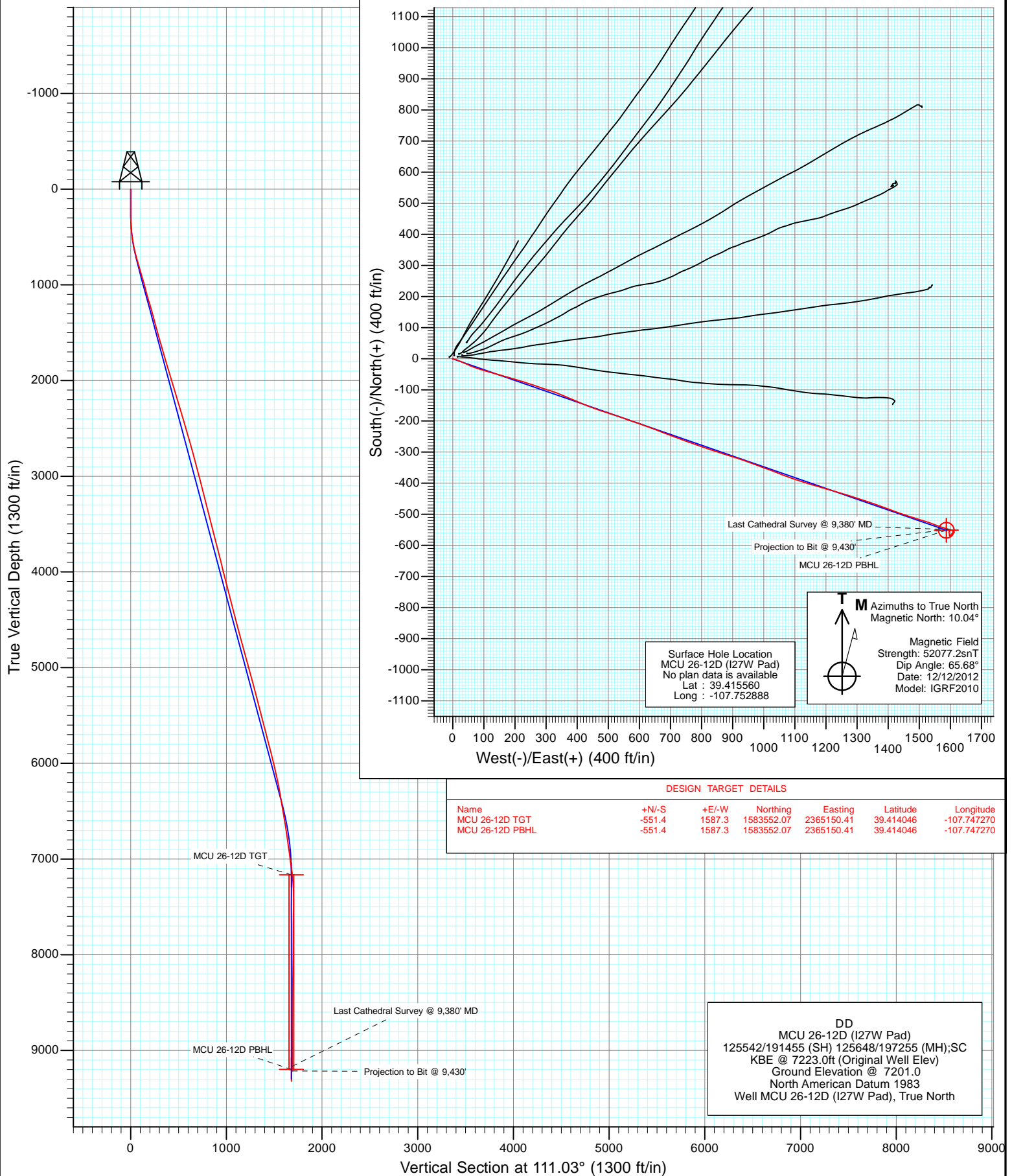


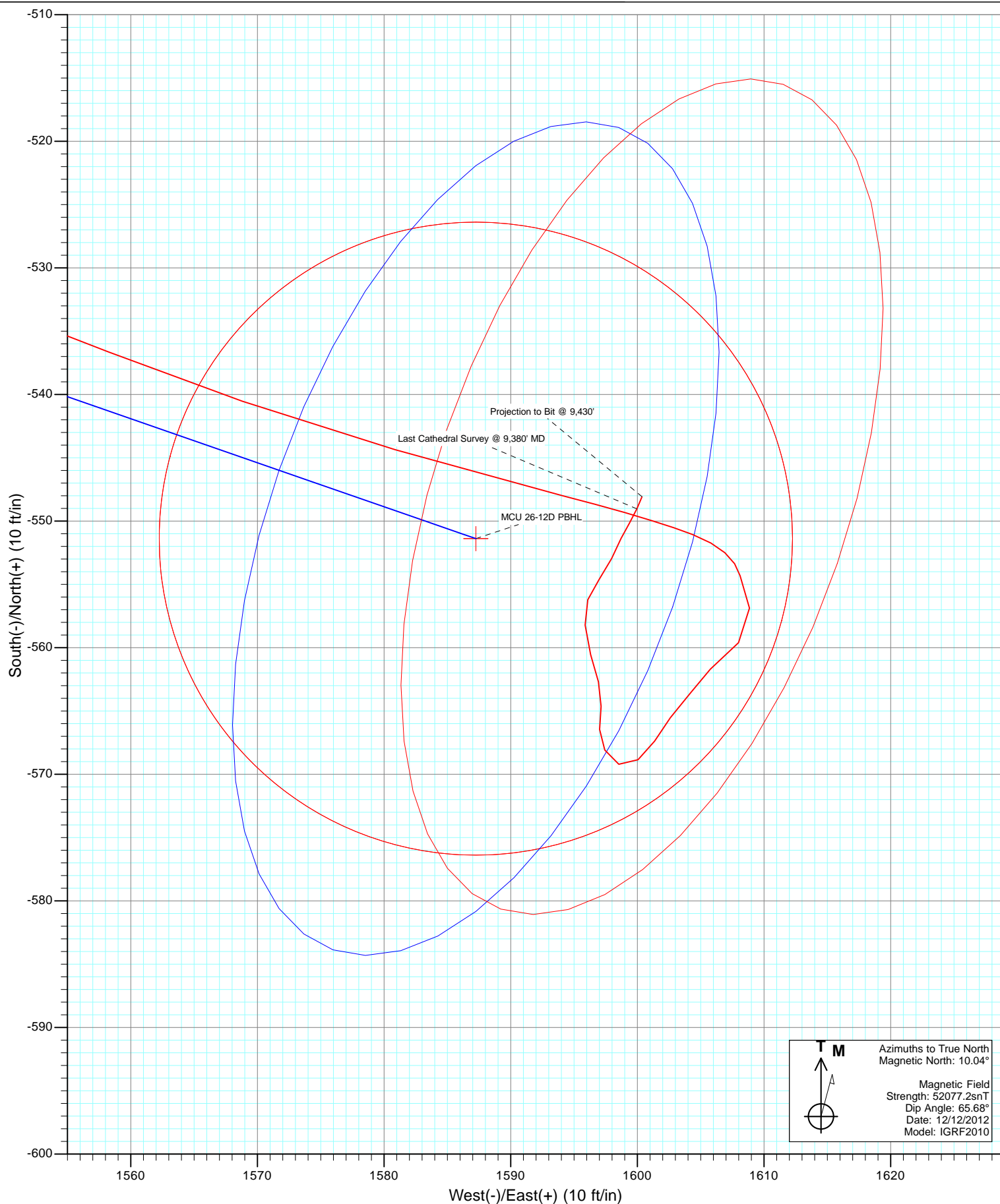


Project: Mamm Creek
Site: I27W
Well: MCU 26-12D (I27W Pad)
Wellbore: DD
Design: FINAL



