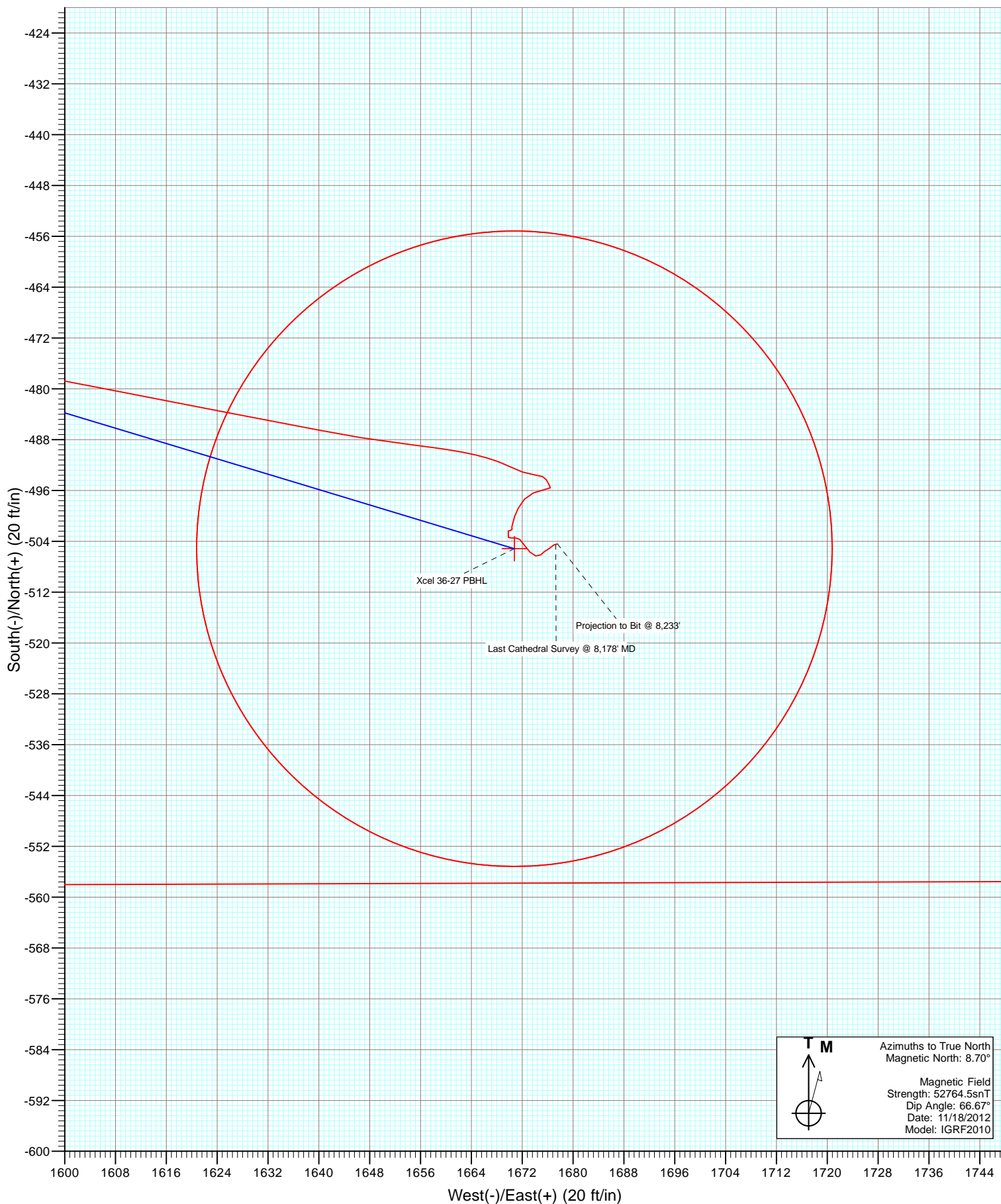


Azimuths to True North
Magnetic North: 8.70°

Magnetic Field
Strength: 52764.5nT
Dip Angle: 66.67°
Date: 11/18/2012
Model: IGRF2010

