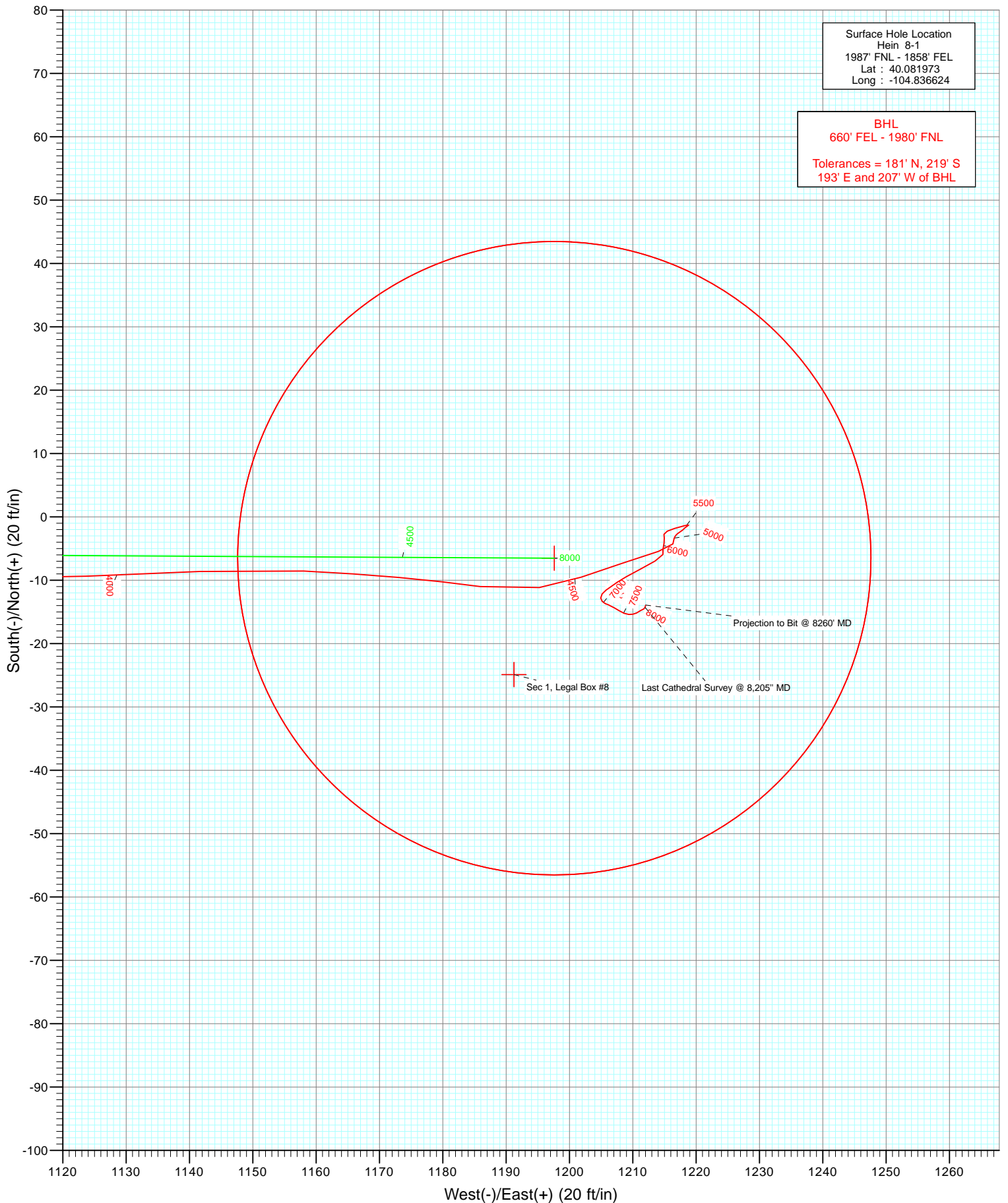


Azimuths to True North  
Magnetic North: 8.78°

Magnetic Field  
Strength: 52877.5snT  
Dip Angle: 66.76°  
Date: 3/12/2012  
Model: IGRF2010

Type	Target	Target	Azimuth	Origin	Type	N/S	E/W	From	TVD
		Hein 8-1 PBHL	90.31	Slot		0.0	0.0		0.0
Name			+N/-S	+E/-W	Latitude				Longitude
Sec 1, Legal Box #8			-24.9	1191.3	40.081905				-104.832367
Hein 8-1 PBHL			-6.5	1197.6	40.081955				-104.832344

