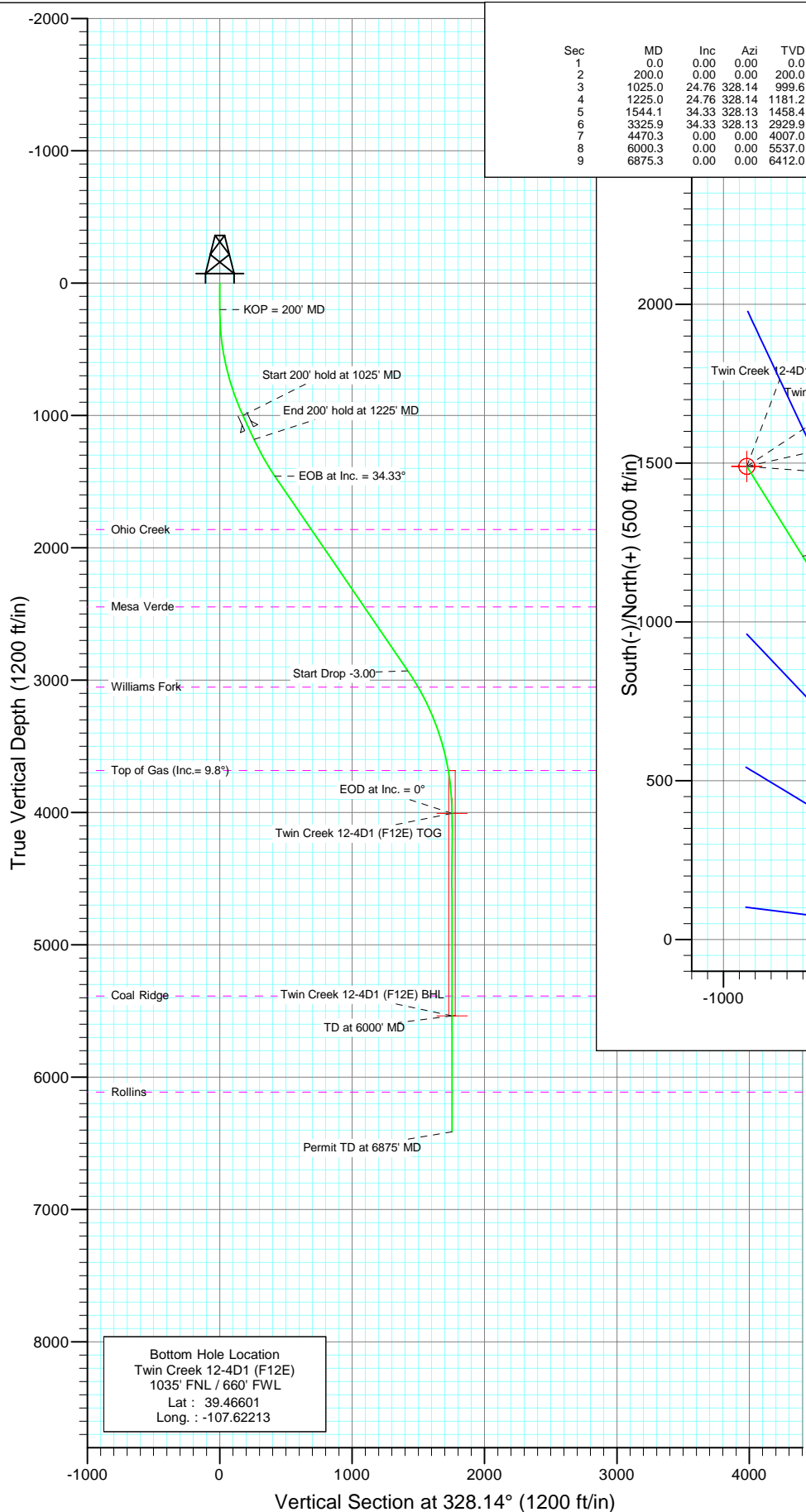
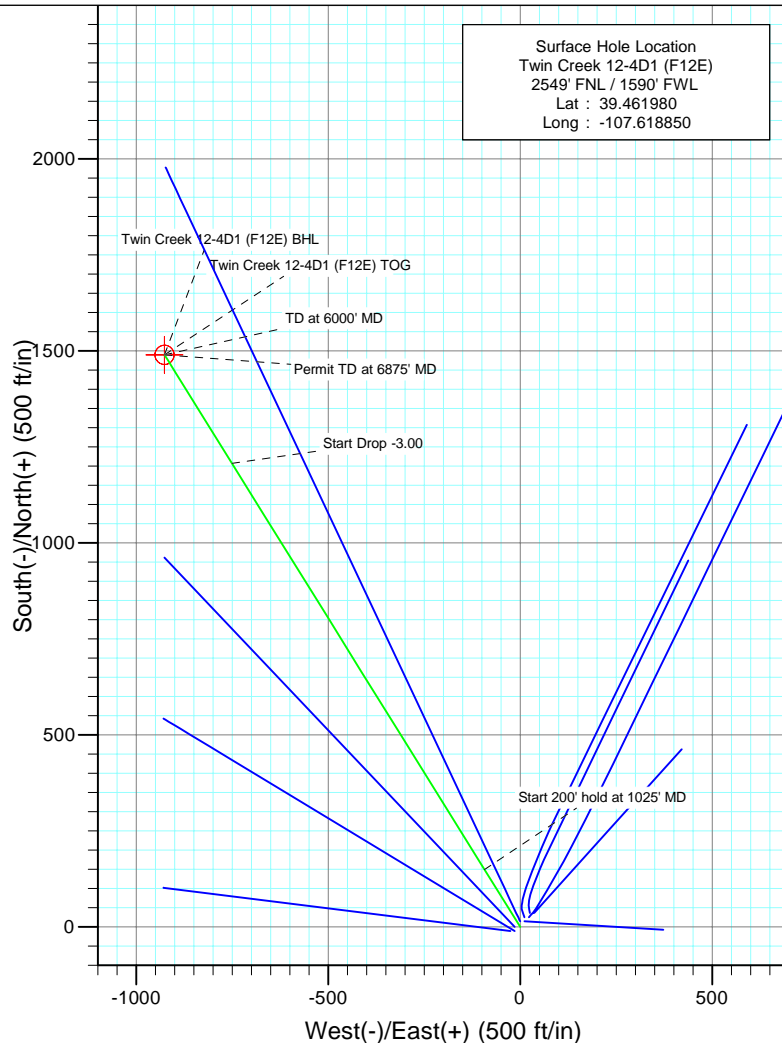




Project: Mamm Creek  
Site: (F12E)  
Well: Twin Creek 12-4D1 (F12E)  
Wellbore: DD  
Design: Plan #1



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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1025.0	24.76	328.14	999.6	149.1	-92.6	3.00	328.14	175.5	
4	1225.0	24.76	328.14	1181.2	220.2	-136.9	0.00	0.00	259.3	
5	1544.1	34.33	328.13	1458.4	353.7	-219.8	3.00	-0.02	416.4	
6	3325.9	34.33	328.13	2929.9	1207.2	-750.4	0.00	0.00	1421.4	
7	4470.3	0.00	0.00	4007.0	1489.8	-926.0	3.00	180.00	1754.1	Twin Creek 12-4D1 (F12E) TOG
8	6000.3	0.00	0.00	5537.0	1489.8	-926.0	0.00	0.00	1754.1	Twin Creek 12-4D1 (F12E) BHL
9	6875.3	0.00	0.00	6412.0	1489.8	-926.0	0.00	0.00	1754.1	



Azimuths to True North  
Magnetic North: 10.30°

Magnetic Field  
Strength: 52425.7snT  
Dip Angle: 65.82°  
Date: 4/16/2010  
Model: IGRF200510

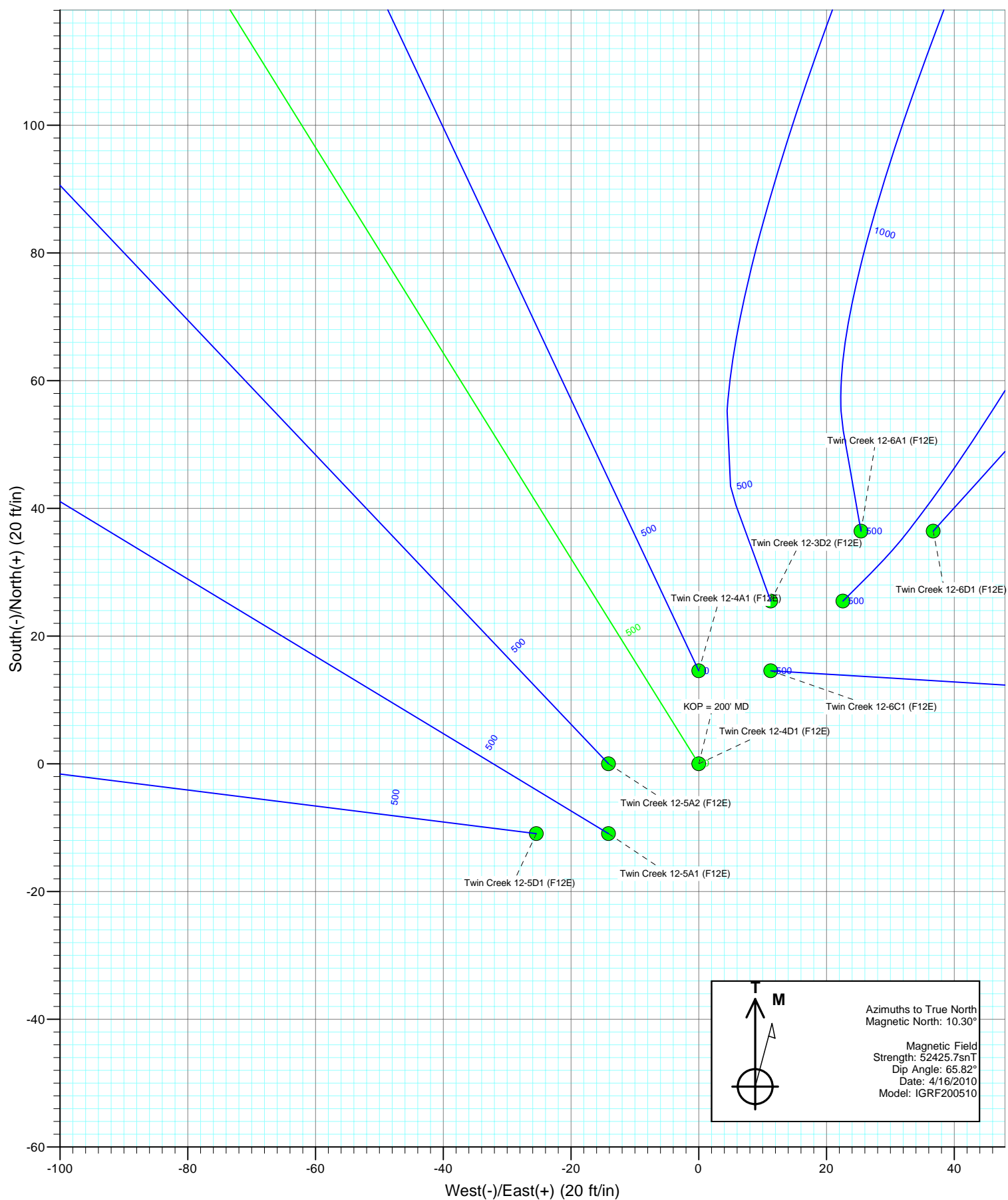
#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle
1862.0	2032.8	Ohio Creek	0.00
2447.0	2741.2	Mesa Verde	0.00
3052.0	3470.3	Williams Fork	0.00
3682.0	4143.7	Top of Gas (Inc.= 9.8°)	0.00
5387.0	5850.3	Coal Ridge	0.00
6112.0	6575.3	Rollins	0.00

#### DESIGN DETAILS: Plan #1

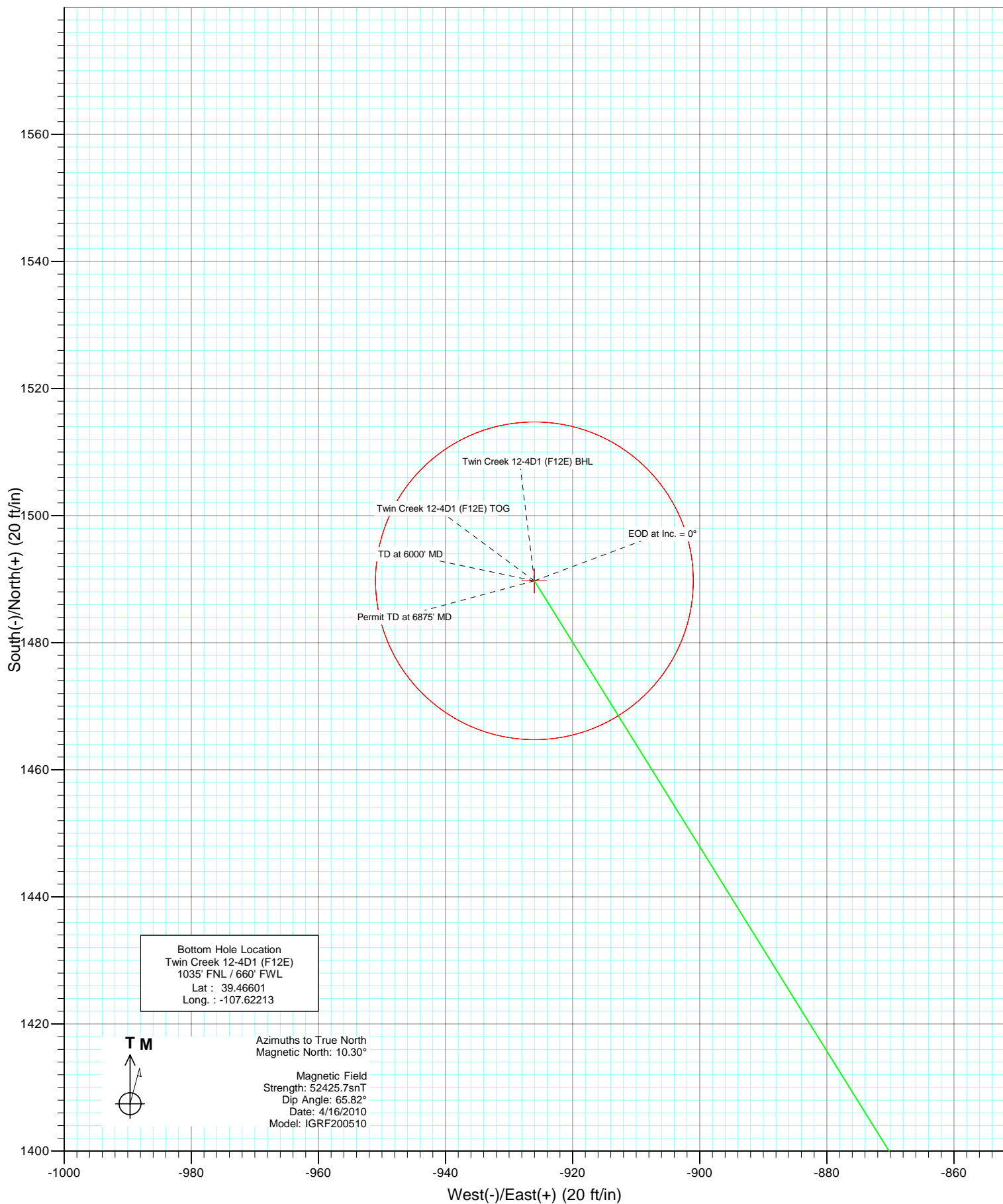
1051XX; KR  
KBE @ 6167.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Twin Creek 12-4D1 (F12E) BH	28.14	Slot	0.0	0.0	0.0





