

CASING DETAILS

No casing data is available

FORMATION TOP DETAILS

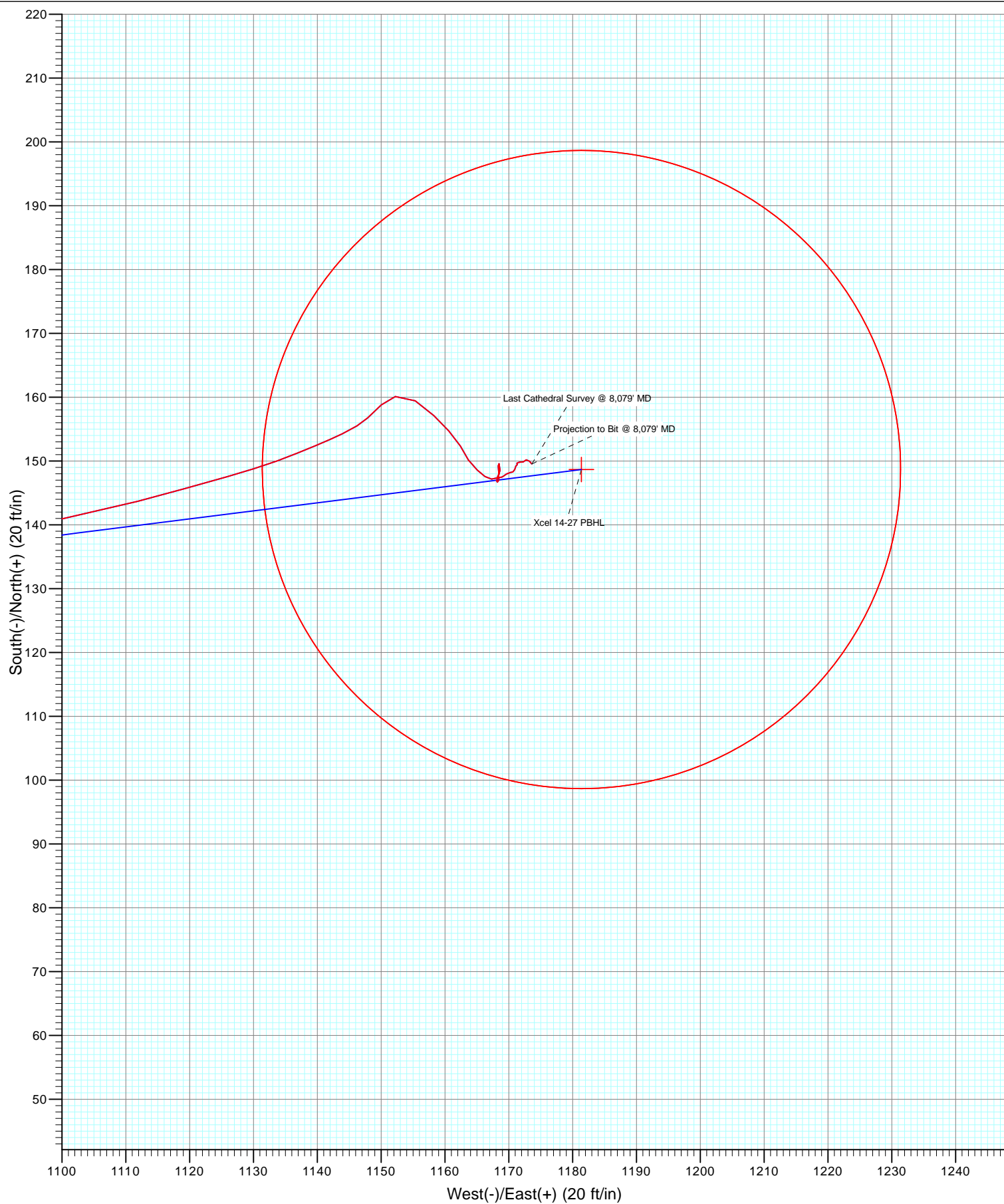
No formation data is available



Azimuths to True North
Magnetic North: 8.70°

Magnetic Field
Strength: 52763.3snT
Dip Angle: 66.67°
Date: 11/22/2012
Model: IGRF2010