DD  
Hein 8-1  
125302/155655 (SH); LR  
KB=15' @ 4908.0ft (Xtreme 11)  
North American Datum 1983  
Well Hein 8-1, True North



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 8-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Site:</b>	SWNE Sec1-T1N-R67W (Hein 2-1)	<b>MD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Well:</b>	Hein 8-1	<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		SWNE Sec1-T1N-R67W (Hein 2-1)			
Site Position:		Northing:	1,273,436.50 ft	Latitude:	40.082061
From:	Lat/Long	Easting:	3,185,627.90 ft	Longitude:	-104.836625
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.43 °

Well	Hein 8-1					
Well Position	+N/-S	0.0 ft	Northing:	1,273,404.44 ft	Latitude:	40.081973
	+E/-W	0.0 ft	Easting:	3,185,628.42 ft	Longitude:	-104.836624
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,893.0 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	3/12/2012	8.77	66.76	52,877

<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	90.31	

<b>Survey Program</b>	<b>Date</b>	5/1/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
76.0	8,260.0	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	Sec 1, Legal Box #8	
76.0	0.70	349.60	76.0	0.5	-0.1	-0.1	0.92	0.92		
163.0	0.40	53.20	163.0	1.2	0.1	0.1	0.73	-0.34		
252.0	0.60	90.80	252.0	1.3	0.8	0.8	0.42	0.22		
339.0	1.60	98.80	339.0	1.1	2.4	2.4	1.16	1.15		
416.0	2.40	96.40	415.9	0.8	5.1	5.1	1.04	1.04		
507.0	4.10	93.60	506.8	0.4	10.2	10.2	1.88	1.87		
597.0	6.50	96.70	596.4	-0.4	18.5	18.5	2.68	2.67		
688.0	9.00	95.90	686.5	-1.7	30.7	30.7	2.75	2.75		
779.0	10.80	92.40	776.2	-2.8	46.3	46.3	2.08	1.98		
870.0	12.80	88.20	865.3	-2.9	64.9	64.9	2.39	2.20		
903.0	12.80	87.80	897.4	-2.6	72.2	72.2	0.27	0.00		
982.0	13.70	90.50	974.3	-2.4	90.3	90.3	1.38	1.14		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 8-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Site:</b>	SWNE Sec1-T1N-R67W (Hein 2-1)	<b>MD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Well:</b>	Hein 8-1	<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
1,073.0	14.80	93.60	1,062.5	-3.2	112.7	112.7	1.47	1.21	
1,164.0	16.30	91.50	1,150.2	-4.2	137.1	137.1	1.76	1.65	
1,254.0	17.40	88.40	1,236.3	-4.2	163.1	163.2	1.58	1.22	
1,345.0	19.00	86.60	1,322.8	-2.9	191.5	191.5	1.86	1.76	
1,436.0	20.20	85.80	1,408.5	-0.9	222.0	222.0	1.35	1.32	
1,527.0	21.40	87.60	1,493.6	0.9	254.2	254.2	1.49	1.32	
1,617.0	21.60	88.90	1,577.3	1.9	287.2	287.2	0.57	0.22	
1,708.0	20.10	90.80	1,662.4	2.0	319.6	319.6	1.81	-1.65	
1,799.0	19.80	92.80	1,747.9	1.1	350.6	350.6	0.82	-0.33	
1,889.0	19.60	92.70	1,832.6	-0.4	380.9	380.9	0.23	-0.22	
1,980.0	19.40	92.10	1,918.4	-1.7	411.3	411.3	0.31	-0.22	
