

CASING DETAILS

No casing data is available

FORMATION TOP DETAILS

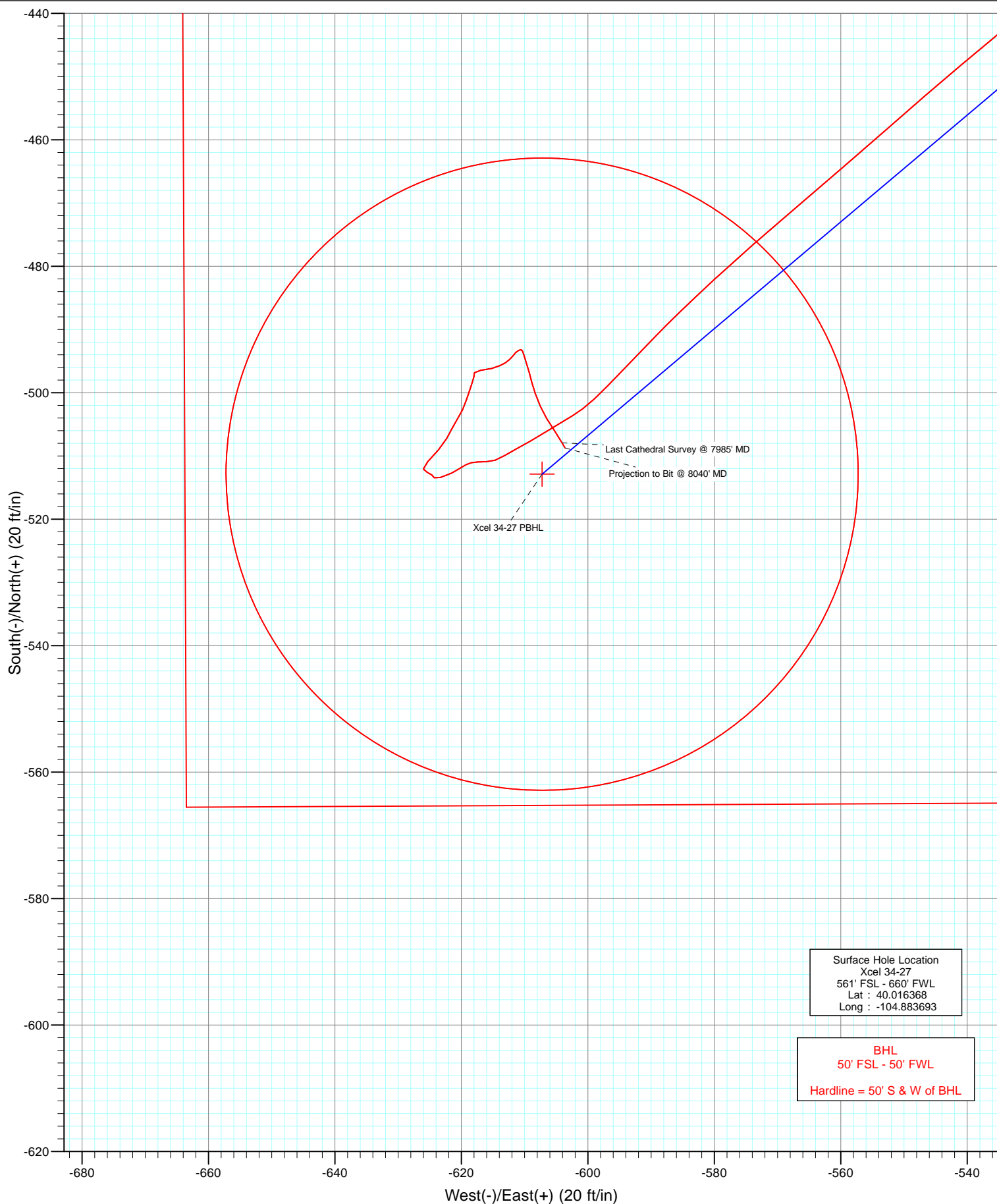
No formation data is available



Azimuths to True North
Magnetic North: 8.70°

Magnetic Field
Strength: 52766.8snT
Dip Angle: 66.67°
Date: 11/10/2012
Model: IGRF2010

