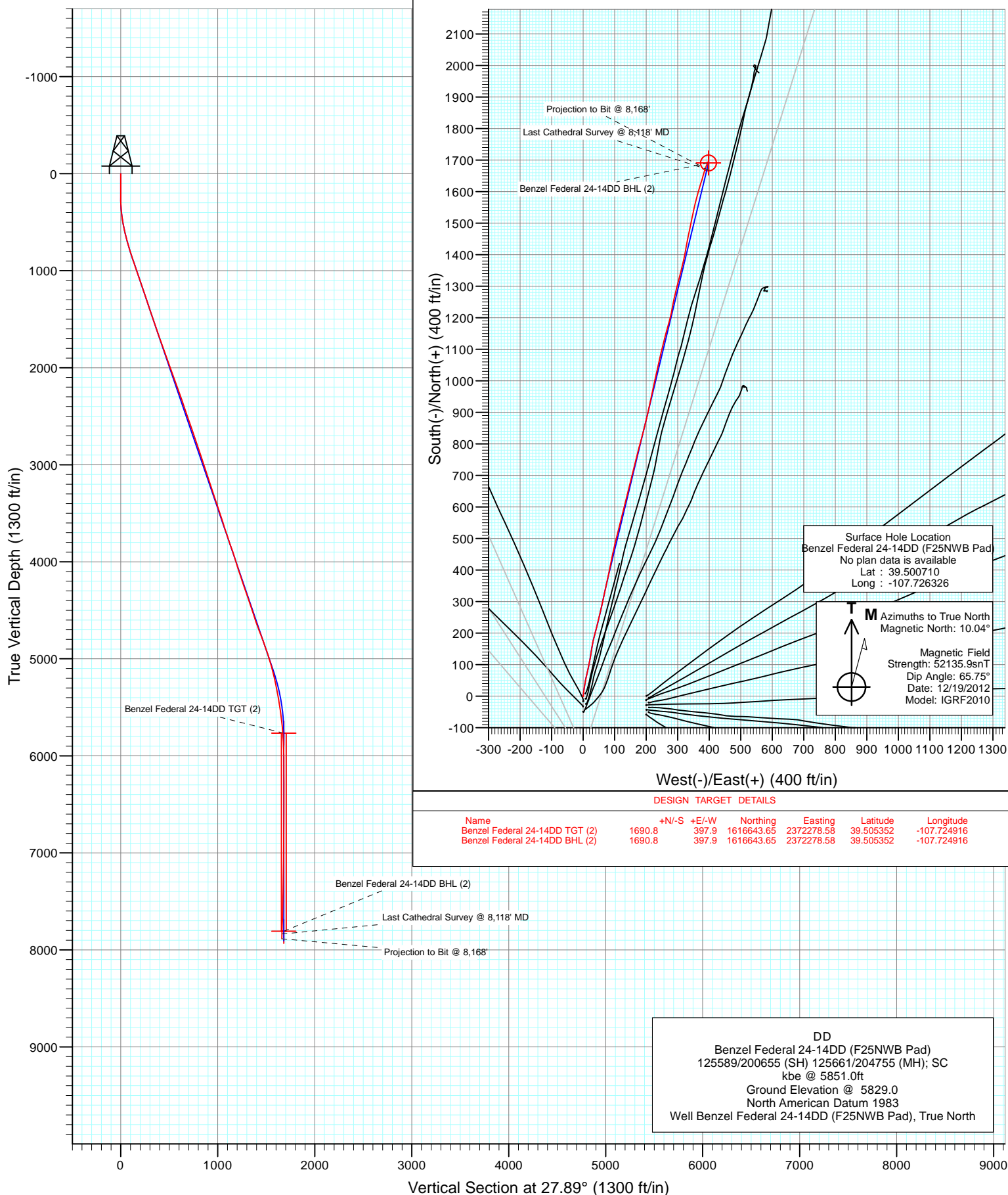


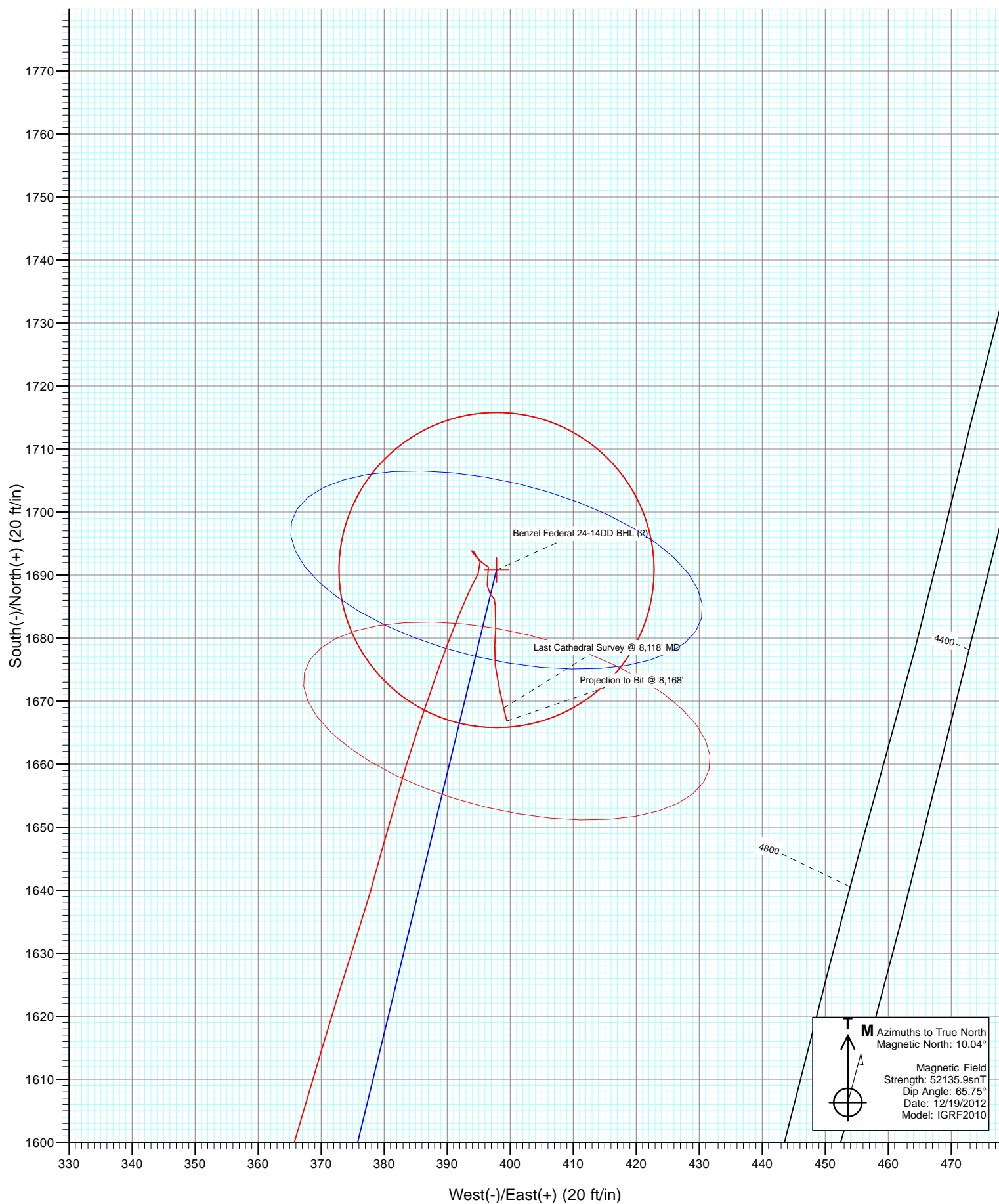


Project: Mamm Creek
 Site: F25NWB Pad
 Well: Benzel Federal 24-14DD (F25NWB Pad)
 Wellbore: DD
 Design: FINAL