2,071.0	19.60	90.30	2,004.2	-2.3	441.6	441.6	0.70	0.22	
2,162.0	20.00	92.00	2,089.8	-2.9	472.5	472.5	0.77	0.44	
2,253.0	20.10	91.00	2,175.3	-3.7	503.6	503.7	0.39	0.11	
2,343.0	19.90	88.70	2,259.9	-3.7	534.4	534.4	0.90	-0.22	
2,434.0	19.30	89.50	2,345.6	-3.2	564.9	564.9	0.72	-0.66	
2,525.0	20.00	89.80	2,431.3	-3.0	595.5	595.5	0.78	0.77	
2,616.0	19.60	89.10	2,516.9	-2.7	626.4	626.4	0.51	-0.44	
2,706.0	18.80	88.70	2,601.9	-2.1	656.0	656.0	0.90	-0.89	
2,797.0	17.60	88.70	2,688.4	-1.5	684.4	684.4	1.32	-1.32	
2,888.0	17.90	90.70	2,775.0	-1.3	712.1	712.1	0.75	0.33	
2,979.0	17.70	93.80	2,861.7	-2.4	739.9	739.9	1.06	-0.22	
3,070.0	20.70	92.10	2,947.6	-3.9	769.8	769.8	3.35	3.30	
3,160.0	21.80	91.90	3,031.5	-5.1	802.4	802.4	1.22	1.22	
3,251.0	21.20	90.50	3,116.2	-5.8	835.7	835.7	0.87	-0.66	
3,342.0	19.40	91.40	3,201.5	-6.3	867.3	867.3	2.01	-1.98	
3,433.0	18.70	88.90	3,287.5	-6.4	897.0	897.0	1.18	-0.77	
3,523.0	19.20	94.90	3,372.6	-7.4	926.2	926.2	2.23	0.56	
3,614.0	19.40	92.60	3,458.5	-9.3	956.2	956.2	0.86	0.22	
3,705.0	19.60	90.70	3,544.3	-10.2	986.5	986.6	0.73	0.22	
3,796.0	20.40	88.60	3,629.8	-10.0	1,017.6	1,017.7	1.18	0.88	
3,887.0	20.00	89.90	3,715.2	-9.6	1,049.1	1,049.1	0.66	-0.44	
3,977.0	16.70	90.10	3,800.6	-9.6	1,077.4	1,077.4	3.67	-3.67	
4,068.0	15.10	90.10	3,888.2	-9.6	1,102.3	1,102.3	1.76	-1.76	
4,159.0	12.00	88.30	3,976.6	-9.4	1,123.6	1,123.7	3.44	-3.41	
4,250.0	10.90	86.90	4,065.8	-8.6	1,141.7	1,141.7	1.25	-1.21	
4,340.0	10.10	92.80	4,154.3	-8.5	1,158.1	1,158.1	1.49	-0.89	
4,431.0	9.00	95.20	4,244.0	-9.6	1,173.1	1,173.1	1.29	-1.21	
4,522.0	7.30	97.60	4,334.1	-11.0	1,185.9	1,186.0	1.90	-1.87	
4,613.0	4.60	80.50	4,424.6	-11.2	1,195.3	1,195.3	3.52	-2.97	
4,703.0	4.10	71.00	4,514.4	-9.5	1,201.9	1,201.9	0.97	-0.56	
4,794.0	4.60	71.60	4,605.1	-7.3	1,208.4	1,208.4	0.55	0.55	
4,885.0	2.90	72.20	4,695.9	-5.4	1,214.1	1,214.1	1.87	-1.87	
4,976.0	0.60	11.20	4,786.9	-4.3	1,216.3	1,216.3	2.92	-2.53	
5,066.0	0.20	17.90	4,876.9	-3.7	1,216.5	1,216.5	0.45	-0.44	
5,157.0	0.10	353.60	4,967.9	-3.4	1,216.5	1,216.5	0.13	-0.11	
5,248.0	0.40	33.40	5,058.9	-3.1	1,216.7	1,216.7	0.36	0.33	
5,339.0	0.50	52.60	5,149.8	-2.6	1,217.2	1,217.2	0.20	0.11	
5,429.0	0.40	59.10	5,239.8	-2.2	1,217.8	1,217.8	0.12	-0.11	
5,520.0	0.40	34.50	5,330.8	-1.8	1,218.2	1,218.2	0.19	0.00	
5,611.0	0.60	66.20	5,421.8	-1.3	1,218.8	1,218.8	0.37	0.22	
5,701.0	1.30	255.50	5,511.8	-1.4	1,218.3	1,218.3	2.11	0.78	
5,792.0	0.90	252.40	5,602.8	-1.8	1,216.6	1,216.6	0.44	-0.44	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 8-1
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Site:</b>	SWNE Sec1-T1N-R67W (Hein 2-1)	<b>MD Reference:</b>	KB=15' @ 4908.0ft (Xtreme 11)
