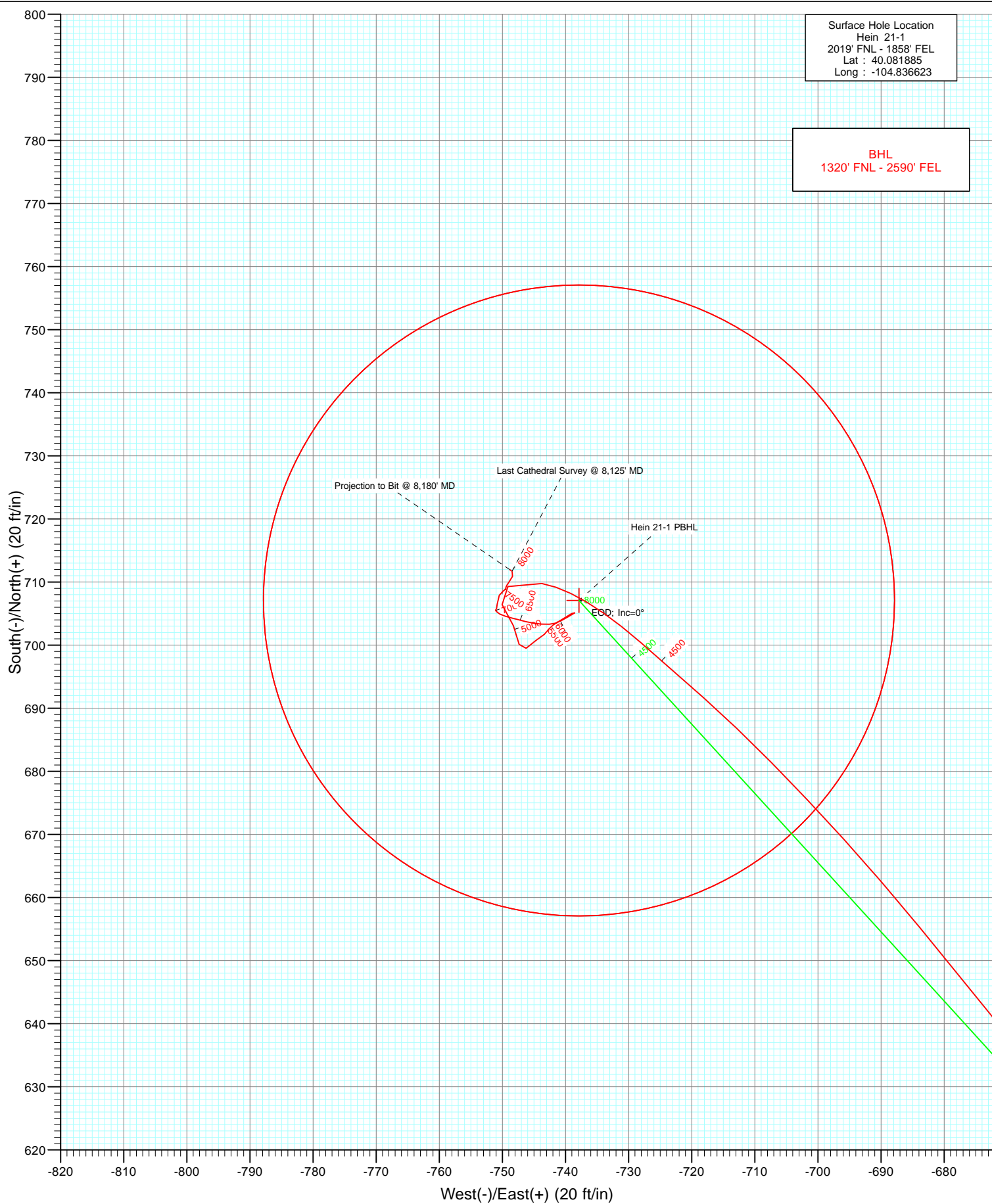


Azimuths to True North  
Magnetic North: 8.76°

Magnetic Field  
Strength: 52862.5nT  
Dip Angle: 66.75°  
Date: 5/3/2012  
Model: IGRF2010