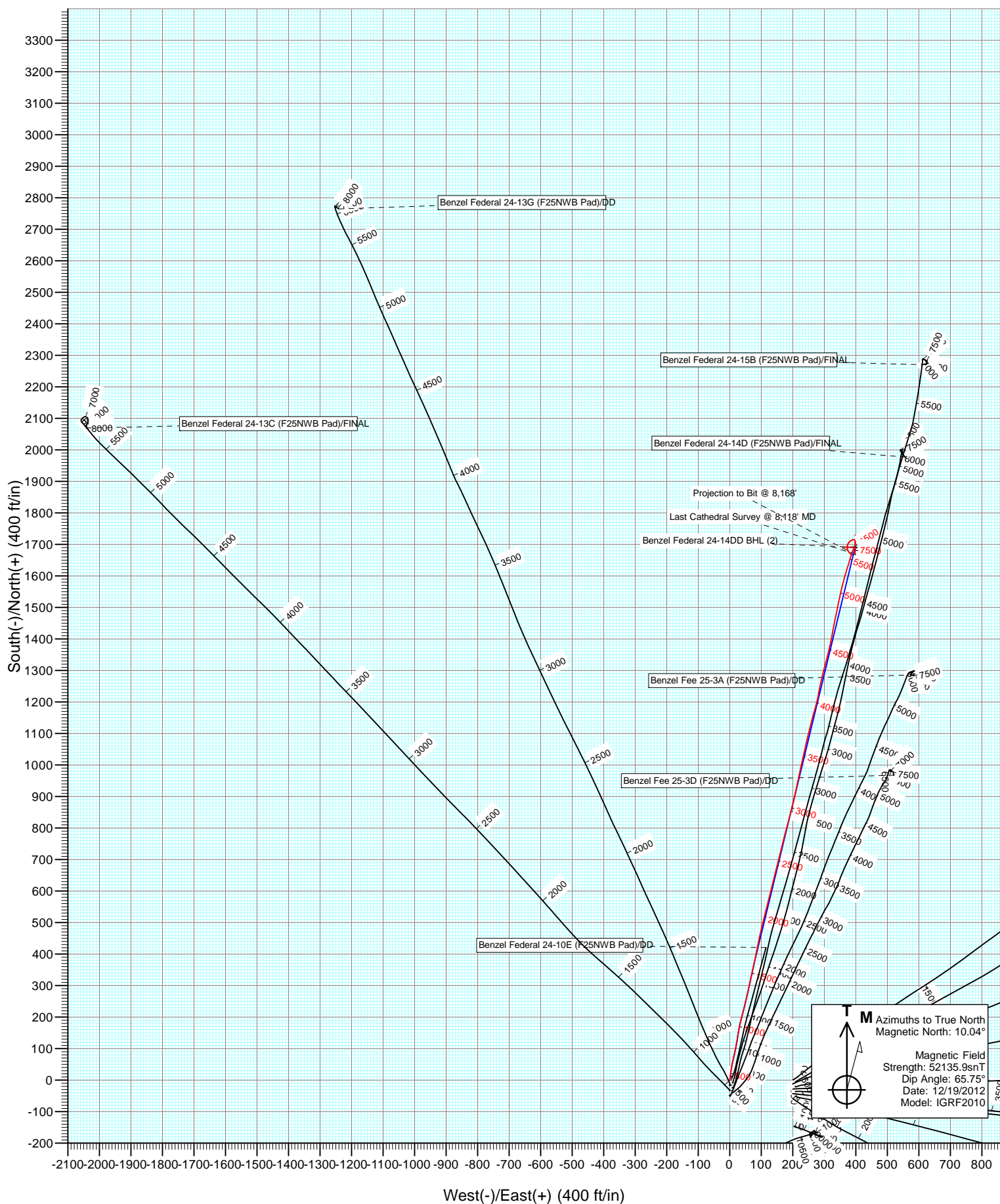


Project: Mamm Creek
Site: F25NWB Pad
Well: Benzel Federal 24-14DD (F25NWB Pad)
Wellbore: DD
Design: FINAL





Project: Mamm Creek
Site: F25NWB Pad
Well: Benzel Federal 24-14DD (F25NWB Pad)
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-14DD (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-14DD (F25NWB 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		F25NWB Pad			
Site Position:		Northing:	1,614,821.30 ft	Latitude:	39.500328
From:	Lat/Long	Easting:	2,371,946.03 ft	Longitude:	-107.725936
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.40 °

Well	Benzel Federal 24-14DD (F25NWB Pad)					
Well Position	+N/-S	0.0 ft	Northing:	1,614,963.09 ft	Latitude:	39.500710
	+E/-W	0.0 ft	Easting:	2,371,839.42 ft	Longitude:	-107.726326
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,829.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/19/2012	10.04	65.75	52,136