<b>Well:</b>	Hein 8-1	<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
5,883.0	0.60	245.40	5,693.8	-2.3	1,215.5	1,215.5	0.34	-0.33	
5,974.0	0.40	199.60	5,784.8	-2.8	1,214.9	1,214.9	0.47	-0.22	
6,065.0	0.40	152.10	5,875.8	-3.3	1,215.0	1,215.0	0.35	0.00	
6,155.0	0.70	198.50	5,965.8	-4.1	1,215.0	1,215.0	0.57	0.33	
6,246.0	0.60	178.80	6,056.8	-5.1	1,214.8	1,214.8	0.27	-0.11	
6,337.0	0.40	183.90	6,147.8	-5.9	1,214.8	1,214.8	0.22	-0.22	
6,428.0	1.80	239.60	6,238.8	-7.0	1,213.5	1,213.5	1.77	1.54	
6,518.0	1.70	242.50	6,328.7	-8.3	1,211.1	1,211.1	0.15	-0.11	
6,609.0	1.40	240.40	6,419.7	-9.5	1,209.0	1,209.0	0.34	-0.33	
6,700.0	0.70	235.50	6,510.7	-10.3	1,207.5	1,207.6	0.77	-0.77	
6,790.0	0.70	235.20	6,600.7	-11.0	1,206.6	1,206.7	0.00	0.00	
6,881.0	0.60	233.20	6,691.7	-11.6	1,205.8	1,205.8	0.11	-0.11	
6,972.0	0.50	216.30	6,782.7	-12.2	1,205.2	1,205.2	0.21	-0.11	
7,063.0	0.40	178.00	6,873.7	-12.8	1,204.9	1,205.0	0.34	-0.11	
7,153.0	0.40	133.70	6,963.7	-13.3	1,205.2	1,205.2	0.34	0.00	
7,244.0	0.40	116.10	7,054.7	-13.7	1,205.7	1,205.8	0.13	0.00	
7,335.0	0.20	105.10	7,145.7	-13.9	1,206.1	1,206.2	0.23	-0.22	
7,425.0	0.30	125.60	7,235.7	-14.1	1,206.5	1,206.5	0.15	0.11	
7,516.0	0.50	111.30	7,326.7	-14.3	1,207.0	1,207.1	0.24	0.22	
7,607.0	0.60	126.60	7,417.7	-14.8	1,207.8	1,207.9	0.19	0.11	
7,698.0	0.60	109.90	7,508.6	-15.2	1,208.6	1,208.7	0.19	0.00	
7,788.0	0.40	92.80	7,598.6	-15.4	1,209.4	1,209.4	0.27	-0.22	
7,879.0	0.40	82.80	7,689.6	-15.4	1,210.0	1,210.1	0.08	0.00	
7,970.0	0.40	60.70	7,780.6	-15.2	1,210.6	1,210.7	0.17	0.00	
8,061.0	0.50	57.10	7,871.6	-14.8	1,211.2	1,211.3	0.11	0.11	
8,151.0	0.30	70.20	7,961.6	-14.5	1,211.8	1,211.8	0.24	-0.22	
8,205.0	0.40	15.50	8,015.6	-14.3	1,212.0	1,212.0	0.62	0.19	Last Cathedral Survey @ 8,205" MD
8,255.4	0.40	15.50	8,066.0	-13.9	1,212.0	1,212.1	0.00	0.00	Hein 8-1 PBHL
8,260.0	0.40	15.50	8,070.6	-13.9	1,212.1	1,212.1	0.00	0.00	Projection to Bit @ 8260' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Hein 8-1 PBHL	0.00	0.00	8,066.0	-6.5	1,197.6	1,273,406.88	3,186,826.05	40.081955	-104.832344
- actual wellpath misses target center by 16.2ft at 8255.4ft MD (8066.0 TVD, -13.9 N, 1212.0 E)									
- Circle (radius 50.0)									
Sec 1, Legal Box #8	0.00	0.00	-5,000.0	-24.9	1,191.3	1,273,388.46	3,186,819.83	40.081905	-104.832367
- actual wellpath misses target center by 5140.0ft 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 (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
8,205.0	8,015.6	-14.3	1,212.0	Last Cathedral Survey @ 8,205" MD	
8,260.0	8,070.6	-13.9	1,212.1	Projection to Bit @ 8260' MD	

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