DD Hein 21-1 125312; 155855; DN KB=15' @ 4908.0ft (Xtreme 11) North American Datum 1983 Well Hein 21-1, True North							
Type Target	Target Hein 21-1 PBHL		Azimuth 313.78	Origin Type Slot	N/S 0.0	E/W 0.0	From TVD 0.0
Name Hein 21-1 PBHL		TVD 8066.0	+N/-S 707.1	+E/-W -737.9	Latitude 40.083826	Longitude -104.839260	



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 21-1
<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 21-1	<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 21-1					
Well Position	+N/-S	0.0 ft	Northing:	1,273,372.38 ft	Latitude:	40.081885
	+E/-W	0.0 ft	Easting:	3,185,628.94 ft	Longitude:	-104.836623
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	5/3/2012	8.76	66.75	52,862

<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	313.78	

<b>Survey Program</b>	<b>Date</b>	5/9/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
105.0	8,180.0	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		
105.0	0.20	184.60	105.0	-0.2	0.0	-0.1	0.19	0.19		
193.0	1.00	237.30	193.0	-0.8	-0.7	0.0	1.01	0.91		
281.0	2.30	275.10	281.0	-1.0	-3.1	1.5	1.85	1.48		
370.0	4.10	280.00	369.8	-0.3	-8.0	5.6	2.04	2.02		
461.0	6.20	288.90	460.4	1.9	-15.8	12.7	2.46	2.31		
552.0	8.00	294.00	550.7	6.0	-26.3	23.1	2.09	1.98		
643.0	10.60	294.10	640.5	12.0	-39.7	37.0	2.86	2.86		
734.0	12.00	292.90	729.8	19.1	-56.1	53.7	1.56	1.54		
824.0	13.00	291.20	817.6	26.4	-74.1	71.8	1.18	1.11		
905.0	14.40	289.30	896.3	33.0	-92.1	89.4	1.82	1.73		
1,027.0	13.90	288.60	1,014.6	42.7	-120.3	116.4	0.43	-0.41		
1,118.0	16.70	292.80	1,102.4	51.3	-142.7	138.5	3.31	3.08		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 21-1
<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 21-1	<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
1,209.0	16.90	300.10	1,189.5	63.0	-166.2	163.6	2.33	0.22	
1,300.0	16.20	305.70	1,276.8	77.0	-188.0	189.0	1.91	-0.77	
1,391.0	16.10	309.20	1,364.2	92.4	-208.1	214.2	1.08	-0.11	
1,481.0	16.70	315.60	1,450.5	109.5	-226.8	239.5	2.11	0.67	
1,572.0	16.30	322.90	1,537.8	129.1	-243.7	265.2	2.32	-0.44	
1,663.0	16.30	321.10	1,625.1	149.2	-259.4	290.5	0.56	0.00	
1,754.0	15.10	326.00	1,712.7	169.0	-274.0	314.8	1.96	-1.32	
1,844.0	14.40	325.10	1,799.8	187.9	-287.0	337.2	0.82	-0.78	
1,935.0	13.60	322.70	1,888.1	205.7	-299.9	358.9	1.09	-0.88	
2,026.0	14.10	321.50	1,976.4	222.8	-313.3	380.4	0.63	0.55	
2,117.0	14.60	326.10	2,064.6	241.0	-326.6	402.6	1.37	0.55	