Project: Mamm Creek  
Site: (F12E)  
Well: Twin Creek 12-4D1 (F12E)  
Wellbore: DD  
Design: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 12-4D1 (F12E)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Site:</b>	(F12E)	<b>North Reference:</b>	True
<b>Well:</b>	Twin Creek 12-4D1 (F12E)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	Mamm Creek		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 12-4D1 (F12E)					
Well Position	+N/-S	0.0 ft	Northing:	1,600,134.73 ft	Latitude:	39.461980
	+E/-W	0.0 ft	Easting:	2,401,829.56 ft	Longitude:	-107.618850
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,145.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	4/16/2010	10.30	65.82	52,426

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	328.14

<b>Plan Sections</b>										
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	
1,312.9	33.39	328.14	1,251.0	267.7	-166.4	3.00	3.00	0.00	328.14	
3,354.9	33.39	328.14	2,956.0	1,222.1	-759.6	0.00	0.00	0.00	0.00	
4,467.8	0.00	0.00	4,007.0	1,489.8	-926.0	3.00	-3.00	0.00	180.00	Twin Creek 12-4D1 (F
5,997.8	0.00	0.00	5,537.0	1,489.8	-926.0	0.00	0.00	0.00	0.00	Twin Creek 12-4D1 (F
6,872.8	0.00	0.00	6,412.0	1,489.8	-926.0	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 12-4D1 (F12E)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Site:</b>	(F12E)	<b>North Reference:</b>	True