FINAL Xcel 34-27 125609; 201655; DN KB-15 @ 5041.0ft (Pitane 11) GL @ 5026.0 North American Datum 1983 Well Xcel 34-27, True North							
Type	Target	Azimuth	Origin	Type	N/S	E/W	From TVD
Target	Xcel 34-27 PBHL	229.82	Slot		0.0	0.0	0.0
		TVD					
Xcel 34-27 PBHL		7896.0		+N/-S	+E/-W	Latitude	Longitude
				-512.9	-607.2	40.014960	-104.885861



Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Xcel 34-27
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 34-27	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 34-27					
Well Position	+N/-S	0.0 ft	Northing:	1,249,411.62 ft	Latitude:	40.016368
	+E/-W	0.0 ft	Easting:	3,172,624.14 ft	Longitude:	-104.883693
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	11/10/2012	8.71	66.67	52,767

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	229.82	

Survey Program	Date	11/27/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
78.0	8,040.0	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		
78.0	0.60	263.60	78.0	0.0	-0.4	0.3	0.77	0.77		
165.0	1.10	265.30	165.0	-0.2	-1.7	1.4	0.58	0.57		
254.0	1.10	239.90	254.0	-0.7	-3.3	2.9	0.54	0.00		
341.0	1.60	220.40	340.9	-2.0	-4.8	5.0	0.77	0.57		
418.0	3.10	233.40	417.9	-4.1	-7.2	8.1	2.06	1.95		
509.0	4.80	234.80	508.7	-7.7	-12.2	14.3	1.87	1.87		
600.0	5.70	229.10	599.3	-12.9	-18.8	22.7	1.14	0.99		
691.0	6.90	229.30	689.7	-19.4	-26.3	32.6	1.32	1.32		
782.0	9.10	225.80	779.8	-28.0	-35.6	45.3	2.48	2.42		
872.0	11.50	226.20	868.4	-39.2	-47.2	61.3	2.67	2.67		
963.0	13.20	231.50	957.3	-51.9	-61.9	80.8	2.24	1.87		
1,054.0	14.70	232.70	1,045.6	-65.4	-79.2	102.7	1.68	1.65		

