-102.5	EOB at Inc. = 18.93°	
3,001.3	2,872.5	100.1	-801.0	Start Drop -3.00	
3,632.2	3,492.0	112.9	-903.5	EOD at Inc. = 0°	
5,487.2	5,347.0	112.9	-903.5	TD at 5487' MD	
6,362.2	6,222.0	112.9	-903.5	Permit TD at 6362' MD	