<b>Well:</b>	Twin Creek 12-4D1 (F12E)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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	328.14	300.0	2.2	-1.4	2.6	3.00	3.00	
400.0	6.00	328.14	399.6	8.9	-5.5	10.5	3.00	3.00	
500.0	9.00	328.14	498.8	20.0	-12.4	23.5	3.00	3.00	
600.0	12.00	328.14	597.1	35.4	-22.0	41.7	3.00	3.00	
700.0	15.00	328.14	694.3	55.3	-34.4	65.1	3.00	3.00	
800.0	18.00	328.14	790.2	79.4	-49.3	93.5	3.00	3.00	
900.0	21.00	328.14	884.4	107.7	-67.0	126.9	3.00	3.00	
1,000.0	24.00	328.14	976.8	140.2	-87.2	165.1	3.00	3.00	
1,100.0	27.00	328.14	1,067.1	176.8	-109.9	208.2	3.00	3.00	
1,137.2	28.11	328.14	1,100.0	191.4	-119.0	225.4	3.00	3.00	Surface Casing
1,200.0	30.00	328.14	1,154.9	217.3	-135.1	255.9	3.00	3.00	
1,300.0	33.00	328.14	1,240.2	261.7	-162.7	308.1	3.00	3.00	
1,312.9	33.39	328.14	1,251.0	267.7	-166.4	315.2	3.00	3.00	EOB at Inc. = 33.39°
1,400.0	33.39	328.14	1,323.7	308.4	-191.7	363.1	0.00	0.00	
1,500.0	33.39	328.14	1,407.2	355.1	-220.7	418.1	0.00	0.00	
1,600.0	33.39	328.14	1,490.7	401.9	-249.8	473.2	0.00	0.00	
1,700.0	33.39	328.14	1,574.2	448.6	-278.8	528.2	0.00	0.00	
1,800.0	33.39	328.14	1,657.7	495.3	-307.9	583.2	0.00	0.00	
1,900.0	33.39	328.14	1,741.2	542.1	-336.9	638.3	0.00	0.00	
2,000.0	33.39	328.14	1,824.7	588.8	-366.0	693.3	0.00	0.00	
2,044.7	33.39	328.14	1,862.0	609.7	-379.0	717.9	0.00	0.00	Ohio Creek
