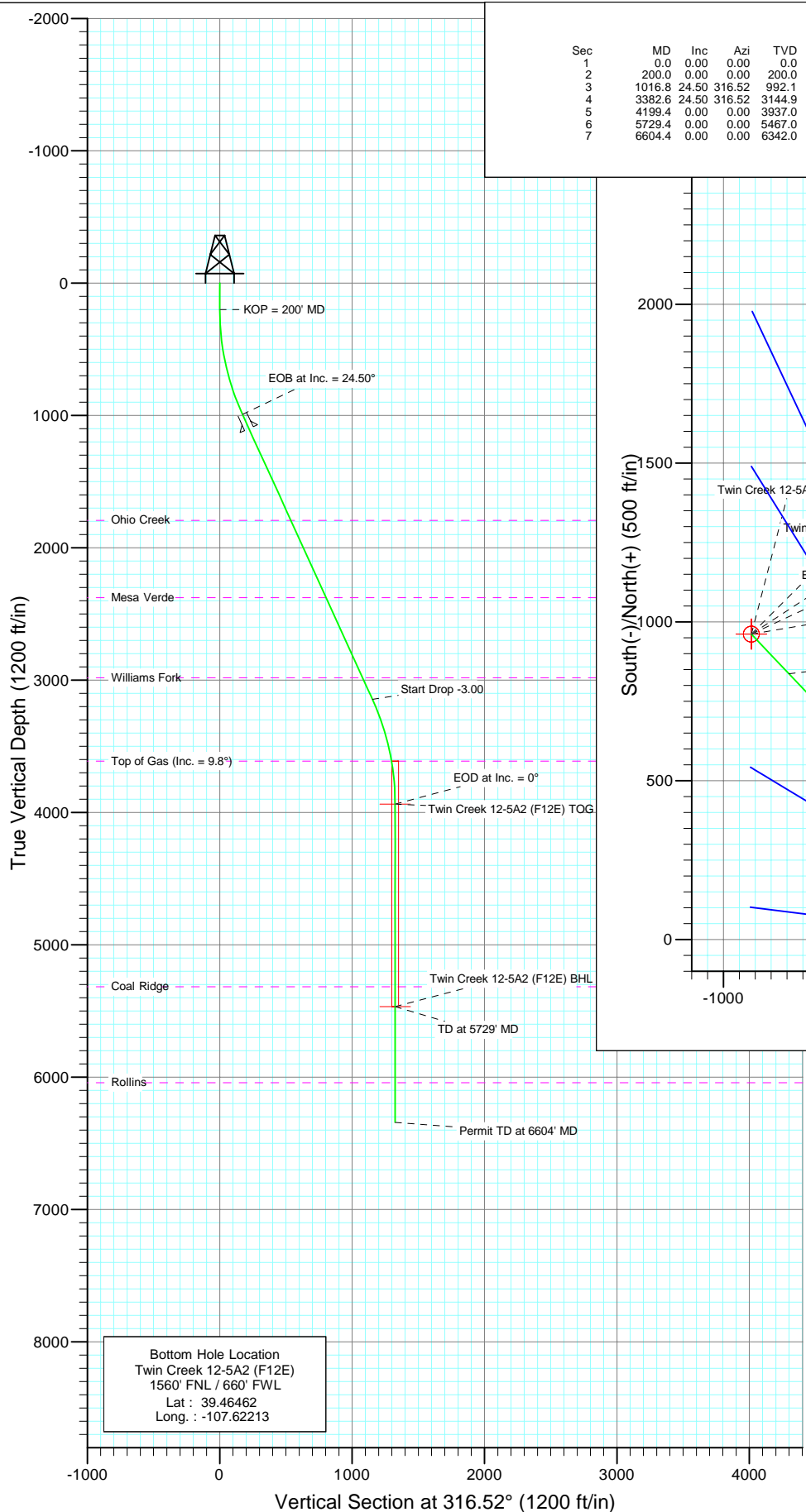
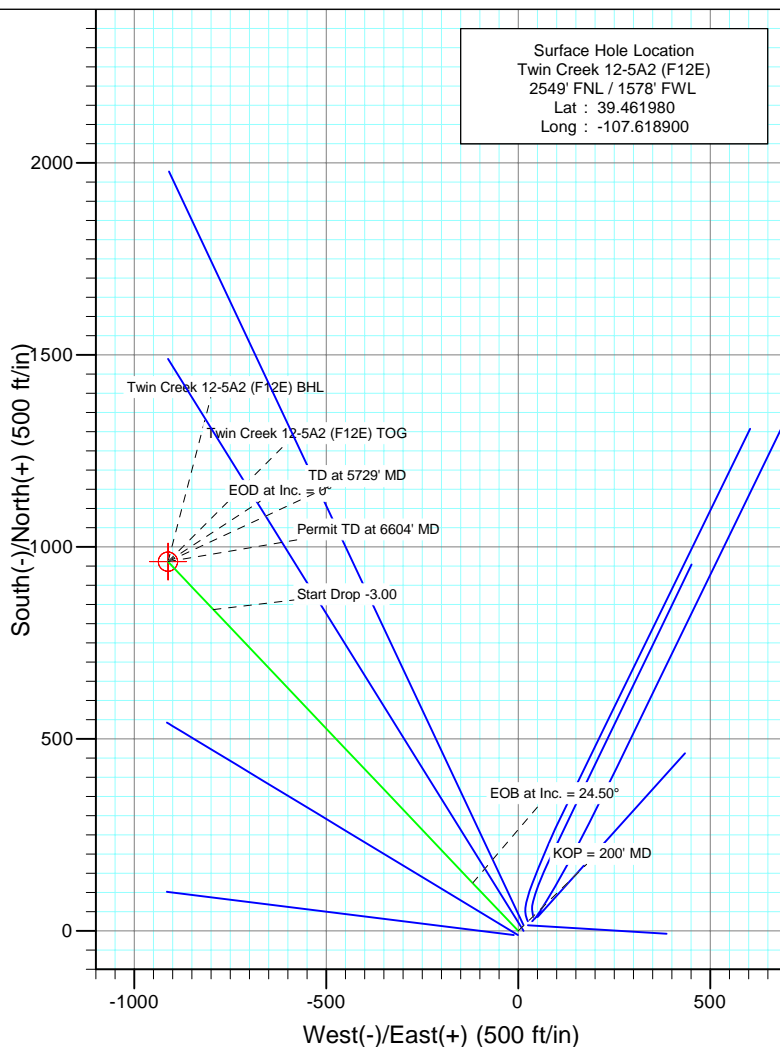




Project: Mamm Creek
 Site: (F12E)
 Well: Twin Creek 12-5A2 (F12E)
 Wellbore: DD
 Design: Plan #1



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	1016.8	24.50	316.52	992.1	124.8	-118.4	3.00	316.52	172.0	
4	3382.6	24.50	316.52	3144.9	836.8	-793.6	0.00	0.00	1153.2	
5	4199.4	0.00	0.00	3937.0	961.6	-911.9	3.00	180.00	1325.2	Twin Creek 12-5A2 (F12E) TOG
6	5729.4	0.00	0.00	5467.0	961.6	-911.9	0.00	0.00	1325.2	Twin Creek 12-5A2 (F12E) BHL
7	6604.4	0.00	0.00	6342.0	961.6	-911.9	0.00	0.00	1325.2	



Azimuths to True North
 Magnetic North: 10.33°

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

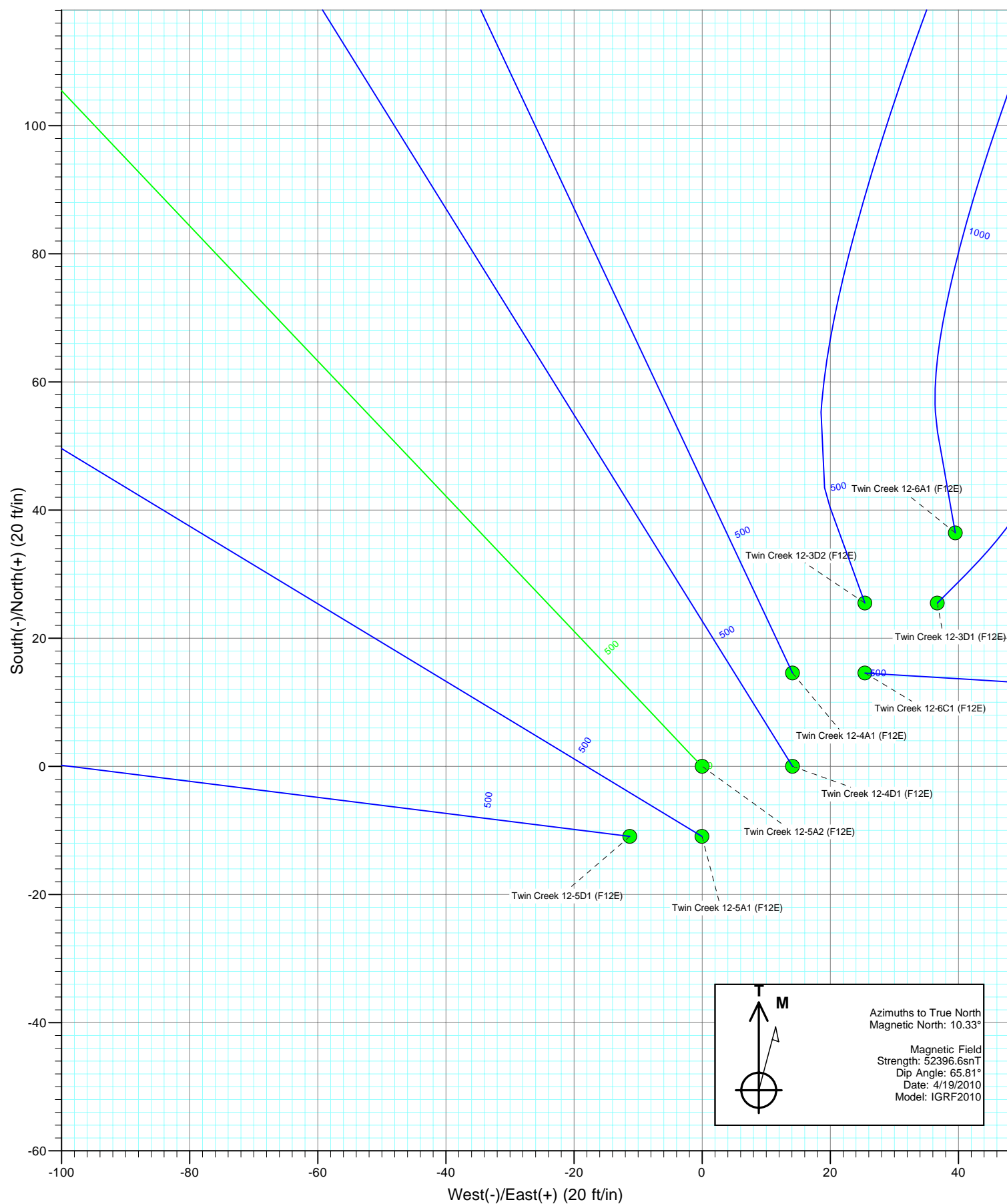
FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle
1792.0	1895.8	Ohio Creek	0.00
2377.0	2538.7	Mesa Verde	0.00
2982.0	3203.6	Williams Fork	0.00
3612.0	3872.8	Top of Gas (Inc. = 9.8°)	0.00
5317.0	5579.4	Coal Ridge	0.00
6042.0	6304.4	Rollins	0.00

DESIGN DETAILS: Plan #1

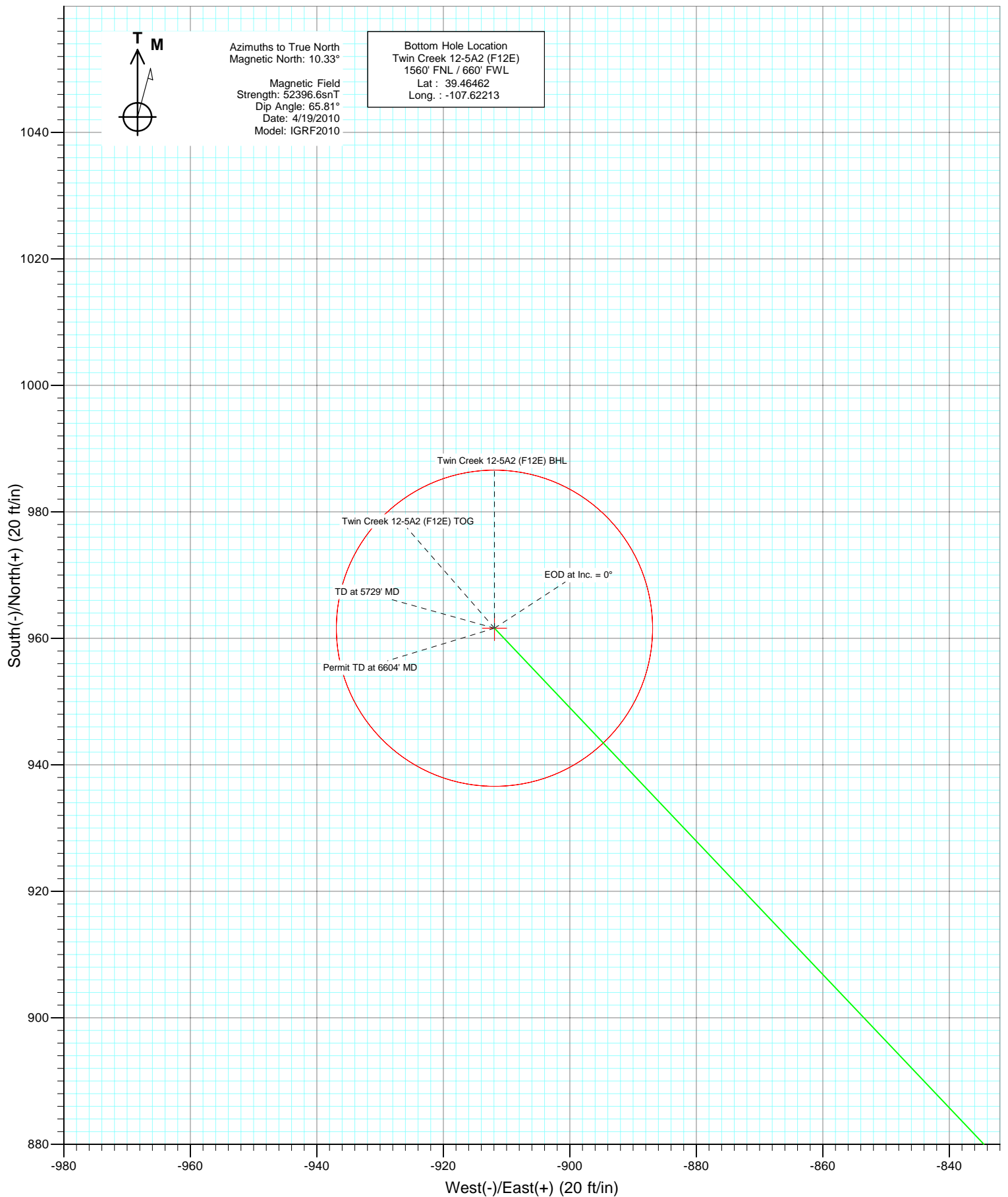
1051XX; KR
 KBE @ 6167.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Twin Creek 12-5A2 (F12E) BHL	16.52	Slot	0.0	0.0	0.0





Project: Mamm Creek
Site: (F12E)
Well: Twin Creek 12-5A2 (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 12-5A2 (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 12-5A2 (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 12-5A2 (F12E)					
