

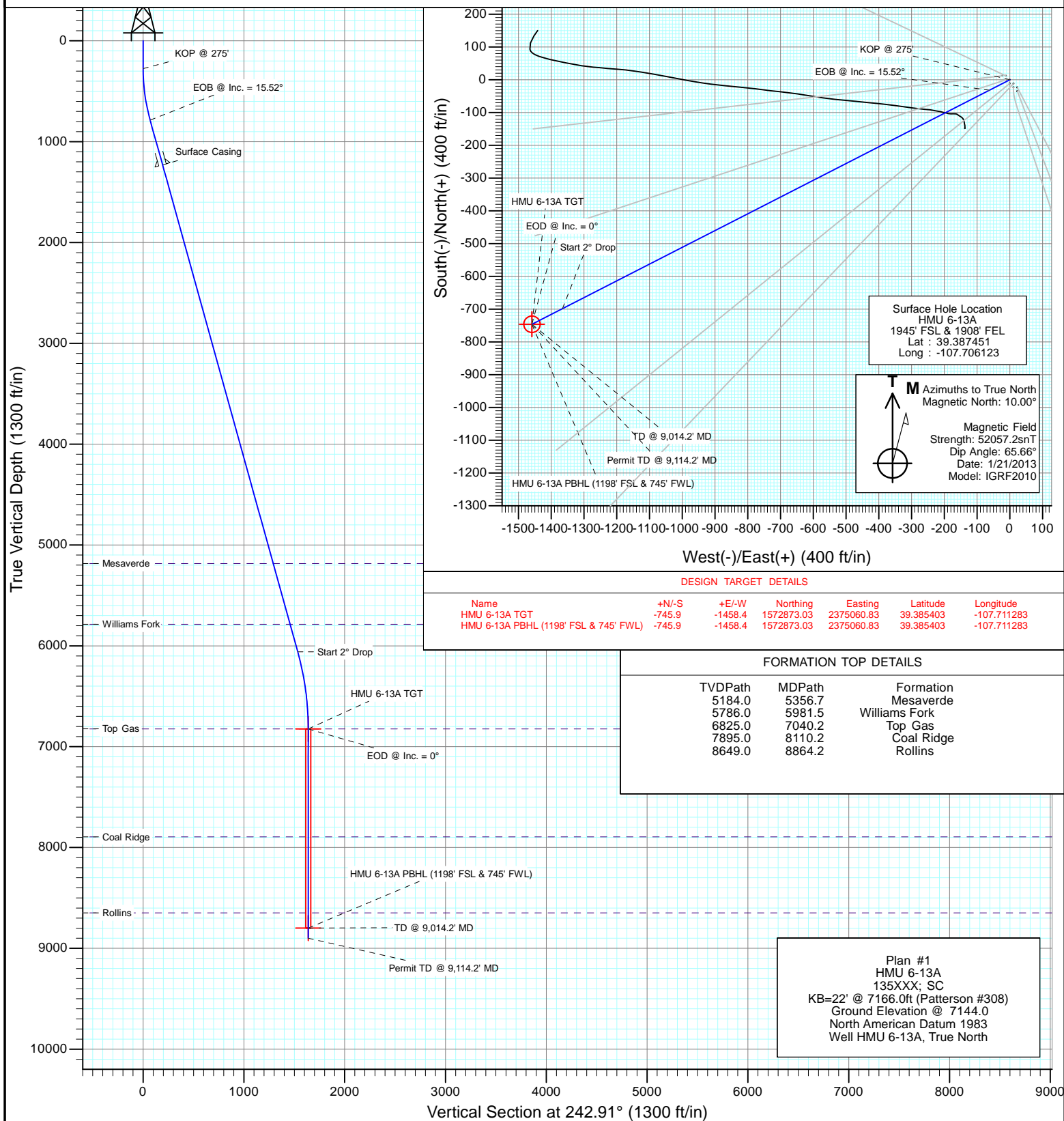


Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-13A
Wellbore: OH
Design: Plan #1



