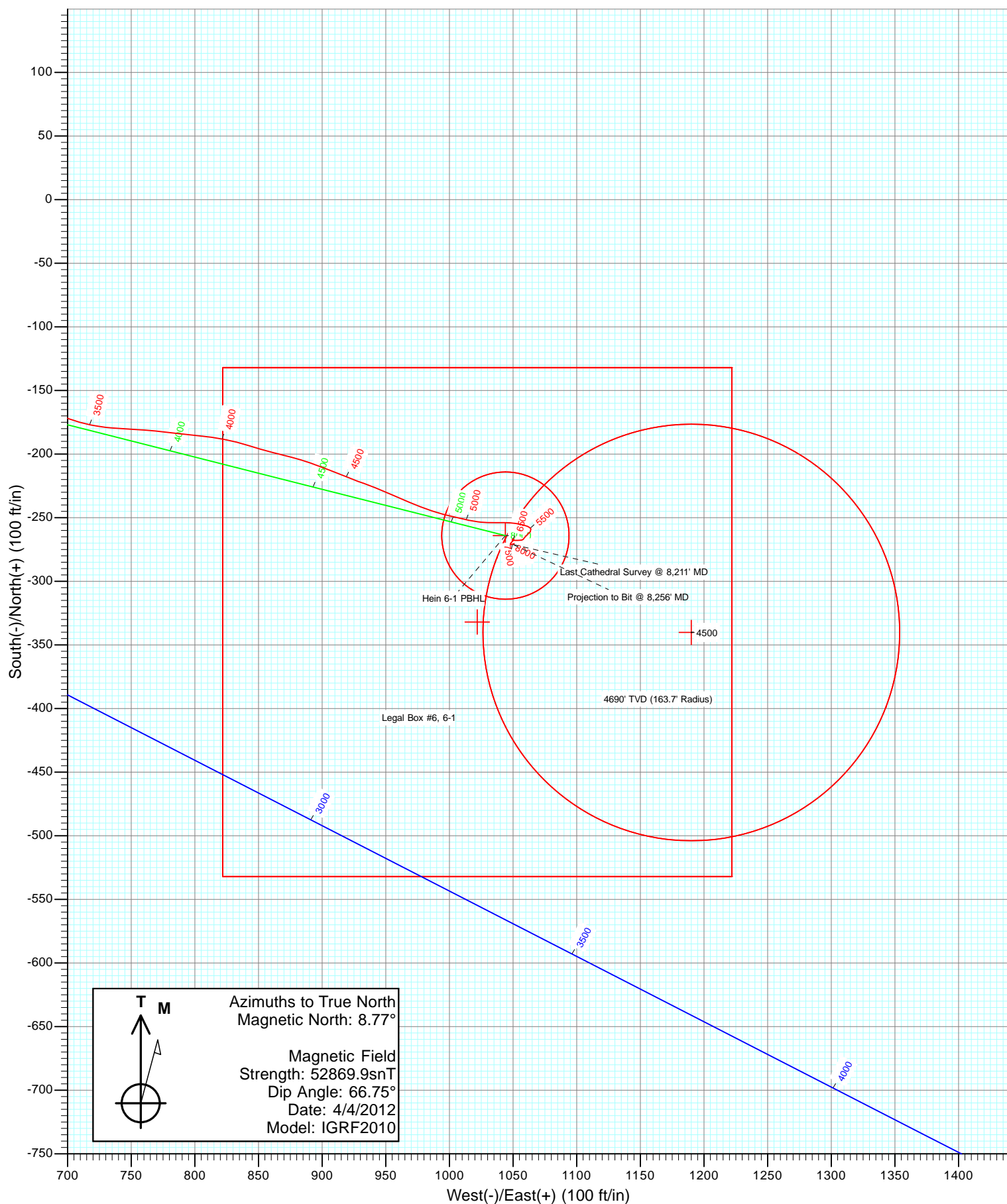


Azimuths to True North  
Magnetic North: 8.77°

Magnetic Field  
Strength: 52869.9snT  
Dip Angle: 66.75°  
Date: 4/4/2012  
Model: IGRF2010

DD Hein 6-1 125255; 156455; DN 15' KB @ 4959.0ft (Xtreme 15) North American Datum 1983 Well Hein 6-1, True North							
Type Target	Target Hein 6-1 PBHL	Azimuth 104.19	Origin Type Slot	N/S 0.0	E/W 0.0	From TVD 0.0	
Name Legal Box #6, 6-1 Hein 6-1 PBHL		TVD -5000.0 8117.0	+N/-S -332.0 -264.1	+E/-W 1021.9 1044.0	Latitude 40.081850 40.082037	Longitude -104.841782 -104.841703	



