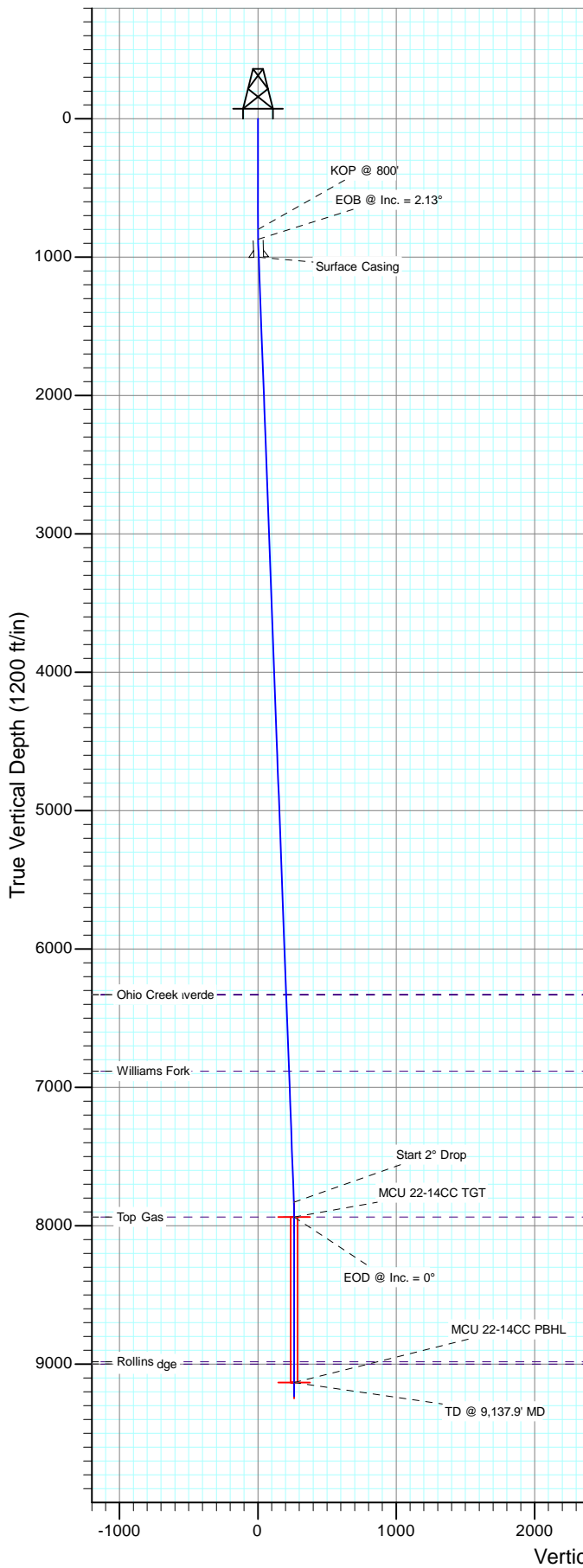
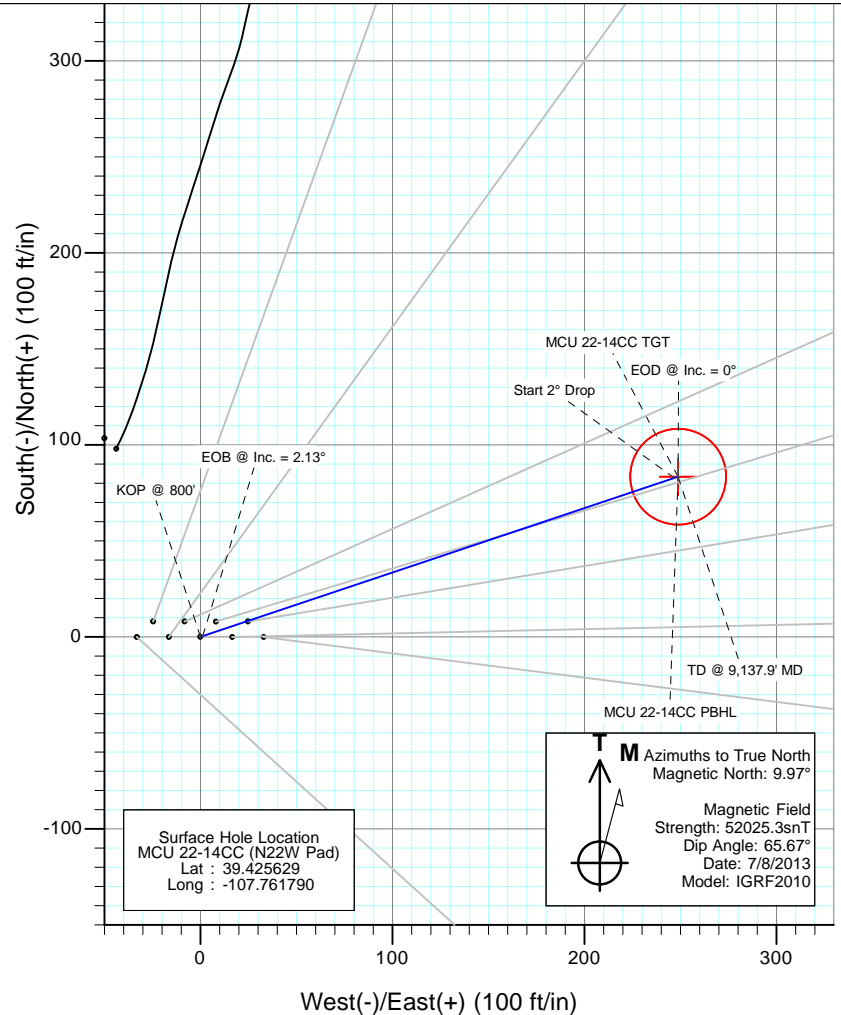




Project: Mamm Creek
 Site: N22W Pad
 Well: MCU 22-14CC (N22W Pad)
 Wellbore: OH
 Design: Plan #1



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	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	871.1	2.13	71.47	871.1	0.4	1.3	3.00	71.47	1.3	
4	7835.2	2.13	71.47	7830.4	82.8	247.0	0.00	0.00	260.5	
5	7941.9	0.00	0.00	7937.0	83.4	248.9	2.00	180.00	262.5	MCU 22-14CC TGT
6	9137.9	0.00	0.00	9133.0	83.4	248.9	0.00	0.00	262.5	MCU 22-14CC PBHL
7	9237.9	0.00	0.00	9233.0	83.4	248.9	0.00	0.00	262.5	



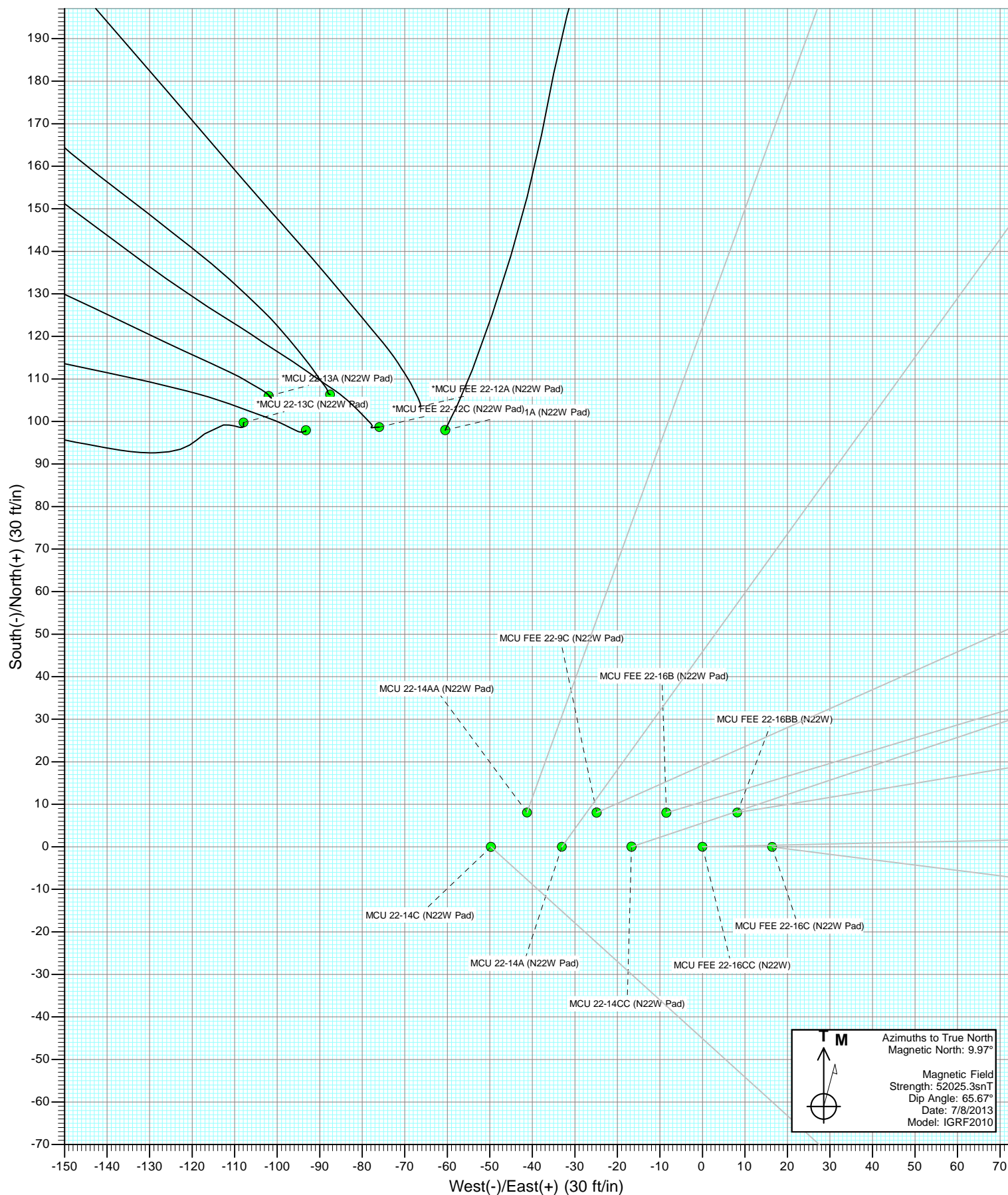
DESIGN TARGET DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MCU 22-14CC TGT	83.4	248.9	1587948.66	2361405.24	39.425858	-107.760909
MCU 22-14CC PBHL	83.4	248.9	1587948.66	2361405.24	39.425858	-107.760909

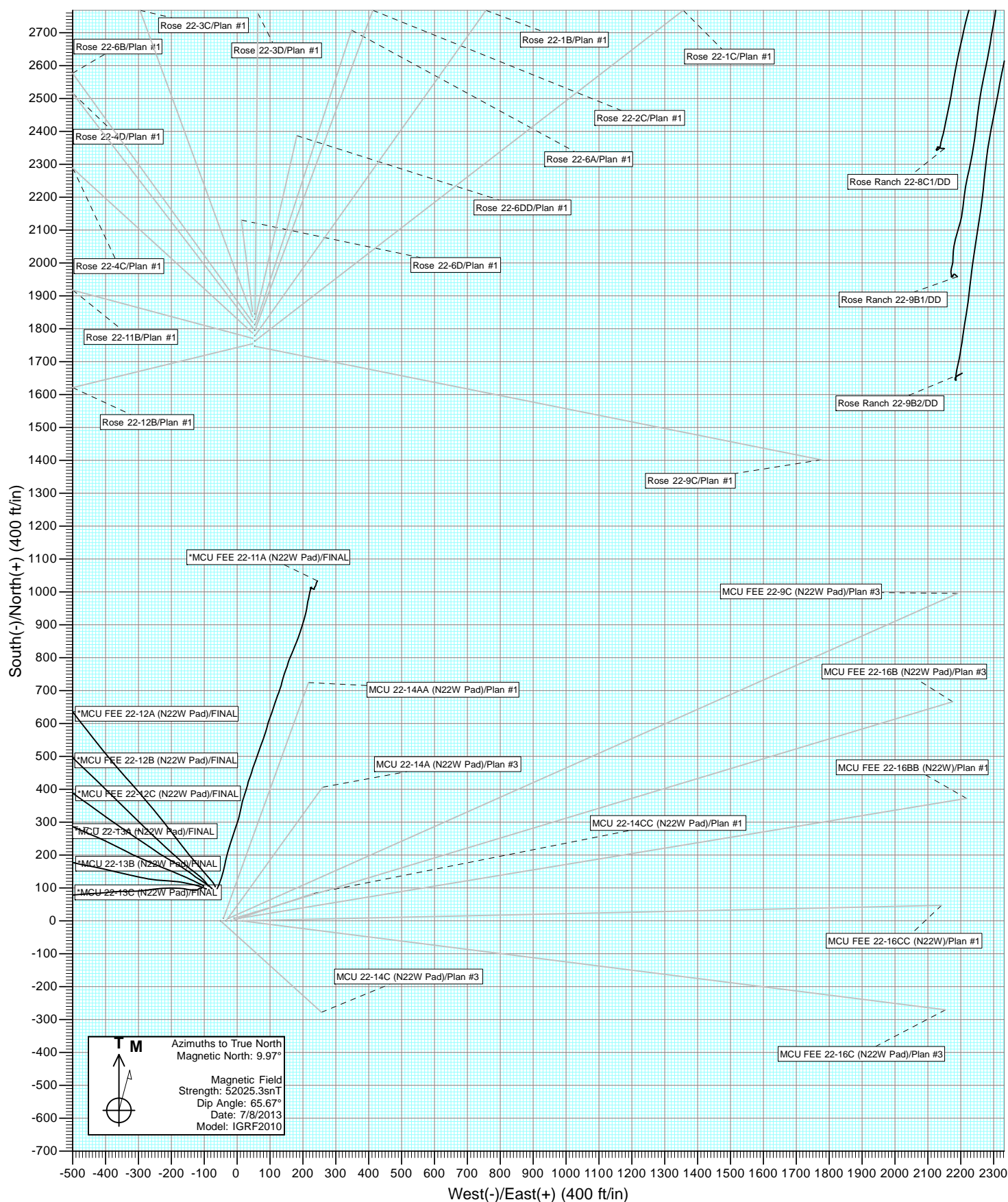
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
6330.0	6333.8	Ohio Creek
6330.0	6333.8	Top of Mesaverde
6883.0	6887.2	Williams Fork
7937.0	7941.9	Top Gas
8983.0	8987.9	Rollins
9000.0	9004.9	Coal Ridge

Plan #1
 MCU 22-14CC (N22W Pad)
 135XXX; SC
 KB=22' @ 7048.0ft (Nabors M-15)
 Ground Elevation @ 7026.0
 North American Datum 1983
 Well MCU 22-14CC (N22W Pad), True North



Project: Mamm Creek
Site: N22W Pad





Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU 22-14CC (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	North Reference:	True
Well:	MCU 22-14CC (N22W Pad)	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		N22W Pad			
Site Position:		Northing:	1,587,870.64 ft	Latitude:	39.425629
From:	Lat/Long	Easting:	2,361,187.41 ft	Longitude:	-107.761673
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.43 °

Well	MCU 22-14CC (N22W Pad)					
Well Position	+N/-S	0.0 ft	Northing:	1,587,871.45 ft	Latitude:	39.425629
	+E/-W	0.0 ft	Easting:	2,361,154.37 ft	Longitude:	-107.761790
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,026.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2013	9.97	65.67	52,025

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	71.47

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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
871.1	2.13	71.47	871.1	0.4	1.3	3.00	3.00	0.00	71.47	
7,835.2	2.13	71.47	7,830.4	82.8	247.0	0.00	0.00	0.00	0.00	
7,941.9	0.00	0.00	7,937.0	83.4	248.9	2.00	-2.00	0.00	180.00	MCU 22-14CC TGT
9,137.9	0.00	0.00	9,133.0	83.4	248.9	0.00	0.00	0.00	0.00	MCU 22-14CC PBHL
9,237.9	0.00	0.00	9,233.0	83.4	248.9	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 MCU 22-14CC (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	North Reference:	True