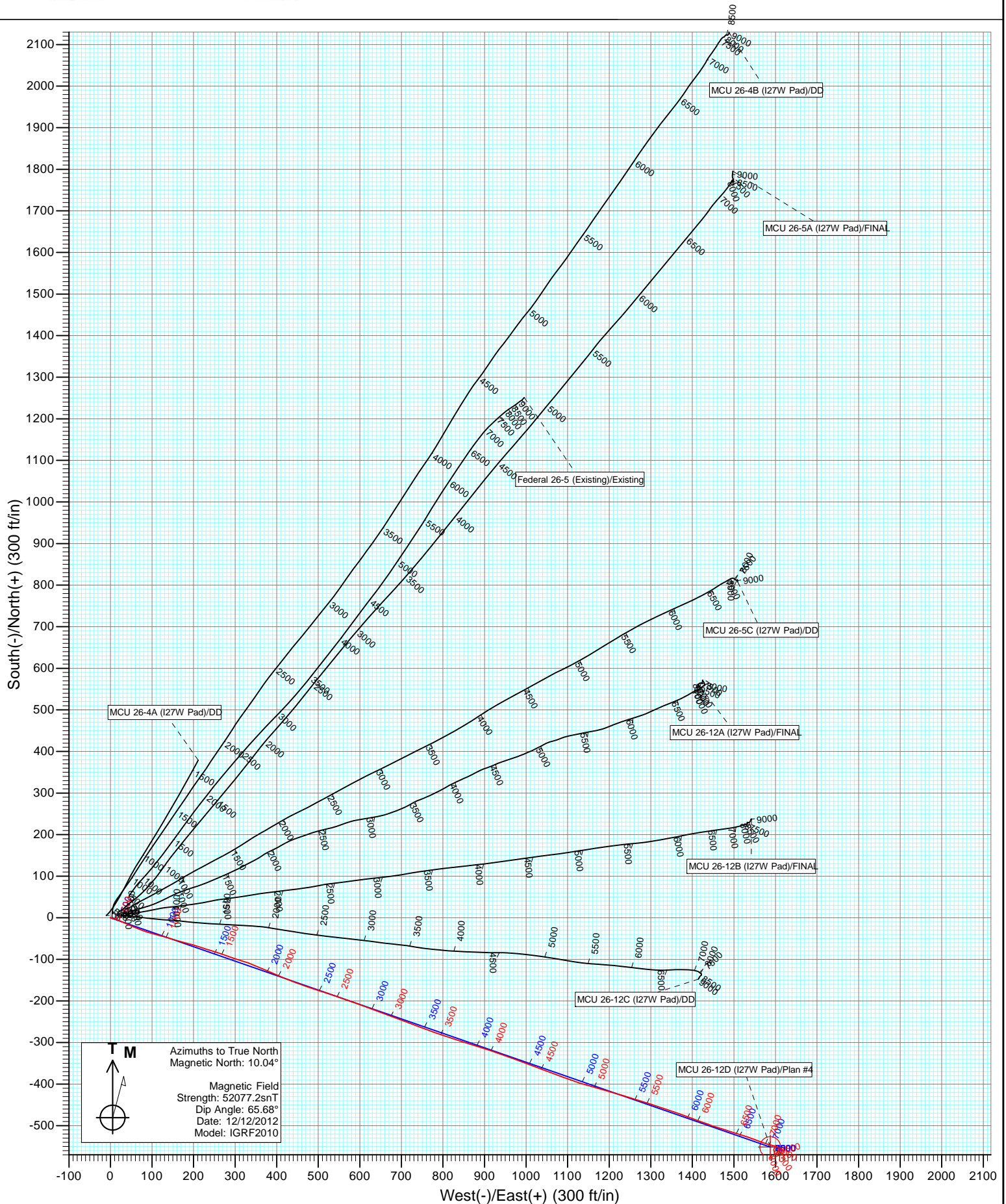


Project: Mamm Creek
Site: I27W
Well: MCU 26-12D (I27W Pad)
Wellbore: DD
Design: FINAL





Project: Mamm Creek
Site: I27W
Well: MCU 26-12D (I27W Pad)
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU 26-12D (I27W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7223.0ft (Original Well Elev)
Site:	I27W	MD Reference:	KBE @ 7223.0ft (Original Well Elev)
Well:	MCU 26-12D (I27W Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

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		I27W			
Site Position:		Northing:	1,584,160.49 ft	Latitude:	39.415612
From:	Lat/Long	Easting:	2,363,622.14 ft	Longitude:	-107.752731
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.42 °

Well		MCU 26-12D (I27W Pad)				
Well Position	+N/-S	0.0 ft	Northing:	1,584,142.64 ft	Latitude:	39.415560
	+E/-W	0.0 ft	Easting:	2,363,577.32 ft	Longitude:	-107.752888
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,201.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/12/2012	10.04	65.68	52,077