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Survey Report

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Site:	SWSW Sec27-T1N-R67W (Xcel 13-27)	MD Reference:	KB=15' @ 5041.0ft (Xtreme 11)
Well:	Xcel 34-27	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
1,140.0	15.20	232.20	1,128.7	-78.9	-96.8	124.9	0.60	0.58	
1,217.0	14.00	231.80	1,203.2	-90.8	-112.1	144.3	1.56	-1.56	
1,308.0	17.40	231.40	1,290.8	-106.1	-131.4	168.9	3.74	3.74	
1,398.0	16.80	229.10	1,376.8	-123.1	-151.7	195.3	1.00	-0.67	
1,489.0	16.30	226.40	1,464.0	-140.5	-170.9	221.2	1.01	-0.55	
1,580.0	17.00	228.50	1,551.2	-158.1	-190.1	247.3	1.01	0.77	
1,671.0	17.10	225.70	1,638.2	-176.3	-209.7	273.9	0.91	0.11	
1,761.0	17.70	226.90	1,724.1	-194.8	-229.1	300.8	0.78	0.67	
1,852.0	16.60	226.50	1,811.1	-213.2	-248.7	327.6	1.22	-1.21	
1,943.0	16.90	229.10	1,898.2	-230.9	-268.1	353.8	0.89	0.33	
2,034.0	16.30	227.80	1,985.4	-248.1	-287.6	379.8	0.78	-0.66	
2,124.0	15.40	232.90	2,072.0	-263.8	-306.4	404.3	1.84	-1.00	
2,215.0	15.50	234.60	2,159.7	-278.1	-326.0	428.5	0.51	0.11	
2,306.0	17.20	237.60	2,247.0	-292.4	-347.3	454.0	2.09	1.87	
2,396.0	15.60	236.70	2,333.4	-306.1	-368.6	479.2	1.80	-1.78	
2,487.0	15.80	235.50	2,421.0	-319.9	-389.0	503.6	0.42	0.22	
2,578.0	15.80	231.40	2,508.5	-334.6	-408.9	528.3	1.23	0.00	
2,669.0	17.00	228.70	2,595.8	-351.1	-428.6	554.0	1.56	1.32	
2,759.0	15.60	227.10	2,682.2	-368.1	-447.4	579.3	1.63	-1.56	
2,849.0	16.20	228.50	2,768.8	-384.6	-465.6	603.9	0.79	0.67	
2,941.0	13.80	225.50	2,857.6	-400.8	-483.1	627.7	2.74	-2.61	
3,032.0	14.20	230.50	2,945.9	-415.5	-499.4	649.7	1.40	0.44	
3,122.0	14.00	233.80	3,033.2	-429.0	-516.7	671.6	0.92	-0.22	
3,213.0	15.40	230.50	3,121.2	-443.2	-534.9	694.6	1.79	1.54	
3,304.0	13.40	228.60	3,209.4	-457.8	-552.2	717.3	2.26	-2.20	
3,394.0	11.70	229.80	3,297.2	-470.6	-567.0	736.8	1.91	-1.89	
3,485.0	10.20	227.30	3,386.6	-482.0	-579.9	754.1	1.73	-1.65	
3,576.0	7.00	224.00	3,476.5	-491.5	-589.7	767.7	3.56	-3.52	
3,667.0	6.00	224.00	3,566.9	-498.9	-596.9	777.9	1.10	-1.10	
3,758.0	3.30	239.70	3,657.6	-503.6	-602.4	785.2	3.25	-2.97	
3,848.0	2.40	237.90	3,747.5	-505.9	-606.3	789.6	1.00	-1.00	
3,939.0	1.80	240.60	3,838.5	-507.7	-609.1	792.9	0.67	-0.66	
4,030.0	1.40	241.40	3,929.4	-508.9	-611.4	795.4	0.44	-0.44	
4,120.0	1.30	238.70	4,019.4	-510.0	-613.2	797.5	0.13	-0.11	
4,211.0	0.80	253.00	4,110.4	-510.7	-614.7	799.1	0.62	-0.55	
4,302.0	0.90	267.50	4,201.4	-510.9	-616.0	800.3	0.26	0.11	
4,392.0	0.90	267.40	4,291.4	-511.0	-617.4	801.4	0.00	0.00	
4,483.0	0.40	256.30	4,382.3	-511.1	-618.4	802.2	0.56	-0.55	
4,574.0	0.70	245.10	4,473.3	-511.4	-619.2	803.0	0.35	0.33	
4,665.0	0.80	234.80	4,564.3	-512.0	-620.3	804.2	0.18	0.11	
4,755.0	1.10	243.90	4,654.3	-512.7	-621.6	805.7	0.37	0.33	
4,846.0	1.30	253.50	4,745.3	-513.4	-623.3	807.5	0.31	0.22	
4,937.0	0.30	8.00	4,836.3	-513.4	-624.3	808.2	1.59	-1.10	
5,028.0	0.60	297.70	4,927.3	-513.0	-624.7	808.2	0.63	0.33	
5,118.0	0.50	299.20	5,017.3	-512.6	-625.4	808.6	0.11	-0.11	
5,209.0	0.50	322.50	5,108.3	-512.1	-626.0	808.7	0.22	0.00	
5,300.0	1.60	47.60	5,199.3	-510.9	-625.3	807.4	1.80	1.21	
5,390.0	1.70	36.90	5,289.2	-509.0	-623.6	804.8	0.36	0.11	
5,481.0	1.00	33.60	5,380.2	-507.2	-622.4	802.8	0.77	-0.77	
5,572.0	1.00	24.10	5,471.2	-505.9	-621.6	801.3	0.18	0.00	
5,663.0	1.20	33.10	5,562.2	-504.3	-620.7	799.7	0.29	0.22	
5,753.0	1.20	25.30	5,652.2	-502.7	-619.8	797.9	0.18	0.00	
5,844.0	1.00	16.60	5,743.1	-501.1	-619.2	796.4	0.29	-0.22	