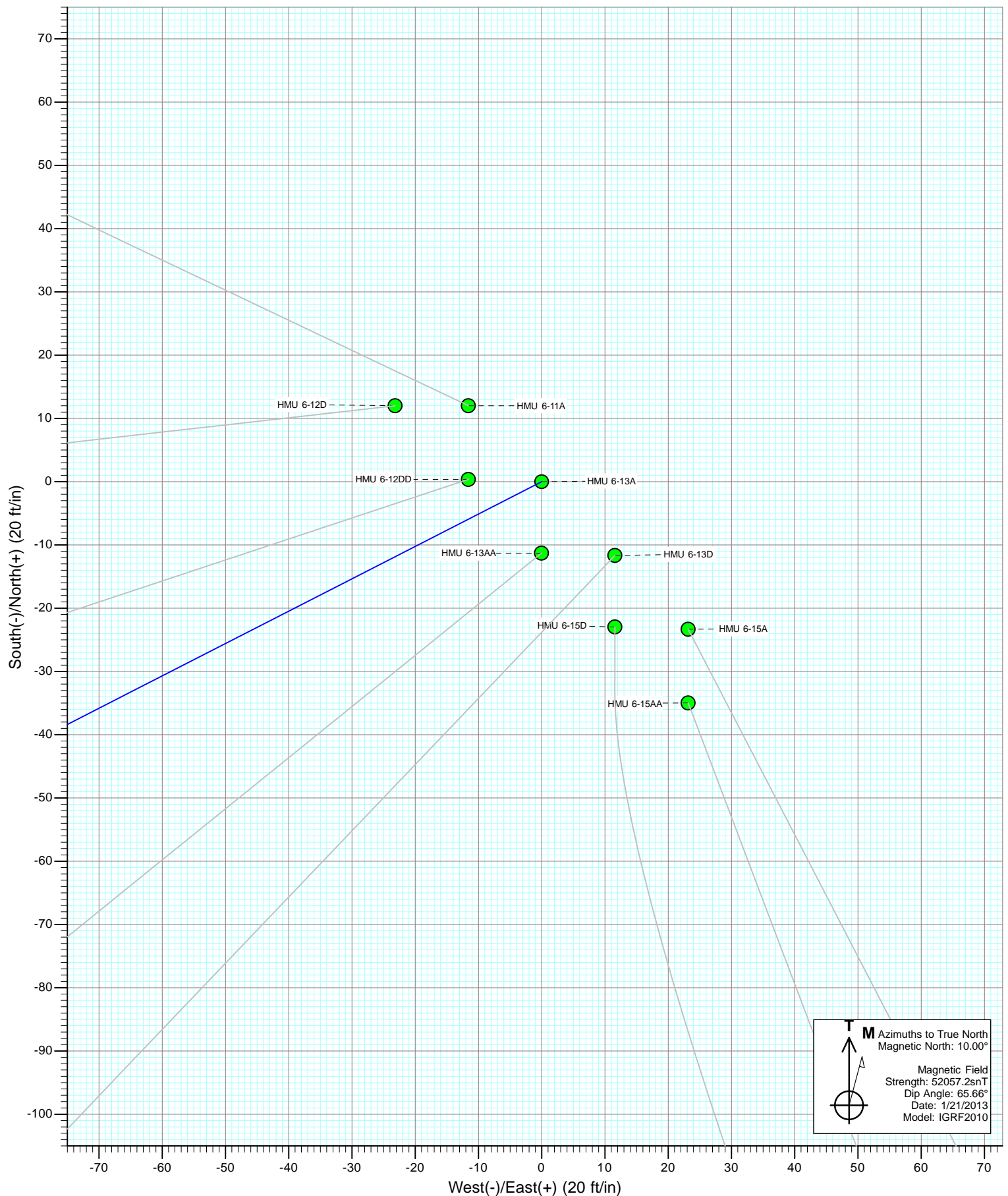
SECTION DETAILS

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	792.3	15.52	242.91	786.0	-31.7	-62.0	3.00	242.91	69.6	
4	6264.3	15.52	242.91	6058.5	-698.3	-1365.5	0.00	0.00	1533.7	
5	7040.2	0.00	0.00	6825.0	-745.9	-1458.4	2.00	180.00	1638.1	HMU 6-13A TGT
6	9014.2	0.00	0.00	8799.0	-745.9	-1458.4	0.00	0.00	1638.1	HMU 6-13A PBHL (1198' FSL & 745' FWL)
7	9114.2	0.00	0.00	8899.0	-745.9	-1458.4	0.00	0.00	1638.1	