Well Position	+N/-S	0.0 ft	Northing:	1,600,135.06 ft	Latitude:	39.461980
	+E/-W	0.0 ft	Easting:	2,401,815.45 ft	Longitude:	-107.618900
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) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	316.52

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	
1,016.8	24.50	316.52	992.1	124.8	-118.4	3.00	3.00	0.00	316.52	
3,382.6	24.50	316.52	3,144.9	836.8	-793.6	0.00	0.00	0.00	0.00	
4,199.4	0.00	0.00	3,937.0	961.6	-911.9	3.00	-3.00	0.00	180.00	Twin Creek 12-5A2 (F
5,729.4	0.00	0.00	5,467.0	961.6	-911.9	0.00	0.00	0.00	0.00	Twin Creek 12-5A2 (F
6,604.4	0.00	0.00	6,342.0	961.6	-911.9	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 12-5A2 (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 12-5A2 (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	316.52	300.0	1.9	-1.8	2.6	3.00	3.00	
400.0	6.00	316.52	399.6	7.6	-7.2	10.5	3.00	3.00	
500.0	9.00	316.52	498.8	17.1	-16.2	23.5	3.00	3.00	
600.0	12.00	316.52	597.1	30.3	-28.7	41.7	3.00	3.00	
700.0	15.00	316.52	694.3	47.2	-44.8	65.1	3.00	3.00	
800.0	18.00	316.52	790.2	67.8	-64.3	93.5	3.00	3.00	
900.0	21.00	316.52	884.4	92.0	-87.3	126.9	3.00	3.00	
1,000.0	24.00	316.52	976.8	119.8	-113.6	165.1	3.00	3.00	
1,016.8	24.50	316.52	992.1	124.8	-118.4	172.0	3.00	3.00	EOB at Inc. = 24.50°