FINAL							
Xcel 14-27							
125626/202355; LR							
KB=15 @ 5040.0ft (Xtreme 11)							
GL @ 5025.0							
North American Datum 1983							
Well Xcel 14-27, True North							
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD	
Target	Xcel 14-27 PBHL	82.83	Slot	0.0	0.0	0.0	
TVD		+N/-S	+E/-W	Latitude	Longitude		
		101.6	1261.0	40.016645	-104.879019		
Legal Box #14, Sec 27							
Xcel 14-27 PBHL		7995.0	148.2	1481.1	40.016371	-104.879333	



Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Xcel 14-27
Project:	DJ Wattenberg	TVD Reference:	KB=15' @ 5040.0ft (Xtreme 11)
Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5040.0ft (Xtreme 11)
Well:	Xcel 14-27	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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 14-27					
Well Position	+N/-S	0.0 ft	Northing:	1,249,411.22 ft	Latitude:	40.016366
	+E/-W	0.0 ft	Easting:	3,172,672.31 ft	Longitude:	-104.883521
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,025.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/22/2012	8.70	66.67	52,763

Design	FINAL				
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	82.83	

Survey Program	Date	11/26/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
76.0	8,079.0	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	0.70	296.00	76.0	0.2	-0.4	-0.4	0.92	0.92		
163.0	0.70	154.00	163.0	0.0	-0.7	-0.7	1.52	0.00		
252.0	1.60	114.50	252.0	-1.0	0.7	0.6	1.29	1.01		
339.0	2.60	85.40	338.9	-1.4	3.8	3.6	1.65	1.15		
416.0	3.60	78.00	415.8	-0.7	7.9	7.7	1.40	1.30		
507.0	4.50	82.30	506.6	0.3	14.2	14.1	1.04	0.99		
597.0	5.90	87.40	596.2	1.0	22.3	22.3	1.64	1.56		
688.0	8.40	85.40	686.5	1.8	33.6	33.6	2.76	2.75		
779.0	10.20	82.50	776.3	3.3	48.3	48.3	2.04	1.98		
870.0	12.30	81.60	865.5	5.8	65.8	66.0	2.32	2.31		
960.0	15.00	85.70	953.0	8.1	86.9	87.3	3.18	3.00		
1,051.0	16.00	85.70	1,040.7	9.9	111.2	111.5	1.10	1.10		