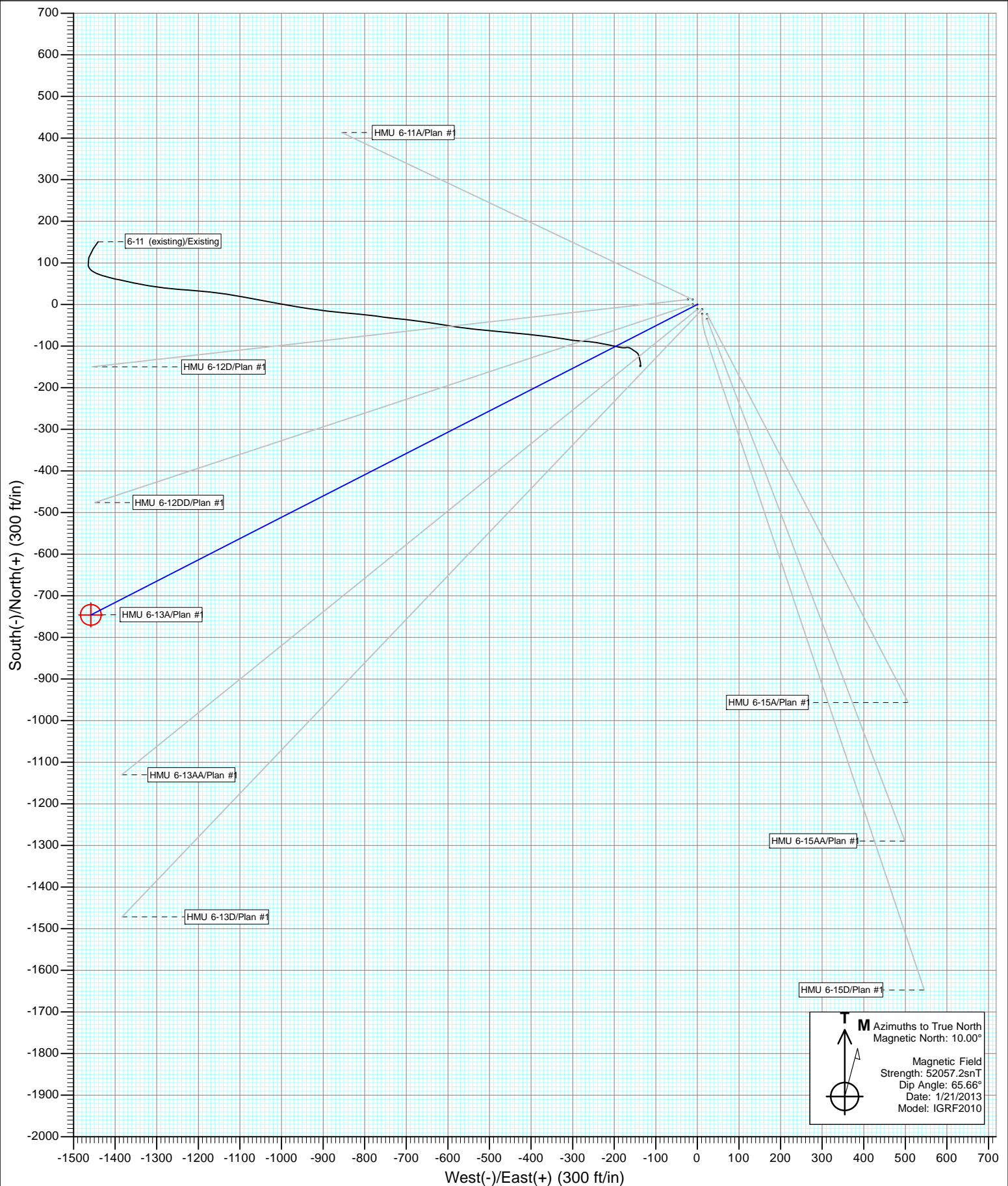


Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-13A
Wellbore: OH
Design: Plan #1