1,100.0	24.50	316.52	1,067.8	149.9	-142.1	206.5	0.00	0.00	
1,135.3	24.50	316.52	1,100.0	160.5	-152.2	221.2	0.00	0.00	Surface Casing
1,200.0	24.50	316.52	1,158.8	179.9	-170.6	248.0	0.00	0.00	
1,300.0	24.50	316.52	1,249.8	210.0	-199.2	289.5	0.00	0.00	
1,400.0	24.50	316.52	1,340.8	240.1	-227.7	330.9	0.00	0.00	
1,500.0	24.50	316.52	1,431.8	270.2	-256.3	372.4	0.00	0.00	
1,600.0	24.50	316.52	1,522.8	300.3	-284.8	413.9	0.00	0.00	
1,700.0	24.50	316.52	1,613.8	330.4	-313.3	455.4	0.00	0.00	
1,800.0	24.50	316.52	1,704.8	360.5	-341.9	496.8	0.00	0.00	
1,895.8	24.50	316.52	1,792.0	389.4	-369.2	536.6	0.00	0.00	Ohio Creek
1,900.0	24.50	316.52	1,795.8	390.6	-370.4	538.3	0.00	0.00	
2,000.0	24.50	316.52	1,886.8	420.7	-399.0	579.8	0.00	0.00	
2,100.0	24.50	316.52	1,977.8	450.8	-427.5	621.3	0.00	0.00	
2,200.0	24.50	316.52	2,068.8	480.9	-456.0	662.7	0.00	0.00	
2,300.0	24.50	316.52	2,159.8	511.0	-484.6	704.2	0.00	0.00	
2,400.0	24.50	316.52	2,250.8	541.1	-513.1	745.7	0.00	0.00	
2,500.0	24.50	316.52	2,341.7	571.2	-541.7	787.2	0.00	0.00	
2,538.7	24.50	316.52	2,377.0	582.8	-552.7	803.2	0.00	0.00	Mesa Verde
2,600.0	24.50	316.52	2,432.7	601.3	-570.2	828.6	0.00	0.00	
2,700.0	24.50	316.52	2,523.7	631.4	-598.7	870.1	0.00	0.00	
2,800.0	24.50	316.52	2,614.7	661.5	-627.3	911.6	0.00	0.00	
2,900.0	24.50	316.52	2,705.7	691.6	-655.8	953.1	0.00	0.00	