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	111.03	

Survey Program	Date	1/2/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
123.0	9,430.0	Survey #1 (DD)	MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
123.0	0.20	0.20	123.0	0.2	0.0	-0.1	0.16	0.16		
215.0	0.40	12.30	215.0	0.7	0.1	-0.2	0.23	0.22		
245.0	0.10	77.70	245.0	0.8	0.1	-0.2	1.23	-1.00		
276.0	1.10	109.00	276.0	0.7	0.4	0.1	3.28	3.23		
306.0	1.70	120.10	306.0	0.4	1.1	0.9	2.19	2.00		
336.0	2.50	119.40	336.0	-0.2	2.0	2.0	2.67	2.67		
367.0	3.20	116.40	366.9	-0.9	3.4	3.5	2.31	2.26		
397.0	4.30	107.60	396.9	-1.6	5.2	5.4	4.13	3.67		
428.0	5.10	106.00	427.8	-2.3	7.7	8.0	2.61	2.58		
458.0	6.20	107.50	457.6	-3.2	10.5	10.9	3.70	3.67		
489.0	7.00	108.90	488.4	-4.3	13.9	14.5	2.63	2.58		
581.0	10.70	113.10	579.3	-9.5	27.0	28.6	4.08	4.02		

Cathedral Energy Services

Survey Report

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Site:	I27W	MD Reference:	KBE @ 7223.0ft (Original Well Elev)
Well:	MCU 26-12D (I27W Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
672.0	14.10	114.00	668.2	-17.3	44.9	48.1	3.74	3.74	
763.0	16.00	112.30	756.0	-26.5	66.7	71.8	2.14	2.09	
854.0	16.10	106.60	843.5	-34.9	90.4	96.9	1.73	0.11	
946.0	16.40	104.80	931.8	-41.9	115.1	122.5	0.64	0.33	
1,039.0	15.20	106.30	1,021.3	-48.6	139.5	147.7	1.36	-1.29	
1,135.0	15.60	106.40	1,113.9	-55.8	164.0	173.1	0.42	0.42	
1,230.0	17.10	104.60	1,205.0	-63.0	189.8	199.7	1.67	1.58	
1,326.0	15.30	108.20	1,297.2	-70.5	215.5	226.4	2.15	-1.87	
1,390.0	14.60	108.60	1,359.0	-75.7	231.1	242.9	1.11	-1.09	
1,453.0	15.20	106.10	1,419.9	-80.5	246.6	259.1	1.40	0.95	
1,548.0	16.00	110.30	1,511.4	-88.5	270.8	284.6	1.46	0.84	
1,643.0	15.70	107.60	1,602.8	-96.9	295.4	310.5	0.84	-0.32	
1,739.0	15.50	107.50	1,695.3	-104.7	320.0	336.2	0.21	-0.21	
1,833.0	16.90	112.60	1,785.5	-113.7	344.6	362.4	2.12	1.49	
1,928.0	16.70	113.40	1,876.5	-124.5	369.9	389.9	0.32	-0.21	
2,024.0	17.00	113.50	1,968.4	-135.5	395.4	417.7	0.31	0.31	
2,119.0	16.80	112.60	2,059.3	-146.4	420.8	445.3	0.35	-0.21	
2,215.0	17.20	109.80	2,151.1	-156.5	447.0	473.3	0.95	0.42	
2,310.0	16.40	109.10	2,242.0	-165.6	472.9	500.8	0.87	-0.84	
2,405.0	16.60	107.60	2,333.1	-174.1	498.5	527.7	0.50	0.21	
2,500.0	16.40	108.80	2,424.2	-182.6	524.1	554.7	0.42	-0.21	
2,595.0	16.10	109.00	2,515.4	-191.2	549.2	581.3	0.32	-0.32	
2,691.0	15.90	108.90	2,607.7	-199.8	574.3	607.7	0.21	-0.21	
2,786.0	15.60	109.60	2,699.1	-208.3	598.6	633.5	0.37	-0.32	
2,881.0	15.20	110.10	2,790.7	-216.8	622.3	658.7	0.44	-0.42	
2,976.0	14.90	110.80	2,882.4	-225.4	645.5	683.4	0.37	-0.32	
3,070.0	14.80	112.00	2,973.3	-234.2	667.9	707.5	0.34	-0.11	
3,166.0	14.70	109.40	3,066.1	-242.9	690.7	731.9	0.70	-0.10	
3,261.0	14.40	110.50	3,158.1	-251.0	713.2	755.7	0.43	-0.32	