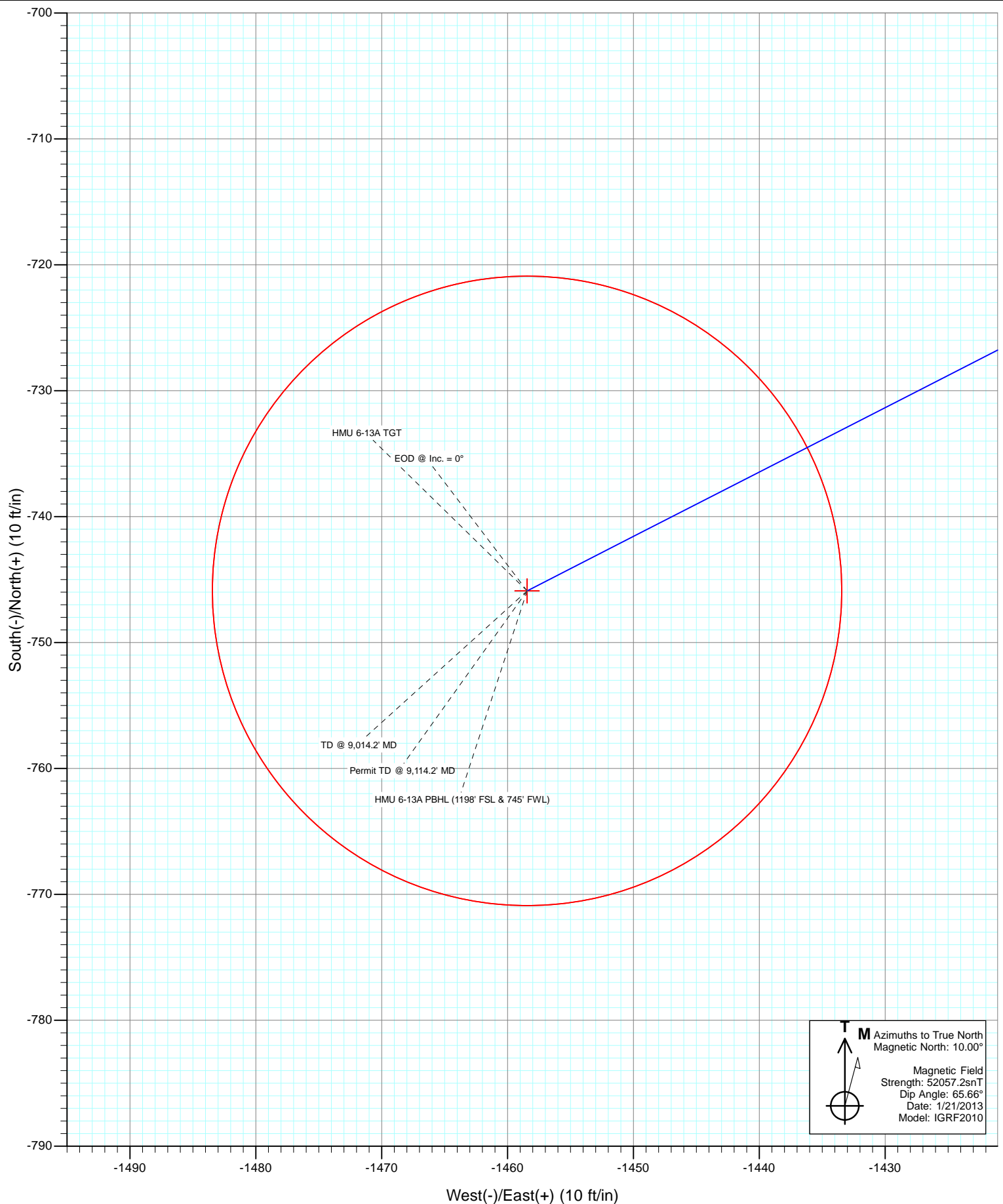


Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-13A
Wellbore: OH
Design: Plan #1





Project: Mamm Creek
Site: J6SEB Pad
Well: HMU 6-13A
Wellbore: OH
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HMU 6-13A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	North Reference:	True
Well:	HMU 6-13A	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		J6SEB Pad			
Site Position:		Northing:	1,573,595.87 ft	Latitude:	39.387484
From:	Lat/Long	Easting:	2,376,514.08 ft	Longitude:	-107.706205
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	HMU 6-13A					
Well Position	+N/-S	0.0 ft	Northing:	1,573,583.29 ft	Latitude:	39.387451
	+E/-W	0.0 ft	Easting:	2,376,536.96 ft	Longitude:	-107.706123
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,144.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/21/2013	10.00	65.66	52,057