2,100.0	33.39	328.14	1,908.2	635.5	-395.0	748.3	0.00	0.00	
2,200.0	33.39	328.14	1,991.7	682.3	-424.1	803.4	0.00	0.00	
2,300.0	33.39	328.14	2,075.2	729.0	-453.2	858.4	0.00	0.00	
2,400.0	33.39	328.14	2,158.7	775.8	-482.2	913.4	0.00	0.00	
2,500.0	33.39	328.14	2,242.2	822.5	-511.3	968.4	0.00	0.00	
2,600.0	33.39	328.14	2,325.7	869.2	-540.3	1,023.5	0.00	0.00	
2,700.0	33.39	328.14	2,409.2	916.0	-569.4	1,078.5	0.00	0.00	
2,745.3	33.39	328.14	2,447.0	937.2	-582.5	1,103.4	0.00	0.00	Mesa Verde
2,800.0	33.39	328.14	2,492.7	962.7	-598.4	1,133.5	0.00	0.00	
2,900.0	33.39	328.14	2,576.2	1,009.4	-627.5	1,188.6	0.00	0.00	
3,000.0	33.39	328.14	2,659.7	1,056.2	-656.5	1,243.6	0.00	0.00	
3,100.0	33.39	328.14	2,743.1	1,102.9	-685.6	1,298.6	0.00	0.00	
3,200.0	33.39	328.14	2,826.6	1,149.7	-714.6	1,353.7	0.00	0.00	
3,300.0	33.39	328.14	2,910.1	1,196.4	-743.7	1,408.7	0.00	0.00	
3,354.9	33.39	328.14	2,956.0	1,222.1	-759.6	1,438.9	0.00	0.00	Start Drop -3.00
3,400.0	32.04	328.14	2,993.9	1,242.8	-772.5	1,463.3	3.00	-3.00	
3,467.8	30.00	328.14	3,052.0	1,272.4	-790.9	1,498.2	3.00	-3.00	Williams Fork
3,500.0	29.04	328.14	3,080.0	1,285.9	-799.3	1,514.1	3.00	-3.00	
3,600.0	26.04	328.14	3,168.7	1,325.2	-823.7	1,560.3	3.00	-3.00	
3,700.0	23.04	328.14	3,259.7	1,360.4	-845.6	1,601.8	3.00	-3.00	
3,800.0	20.04	328.14	3,352.7	1,391.6	-865.0	1,638.5	3.00	-3.00	