Well:	MCU 22-14CC (N22W Pad)	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	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	KOP @ 800'
871.1	2.13	71.47	871.1	0.4	1.3	1.3	3.00	3.00	EOB @ Inc. = 2.13°
900.0	2.13	71.47	900.0	0.8	2.3	2.4	0.00	0.00	
1,000.0	2.13	71.47	999.9	1.9	5.8	6.1	0.00	0.00	
1,000.1	2.13	71.47	1,000.0	1.9	5.8	6.1	0.00	0.00	Surface Casing
1,100.0	2.13	71.47	1,099.8	3.1	9.3	9.8	0.00	0.00	
1,200.0	2.13	71.47	1,199.8	4.3	12.9	13.6	0.00	0.00	
1,300.0	2.13	71.47	1,299.7	5.5	16.4	17.3	0.00	0.00	
1,400.0	2.13	71.47	1,399.6	6.7	19.9	21.0	0.00	0.00	
1,500.0	2.13	71.47	1,499.5	7.9	23.4	24.7	0.00	0.00	
1,600.0	2.13	71.47	1,599.5	9.0	27.0	28.4	0.00	0.00	
1,700.0	2.13	71.47	1,699.4	10.2	30.5	32.2	0.00	0.00	
1,800.0	2.13	71.47	1,799.3	11.4	34.0	35.9	0.00	0.00	
1,900.0	2.13	71.47	1,899.3	12.6	37.6	39.6	0.00	0.00	
2,000.0	2.13	71.47	1,999.2	13.8	41.1	43.3	0.00	0.00	
2,100.0	2.13	71.47	2,099.1	15.0	44.6	47.1	0.00	0.00	
2,200.0	2.13	71.47	2,199.1	16.1	48.1	50.8	0.00	0.00	
2,300.0	2.13	71.47	2,299.0	17.3	51.7	54.5	0.00	0.00	
2,400.0	2.13	71.47	2,398.9	18.5	55.2	58.2	0.00	0.00	
2,500.0	2.13	71.47	2,498.9	19.7	58.7	61.9	0.00	0.00	
2,600.0	2.13	71.47	2,598.8	20.9	62.3	65.7	0.00	0.00	
2,700.0	2.13	71.47	2,698.7	22.1	65.8	69.4	0.00	0.00	
2,800.0	2.13	71.47	2,798.6	23.2	69.3	73.1	0.00	0.00	
2,900.0	2.13	71.47	2,898.6	24.4	72.8	76.8	0.00	0.00	
3,000.0	2.13	71.47	2,998.5	25.6	76.4	80.6	0.00	0.00	