3,355.0	14.30	110.50	3,249.2	-259.2	735.0	779.0	0.11	-0.11	
3,451.0	14.10	110.70	3,342.2	-267.5	757.0	802.6	0.21	-0.21	
3,546.0	14.10	110.00	3,434.4	-275.5	778.7	825.7	0.18	0.00	
3,641.0	14.40	108.20	3,526.4	-283.2	800.8	849.1	0.56	0.32	
3,736.0	14.20	108.30	3,618.5	-290.5	823.1	872.5	0.21	-0.21	
3,832.0	14.50	107.10	3,711.5	-297.7	845.8	896.3	0.44	0.31	
3,928.0	14.40	107.30	3,804.5	-304.8	868.7	920.2	0.12	-0.10	
4,024.0	14.20	107.80	3,897.5	-312.0	891.3	943.9	0.24	-0.21	
4,118.0	13.60	108.70	3,988.7	-319.0	912.7	966.4	0.68	-0.64	
4,213.0	13.90	108.70	4,081.0	-326.3	934.1	989.0	0.32	0.32	
4,309.0	14.60	110.20	4,174.1	-334.1	956.4	1,012.6	0.82	0.73	
4,405.0	14.50	110.80	4,267.0	-342.6	979.0	1,036.7	0.19	-0.10	
4,500.0	14.70	109.80	4,358.9	-350.9	1,001.4	1,060.7	0.34	0.21	
4,595.0	14.70	110.70	4,450.8	-359.2	1,024.1	1,084.8	0.24	0.00	
4,691.0	15.10	110.10	4,543.6	-367.8	1,047.2	1,109.4	0.45	0.42	
4,786.0	15.00	110.50	4,635.3	-376.4	1,070.3	1,134.1	0.15	-0.11	
4,881.0	15.00	109.50	4,727.1	-384.8	1,093.4	1,158.7	0.27	0.00	
4,976.0	15.10	110.10	4,818.8	-393.2	1,116.6	1,183.4	0.19	0.11	
5,072.0	15.40	105.80	4,911.4	-400.9	1,140.6	1,208.5	1.22	0.31	
5,167.0	15.40	106.30	5,003.0	-407.9	1,164.9	1,233.7	0.14	0.00	
5,262.0	15.30	106.10	5,094.6	-414.9	1,189.0	1,258.7	0.12	-0.11	
5,357.0	14.60	105.60	5,186.4	-421.6	1,212.6	1,283.1	0.75	-0.74	
5,453.0	14.90	106.50	5,279.3	-428.4	1,236.1	1,307.5	0.39	0.31	
5,548.0	14.90	107.30	5,371.1	-435.5	1,259.5	1,331.9	0.22	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU 26-12D (I27W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7223.0ft (Original Well Elev)
Site:	I27W	MD Reference:	KBE @ 7223.0ft (Original Well Elev)
Well:	MCU 26-12D (I27W Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,643.0	14.10	107.30	5,463.0	-442.6	1,282.2	1,355.6	0.84	-0.84	
5,738.0	14.80	108.50	5,555.0	-449.8	1,304.7	1,379.3	0.80	0.74	
5,834.0	14.40	107.60	5,647.9	-457.3	1,327.7	1,403.4	0.48	-0.42	
5,929.0	14.90	109.80	5,739.9	-465.1	1,350.5	1,427.4	0.79	0.53	
6,023.0	14.20	109.60	5,830.8	-473.0	1,372.7	1,451.0	0.75	-0.74	
6,118.0	14.60	110.00	5,922.9	-481.0	1,395.0	1,474.7	0.43	0.42	
6,213.0	13.30	109.90	6,015.0	-488.8	1,416.5	1,497.6	1.37	-1.37	
6,308.0	12.50	110.50	6,107.6	-496.2	1,436.4	1,518.8	0.85	-0.84	
6,404.0	11.40	107.40	6,201.6	-502.6	1,455.2	1,538.6	1.33	-1.15	
6,499.0	10.50	107.30	6,294.8	-508.0	1,472.4	1,556.6	0.95	-0.95	
6,594.0	9.80	107.80	6,388.3	-513.1	1,488.4	1,573.3	0.74	-0.74	
6,690.0	9.10	107.30	6,483.0	-517.8	1,503.4	1,589.1	0.73	-0.73	
6,785.0	9.60	107.20	6,576.8	-522.4	1,518.1	1,604.5	0.53	0.53	
6,881.0	8.80	109.30	6,671.5	-527.2	1,532.7	1,619.8	0.90	-0.83	
6,976.0	8.20	110.10	6,765.5	-531.9	1,545.9	1,633.8	0.64	-0.63	