3,900.0	17.04	328.14	3,447.5	1,418.6	-881.8	1,670.3	3.00	-3.00	
4,000.0	14.04	328.14	3,543.8	1,441.3	-895.9	1,697.1	3.00	-3.00	
4,100.0	11.04	328.14	3,641.4	1,459.8	-907.4	1,718.8	3.00	-3.00	
4,141.3	9.80	328.14	3,682.0	1,466.1	-911.3	1,726.2	3.00	-3.00	Top of Gas (Inc.= 9.8°)
4,200.0	8.04	328.14	3,740.0	1,473.8	-916.1	1,735.3	3.00	-3.00	
4,300.0	5.04	328.14	3,839.4	1,483.5	-922.1	1,746.7	3.00	-3.00	
4,400.0	2.04	328.14	3,939.2	1,488.7	-925.4	1,752.9	3.00	-3.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 12-4D1 (F12E)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Site:</b>	(F12E)	<b>North Reference:</b>	True
<b>Well:</b>	Twin Creek 12-4D1 (F12E)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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
4,467.8	0.00	0.00	4,007.0	1,489.8	-926.0	1,754.1	3.00	-3.00	EOD at Inc. = 0° - Twin Creek 12-4D1 (F12E) T
4,500.0	0.00	0.00	4,039.2	1,489.8	-926.0	1,754.1	0.00	0.00	
4,600.0	0.00	0.00	4,139.2	1,489.8	-926.0	1,754.1	0.00	0.00	
4,700.0	0.00	0.00	4,239.2	1,489.8	-926.0	1,754.1	0.00	0.00	
4,800.0	0.00	0.00	4,339.2	1,489.8	-926.0	1,754.1	0.00	0.00	
4,900.0	0.00	0.00	4,439.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,000.0	0.00	0.00	4,539.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,100.0	0.00	0.00	4,639.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,200.0	0.00	0.00	4,739.