3,100.0	2.13	71.47	3,098.4	26.8	79.9	84.3	0.00	0.00	
3,200.0	2.13	71.47	3,198.4	28.0	83.4	88.0	0.00	0.00	
3,300.0	2.13	71.47	3,298.3	29.1	87.0	91.7	0.00	0.00	
3,400.0	2.13	71.47	3,398.2	30.3	90.5	95.4	0.00	0.00	
3,500.0	2.13	71.47	3,498.2	31.5	94.0	99.2	0.00	0.00	
3,600.0	2.13	71.47	3,598.1	32.7	97.5	102.9	0.00	0.00	
3,700.0	2.13	71.47	3,698.0	33.9	101.1	106.6	0.00	0.00	
3,800.0	2.13	71.47	3,798.0	35.1	104.6	110.3	0.00	0.00	
3,900.0	2.13	71.47	3,897.9	36.2	108.1	114.0	0.00	0.00	
4,000.0	2.13	71.47	3,997.8	37.4	111.7	117.8	0.00	0.00	
4,100.0	2.13	71.47	4,097.7	38.6	115.2	121.5	0.00	0.00	
4,200.0	2.13	71.47	4,197.7	39.8	118.7	125.2	0.00	0.00	
4,300.0	2.13	71.47	4,297.6	41.0	122.2	128.9	0.00	0.00	
4,400.0	2.13	71.47	4,397.5	42.2	125.8	132.7	0.00	0.00	
4,500.0	2.13	71.47	4,497.5	43.3	129.3	136.4	0.00	0.00	
4,600.0	2.13	71.47	4,597.4	44.5	132.8	140.1	0.00	0.00	
4,700.0	2.13	71.47	4,697.3	45.7	136.4	143.8	0.00	0.00	
4,800.0	2.13	71.47	4,797.3	46.9	139.9	147.5	0.00	0.00	
4,900.0	2.13	71.47	4,897.2	48.1	143.4	151.3	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU 22-14CC (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	North Reference:	True
Well:	MCU 22-14CC (N22W Pad)	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
5,000.0	2.13	71.47	4,997.1	49.3	146.9	155.0	0.00	0.00	
5,100.0	2.13	71.47	5,097.1	50.4	150.5	158.7	0.00	0.00	