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Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5040.0ft (Xtreme 11)
Well:	Xcel 14-27	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
1,144.0	16.30	83.80	1,130.0	12.3	136.9	137.4	0.65	0.32	
1,307.0	18.60	87.50	1,285.5	15.9	185.7	186.2	1.57	1.41	
1,398.0	19.20	83.60	1,371.6	18.2	215.0	215.6	1.54	0.66	
1,489.0	18.90	78.70	1,457.6	22.7	244.4	245.3	1.79	-0.33	
1,579.0	17.90	79.50	1,543.0	28.1	272.2	273.6	1.15	-1.11	
1,670.0	18.00	80.20	1,629.6	33.1	299.9	301.6	0.26	0.11	
1,761.0	17.70	81.00	1,716.2	37.6	327.4	329.5	0.43	-0.33	
1,852.0	16.60	82.20	1,803.2	41.5	353.9	356.3	1.27	-1.21	
1,942.0	18.50	79.90	1,889.0	45.8	380.7	383.4	2.25	2.11	
2,033.0	18.30	79.10	1,975.3	51.0	409.0	412.1	0.35	-0.22	
2,124.0	17.30	77.20	2,062.0	56.7	436.2	439.8	1.27	-1.10	
2,215.0	15.40	83.60	2,149.3	61.1	461.4	465.4	2.87	-2.09	
2,305.0	14.70	82.30	2,236.2	63.9	484.6	488.8	0.86	-0.78	
2,396.0	15.90	83.20	2,324.0	67.0	508.4	512.8	1.34	1.32	
2,487.0	16.90	85.10	2,411.3	69.6	534.0	538.5	1.25	1.10	
2,577.0	16.10	83.70	2,497.6	72.0	559.4	564.0	0.99	-0.89	
2,668.0	14.80	85.20	2,585.3	74.4	583.5	588.2	1.49	-1.43	
2,759.0	16.40	82.80	2,672.9	77.0	607.8	612.7	1.90	1.76	
2,850.0	16.50	84.10	2,760.2	79.9	633.4	638.5	0.42	0.11	
2,941.0	17.20	84.50	2,847.3	82.5	659.7	664.8	0.78	0.77	
3,031.0	17.80	83.10	2,933.1	85.5	686.6	691.9	0.81	0.67	
3,122.0	17.30	79.00	3,019.9	89.7	713.7	719.3	1.47	-0.55	
3,213.0	15.90	78.80	3,107.1	94.7	739.2	745.2	1.54	-1.54	
3,303.0	16.70	80.90	3,193.5	99.2	764.1	770.5	1.10	0.89	
3,394.0	16.00	81.20	3,280.8	103.2	789.4	796.1	0.77	-0.77	
3,485.0	16.10	87.50	3,368.3	105.6	814.4	821.2	1.92	0.11	
3,576.0	16.80	89.30	3,455.5	106.3	840.1	846.8	0.95	0.77	
3,667.0	17.80	88.90	3,542.4	106.8	867.2	873.7	1.11	1.10	
3,757.0	17.40	87.10	3,628.2	107.7	894.4	900.8	0.75	-0.44	
3,848.0	18.40	84.40	3,714.8	109.8	922.3	928.7	1.43	1.10	
3,939.0	17.50	80.00	3,801.4	113.6	950.0	956.8	1.79	-0.99	
4,030.0	16.10	78.40	3,888.5	118.5	975.9	983.0	1.62	-1.54	
4,121.0	15.90	82.40	3,976.0	122.7	1,000.6	1,008.1	1.23	-0.22	
4,211.0	14.20	81.40	4,062.9	126.0	1,023.7	1,031.4	1.91	-1.89	
4,302.0	13.40	79.40	4,151.2	129.6	1,045.1	1,053.1	1.02	-0.88	
4,393.0	11.70	77.40	4,240.1	133.5	1,064.5	1,072.8	1.93	-1.87	
4,484.0	10.20	78.70	4,329.4	137.1	1,081.4	1,090.1	1.67	-1.65	
4,574.0	9.90	78.60	4,418.0	140.2	1,096.8	1,105.7	0.33	-0.33	
4,665.0	9.70	75.30	4,507.7	143.7	1,111.9	1,121.1	0.66	-0.22	
4,756.0	8.70	73.90	4,597.5	147.5	1,125.9	1,135.5	1.13	-1.10	
4,846.0	6.10	68.00	4,686.8	151.2	1,136.9	1,146.9	3.01	-2.89	
4,937.0	3.60	64.20	4,777.4	154.3	1,143.9	1,154.2	2.77	-2.75	
5,028.0	2.30	48.60	4,868.3	156.7	1,147.9	1,158.5	1.67	-1.43	
5,119.0	1.50	42.50	4,959.3	158.8	1,150.1	1,160.9	0.91	-0.88	
5,210.0	1.80	73.40	5,050.2	160.1	1,152.2	1,163.2	1.02	0.33	
5,301.0	2.60	121.60	5,141.2	159.4	1,155.4	1,166.2	2.13	0.88	
5,391.0	2.20	136.10	5,231.1	157.1	1,158.3	1,168.8	0.80	-0.44	
5,482.0	2.00	135.70	5,322.0	154.7	1,160.6	1,170.8	0.22	-0.22	
5,573.0	1.80	150.60	5,413.0	152.3	1,162.4	1,172.3	0.58	-0.22	
5,663.0	1.40	149.20	5,502.9	150.2	1,163.7	1,173.3	0.45	-0.44	
5,754.0	1.30	126.60	5,593.9	148.6	1,165.1	1,174.5	0.59	-0.11	
5,845.0	0.70	135.40	5,684.9	147.6	1,166.3	1,175.6	0.68	-0.66	
5,935.0	0.80	92.00	5,774.9	147.2	1,167.3	1,176.6	0.62	0.11	