3,000.0	24.50	316.52	2,796.7	721.6	-684.4	994.5	0.00	0.00	
3,100.0	24.50	316.52	2,887.7	751.7	-712.9	1,036.0	0.00	0.00	
3,200.0	24.50	316.52	2,978.7	781.8	-741.4	1,077.5	0.00	0.00	
3,203.6	24.50	316.52	2,982.0	782.9	-742.5	1,079.0	0.00	0.00	Williams Fork
3,300.0	24.50	316.52	3,069.7	811.9	-770.0	1,119.0	0.00	0.00	
3,382.6	24.50	316.52	3,144.9	836.8	-793.6	1,153.2	0.00	0.00	Start Drop -3.00
3,400.0	23.98	316.52	3,160.7	842.0	-798.5	1,160.4	3.00	-3.00	
3,500.0	20.98	316.52	3,253.1	869.7	-824.8	1,198.6	3.00	-3.00	
3,600.0	17.98	316.52	3,347.4	893.9	-847.7	1,232.0	3.00	-3.00	
3,700.0	14.98	316.52	3,443.3	914.5	-867.2	1,260.3	3.00	-3.00	
3,800.0	11.98	316.52	3,540.5	931.4	-883.3	1,283.6	3.00	-3.00	
3,872.8	9.80	316.52	3,612.0	941.4	-892.7	1,297.4	3.00	-3.00	Top of Gas (Inc. = 9.8°)
3,900.0	8.98	316.52	3,638.8	944.6	-895.8	1,301.8	3.00	-3.00	
4,000.0	5.98	316.52	3,737.9	954.1	-904.8	1,314.8	3.00	-3.00	
4,100.0	2.98	316.52	3,837.6	959.7	-910.1	1,322.7	3.00	-3.00	
4,199.4	0.00	0.00	3,937.0	961.6	-911.9	1,325.2	3.00	-3.00	EOD at Inc. = 0° - Twin Creek 12-5A2 (F12E) T
4,200.0	0.00	0.00	3,937.6	961.6	-911.9	1,325.2	0.00	0.00	
4,300.0	0.00	0.00	4,037.6	961.6	-911.9	1,325.2	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Twin Creek 12-5A2 (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 12-5A2 (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