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 6-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Well:</b>	Hein 6-1	<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 6-1					
Well Position	+N/-S	0.0 ft	Northing:	1,273,673.52 ft	Latitude:	40.082762
	+E/-W	0.0 ft	Easting:	3,183,161.18 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	4/4/2012	8.77	66.75	52,870

<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 (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	104.19	

<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>	
91.0	8,256.0	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		
91.0	0.30	86.40	91.0	0.0	0.2	0.2	0.33	0.33		
153.0	1.10	87.80	153.0	0.0	1.0	1.0	1.29	1.29		
215.0	1.50	102.90	215.0	-0.1	2.4	2.3	0.84	0.65		
277.0	2.60	94.80	276.9	-0.4	4.6	4.5	1.83	1.77		
339.0	3.30	98.20	338.9	-0.8	7.7	7.7	1.16	1.13		
372.0	3.30	107.00	371.8	-1.2	9.6	9.6	1.53	0.00		
455.0	3.40	128.80	454.7	-3.4	13.8	14.2	1.53	0.12		
540.0	2.90	123.10	539.5	-6.2	17.6	18.5	0.69	-0.59		
626.0	3.60	114.80	625.4	-8.5	21.8	23.3	0.98	0.81		
711.0	6.60	114.80	710.0	-11.7	28.7	30.7	3.53	3.53		
797.0	8.50	112.20	795.3	-16.2	39.1	41.8	2.24	2.21		
882.0	10.20	110.50	879.2	-21.2	51.9	55.5	2.03	2.00		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 6-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Well:</b>	Hein 6-1	<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
961.0	11.70	108.80	956.7	-26.2	66.1	70.5	1.94	1.90	
1,034.0	13.80	108.90	1,027.9	-31.4	81.3	86.5	2.88	2.88	
1,119.0	15.60	108.30	1,110.1	-38.3	101.8	108.0	2.13	2.12	
1,205.0	16.30	105.40	1,192.8	-45.1	124.4	131.6	1.23	0.81	
1,290.0	16.30	94.70	1,274.4	-49.3	147.8	155.3	3.53	0.00	
1,376.0	18.00	92.80	1,356.6	-50.9	173.1	180.3	2.08	1.98	
1,462.0	17.20	92.70	1,438.6	-52.1	199.0	205.7	0.93	-0.93	
1,547.0	18.40	93.90	1,519.5	-53.6	225.0	231.3	1.48	1.41	
1,632.0	19.20	98.50	1,600.0	-56.6	252.2	258.4	1.98	0.94	
1,718.0	18.40	98.20	1,681.4	-60.7	279.6	285.9	0.94	-0.93	
1,803.0	19.00	97.90	1,761.9	-64.5	306.6	313.0	0.71	0.71	
1,889.0	17.80	103.40	1,843.5	-69.4	333.2	340.1	2.45	-1.40	
1,974.0	16.30	109.80	1,924.8	-76.5	357.1	365.0	2.82	-1.76	
2,060.0	15.20	107.40	2,007.5	-83.9	379.2	388.2	1.49	-1.28	
2,145.0	14.00	103.30	2,089.8	-89.6	399.9	409.6	1.86	-1.41	
2,231.0	14.40	105.10	2,173.2	-94.8	420.3	430.7	0.69	0.47	
2,316.0	13.00	103.10	2,255.8	-99.7	439.8	450.9	1.74	-1.65	
2,402.0	13.50	104.30	2,339.5	-104.4	459.0	470.6	0.66	0.58	
2,487.0	14.70	102.00	2,421.9	-109.1	479.1	491.3	1.56	1.41	
2,573.0	12.80	100.60	2,505.4	-113.1	499.2	511.7	2.24	-2.21	
2,658.0	12.00	106.00	2,588.5	-117.3	516.9	529.9	1.66	-0.94	
2,744.0	11.60	104.70	2,672.6	-122.0	533.9	547.5	0.56	-0.47	
2,829.0	13.10	109.10	2,755.7	-127.3	551.3	565.6	2.08	1.76	
2,915.0	12.70	109.80	2,839.5	-133.7	569.4	584.8	0.50	-0.47	
3,000.0	14.90	105.90	2,922.0	-139.8	588.7	605.0	2.81	2.59	
3,086.0	13.10	105.40	3,005.5	-145.4	608.7	625.8	2.10	-2.09	
3,171.0	13.30	98.20	3,088.2	-149.4	627.7	645.1	1.95	0.24	
3,257.0	12.00	108.20	3,172.2	-153.6	646.0	663.9	2.96	-1.51	
3,342.0	12.70	106.90	3,255.2	-159.1	663.3	682.0	0.89	0.82	
3,428.0	14.20	110.00	3,338.8	-165.4	682.2	702.0	1.93	1.74	
3,513.0	12.50	110.00	3,421.5	-172.2	700.7	721.5	2.00	-2.00	
3,599.0	12.40	101.10	3,505.5	-177.1	718.5	740.0	2.23	-0.12	
3,684.0	10.80	94.30	3,588.8	-179.5	735.4	756.9	2.47	-1.88	
3,770.0	11.10	93.10	3,673.2	-180.5	751.7	773.0	0.44	0.35	
3,855.0	12.20	95.40	3,756.5	-181.8	768.8	789.9	1.40	1.29	
3,941.0	11.80	97.60	3,840.6	-183.8	786.6	807.6	0.71	-0.47	