7,071.0	7.80	111.80	6,859.6	-536.6	1,558.3	1,647.1	0.49	-0.42	
7,156.0	7.40	108.70	6,943.8	-540.5	1,568.8	1,658.3	0.67	-0.47	
7,251.0	7.90	106.50	7,038.0	-544.4	1,580.9	1,670.9	0.61	0.53	
7,346.0	8.60	104.40	7,132.0	-548.0	1,594.0	1,684.5	0.80	0.74	
7,443.0	4.20	111.10	7,228.4	-551.1	1,604.4	1,695.2	4.59	-4.54	
7,538.0	2.50	165.80	7,323.2	-554.3	1,608.1	1,699.9	3.61	-1.79	
7,603.0	2.20	161.70	7,388.2	-556.9	1,608.9	1,701.5	0.53	-0.46	
7,698.0	2.10	235.00	7,483.1	-559.6	1,608.0	1,701.7	2.70	-0.11	
7,794.0	1.60	216.20	7,579.1	-561.7	1,605.8	1,700.4	0.81	-0.52	
7,889.0	1.40	224.00	7,674.0	-563.6	1,604.2	1,699.6	0.30	-0.21	
7,984.0	1.60	215.00	7,769.0	-565.5	1,602.6	1,698.8	0.32	0.21	
8,079.0	1.10	211.80	7,864.0	-567.4	1,601.4	1,698.3	0.53	-0.53	
8,174.0	1.30	230.70	7,959.0	-568.8	1,600.1	1,697.6	0.46	0.21	
8,269.0	0.90	295.30	8,054.0	-569.2	1,598.5	1,696.3	1.29	-0.42	
8,364.0	1.10	331.40	8,149.0	-568.1	1,597.4	1,694.9	0.68	0.21	
8,459.0	1.00	2.20	8,243.9	-566.5	1,597.0	1,693.9	0.60	-0.11	
8,554.0	1.20	4.80	8,338.9	-564.6	1,597.1	1,693.4	0.22	0.21	
8,649.0	1.20	342.60	8,433.9	-562.7	1,596.9	1,692.5	0.49	0.00	
8,744.0	1.50	345.20	8,528.9	-560.5	1,596.3	1,691.1	0.32	0.32	
8,838.0	1.40	354.00	8,622.8	-558.2	1,595.9	1,689.9	0.26	-0.11	
8,933.0	1.10	21.60	8,717.8	-556.2	1,596.1	1,689.4	0.70	-0.32	
9,028.0	1.10	36.90	8,812.8	-554.6	1,597.0	1,689.6	0.31	0.00	
9,122.0	1.30	25.50	8,906.8	-553.0	1,598.0	1,690.0	0.33	0.21	
9,217.0	0.80	24.40	9,001.8	-551.4	1,598.7	1,690.1	0.53	-0.53	
9,311.0	0.90	32.60	9,095.8	-550.2	1,599.4	1,690.3	0.17	0.11	
9,380.0	1.20	23.10	9,164.7	-549.0	1,600.0	1,690.4	0.50	0.43	Last Cathedral Survey @ 9,380' MD Projection to Bit @ 9,430'
9,430.0	1.20	23.10	9,214.7	-548.1	1,600.4	1,690.5	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU 26-12D (I27W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7223.0ft (Original Well Elev)
Site:	I27W	MD Reference:	KBE @ 7223.0ft (Original Well Elev)
Well:	MCU 26-12D (I27W Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

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 26-12D TGT	0.00	358.58	7,166.0	-551.4	1,587.3	1,583,552.07	2,365,150.41	39.414046	-107.747270
- actual wellpath misses target center by 11.4ft at 7379.2ft MD (7164.9 TVD, -549.1 N, 1598.4 E)									
- Point									
MCU 26-12D PBHL	0.00	358.58	9,199.0	-551.4	1,587.3	1,583,552.07	2,365,150.41	39.414046	-107.747270
- actual wellpath misses target center by 13.3ft at 9414.1ft MD (9198.8 TVD, -548.4 N, 1600.2 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
9,380.0	9,164.7	-549.0	1,600.0	Last Cathedral Survey @ 9,380' MD	
9,430.0	9,214.7	-548.1	1,600.4	Projection to Bit @ 9,430'	

Checked By: _____ Approved By: _____ Date: _____