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	27.89	

Survey Program	Date	12/28/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
177.0	8,168.0	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		
177.0	0.30	176.00	177.0	-0.5	0.0	-0.4	0.17	0.17		
207.0	0.20	140.80	207.0	-0.6	0.1	-0.5	0.60	-0.33		
237.0	0.20	52.90	237.0	-0.6	0.1	-0.5	0.93	0.00		
268.0	1.30	21.20	268.0	-0.2	0.3	-0.1	3.66	3.55		
298.0	2.30	8.20	298.0	0.7	0.5	0.8	3.58	3.33		
329.0	3.30	4.60	328.9	2.2	0.7	2.3	3.27	3.23		
359.0	4.10	2.10	358.9	4.1	0.8	4.0	2.72	2.67		
390.0	5.00	7.20	389.8	6.6	1.0	6.3	3.18	2.90		
421.0	6.30	8.60	420.6	9.6	1.4	9.1	4.22	4.19		
452.0	8.00	9.70	451.4	13.4	2.0	12.8	5.50	5.48		
482.0	9.40	7.90	481.0	17.9	2.7	17.1	4.75	4.67		
512.0	11.30	7.80	510.6	23.2	3.5	22.1	6.33	6.33		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-14DD (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-14DD (F25NWB 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
543.0	12.50	7.40	540.9	29.6	4.3	28.1	3.88	3.87	
573.0	13.60	8.10	570.1	36.3	5.2	34.5	3.70	3.67	
604.0	13.90	10.10	600.2	43.5	6.4	41.5	1.81	0.97	
634.0	14.30	11.50	629.3	50.7	7.8	48.5	1.75	1.33	
665.0	15.20	13.20	659.3	58.4	9.5	56.1	3.22	2.90	
696.0	15.50	13.80	689.2	66.4	11.4	64.0	1.09	0.97	
727.0	15.90	13.30	719.0	74.6	13.3	72.1	1.36	1.29	
758.0	16.70	12.60	748.8	83.0	15.3	80.6	2.66	2.58	
850.0	19.20	10.10	836.3	110.8	20.8	107.7	2.84	2.72	
942.0	20.30	8.80	922.9	141.5	25.9	137.2	1.29	1.20	
1,034.0	19.90	11.70	1,009.3	172.6	31.5	167.3	1.17	-0.43	
1,125.0	18.80	15.10	1,095.2	201.9	38.5	196.5	1.73	-1.21	
1,217.0	19.00	14.40	1,182.2	230.8	46.1	225.5	0.33	0.22	
1,307.0	19.30	13.20	1,267.2	259.4	53.1	254.2	0.55	0.33	
1,400.0	19.30	12.40	1,355.0	289.4	59.9	283.8	0.28	0.00	
1,491.0	19.10	12.10	1,440.9	318.6	66.3	312.6	0.25	-0.22	
1,572.0	19.90	12.00	1,517.3	345.1	71.9	338.7	0.99	0.99	
1,618.0	19.90	12.20	1,560.5	360.4	75.2	353.7	0.15	0.00	
1,709.0	20.20	11.90	1,646.0	390.9	81.7	383.7	0.35	0.33	
1,801.0	20.20	11.70	1,732.4	422.0	88.2	414.3	0.08	0.00	
1,892.0	20.00	11.00	1,817.8	452.7	94.4	444.2	0.34	-0.22	
1,984.0	20.30	14.50	1,904.2	483.6	101.4	474.8	1.35	0.33	
2,075.0	20.50	13.20	1,989.5	514.4	109.0	505.6	0.54	0.22	
2,167.0	20.90	14.40	2,075.5	545.9	116.7	537.1	0.63	0.43	
2,259.0	21.10	14.00	2,161.4	577.9	124.8	569.2	0.27	0.22	
2,350.0	19.60	14.60	2,246.7	608.6	132.6	599.9	1.66	-1.65	
2,442.0	19.40	13.70	2,333.5	638.3	140.1	629.8	0.39	-0.22	
2,534.0	19.60	14.10	2,420.2	668.2	147.5	659.6	0.26	0.22	
2,625.0	19.70	13.60	2,505.9	697.9	154.8	689.2	0.21	0.11	
2,717.0	19.60	13.70	2,592.5	727.9	162.1	719.2	0.11	-0.11	
2,809.0	19.30	14.30	2,679.3	757.7	169.5	749.0	0.39	-0.33	
2,900.0	19.00	15.00	2,765.3	786.5	177.1	778.0	0.42	-0.33	
2,992.0	18.80	15.00	2,852.3	815.3	184.8	807.1	0.22	-0.22	
3,084.0	18.60	14.30	2,939.4	843.9	192.3	835.8	0.33	-0.22	
3,175.0	18.70	14.70	3,025.7	872.0	199.6	864.1	0.18	0.11	
3,267.0	19.50	11.50	3,112.6	901.3	206.4	893.2	1.43	0.87	
3,359.0	18.90	12.30	3,199.5	930.9	212.6	922.3	0.71	-0.65	
3,450.0	18.10	12.10	3,285.8	959.2	218.7	950.1	0.88	-0.88	
3,542.0	19.90	12.80	3,372.8	988.4	225.2	979.0	1.97	1.96	
3,633.0	19.20	11.40	3,458.5	1,018.2	231.5	1,008.3	0.93	-0.77	
3,725.0	19.20	12.80	3,545.4	1,047.8	237.9	1,037.4	0.50	0.00	