2,208.0	13.30	324.50	2,152.9	259.1	-339.1	424.1	1.49	-1.43	
2,299.0	14.50	325.50	2,241.2	277.0	-351.6	445.5	1.34	1.32	
2,389.0	14.60	322.90	2,328.3	295.3	-364.9	467.8	0.73	0.11	
2,480.0	14.90	315.60	2,416.4	312.8	-380.0	490.8	2.07	0.33	
2,571.0	13.60	315.70	2,504.6	328.8	-395.6	513.2	1.43	-1.43	
2,662.0	13.40	314.40	2,593.0	343.9	-410.6	534.4	0.40	-0.22	
2,753.0	13.70	315.80	2,681.5	359.0	-425.7	555.7	0.49	0.33	
2,844.0	14.60	318.50	2,769.7	375.3	-440.8	577.9	1.23	0.99	
2,934.0	15.70	318.60	2,856.6	392.9	-456.4	601.4	1.22	1.22	
3,025.0	16.30	321.70	2,944.1	412.2	-472.4	626.3	1.15	0.66	
3,116.0	15.20	321.70	3,031.7	431.6	-487.7	650.7	1.21	-1.21	
3,207.0	16.90	316.60	3,119.1	450.5	-504.2	675.8	2.43	1.87	
3,298.0	15.30	315.30	3,206.6	468.7	-521.7	701.0	1.80	-1.76	
3,388.0	14.40	319.20	3,293.6	485.6	-537.4	724.0	1.49	-1.00	
3,479.0	14.60	322.70	3,381.7	503.3	-551.8	746.6	0.99	0.22	
3,570.0	15.30	321.30	3,469.6	521.8	-566.2	769.8	0.87	0.77	
3,661.0	15.70	317.80	3,557.3	540.3	-582.0	794.0	1.12	0.44	
3,752.0	14.50	313.90	3,645.1	557.3	-598.5	817.7	1.73	-1.32	
3,842.0	13.70	313.70	3,732.4	572.5	-614.3	839.6	0.89	-0.89	
3,933.0	13.80	316.70	3,820.8	587.8	-629.5	861.2	0.79	0.11	
4,024.0	14.50	322.30	3,909.1	604.7	-643.9	883.3	1.69	0.77	
4,115.0	15.00	322.30	3,997.1	623.1	-658.1	906.2	0.55	0.55	
4,205.0	12.60	321.10	4,084.4	639.9	-671.4	927.5	2.69	-2.67	
4,296.0	12.40	320.70	4,173.3	655.2	-683.8	947.0	0.24	-0.22	
4,387.0	11.20	317.70	4,262.4	669.3	-696.0	965.6	1.48	-1.32	
4,478.0	9.90	315.50	4,351.8	681.4	-707.4	982.2	1.50	-1.43	
4,569.0	8.90	311.70	4,441.6	691.7	-718.1	997.1	1.29	-1.10	
4,659.0	8.00	310.90	4,530.6	700.4	-728.1	1,010.3	1.01	-1.00	
4,750.0	5.60	301.00	4,621.0	706.9	-736.6	1,020.9	2.93	-2.64	
4,841.0	4.20	280.90	4,711.7	709.8	-743.7	1,028.1	2.41	-1.54	
4,932.0	3.00	242.40	4,802.5	709.3	-749.1	1,031.6	2.89	-1.32	
5,022.0	2.70	146.80	4,892.4	706.4	-750.0	1,030.3	4.70	-0.33	
5,113.0	2.10	158.70	4,983.3	703.1	-748.3	1,026.7	0.85	-0.66	
5,204.0	1.80	167.10	5,074.3	700.1	-747.3	1,024.0	0.45	-0.33	
5,294.0	1.40	46.30	5,164.3	699.5	-746.2	1,022.8	3.10	-0.44	
5,385.0	1.20	58.30	5,255.2	700.8	-744.6	1,022.5	0.37	-0.22	
5,476.0	0.80	46.80	5,346.2	701.7	-743.3	1,022.2	0.49	-0.44	
5,566.0	0.60	30.90	5,436.2	702.6	-742.6	1,022.3	0.31	-0.22	
5,657.0	0.70	61.30	5,527.2	703.2	-741.9	1,022.2	0.39	0.11	
5,748.0	1.10	55.40	5,618.2	704.0	-740.7	1,021.9	0.45	0.44	
