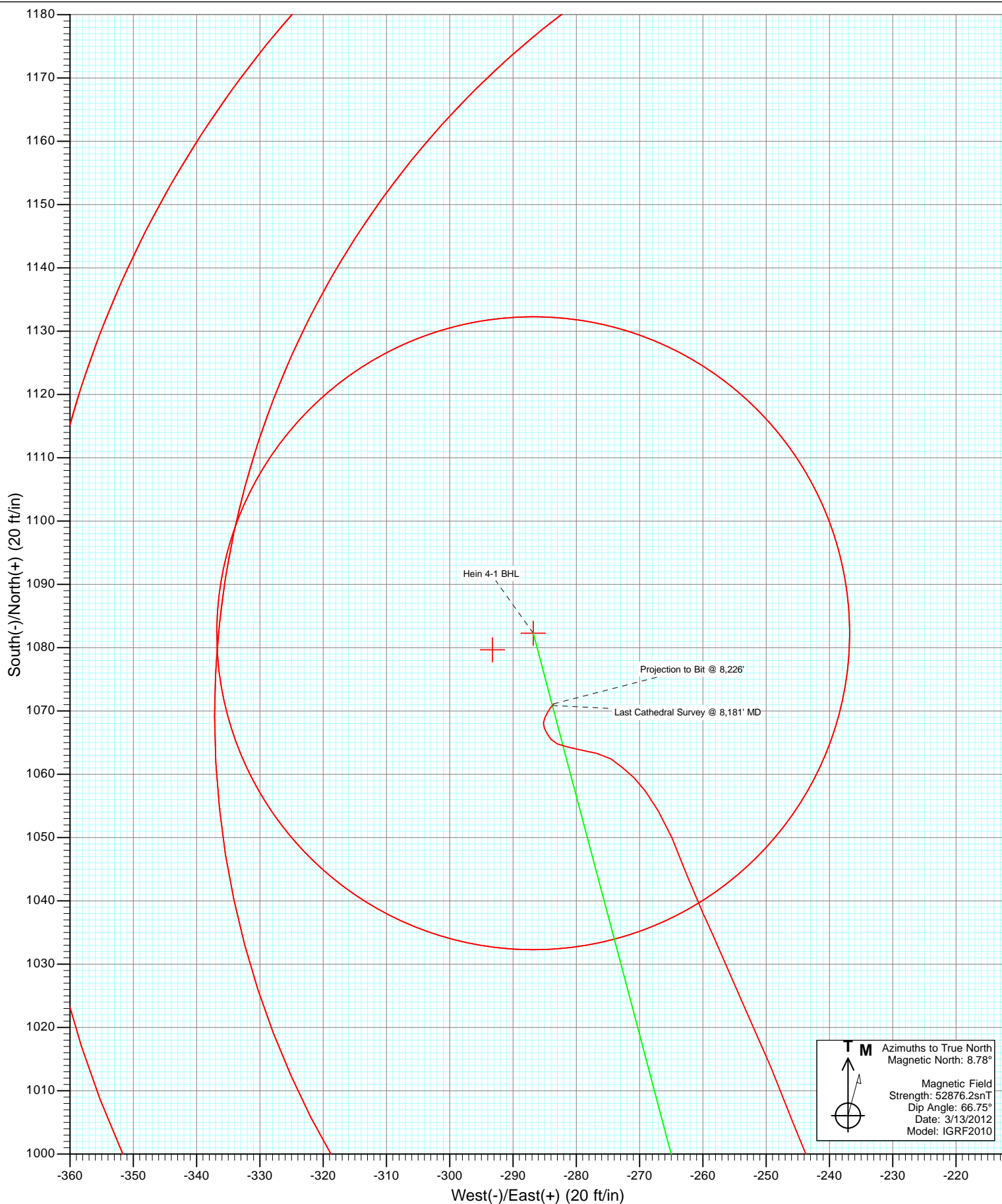


Azimuths to True North  
Magnetic North: 8.78°

Magnetic Field  
Strength: 52876.2nT  
Dip Angle: 66.75°  
Date: 3/13/2012  
Model: IGRF2010