3,816.0	17.50	13.10	3,631.8	1,075.7	244.3	1,065.0	1.87	-1.87	
3,908.0	18.50	13.50	3,719.3	1,103.4	250.8	1,092.6	1.10	1.09	
4,000.0	20.40	14.40	3,806.0	1,133.1	258.2	1,122.3	2.09	2.07	
4,091.0	19.20	15.90	3,891.6	1,162.8	266.3	1,152.4	1.43	-1.32	
4,183.0	17.70	14.90	3,978.9	1,190.9	274.0	1,180.8	1.67	-1.63	
4,274.0	18.00	12.40	4,065.5	1,218.0	280.6	1,207.8	0.90	0.33	
4,366.0	19.00	9.30	4,152.8	1,246.7	286.1	1,235.7	1.52	1.09	
4,457.0	20.10	13.60	4,238.5	1,276.5	292.1	1,264.9	1.99	1.21	
4,549.0	19.40	15.00	4,325.1	1,306.6	299.8	1,295.1	0.92	-0.76	
4,640.0	19.00	15.30	4,411.0	1,335.5	307.6	1,324.3	0.45	-0.44	
4,732.0	19.10	12.60	4,498.0	1,364.6	314.9	1,353.4	0.96	0.11	
4,823.0	19.10	11.60	4,584.0	1,393.7	321.1	1,382.1	0.36	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-14DD (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-14DD (F25NWB 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
4,914.0	20.60	10.50	4,669.6	1,424.1	327.0	1,411.7	1.70	1.65	
5,006.0	22.10	11.50	4,755.3	1,456.9	333.4	1,443.7	1.68	1.63	
5,097.0	21.00	11.50	4,839.9	1,489.7	340.1	1,475.8	1.21	-1.21	
5,186.0	20.20	11.70	4,923.2	1,520.4	346.4	1,505.8	0.90	-0.90	
5,280.0	17.00	13.10	5,012.3	1,549.7	352.8	1,534.7	3.44	-3.40	
5,372.0	15.10	14.20	5,100.7	1,574.4	358.8	1,559.4	2.09	-2.07	
5,463.0	13.10	16.10	5,189.0	1,595.8	364.6	1,581.0	2.26	-2.20	
5,555.0	11.80	16.60	5,278.8	1,614.8	370.1	1,600.4	1.42	-1.41	
5,647.0	10.50	17.80	5,369.1	1,631.8	375.4	1,617.9	1.44	-1.41	
5,738.0	9.00	14.60	5,458.7	1,646.6	379.7	1,633.0	1.75	-1.65	
5,830.0	8.30	17.60	5,549.7	1,659.9	383.5	1,646.5	0.90	-0.76	
5,921.0	7.00	19.00	5,639.9	1,671.4	387.3	1,658.5	1.44	-1.43	
6,012.0	5.10	21.30	5,730.4	1,680.4	390.6	1,668.0	2.10	-2.09	
6,104.0	3.10	23.70	5,822.1	1,686.5	393.1	1,674.5	2.18	-2.17	
6,195.0	2.10	29.90	5,913.0	1,690.2	394.9	1,678.6	1.14	-1.10	
6,287.0	0.90	317.20	6,005.0	1,692.2	395.3	1,680.6	2.20	-1.30	
6,378.0	0.70	322.80	6,096.0	1,693.1	394.4	1,681.0	0.24	-0.22	
6,470.0	0.20	316.40	6,188.0	1,693.7	394.0	1,681.3	0.55	-0.54	
6,562.0	0.10	67.30	6,280.0	1,693.9	393.9	1,681.4	0.28	-0.11	
6,653.0	0.40	132.10	6,371.0	1,693.7	394.3	1,681.4	0.41	0.33	
6,745.0	0.40	161.40	6,463.0	1,693.2	394.6	1,681.1	0.22	0.00	
6,837.0	0.80	135.40	6,555.0	1,692.4	395.1	1,680.7	0.52	0.43	
6,928.0	0.70	123.70	6,646.0	1,691.6	396.1	1,680.4	0.20	-0.11	
7,020.0	0.00	100.00	6,738.0	1,691.3	396.5	1,680.4	0.76	-0.76	
7,112.0	0.20	172.10	6,830.0	1,691.2	396.5	1,680.3	0.22	0.22	
7,203.0	0.90	185.80	6,921.0	1,690.3	396.5	1,679.5	0.78	0.77	
7,295.0	1.50	181.70	7,013.0	1,688.4	396.4	1,677.7	0.66	0.65	
7,386.0	0.70	113.10	7,103.9	1,687.0	396.9	1,676.7	1.54	-0.88	
7,477.0	0.60	167.70	7,194.9	1,686.3	397.5	1,676.4	0.66	-0.11	
7,568.0	0.80	173.30	7,285.9	1,685.2	397.7	1,675.5	0.23	0.22	
7,660.0	1.20	182.00	7,377.9	1,683.6	397.7	1,674.1	0.46	0.43	
7,752.0	1.40	177.80	7,469.9	1,681.5	397.7	1,672.3	0.24	0.22	
7,844.0	1.90	187.00	7,561.9	1,678.9	397.6	1,669.9	0.61	0.54	
7,935.0	2.10	170.90	7,652.8	1,675.7	397.6	1,667.1	0.65	0.22	
8,027.0	2.10	169.20	7,744.7	1,672.4	398.2	1,664.5	0.07	0.00	
8,118.0	2.40	166.30	7,835.7	1,668.9	399.0	1,661.7	0.35	0.33	Last Cathedral Survey @ 8,118' MD
8,168.0	2.40	166.30	7,885.6	1,666.9	399.5	1,660.2	0.00	0.00	Projection to Bit @ 8,168'