5,838.0	1.40	61.80	5,708.2	705.0	-739.0	1,021.4	0.37	0.33	
5,929.0	0.80	230.60	5,799.2	705.1	-738.5	1,021.1	2.41	-0.66	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Hein 21-1
<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 21-1	<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
6,020.0	0.70	248.80	5,890.2	704.5	-739.5	1,021.4	0.28	-0.11	
6,111.0	0.80	233.80	5,981.2	703.9	-740.6	1,021.7	0.24	0.11	
6,202.0	0.60	261.10	6,072.1	703.5	-741.6	1,022.1	0.42	-0.22	
6,292.0	0.70	260.80	6,162.1	703.3	-742.6	1,022.8	0.11	0.11	
6,383.0	0.90	278.80	6,253.1	703.4	-743.8	1,023.7	0.35	0.22	
6,474.0	0.70	272.10	6,344.1	703.5	-745.1	1,024.7	0.24	-0.22	
6,565.0	0.90	289.10	6,435.1	703.7	-746.3	1,025.7	0.34	0.22	
6,656.0	0.60	278.80	6,526.1	704.0	-747.5	1,026.8	0.36	-0.33	
6,746.0	0.70	287.10	6,616.1	704.3	-748.4	1,027.7	0.15	0.11	
6,837.0	0.70	284.70	6,707.1	704.6	-749.5	1,028.6	0.03	0.00	
6,928.0	0.50	301.00	6,798.1	704.9	-750.4	1,029.5	0.29	-0.22	
6,974.0	0.20	319.40	6,844.1	705.1	-750.6	1,029.8	0.69	-0.65	
7,064.0	0.30	301.30	6,934.1	705.3	-750.9	1,030.2	0.14	0.11	
7,155.0	0.10	24.70	7,025.1	705.5	-751.1	1,030.4	0.34	-0.22	
7,246.0	0.30	37.10	7,116.1	705.8	-750.9	1,030.5	0.22	0.22	
7,337.0	0.60	354.60	7,207.1	706.5	-750.8	1,030.9	0.47	0.33	
7,473.0	0.70	28.40	7,343.1	707.9	-750.5	1,031.6	0.29	0.07	
7,564.0	0.50	62.80	7,434.1	708.6	-749.9	1,031.7	0.44	-0.22	
7,655.0	0.20	7.80	7,525.1	708.9	-749.5	1,031.6	0.46	-0.33	
7,746.0	0.20	19.30	7,616.1	709.2	-749.4	1,031.8	0.04	0.00	
7,836.0	0.20	32.70	7,706.1	709.5	-749.3	1,031.9	0.05	0.00	
7,927.0	0.60	32.90	7,797.1	710.0	-748.9	1,032.0	0.44	0.44	
8,018.0	0.70	31.00	7,888.1	710.9	-748.4	1,032.2	0.11	0.11	
8,125.0	0.50	303.50	7,995.1	711.7	-748.4	1,032.8	0.79	-0.19	Last Cathedral Survey @ 8,125' MD
8,180.0	0.50	303.50	8,050.1	712.0	-748.8	1,033.3	0.00	0.00	Projection to Bit @ 8,180' MD - Hein 21-1 PBHL

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude
Hein 21-1 PBHL		0.00	0.00	8,066.0	707.1	-737.9	1,274,073.93	3,184,885.81	40.083826 -104.839260
- actual wellpath misses target center by 20.0ft at 8180.0ft MD (8050.1 TVD, 712.0 N, -748.8 E)									
- Circle (radius 50.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
8,125.0	7,995.1	711.7	-748.4	Last Cathedral Survey @ 8,125' MD	
8,180.0	8,050.1	712.0	-748.8	Projection to Bit @ 8,180' MD	

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