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	242.91

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	
792.3	15.52	242.91	786.0	-31.7	-62.0	3.00	3.00	0.00	242.91	
6,264.3	15.52	242.91	6,058.5	-698.3	-1,365.5	0.00	0.00	0.00	0.00	
7,040.2	0.00	0.00	6,825.0	-745.9	-1,458.4	2.00	-2.00	0.00	180.00	HMU 6-13A TGT
9,014.2	0.00	0.00	8,799.0	-745.9	-1,458.4	0.00	0.00	0.00	0.00	HMU 6-13A PBHL (11
9,114.2	0.00	0.00	8,899.0	-745.9	-1,458.4	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 HMU 6-13A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	North Reference:	True
Well:	HMU 6-13A	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	242.91	300.0	-0.1	-0.1	0.2	3.00	3.00	
400.0	3.75	242.91	399.9	-1.9	-3.6	4.1	3.00	3.00	
500.0	6.75	242.91	499.5	-6.0	-11.8	13.2	3.00	3.00	
600.0	9.75	242.91	598.4	-12.6	-24.6	27.6	3.00	3.00	
700.0	12.75	242.91	696.5	-21.4	-41.9	47.1	3.00	3.00	
792.3	15.52	242.91	786.0	-31.7	-62.0	69.6	3.00	3.00	EOB @ Inc. = 15.52°
800.0	15.52	242.91	793.4	-32.6	-63.8	71.7	0.00	0.00	
900.0	15.52	242.91	889.8	-44.8	-87.6	98.4	0.00	0.00	
1,000.0	15.52	242.91	986.1	-57.0	-111.5	125.2	0.00	0.00	
1,100.0	15.52	242.91	1,082.5	-69.2	-135.3	152.0	0.00	0.00	
1,200.0	15.52	242.91	1,178.8	-81.4	-159.1	178.7	0.00	0.00	
1,253.1	15.52	242.91	1,230.0	-87.8	-171.8	192.9	0.00	0.00	Surface Casing
1,300.0	15.52	242.91	1,275.2	-93.6	-182.9	205.5	0.00	0.00	
1,400.0	15.52	242.91	1,371.5	-105.7	-206.8	232.2	0.00	0.00	
1,500.0	15.52	242.91	1,467.9	-117.9	-230.6	259.0	0.00	0.00	
1,600.0	15.52	242.91	1,564.3	-130.1	-254.4	285.7	0.00	0.00	
1,700.0	15.52	242.91	1,660.6	-142.3	-278.2	312.5	0.00	0.00	
1,800.0	15.52	242.91	1,757.0	-154.5	-302.0	339.2	0.00	0.00	
1,900.0	15.52	242.91	1,853.3	-166.7	-325.9	366.0	0.00	0.00	
2,000.0	15.52	242.91	1,949.7	-178.8	-349.7	392.8	0.00	0.00	
2,100.0	15.52	242.91	2,046.0	-191.0	-373.5	419.5	0.00	0.00	
2,200.0	15.52	242.91	2,142.4	-203.2	-397.3	446.3	0.00	0.00	
2,300.0	15.52	242.91	2,238.7	-215.4	-421.1	473.0	0.00	0.00	
2,400.0	15.52	242.91	2,335.1	-227.6	-445.0	499.8	0.00	0.00	
2,500.0	15.52	242.91	2,431.4	-239.7	-468.8	526.5	0.00	0.00	
2,600.0	15.52	242.91	2,527.8	-251.9	-492.6	553.3	0.00	0.00	
2,700.0	15.52	242.91	2,624.2	-264.1	-516.4	580.0	0.00	0.00	
2,800.0	15.52	242.91	2,720.5	-276.3	-540.2	606.8	0.00	0.00	
2,900.0	15.52	242.91	2,816.9	-288.5	-564.1	633.5	0.00	0.00	
3,000.0	15.52	242.91	2,913.2	-300.7	-587.9	660.3	0.00	0.00	
3,100.0	15.52	242.91	3,009.6	-312.8	-611.7	687.1	0.00	0.00	
3,200.0	15.52	242.91	3,105.9	-325.0	-635.5	713.8	0.00	0.00	
3,300.0	15.52	242.91	3,202.3	-337.2	-659.3	740.6	0.00	0.00	
3,400.0	15.52	242.91	3,298.6	-349.4	-683.2	767.3	0.00	0.00	
3,500.0	15.52	242.91	3,395.0	-361.6	-707.0	794.1	0.00	0.00	
3,600.0	15.52	242.91	3,491.3	-373.8	-730.8	820.8	0.00	0.00	
3,700.0	15.52	242.91	3,587.7	-385.9	-754.6	847.6	0.00	0.00	
3,800.0	15.52	242.91	3,684.0	-398.1	-778.4	874.3	0.00	0.00	