4,026.0	12.40	95.00	3,923.7	-185.8	804.3	825.3	0.95	0.71	
4,112.0	13.20	101.00	4,007.6	-188.4	823.1	844.2	1.80	0.93	
4,197.0	13.40	107.40	4,090.3	-193.2	842.0	863.7	1.75	0.24	
4,283.0	11.90	104.70	4,174.2	-198.5	860.1	882.5	1.87	-1.74	
4,368.0	10.20	103.60	4,257.6	-202.5	875.9	898.8	2.02	-2.00	
4,454.0	11.00	110.10	4,342.2	-207.1	891.0	914.6	1.67	0.93	
4,539.0	10.60	110.50	4,425.7	-212.6	906.0	930.4	0.48	-0.47	
4,625.0	10.70	112.70	4,510.2	-218.5	920.7	946.2	0.49	0.12	
4,710.0	11.70	109.60	4,593.6	-224.4	936.1	962.6	1.37	1.18	
4,796.0	12.50	113.90	4,677.6	-231.1	952.9	980.4	1.40	0.93	
4,881.0	10.90	113.20	4,760.9	-238.0	968.7	997.4	1.89	-1.88	
4,967.0	11.60	108.40	4,845.2	-243.9	984.3	1,014.1	1.36	0.81	
5,052.0	10.90	103.80	4,928.6	-248.5	1,000.3	1,030.7	1.34	-0.82	
5,138.0	10.00	101.90	5,013.2	-252.0	1,015.5	1,046.2	1.12	-1.05	
5,223.0	9.20	92.60	5,097.0	-253.8	1,029.5	1,060.3	2.05	-0.94	
5,309.0	7.90	88.00	5,182.0	-253.9	1,042.2	1,072.7	1.71	-1.51	
5,394.0	4.20	102.50	5,266.5	-254.4	1,051.1	1,081.4	4.68	-4.35	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 6-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Site:</b>	S01N-67W-01-22 (Hein 5-1 Pad)	<b>MD Reference:</b>	15' KB @ 4959.0ft (Xtreme 15)
<b>Well:</b>	Hein 6-1	<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
5,480.0	3.70	99.70	5,352.3	-255.6	1,056.9	1,087.3	0.62	-0.58	
5,565.0	2.70	114.70	5,437.2	-256.9	1,061.5	1,092.0	1.52	-1.18	
5,651.0	1.80	148.40	5,523.1	-258.9	1,064.0	1,095.0	1.82	-1.05	
5,736.0	2.10	229.20	5,608.1	-261.0	1,063.5	1,095.1	2.99	0.35	
5,822.0	1.60	222.60	5,694.1	-262.9	1,061.5	1,093.6	0.63	-0.58	
5,907.0	1.40	222.90	5,779.0	-264.6	1,060.0	1,092.5	0.24	-0.24	
5,993.0	0.90	219.90	5,865.0	-265.8	1,058.9	1,091.7	0.59	-0.58	
6,078.0	0.90	209.90	5,950.0	-266.9	1,058.1	1,091.3	0.18	0.00	
6,164.0	1.20	265.70	6,036.0	-267.6	1,056.9	1,090.2	1.18	0.35	
6,249.0	1.30	267.00	6,121.0	-267.7	1,055.0	1,088.4	0.12	0.12	
6,335.0	0.90	263.50	6,207.0	-267.8	1,053.4	1,086.9	0.47	-0.47	
6,420.0	0.70	275.50	6,291.9	-267.9	1,052.2	1,085.7	0.31	-0.24	
6,506.0	0.70	266.50	6,377.9	-267.8	1,051.1	1,084.7	0.13	0.00	
6,591.0	0.80	278.80	6,462.9	-267.8	1,050.0	1,083.6	0.22	0.12	
6,677.0	0.20	310.10	6,548.9	-267.6	1,049.3	1,082.9	0.74	-0.70	
6,762.0	0.30	34.40	6,633.9	-267.3	1,049.3	1,082.9	0.40	0.12	
6,848.0	0.60	47.90	6,719.9	-266.8	1,049.8	1,083.2	0.37	0.35	
6,933.0	0.60	114.80	6,804.9	-266.7	1,050.5	1,083.9	0.78	0.00	
7,019.0	1.10	224.30	6,890.9	-267.5	1,050.4	1,083.9	1.65	0.58	
7,104.0	1.10	216.20	6,975.9	-268.7	1,049.3	1,083.2	0.18	0.00	
7,189.0	0.70	230.00	7,060.9	-269.7	1,048.4	1,082.6	0.53	-0.47	
7,275.0	0.40	197.80	7,146.9	-270.4	1,047.9	1,082.2	0.49	-0.35	
7,360.0	0.30	165.00	7,231.9	-270.9	1,047.9	1,082.3	0.26	-0.12	
7,446.0	0.30	82.90	7,317.9	-271.0	1,048.2	1,082.7	0.46	0.00	
7,532.0	0.40	80.80	7,403.9	-271.0	1,048.7	1,083.1	0.12	0.12	
7,617.0	0.50	80.30	7,488.9	-270.9	1,049.4	1,083.7	0.12	0.12	
7,702.0	0.20	73.00	7,573.9	-270.8	1,049.9	1,084.2	0.36	-0.35	
7,788.0	0.20	81.50	7,659.9	-270.7	1,050.2	1,084.5	0.03	0.00	
7,873.0	0.40	50.30	7,744.9	-270.5	1,050.5	1,084.8	0.30	0.24	
7,959.0	0.00	43.10	7,830.9	-270.3	1,050.8	1,085.0	0.47	-0.47	
8,044.0	0.30	223.70	7,915.9	-270.4	1,050.6	1,084.9	0.35	0.35	
8,130.0	0.40	206.40	8,001.9	-270.9	1,050.3	1,084.7	0.17	0.12	
8,211.0	0.10	154.80	8,082.9	-271.2	1,050.2	1,084.7	0.43	-0.37	Last Cathedral Survey @ 8,211' MD
8,256.0	0.10	154.80	8,127.9	-271.3	1,050.3	1,084.7	0.00	0.00	Projection to Bit @ 8,256' MD