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
Target	Xcel 36-27 PBHL	106.82	Slot	0.0	0.0	0.0
		TVD	+N/-	+E/-W		Longitude
Xcel 36-27 PBHL		7896.0	-505.2	1670.8	40.014980	-104.877614



Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Xcel 36-27
Project:	DJ Wattenberg	TVD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Well:	Xcel 36-27	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		SWSW Sec27-T1N-R67W (Xcel 13-27)			
Site Position:		Northing:	1,249,558.43 ft	Latitude:	40.016771
From:	Lat/Long	Easting:	3,172,622.55 ft	Longitude:	-104.883695
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.40 °

Well	Xcel 36-27					
Well Position	+N/-S	0.0 ft	Northing:	1,249,411.48 ft	Latitude:	40.016367
	+E/-W	0.0 ft	Easting:	3,172,656.07 ft	Longitude:	-104.883579
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,026.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/18/2012	8.70	66.67	52,764

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	106.82	

Survey Program	Date	11/23/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
76.0	8,233.0	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		
76.0	0.40	263.60	76.0	0.0	-0.3	-0.2	0.53	0.53		
164.0	0.60	139.60	164.0	-0.4	-0.3	-0.1	1.01	0.23		
252.0	3.00	109.00	251.9	-1.5	2.2	2.6	2.84	2.73		
342.0	5.90	99.00	341.7	-3.0	9.0	9.5	3.32	3.22		
418.0	6.60	101.90	417.2	-4.5	17.1	17.7	1.01	0.92		
507.0	7.30	105.80	505.6	-7.1	27.6	28.5	0.95	0.79		
600.0	8.10	106.10	597.7	-10.5	39.6	40.9	0.86	0.86		
691.0	10.80	110.70	687.5	-15.3	53.7	55.8	3.08	2.97		
781.0	13.30	111.40	775.5	-22.1	71.2	74.6	2.78	2.78		
872.0	14.70	108.20	863.8	-29.5	91.9	96.6	1.76	1.54		
961.0	15.60	112.10	949.7	-37.5	113.8	119.8	1.53	1.01		
1,051.0	16.60	105.20	1,036.2	-45.5	137.4	144.7	2.40	1.11		

Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Xcel 36-27
Project:	DJ Wattenberg	TVD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Well:	Xcel 36-27	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
1,127.0	17.00	105.80	1,108.9	-51.3	158.5	166.6	0.57	0.53	
1,216.0	15.60	104.10	1,194.4	-57.8	182.7	191.6	1.66	-1.57	
1,307.0	16.90	102.50	1,281.7	-63.6	207.5	217.0	1.51	1.43	
1,398.0	18.40	104.30	1,368.4	-70.1	234.3	244.5	1.75	1.65	
1,489.0	20.50	108.30	1,454.2	-78.6	263.3	274.8	2.73	2.31	
1,579.0	22.20	108.00	1,538.1	-88.8	294.5	307.6	1.89	1.89	
1,670.0	24.40	108.10	1,621.6	-100.0	328.7	343.6	2.42	2.42	
1,761.0	25.20	112.40	1,704.2	-113.2	364.5	381.6	2.17	0.88	
1,851.0	23.90	112.10	1,786.1	-127.3	399.1	418.9	1.45	-1.44	
1,942.0	24.00	107.20	1,869.3	-139.8	433.8	455.7	2.19	0.11	
2,033.0	24.20	105.80	1,952.3	-150.3	469.5	492.9	0.67	0.22	
2,123.0	22.50	107.10	2,035.0	-160.4	503.7	528.5	1.97	-1.89	
2,214.0	22.70	104.40	2,119.0	-169.9	537.3	563.5	1.16	0.22	
2,305.0	22.50	105.60	2,203.0	-178.9	571.1	598.5	0.55	-0.22	
2,395.0	24.40	104.90	2,285.6	-188.3	605.7	634.3	2.13	2.11	
2,486.0	24.80	103.80	2,368.3	-197.7	642.4	672.1	0.67	0.44	
2,577.0	24.60	102.00	2,451.0	-206.2	679.4	710.0	0.86	-0.22	
2,668.0	22.40	104.10	2,534.4	-214.4	714.8	746.2	2.59	-2.42	
2,758.0	23.40	108.00	2,617.3	-224.1	748.4	781.2	2.02	1.11	
2,849.0	22.70	104.50	2,701.1	-234.1	782.6	816.8	1.69	-0.77	
2,940.0	22.40	108.60	2,785.1	-244.0	816.0	851.7	1.76	-0.33	
3,030.0	22.00	106.00	2,868.5	-254.1	848.5	885.7	1.18	-0.44	
3,121.0	22.10	114.20	2,952.8	-265.8	880.5	919.7	3.38	0.11	
3,212.0	21.90	110.50	3,037.2	-278.8	912.0	953.7	1.54	-0.22	
3,303.0	22.30	110.40	3,121.5	-290.7	944.1	987.8	0.44	0.44	
3,394.0	22.90	107.00	3,205.5	-301.9	977.2	1,022.8	1.58	0.66	
3,484.0	23.30	103.40	3,288.3	-311.2	1,011.3	1,058.0	1.63	0.44	
3,575.0	20.80	105.30	3,372.7	-319.6	1,044.4	1,092.2	2.86	-2.75	
3,666.0	20.60	104.80	3,457.8	-328.0	1,075.4	1,124.3	0.29	-0.22	
3,757.0	21.60	106.50	3,542.7	-336.8	1,107.0	1,157.1	1.29	1.10	
3,847.0	21.70	112.10	3,626.3	-347.8	1,138.3	1,190.2	2.30	0.11	
3,938.0	24.10	110.50	3,710.2	-360.6	1,171.3	1,225.5	2.72	2.64	
4,029.0	23.90	107.10	3,793.3	-372.6	1,206.3	1,262.5	1.54	-0.22	
4,120.0	23.10	103.40	3,876.8	-382.1	1,241.3	1,298.7	1.84	-0.88	
4,210.0	21.90	107.90	3,959.9	-391.4	1,274.4	1,333.1	2.33	-1.33	
4,301.0	22.80	105.50	4,044.1	-401.3	1,307.6	1,367.7	1.41	0.99	
4,392.0	22.70	106.80	4,128.0	-411.1	1,341.4	1,402.9	0.56	-0.11	
4,483.0	23.20	104.90	4,211.8	-420.8	1,375.5	1,438.4	0.98	0.55	
4,573.0	22.80	108.00	4,294.6	-430.7	1,409.2	1,473.6	1.42	-0.44	
4,664.0	22.50	103.40	4,378.6	-440.2	1,442.9	1,508.6	1.97	-0.33	
4,755.0	21.00	103.90	4,463.1	-448.1	1,475.7	1,542.2	1.66	-1.65	
4,846.0	18.50	108.40	4,548.8	-456.6	1,505.2	1,573.0	3.21	-2.75	
4,936.0	18.60	103.00	4,634.1	-464.4	1,532.8	1,601.6	1.91	0.11	
5,027.0	17.10	103.10	4,720.7	-470.7	1,559.9	1,629.4	1.65	-1.65	
5,118.0	15.00	100.50	4,808.2	-475.8	1,584.5	1,654.4	2.44	-2.31	
5,209.0	12.70	101.20	4,896.5	-479.9	1,605.9	1,676.1	2.53	-2.53	
5,299.0	11.60	100.80	4,984.5	-483.5	1,624.5	1,694.9	1.23	-1.22	
5,390.0	8.60	101.00	5,074.1	-486.6	1,640.2	1,710.8	3.30	-3.30	
5,481.0	7.50	96.90	5,164.2	-488.6	1,652.8	1,723.4	1.36	-1.21	
5,572.0	5.40	100.50	5,254.6	-490.1	1,662.9	1,733.5	2.35	-2.31	
5,663.0	3.60	116.00	5,345.3	-492.1	1,669.7	1,740.6	2.37	-1.98	
5,754.0	2.10	96.80	5,436.2	-493.5	1,673.9	1,745.1	1.93	-1.65	
5,845.0	0.80	156.60	5,527.2	-494.3	1,675.8	1,747.1	2.01	-1.43	

Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Xcel 36-27
Project:	DJ Wattenberg	TVD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Well:	Xcel 36-27	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
5,935.0	0.50	145.70	5,617.2	-495.2	1,676.3	1,747.9	0.36	-0.33	
6,026.0	0.10	240.20	5,708.2	-495.6	1,676.4	1,748.1	0.57	-0.44	
6,117.0	1.10	254.20	5,799.2	-495.9	1,675.5	1,747.3	1.10	1.10	
6,208.0	1.20	252.50	5,890.2	-496.4	1,673.8	1,745.8	0.12	0.11	
6,298.0	1.10	216.60	5,980.1	-497.4	1,672.3	1,744.7	0.79	-0.11	
6,389.0	1.10	212.30	6,071.1	-498.8	1,671.4	1,744.2	0.09	0.00	
6,480.0	0.70	189.40	6,162.1	-500.1	1,670.8	1,744.0	0.58	-0.44	
6,571.0	0.70	200.70	6,253.1	-501.2	1,670.5	1,744.1	0.15	0.00	
6,661.0	0.10	154.90	6,343.1	-501.8	1,670.4	1,744.1	0.70	-0.67	
6,752.0	0.40	180.10	6,434.1	-502.1	1,670.4	1,744.2	0.34	0.33	
6,843.0	0.40	298.00	6,525.1	-502.3	1,670.1	1,744.0	0.75	0.00	
6,934.0	0.30	186.90	6,616.1	-502.4	1,669.8	1,743.7	0.64	-0.11	
7,024.0	0.40	171.30	6,706.1	-502.9	1,669.8	1,743.9	0.15	0.11	
7,115.0	0.20	191.80	6,797.1	-503.4	1,669.8	1,744.1	0.25	-0.22	
7,206.0	0.50	75.00	6,888.1	-503.5	1,670.2	1,744.4	0.68	0.33	
7,297.0	0.60	106.30	6,979.1	-503.5	1,671.0	1,745.2	0.34	0.11	
7,387.0	0.20	120.80	7,069.1	-503.7	1,671.6	1,745.9	0.45	-0.44	
7,478.0	0.50	150.90	7,160.1	-504.1	1,671.9	1,746.3	0.38	0.33	
7,569.0	0.70	133.50	7,251.1	-504.9	1,672.5	1,747.1	0.29	0.22	
7,660.0	0.70	148.60	7,342.1	-505.7	1,673.2	1,748.0	0.20	0.00	
7,750.0	0.80	101.20	7,432.1	-506.3	1,674.1	1,749.0	0.68	0.11	
7,841.0	0.40	25.90	7,523.1	-506.2	1,674.9	1,749.7	0.88	-0.44	
7,932.0	0.60	63.60	7,614.1	-505.7	1,675.5	1,750.1	0.41	0.22	
8,023.0	0.70	49.70	7,705.1	-505.1	1,676.3	1,750.7	0.20	0.11	
8,113.0	0.30	61.80	7,795.1	-504.6	1,676.9	1,751.2	0.46	-0.44	
8,178.0	0.30	75.00	7,860.1	-504.5	1,677.2	1,751.5	0.11	0.00	Last Cathedral Survey @ 8,178' MD
8,233.0	0.30	75.00	7,915.1	-504.4	1,677.5	1,751.7	0.00	0.00	Projection to Bit @ 8,233'

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									
Xcel 36-27 PBHL	0.00	0.00	7,896.0	-505.2	1,670.8	1,248,917.93	3,174,330.29	40.014980	-104.877614
- actual wellpath misses target center by 6.7ft at 8213.9ft MD (7896.0 TVD, -504.4 N, 1677.4 E)									
- Circle (radius 50.0)									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates	Comment
		+N/-S (ft)	+E/-W (ft)
8,178.0	7,860.1	-504.5	1,677.2
8,233.0	7,915.1	-504.4	1,677.5
Last Cathedral Survey @ 8,178' MD			
Projection to Bit @ 8,233'			

Checked By: _____ Approved By: _____ Date: _____