5,200.0	2.13	71.47	5,197.0	51.6	154.0	162.4	0.00	0.00	
5,300.0	2.13	71.47	5,296.9	52.8	157.5	166.1	0.00	0.00	
5,400.0	2.13	71.47	5,396.8	54.0	161.1	169.9	0.00	0.00	
5,500.0	2.13	71.47	5,496.8	55.2	164.6	173.6	0.00	0.00	
5,600.0	2.13	71.47	5,596.7	56.4	168.1	177.3	0.00	0.00	
5,700.0	2.13	71.47	5,696.6	57.5	171.6	181.0	0.00	0.00	
5,800.0	2.13	71.47	5,796.6	58.7	175.2	184.8	0.00	0.00	
5,900.0	2.13	71.47	5,896.5	59.9	178.7	188.5	0.00	0.00	
6,000.0	2.13	71.47	5,996.4	61.1	182.2	192.2	0.00	0.00	
6,100.0	2.13	71.47	6,096.4	62.3	185.8	195.9	0.00	0.00	
6,200.0	2.13	71.47	6,196.3	63.5	189.3	199.6	0.00	0.00	
6,300.0	2.13	71.47	6,296.2	64.6	192.8	203.4	0.00	0.00	
6,333.8	2.13	71.47	6,330.0	65.0	194.0	204.6	0.00	0.00	Top of Mesaverde - Ohio Creek
6,400.0	2.13	71.47	6,396.2	65.8	196.3	207.1	0.00	0.00	
6,500.0	2.13	71.47	6,496.1	67.0	199.9	210.8	0.00	0.00	
6,600.0	2.13	71.47	6,596.0	68.2	203.4	214.5	0.00	0.00	
6,700.0	2.13	71.47	6,695.9	69.4	206.9	218.2	0.00	0.00	
6,800.0	2.13	71.47	6,795.9	70.5	210.5	222.0	0.00	0.00	
6,887.2	2.13	71.47	6,883.0	71.6	213.5	225.2	0.00	0.00	Williams Fork
6,900.0	2.13	71.47	6,895.8	71.7	214.0	225.7	0.00	0.00	
7,000.0	2.13	71.47	6,995.7	72.9	217.5	229.4	0.00	0.00	
7,100.0	2.13	71.47	7,095.7	74.1	221.0	233.1	0.00	0.00	
7,200.0	2.13	71.47	7,195.6	75.3	224.6	236.9	0.00	0.00	
7,300.0	2.13	71.47	7,295.5	76.5	228.1	240.6	0.00	0.00	