3,900.0	15.52	242.91	3,780.4	-410.3	-802.3	901.1	0.00	0.00	
4,000.0	15.52	242.91	3,876.8	-422.5	-826.1	927.9	0.00	0.00	
4,100.0	15.52	242.91	3,973.1	-434.7	-849.9	954.6	0.00	0.00	
4,200.0	15.52	242.91	4,069.5	-446.9	-873.7	981.4	0.00	0.00	
4,300.0	15.52	242.91	4,165.8	-459.0	-897.5	1,008.1	0.00	0.00	
4,400.0	15.52	242.91	4,262.2	-471.2	-921.4	1,034.9	0.00	0.00	
4,500.0	15.52	242.91	4,358.5	-483.4	-945.2	1,061.6	0.00	0.00	
4,600.0	15.52	242.91	4,454.9	-495.6	-969.0	1,088.4	0.00	0.00	
4,700.0	15.52	242.91	4,551.2	-507.8	-992.8	1,115.1	0.00	0.00	
4,800.0	15.52	242.91	4,647.6	-519.9	-1,016.7	1,141.9	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HMU 6-13A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	North Reference:	True
Well:	HMU 6-13A	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
4,900.0	15.52	242.91	4,743.9	-532.1	-1,040.5	1,168.7	0.00	0.00	
5,000.0	15.52	242.91	4,840.3	-544.3	-1,064.3	1,195.4	0.00	0.00	
5,100.0	15.52	242.91	4,936.7	-556.5	-1,088.1	1,222.2	0.00	0.00	
5,200.0	15.52	242.91	5,033.0	-568.7	-1,111.9	1,248.9	0.00	0.00	
5,300.0	15.52	242.91	5,129.4	-580.9	-1,135.8	1,275.7	0.00	0.00	
5,356.7	15.52	242.91	5,184.0	-587.8	-1,149.3	1,290.8	0.00	0.00	Mesaverde
5,400.0	15.52	242.91	5,225.7	-593.0	-1,159.6	1,302.4	0.00	0.00	
5,500.0	15.52	242.91	5,322.1	-605.2	-1,183.4	1,329.2	0.00	0.00	
5,600.0	15.52	242.91	5,418.4	-617.4	-1,207.2	1,355.9	0.00	0.00	
5,700.0	15.52	242.91	5,514.8	-629.6	-1,231.0	1,382.7	0.00	0.00	
5,800.0	15.52	242.91	5,611.1	-641.8	-1,254.9	1,409.4	0.00	0.00	
5,900.0	15.52	242.91	5,707.5	-654.0	-1,278.7	1,436.2	0.00	0.00	
5,981.5	15.52	242.91	5,786.0	-663.9	-1,298.1	1,458.0	0.00	0.00	Williams Fork
6,000.0	15.52	242.91	5,803.8	-666.1	-1,302.5	1,463.0	0.00	0.00	
6,100.0	15.52	242.91	5,900.2	-678.3	-1,326.3	1,489.7	0.00	0.00	
6,200.0	15.52	242.91	5,996.6	-690.5	-1,350.1	1,516.5	0.00	0.00	
6,264.3	15.52	242.91	6,058.5	-698.3	-1,365.5	1,533.7	0.00	0.00	Start 2° Drop
6,300.0	14.80	242.91	6,093.0	-702.6	-1,373.8	1,543.0	2.00	-2.00	
6,400.0	12.80	242.91	6,190.1	-713.5	-1,395.0	1,566.9	2.00	-2.00	
6,500.0	10.80	242.91	6,288.0	-722.8	-1,413.2	1,587.3	2.00	-2.00	
6,600.0	8.80	242.91	6,386.5	-730.5	-1,428.4	1,604.4	2.00	-2.00	
6,700.0	6.80	242.91	6,485.6	-736.7	-1,440.5	1,617.9	2.00	-2.00	
6,800.0	4.80	242.91	6,585.0	-741.3	-1,449.5	1,628.0	2.00	-2.00	
6,900.0	2.80	242.91	6,684.8	-744.3	-1,455.4	1,634.7	2.00	-2.00	
7,000.0	0.80	242.91	6,784.8	-745.8	-1,458.2	1,637.8	2.00	-2.00	
7,040.2	0.00	0.00	6,825.0	-745.9	-1,458.4	1,638.1	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,100.0	0.00	0.00	6,884.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,200.0	0.00	0.00	6,984.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,300.0	0.00	0.00	7,084.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,400.0	0.00	0.00	7,184.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,500.0	0.00	0.00	7,284.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,600.0	0.00	0.00	7,384.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,700.0	0.00	0.00	7,484.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,800.0	0.00	0.00	7,584.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