DD Hein 4-1 125270/156555; LR 15' KB @ 4959.0ft (Original Well Elev) North American Datum 1983 Well Hein 4-1, True North							
Type	Target	Azimuth	Origin	Type	N/S	E/W	From TVD
Target	Hein 4-1 BHL	345.16	Slot		0.0	0.0	0.0
Name	Legal Box #4, 4-1	TVD	+N/-S	+E/-W	Latitude	Longitude	
	Hein 4-1 BHL	-5000.0	1079.7	-293.2	40.085699	-104.846482	
		8117.0	1082.3	-286.8	40.085706	-104.846459	



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 4-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Well:</b>	Hein 4-1	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

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

Site		S01N-67W-01-22 (Hein 5-1 Pad)			
Site Position:		Northing:	1,273,693.57 ft	Latitude:	40.082817
From:	Lat/Long	Easting:	3,183,160.75 ft	Longitude:	-104.845435
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.42 °

Well	Hein 4-1					
Well Position	+N/-S	0.0 ft	Northing:	1,273,663.69 ft	Latitude:	40.082735
	+E/-W	0.0 ft	Easting:	3,183,161.25 ft	Longitude:	-104.845434
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,944.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/13/2012	8.78	66.75	52,876

<b>Design</b>	DD				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	345.16	

<b>Survey Program</b>	<b>Date</b>	4/17/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.0	8,226.0	Survey #1 (DD)	MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
126.0	0.30	135.20	126.0	-0.2	0.2	-0.3	0.24	0.24		
188.0	0.10	336.50	188.0	-0.3	0.3	-0.4	0.64	-0.32		
250.0	1.60	347.90	250.0	0.6	0.1	0.5	2.42	2.42		
312.0	2.50	358.40	312.0	2.8	-0.1	2.7	1.57	1.45		
374.0	3.20	348.40	373.9	5.8	-0.5	5.8	1.38	1.13		
419.0	3.20	348.40	418.8	8.3	-1.0	8.3	0.00	0.00		
505.0	4.30	337.10	504.6	13.6	-2.7	13.9	1.54	1.28		
590.0	5.30	335.10	589.3	20.1	-5.6	20.9	1.19	1.18		
675.0	7.40	336.30	673.8	28.7	-9.5	30.2	2.48	2.47		
761.0	8.90	337.00	758.9	39.9	-14.3	42.2	1.75	1.74		
846.0	9.70	339.70	842.8	52.7	-19.4	55.9	1.07	0.94		
911.0	11.20	345.70	906.7	63.9	-22.8	67.6	2.85	2.31		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 4-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Well:</b>	Hein 4-1	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	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
1,077.0	13.00	359.10	1,069.1	98.2	-27.1	101.9	2.00	1.08	
1,162.0	15.20	0.30	1,151.5	118.9	-27.2	121.9	2.61	2.59	
1,247.0	16.30	353.40	1,233.3	141.9	-28.5	144.5	2.55	1.29	
1,333.0	16.90	346.70	1,315.7	166.1	-32.8	168.9	2.33	0.70	
1,418.0	17.50	336.50	1,397.0	189.8	-40.7	193.9	3.61	0.71	
1,504.0	17.80	338.10	1,478.9	213.9	-50.8	219.7	0.66	0.35	
1,590.0	17.30	336.20	1,560.9	237.8	-60.8	245.4	0.88	-0.58	
1,675.0	17.00	334.20	1,642.1	260.5	-71.3	270.1	0.78	-0.35	
1,761.0	16.50	338.10	1,724.5	283.2	-81.4	294.6	1.43	-0.58	
1,846.0	16.10	346.30	1,806.1	305.8	-88.6	318.3	2.75	-0.47	