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-14DD (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-14DD (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

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)		
Benzel Federal 24-14DC	0.00	0.00	7,807.0	1,690.8	397.9	1,616,643.65	2,372,278.58	39.505352	-107.724916
- actual wellpath misses target center by 20.8ft at 8088.5ft MD (7806.2 TVD, 1670.1 N, 398.7 E)									
- Circle (radius 25.0)									
Benzel Federal 24-14DC	0.00	0.00	5,767.0	1,690.8	397.9	1,616,643.65	2,372,278.58	39.505352	-107.724916
- actual wellpath misses target center by 9.8ft at 6049.4ft MD (5767.7 TVD, 1683.2 N, 391.7 E)									
- Point									
Benzel Federal 24-15E (0.00	0.00	7,806.0	1,513.1	805.6	1,616,455.97	2,372,681.84	39.504864	-107.723471
- actual wellpath misses target center by 436.0ft at 8097.7ft MD (7815.4 TVD, 1669.7 N, 398.8 E)									
- Circle (radius 40.0)									
Benzel Federal 24-15E (0.00	0.00	5,705.0	1,513.1	805.6	1,616,455.97	2,372,681.84	39.504864	-107.723471
- actual wellpath misses target center by 447.4ft at 5985.1ft MD (5703.6 TVD, 1678.0 N, 389.7 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	Comment	
8,118.0	7,835.7	1,668.9	399.0	Last Cathedral Survey @ 8,118' MD	
8,168.0	7,885.6	1,666.9	399.5	Projection to Bit @ 8,168'	

Checked By: _____ Approved By: _____ Date: _____