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,300.0	0.00	0.00	4,839.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,400.0	0.00	0.00	4,939.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,500.0	0.00	0.00	5,039.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,600.0	0.00	0.00	5,139.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,700.0	0.00	0.00	5,239.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,800.0	0.00	0.00	5,339.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,847.8	0.00	0.00	5,387.0	1,489.8	-926.0	1,754.1	0.00	0.00	Coal Ridge
5,900.0	0.00	0.00	5,439.2	1,489.8	-926.0	1,754.1	0.00	0.00	
5,997.8	0.00	0.00	5,537.0	1,489.8	-926.0	1,754.1	0.00	0.00	TD at 5997' MD - Twin Creek 12-4D1 (F12E) BI
6,000.0	0.00	0.00	5,539.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,100.0	0.00	0.00	5,639.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,200.0	0.00	0.00	5,739.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,300.0	0.00	0.00	5,839.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,400.0	0.00	0.00	5,939.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,500.0	0.00	0.00	6,039.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,572.8	0.00	0.00	6,112.0	1,489.8	-926.0	1,754.1	0.00	0.00	Rollins
6,600.0	0.00	0.00	6,139.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,700.0	0.00	0.00	6,239.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,800.0	0.00	0.00	6,339.2	1,489.8	-926.0	1,754.1	0.00	0.00	