# Cathedral Energy Services

## Survey Report

**Company:** Anadarko Petroleum Corporation  
**Project:** DJ Wattenberg  
**Site:** S01N-67W-01-22 (Hein 5-1 Pad)  
**Well:** Hein 6-1  
**Wellbore:** DD  
**Design:** DD

**Local Co-ordinate Reference:** Well Hein 6-1  
**TVD Reference:** 15' KB @ 4959.0ft (Xtreme 15)  
**MD Reference:** 15' KB @ 4959.0ft (Xtreme 15)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** 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									
Hein 6-1 PBHL	0.00	0.43	8,117.0	-264.1	1,044.0	1,273,417.17	3,184,207.09	40.082037	-104.841703
- actual wellpath misses target center by 9.5ft at 8245.1ft MD (8117.0 TVD, -271.2 N, 1050.3 E)									
- Circle (radius 50.0)									
Legal Box #6, 6-1	0.00	0.00	-5,000.0	-332.0	1,021.9	1,273,349.07	3,184,185.45	40.081850	-104.841782
- actual wellpath misses target center by 5114.1ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W400.0 H400.0 D0.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,211.0	8,082.9	-271.2	1,050.2	Last Cathedral Survey @ 8,211' MD	
8,256.0	8,127.9	-271.3	1,050.3	Projection to Bit @ 8,256' MD	

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