1,932.0	14.70	344.40	1,889.0	327.9	-94.4	341.2	1.73	-1.63	
2,017.0	13.30	340.90	1,971.5	347.5	-100.5	361.7	1.92	-1.65	
2,103.0	12.20	341.60	2,055.3	365.5	-106.6	380.6	1.29	-1.28	
2,188.0	11.40	349.90	2,138.5	382.3	-110.9	398.0	2.20	-0.94	
2,274.0	10.50	350.60	2,223.0	398.4	-113.7	414.2	1.06	-1.05	
2,359.0	8.90	348.80	2,306.8	412.5	-116.2	428.5	1.92	-1.88	
2,445.0	7.60	344.20	2,391.9	424.5	-119.1	440.8	1.69	-1.51	
2,530.0	9.20	345.20	2,476.0	436.5	-122.3	453.3	1.89	1.88	
2,616.0	8.40	343.50	2,560.9	449.1	-125.9	466.4	0.98	-0.93	
2,702.0	7.40	342.00	2,646.1	460.4	-129.4	478.2	1.19	-1.16	
2,787.0	8.20	351.40	2,730.3	471.6	-132.0	489.7	1.77	0.94	
2,873.0	9.40	350.30	2,815.3	484.7	-132.5	502.5	2.56	1.40	
2,958.0	11.40	346.60	2,899.0	499.8	-134.0	517.5	4.27	2.35	
3,044.0	10.80	347.30	2,983.3	515.9	-137.7	534.0	0.72	-0.70	
3,129.0	10.30	346.50	3,066.9	531.1	-141.3	549.6	0.61	-0.59	
3,215.0	8.70	347.70	3,151.7	544.9	-144.4	563.8	1.87	-1.86	
3,300.0	10.00	350.80	3,235.6	558.5	-147.0	577.5	1.64	1.53	
3,386.0	8.70	351.50	3,320.5	572.3	-149.1	591.4	1.52	-1.51	
3,471.0	9.70	349.10	3,404.4	585.7	-151.4	605.0	1.26	1.18	
3,556.0	9.20	346.60	3,488.2	599.3	-154.4	618.9	0.76	-0.59	
3,642.0	11.30	355.50	3,572.8	614.4	-156.6	634.1	3.05	2.44	
3,727.0	10.70	353.70	3,656.3	630.6	-158.1	650.0	0.81	-0.71	
3,813.0	8.70	354.30	3,741.0	645.0	-159.7	664.4	2.33	-2.33	
3,898.0	5.80	4.80	3,825.4	655.7	-159.9	674.8	3.74	-3.41	
3,984.0	11.00	358.20	3,910.4	668.2	-159.8	686.9	6.14	6.05	
4,069.0	9.50	357.20	3,994.0	683.3	-160.4	701.6	1.78	-1.76	
4,155.0	10.60	352.60	4,078.7	698.3	-161.8	716.4	1.58	1.28	
4,240.0	10.00	355.20	4,162.4	713.4	-163.4	731.4	0.89	-0.71	
4,326.0	9.40	350.80	4,247.1	727.7	-165.2	745.8	1.11	-0.70	
4,412.0	9.40	346.50	4,332.0	741.5	-167.9	759.8	0.82	0.00	
4,497.0	9.00	340.40	4,415.9	754.5	-171.8	773.3	1.24	-0.47	
4,583.0	8.10	339.60	4,500.9	766.5	-176.2	786.1	1.06	-1.05	
4,668.0	6.90	340.50	4,585.2	776.9	-179.9	797.1	1.42	-1.41	
4,754.0	6.50	338.70	4,670.6	786.4	-183.4	807.1	0.53	-0.47	
4,839.0	7.80	343.20	4,754.9	796.4	-186.9	817.7	1.66	1.53	
4,925.0	8.60	356.30	4,840.1	808.4	-189.0	829.8	2.36	0.93	
5,010.0	10.40	352.20	4,923.9	822.3	-190.4	843.6	2.26	2.12	
5,096.0	11.10	349.50	5,008.4	838.1	-193.0	859.6	1.00	0.81	
5,182.0	12.00	346.60	5,092.7	855.0	-196.6	876.8	1.25	1.05	
5,267.0	12.50	338.90	5,175.7	872.2	-201.9	894.8	2.01	0.59	
5,352.0	12.60	331.50	5,258.7	888.9	-209.6	912.9	1.89	0.12	
5,438.0	11.30	337.40	5,342.8	904.9	-217.4	930.4	2.07	-1.51	
5,524.0	11.20	343.50	5,427.2	920.7	-223.0	947.1	1.39	-0.12	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 4-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Well:</b>	Hein 4-1	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	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
5,609.0	8.90	341.30	5,510.9	934.8	-227.4	961.9	2.74	-2.71	