Cathedral Energy Services

Survey Report

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Well:	Xcel 34-27	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
5,935.0	0.90	20.70	5,834.1	-499.6	-618.7	795.1	0.13	-0.11	
6,026.0	0.70	16.10	5,925.1	-498.4	-618.3	794.0	0.23	-0.22	
6,116.0	0.50	15.60	6,015.1	-497.5	-618.0	793.2	0.22	-0.22	
6,207.0	0.40	357.40	6,106.1	-496.8	-618.0	792.7	0.19	-0.11	
6,298.0	1.30	85.90	6,197.1	-496.4	-616.9	791.7	1.48	0.99	
6,389.0	0.90	74.30	6,288.1	-496.2	-615.2	790.2	0.50	-0.44	
6,479.0	0.80	67.20	6,378.1	-495.7	-614.0	788.9	0.16	-0.11	
6,570.0	0.50	55.00	6,469.1	-495.3	-613.1	787.9	0.36	-0.33	
6,661.0	0.60	47.00	6,560.1	-494.7	-612.4	787.1	0.14	0.11	
6,751.0	0.40	41.10	6,650.1	-494.2	-611.8	786.3	0.23	-0.22	
6,842.0	0.40	36.20	6,741.1	-493.7	-611.4	785.6	0.04	0.00	
6,933.0	0.40	68.60	6,832.1	-493.3	-610.9	785.0	0.25	0.00	
7,024.0	0.10	98.70	6,923.1	-493.2	-610.6	784.7	0.35	-0.33	
7,115.0	0.30	145.10	7,014.1	-493.4	-610.4	784.7	0.27	0.22	
7,205.0	0.70	166.30	7,104.1	-494.1	-610.1	784.9	0.48	0.44	
7,296.0	0.90	161.50	7,195.0	-495.3	-609.7	785.4	0.23	0.22	
7,387.0	1.10	164.30	7,286.0	-496.9	-609.3	786.1	0.23	0.22	
7,478.0	0.90	166.80	7,377.0	-498.4	-608.9	786.7	0.22	-0.22	
7,568.0	1.40	159.90	7,467.0	-500.1	-608.3	787.4	0.58	0.56	
7,659.0	1.40	156.60	7,558.0	-502.2	-607.5	788.1	0.09	0.00	
7,750.0	1.30	148.60	7,648.9	-504.1	-606.5	788.6	0.23	-0.11	
7,841.0	1.10	145.50	7,739.9	-505.7	-605.5	788.9	0.23	-0.22	
7,985.0	1.00	150.10	7,883.9	-507.9	-604.1	789.2	0.09	-0.07	Last Cathedral Survey @ 7985' MD
8,040.0	1.00	150.10	7,938.9	-508.7	-603.6	789.4	0.00	0.00	Projection to Bit @ 8040' MD

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
Xcel 34-27 PBHL	0.00	0.00	7,896.0	-512.9	-607.2	1,248,894.53	3,172,020.47	40.014960	-104.885861
- survey misses target center by 13.5ft at 7985.0ft MD (7883.9 TVD, -507.9 N, -604.1 E)									
- Circle (radius 50.0)									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates	Comment
		+N/-S (ft)	+E/-W (ft)
7,985.0	7,883.9	-507.9	-604.1
8,040.0	7,938.9	-508.7	-603.6
			Last Cathedral Survey @ 7985' MD
			Projection to Bit @ 8040' MD

Checked By: _____ Approved By: _____ Date: _____