4,400.0	0.00	0.00	4,137.6	961.6	-911.9	1,325.2	0.00	0.00	
4,500.0	0.00	0.00	4,237.6	961.6	-911.9	1,325.2	0.00	0.00	
4,600.0	0.00	0.00	4,337.6	961.6	-911.9	1,325.2	0.00	0.00	
4,700.0	0.00	0.00	4,437.6	961.6	-911.9	1,325.2	0.00	0.00	
4,800.0	0.00	0.00	4,537.6	961.6	-911.9	1,325.2	0.00	0.00	
4,900.0	0.00	0.00	4,637.6	961.6	-911.9	1,325.2	0.00	0.00	
5,000.0	0.00	0.00	4,737.6	961.6	-911.9	1,325.2	0.00	0.00	
5,100.0	0.00	0.00	4,837.6	961.6	-911.9	1,325.2	0.00	0.00	
5,200.0	0.00	0.00	4,937.6	961.6	-911.9	1,325.2	0.00	0.00	
5,300.0	0.00	0.00	5,037.6	961.6	-911.9	1,325.2	0.00	0.00	
5,400.0	0.00	0.00	5,137.6	961.6	-911.9	1,325.2	0.00	0.00	
5,500.0	0.00	0.00	5,237.6	961.6	-911.9	1,325.2	0.00	0.00	
5,579.4	0.00	0.00	5,317.0	961.6	-911.9	1,325.2	0.00	0.00	Coal Ridge
5,600.0	0.00	0.00	5,337.6	961.6	-911.9	1,325.2	0.00	0.00	
5,700.0	0.00	0.00	5,437.6	961.6	-911.9	1,325.2	0.00	0.00	
5,729.4	0.00	0.00	5,467.0	961.6	-911.9	1,325.2	0.00	0.00	TD at 5729' MD - Twin Creek 12-5A2 (F12E) Bl
5,800.0	0.00	0.00	5,537.6	961.6	-911.9	1,325.2	0.00	0.00	
5,900.0	0.00	0.00	5,637.6	961.6	-911.9	1,325.2	0.00	0.00	
6,000.0	0.00	0.00	5,737.6	961.6	-911.9	1,325.2	0.00	0.00	
6,100.0	0.00	0.00	5,837.6	961.6	-911.9	1,325.2	0.00	0.00	
6,200.0	0.00	0.00	5,937.6	961.6	-911.9	1,325.2	0.00	0.00	
6,300.0	0.00	0.00	6,037.6	961.6	-911.9	1,325.2	0.00	0.00	
6,304.4	0.00	0.00	6,042.0	961.6	-911.9	1,325.2	0.00	0.00	Rollins