6,872.8	0.00	0.00	6,412.0	1,489.8	-926.0	1,754.1	0.00	0.00	Permit TD at 6872' 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 12-4D1 (F12	0.00	0.00	4,007.0	1,489.8	-926.0	1,601,645.68	2,400,938.54	39.466070	-107.622130
- plan hits target center									
- Point									
Twin Creek 12-4D1 (F12	0.00	0.00	5,537.0	1,489.8	-926.0	1,601,645.68	2,400,938.54	39.466070	-107.622130
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,137.2	1,100.0	Surface Casing	0.000	0.000	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 12-4D1 (F12E)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 6167.0ft (Original Well Elev)
<b>Site:</b>	(F12E)	<b>North Reference:</b>	True
<b>Well:</b>	Twin Creek 12-4D1 (F12E)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,044.7	1,862.0	Ohio Creek		0.00		
2,745.3	2,447.0	Mesa Verde		0.00		
3,467.8	3,052.0	Williams Fork		0.00		
4,141.3	3,682.0	Top of Gas (Inc. = 9.8°)		0.00		
5,847.8	5,387.0	Coal Ridge		0.00		
6,572.8	6,112.0	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	
1,312.9	1,251.0	267.7	-166.4	EOB at Inc. = 33.39°	
3,354.9	2,956.0	1,222.1	-759.6	Start Drop -3.00	
4,467.8	4,007.0	1,489.8	-926.0	EOD at Inc. = 0°	
5,997.8	5,537.0	1,489.8	-926.0	TD at 5997' MD	
6,872.8	6,412.0	1,489.8	-926.0	Permit TD at 6872' MD	