7,400.0	2.13	71.47	7,395.5	77.6	231.6	244.3	0.00	0.00	
7,500.0	2.13	71.47	7,495.4	78.8	235.2	248.0	0.00	0.00	
7,600.0	2.13	71.47	7,595.3	80.0	238.7	251.7	0.00	0.00	
7,700.0	2.13	71.47	7,695.3	81.2	242.2	255.5	0.00	0.00	
7,800.0	2.13	71.47	7,795.2	82.4	245.7	259.2	0.00	0.00	
7,835.2	2.13	71.47	7,830.4	82.8	247.0	260.5	0.00	0.00	Start 2° Drop
7,900.0	0.84	71.47	7,895.1	83.3	248.6	262.2	2.00	-2.00	
7,941.9	0.00	0.00	7,937.0	83.4	248.9	262.5	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
8,000.0	0.00	0.00	7,995.1	83.4	248.9	262.5	0.00	0.00	
8,100.0	0.00	0.00	8,095.1	83.4	248.9	262.5	0.00	0.00	
8,200.0	0.00	0.00	8,195.1	83.4	248.9	262.5	0.00	0.00	
8,300.0	0.00	0.00	8,295.1	83.4	248.9	262.5	0.00	0.00	
8,400.0	0.00	0.00	8,395.1	83.4	248.9	262.5	0.00	0.00	
8,500.0	0.00	0.00	8,495.1	83.4	248.9	262.5	0.00	0.00	
8,600.0	0.00	0.00	8,595.1	83.4	248.9	262.5	0.00	0.00	
8,700.0	0.00	0.00	8,695.1	83.4	248.9	262.5	0.00	0.00	
8,800.0	0.00	0.00	8,795.1	83.4	248.9	262.5	0.00	0.00	
8,900.0	0.00	0.00	8,895.1	83.4	248.9	262.5	0.00	0.00	
8,987.9	0.00	0.00	8,983.0	83.4	248.9	262.5	0.00	0.00	Rollins
9,000.0	0.00	0.00	8,995.1	83.4	248.9	262.5	0.00	0.00	
9,004.9	0.00	0.00	9,000.0	83.4	248.9	262.5	0.00	0.00	Coal Ridge
9,100.0	0.00	0.00	9,095.1	83.4	248.9	262.5	0.00	0.00	
9,137.9	0.00	0.00	9,133.0	83.4	248.9	262.5	0.00	0.00	TD @ 9,137.9' MD