7,900.0	0.00	0.00	7,684.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,000.0	0.00	0.00	7,784.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,100.0	0.00	0.00	7,884.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,110.2	0.00	0.00	7,895.0	-745.9	-1,458.4	1,638.1	0.00	0.00	Coal Ridge
8,200.0	0.00	0.00	7,984.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,300.0	0.00	0.00	8,084.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,400.0	0.00	0.00	8,184.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,500.0	0.00	0.00	8,284.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,600.0	0.00	0.00	8,384.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,700.0	0.00	0.00	8,484.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,800.0	0.00	0.00	8,584.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
8,864.2	0.00	0.00	8,649.0	-745.9	-1,458.4	1,638.1	0.00	0.00	Rollins
8,900.0	0.00	0.00	8,684.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
9,000.0	0.00	0.00	8,784.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
9,014.2	0.00	0.00	8,799.0	-745.9	-1,458.4	1,638.1	0.00	0.00	TD @ 9,014.2' MD
9,100.0	0.00	0.00	8,884.8	-745.9	-1,458.4	1,638.1	0.00	0.00	
9,114.2	0.00	0.00	8,899.0	-745.9	-1,458.4	1,638.1	0.00	0.00	Permit TD @ 9,114.2' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well HMU 6-13A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Project:	Mamm Creek	MD Reference:	KB=22' @ 7166.0ft (Patterson #308)
Site:	J6SEB Pad	North Reference:	True
Well:	HMU 6-13A	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)		
HMU 6-13A TGT	0.00	0.00	6,825.0	-745.9	-1,458.4	1,572,873.03	2,375,060.83	39.385403	-107.711283
- plan hits target center									
- Point									
HMU 6-13A PBHL (1198	0.00	0.00	8,799.0	-745.9	-1,458.4	1,572,873.03	2,375,060.83	39.385403	-107.711283
- plan hits target center									
- Circle (radius 25.0)									

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(ft)	(ft)	Name	(in)	(in)
1,253.1	1,230.0	Surface Casing		

Formations					
Measured Depth	Vertical Depth			Dip	Dip Direction
(ft)	(ft)	Name	Lithology	(°)	(°)
5,356.7	5,184.0	Mesaverde			
5,981.5	5,786.0	Williams Fork			
7,040.2	6,825.0	Top Gas			
8,110.2	7,895.0	Coal Ridge			
8,864.2	8,649.0	Rollins			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
275.0	275.0	0.0	0.0	KOP @ 275'	
792.3	786.0	-31.7	-62.0	EOB @ Inc. = 15.52°	
6,264.3	6,058.5	-698.3	-1,365.5	Start 2° Drop	
7,040.2	6,825.0	-745.9	-1,458.4	EOD @ Inc. = 0°	
9,014.2	8,799.0	-745.9	-1,458.4	TD @ 9,014.2' MD	
9,114.2	8,899.0	-745.9	-1,458.4	Permit TD @ 9,114.2' MD	