Cathedral Energy Services

Survey Report

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Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5040.0ft (Xtreme 11)
Well:	Xcel 14-27	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
6,026.0	0.40	48.10	5,865.9	147.4	1,168.2	1,177.4	0.64	-0.44	
6,117.0	0.50	3.30	5,956.9	148.0	1,168.4	1,177.8	0.39	0.11	
6,208.0	1.10	352.30	6,047.9	149.2	1,168.3	1,177.8	0.68	0.66	
6,298.0	0.70	151.70	6,137.9	149.6	1,168.5	1,178.0	1.97	-0.44	
6,389.0	0.70	193.40	6,228.9	148.6	1,168.6	1,178.0	0.55	0.00	
6,480.0	0.60	194.30	6,319.9	147.6	1,168.4	1,177.7	0.11	-0.11	
6,571.0	0.30	228.40	6,410.9	146.9	1,168.1	1,177.3	0.43	-0.33	
6,662.0	0.40	106.20	6,501.9	146.7	1,168.2	1,177.4	0.68	0.11	
6,752.0	0.50	347.20	6,591.9	147.0	1,168.4	1,177.6	0.86	0.11	
6,843.0	0.20	72.90	6,682.9	147.4	1,168.5	1,177.8	0.58	-0.33	
6,934.0	0.30	93.50	6,773.9	147.5	1,168.9	1,178.1	0.15	0.11	
7,025.0	0.20	4.90	6,864.9	147.6	1,169.1	1,178.4	0.39	-0.11	
7,115.0	0.70	67.90	6,954.9	148.0	1,169.7	1,179.0	0.71	0.56	
7,206.0	0.10	65.50	7,045.9	148.2	1,170.2	1,179.6	0.66	-0.66	
7,297.0	0.40	81.40	7,136.9	148.3	1,170.6	1,180.0	0.34	0.33	
7,388.0	0.40	356.50	7,227.9	148.7	1,170.9	1,180.3	0.59	0.00	
7,478.0	0.40	42.00	7,317.8	149.2	1,171.1	1,180.6	0.34	0.00	
7,569.0	0.00	117.20	7,408.8	149.4	1,171.3	1,180.8	0.44	-0.44	
7,660.0	0.30	352.20	7,499.8	149.7	1,171.3	1,180.8	0.33	0.33	
7,750.0	0.50	105.50	7,589.8	149.8	1,171.6	1,181.2	0.75	0.22	
7,841.0	0.40	57.40	7,680.8	149.9	1,172.3	1,181.8	0.42	-0.11	
7,932.0	0.30	51.70	7,771.8	150.2	1,172.7	1,182.3	0.12	-0.11	
8,024.0	0.60	139.80	7,863.8	150.0	1,173.2	1,182.8	0.72	0.33	Last Cathedral Survey @ 8,024' MD
8,079.0	0.60	139.80	7,918.8	149.5	1,173.6	1,183.1	0.00	0.00	Projection to Bit @ 8,079' MD

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									
Legal Box #14, Sec 27	0.00	0.00	-5,000.0	101.6	1,261.0	1,249,521.60	3,173,932.57	40.016645	-104.879019
- survey misses target center by 5157.6ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W400.0 H400.0 D0.0)									
Xcel 14-27 PBHL	0.00	0.00	7,895.0	148.7	1,181.4	1,249,568.10	3,173,852.65	40.016774	-104.879303
- survey misses target center by 8.0ft at 8055.2ft MD (7895.1 TVD, 149.7 N, 1173.5 E)									
- Circle (radius 50.0)									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,024.0	7,863.8	150.0	1,173.2	Last Cathedral Survey @ 8,024' MD Projection to Bit @ 8,079' MD
8,079.0	7,918.8	149.5	1,173.6	

Checked By: _____ Approved By: _____ Date: _____