9,200.0	0.00	0.00	9,195.1	83.4	248.9	262.5	0.00	0.00	
9,237.9	0.00	0.00	9,233.0	83.4	248.9	262.5	0.00	0.00	Permit TD @ 9,237.9' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU 22-14CC (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	North Reference:	True
Well:	MCU 22-14CC (N22W Pad)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
MCU 22-14CC PBHL	0.00	0.00	9,133.0	83.4	248.9	1,587,948.66	2,361,405.24	39.425858	-107.760909
- plan hits target center									
- Circle (radius 25.0)									
MCU 22-14CC TGT	0.00	0.00	7,937.0	83.4	248.9	1,587,948.66	2,361,405.24	39.425858	-107.760909
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name		
(ft)	(ft)			
		Casing Diameter	Hole Diameter	
		(in)	(in)	
1,000.1	1,000.0	Surface Casing		

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
6,333.8	6,330.0	Top of Mesaverde			
6,333.8	6,330.0	Ohio Creek			
6,887.2	6,883.0	Williams Fork			
7,941.9	7,937.0	Top Gas			
8,987.9	8,983.0	Rollins			
9,004.9	9,000.0	Coal Ridge			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		
(ft)	(ft)	+N/-S	+E/-W	Comment
(ft)	(ft)	(ft)	(ft)	
800.0	800.0	0.0	0.0	KOP @ 800'
871.1	871.1	0.4	1.3	EOB @ Inc. = 2.13°
7,835.2	7,830.4	82.8	247.0	Start 2° Drop
7,941.9	7,937.0	83.4	248.9	EOD @ Inc. = 0°
9,137.9	9,133.0	83.4	248.9	TD @ 9,137.9' MD
9,237.9	9,233.0	83.4	248.9	Permit TD @ 9,237.9' MD