6,400.0	0.00	0.00	6,137.6	961.6	-911.9	1,325.2	0.00	0.00	
6,500.0	0.00	0.00	6,237.6	961.6	-911.9	1,325.2	0.00	0.00	
6,600.0	0.00	0.00	6,337.6	961.6	-911.9	1,325.2	0.00	0.00	
6,604.4	0.00	0.00	6,342.0	961.6	-911.9	1,325.2	0.00	0.00	Permit TD at 6604' 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 12-5A2 (F12	0.00	0.00	3,937.0	961.6	-911.9	1,601,117.68	2,400,926.21	39.464620	-107.622130
- plan hits target center									
- Point									
Twin Creek 12-5A2 (F12	0.00	0.00	5,467.0	961.6	-911.9	1,601,117.68	2,400,926.21	39.464620	-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)
1,135.3	1,100.0	Surface Casing	0.000	0.000

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Twin Creek 12-5A2 (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 12-5A2 (F12E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,895.8	1,792.0	Ohio Creek		0.00		
2,538.7	2,377.0	Mesa Verde		0.00		
3,203.6	2,982.0	Williams Fork		0.00		
3,872.8	3,612.0	Top of Gas (Inc. = 9.8°)		0.00		
5,579.4	5,317.0	Coal Ridge		0.00		
6,304.4	6,042.0	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	
1,016.8	992.1	124.8	-118.4	EOB at Inc. = 24.50°	
3,382.6	3,144.9	836.8	-793.6	Start Drop -3.00	
4,199.4	3,937.0	961.6	-911.9	EOD at Inc. = 0°	
5,729.4	5,467.0	961.6	-911.9	TD at 5729' MD	
6,604.4	6,342.0	961.6	-911.9	Permit TD at 6604' MD	