5,695.0	9.10	352.30	5,595.8	947.9	-230.5	975.3	2.01	0.23	
5,780.0	8.30	354.40	5,679.8	960.6	-232.0	988.0	1.01	-0.94	
5,866.0	6.10	351.00	5,765.2	971.3	-233.3	998.7	2.60	-2.56	
5,951.0	5.20	344.20	5,849.7	979.5	-235.0	1,007.0	1.32	-1.06	
6,036.0	5.10	333.20	5,934.4	986.6	-237.8	1,014.6	1.17	-0.12	
6,122.0	7.00	336.40	6,019.9	994.8	-241.6	1,023.5	2.24	2.21	
6,208.0	7.00	339.30	6,105.3	1,004.5	-245.6	1,033.9	0.41	0.00	
6,293.0	6.50	337.00	6,189.7	1,013.8	-249.3	1,043.8	0.67	-0.59	
6,379.0	6.50	335.70	6,275.1	1,022.7	-253.2	1,053.4	0.17	0.00	
6,464.0	5.90	337.00	6,359.6	1,031.1	-256.9	1,062.5	0.72	-0.71	
6,550.0	4.50	334.60	6,445.3	1,038.2	-260.0	1,070.2	1.65	-1.63	
6,635.0	4.50	339.80	6,530.0	1,044.4	-262.6	1,076.8	0.48	0.00	
6,721.0	3.60	335.90	6,615.8	1,050.0	-264.9	1,082.8	1.09	-1.05	
6,806.0	2.80	329.50	6,700.7	1,054.2	-267.0	1,087.4	1.03	-0.94	
6,977.0	1.60	313.60	6,871.6	1,059.5	-270.9	1,093.5	0.78	-0.70	
7,062.0	1.60	309.60	6,956.5	1,061.0	-272.7	1,095.5	0.13	0.00	
7,148.0	1.50	304.00	7,042.5	1,062.4	-274.5	1,097.3	0.21	-0.12	
7,233.0	1.80	281.30	7,127.5	1,063.3	-276.8	1,098.7	0.84	0.35	
7,319.0	1.70	281.80	7,213.4	1,063.8	-279.3	1,099.9	0.12	-0.12	
7,404.0	1.20	284.70	7,298.4	1,064.3	-281.4	1,100.9	0.59	-0.59	
7,490.0	1.00	290.60	7,384.4	1,064.8	-283.0	1,101.8	0.27	-0.23	
7,575.0	0.70	325.80	7,469.4	1,065.5	-284.0	1,102.7	0.69	-0.35	
7,661.0	0.70	325.20	7,555.4	1,066.4	-284.6	1,103.7	0.01	0.00	
7,746.0	0.70	341.60	7,640.3	1,067.3	-285.0	1,104.7	0.23	0.00	
7,832.0	0.40	1.40	7,726.3	1,068.1	-285.2	1,105.5	0.41	-0.35	
7,917.0	0.70	22.60	7,811.3	1,068.9	-285.0	1,106.2	0.42	0.35	
8,003.0	0.70	31.30	7,897.3	1,069.8	-284.5	1,107.0	0.12	0.00	
8,088.0	0.30	35.70	7,982.3	1,070.4	-284.1	1,107.5	0.47	-0.47	
8,181.0	0.40	38.70	8,075.3	1,070.9	-283.8	1,107.8	0.11	0.11	Last Cathedral Survey @ 8,181' MD
8,226.0	0.40	38.70	8,120.3	1,071.1	-283.6	1,108.0	0.00	0.00	Projection to Bit @ 8,226'

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 4-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Original Well Elev)
<b>Well:</b>	Hein 4-1	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	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									
Legal Box #4, 4-1	0.00	0.00	-5,000.0	1,079.7	-293.2	1,274,741.17	3,182,860.05	40.085699	-104.846482
- actual wellpath misses target center by 5123.6ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W400.0 H400.0 D0.0)									
Hein 4-1 BHL	0.00	0.42	8,117.0	1,082.3	-286.8	1,274,743.83	3,182,866.47	40.085706	-104.846459
- actual wellpath misses target center by 11.6ft at 8222.7ft MD (8117.0 TVD, 1071.1 N, -283.6 E)									
- Circle (radius 50.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,181.0	8,075.3	1,070.9	-283.8	Last Cathedral Survey @ 8,181' MD	
8,226.0	8,120.3	1,071.1	-283.6	Projection to Bit @ 8,226'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_