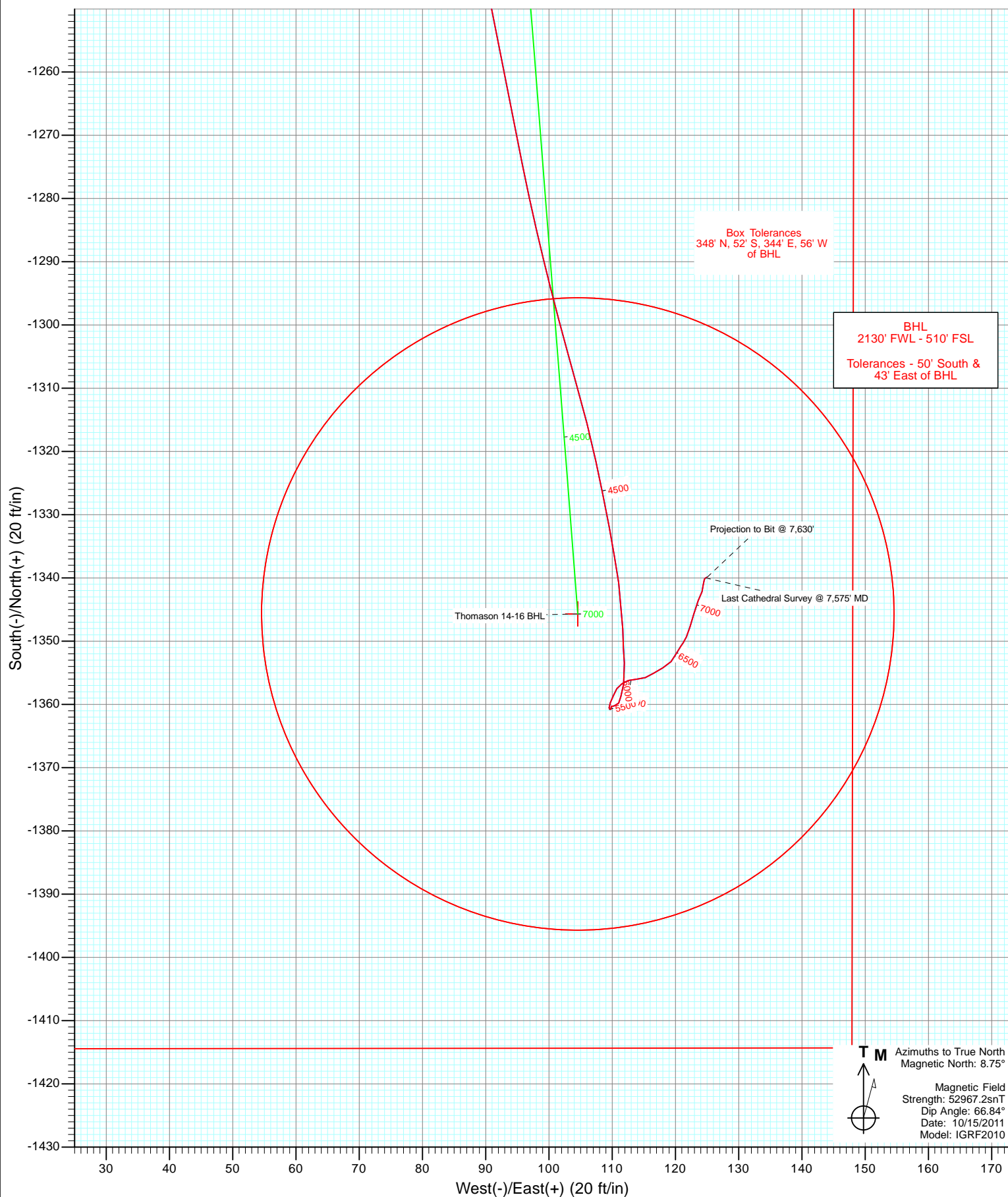


Azimuths to True North  
Magnetic North: 8.75°

Magnetic Field  
Strength: 52967.2snT  
Dip Angle: 66.84°  
Date: 10/15/2011  
Model: IGRF2010

DD Thomason 14-16 115455.113755; BH KBE @ 4907.0ft (Original Well Elev) North American Datum 1983 Well Thomason 14-16, True North						
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
Target	Thomason 14-16 BHL	175.56	Slot	0.0	0.0	0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
Thomason 14-16 TGT	4900.0	-1345.7	104.6	40.132866	-104.670802	
Thomason 14-16 BHL	7360.0	-1345.7	104.6	40.132866	-104.670802	



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Site:</b>	S16-T2N-R65W (Thomason 6 pad)	<b>MD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Well:</b>	Thomason 14-16	<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		S16-T2N-R65W (Thomason 6 pad)			
Site Position:		Northing:	1,293,758.15 ft	Latitude:	40.136780
From:	Lat/Long	Easting:	3,231,735.68 ft	Longitude:	-104.671175
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.54 °

Well	Thomason 14-16					
Well Position	+N/-S	0.0 ft	Northing:	1,293,678.05 ft	Latitude:	40.136560
	+E/-W	0.0 ft	Easting:	3,231,736.15 ft	Longitude:	-104.671176
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,885.0 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	10/15/2011	8.75	66.84	52,967

Design	DD			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	175.56

<b>Survey Program</b>	<b>Date</b>	10/21/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
123.0	7,630.0	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	
123.0	0.30	286.30	123.0	0.1	-0.3	-0.1	0.24	0.24	
216.0	0.40	22.30	216.0	0.5	-0.4	-0.5	0.56	0.11	
309.0	0.70	243.20	309.0	0.5	-0.8	-0.6	1.11	0.32	
417.0	1.80	214.20	417.0	-1.2	-2.3	1.0	1.14	1.02	
506.0	2.70	218.50	505.9	-4.0	-4.4	3.6	1.03	1.01	
596.0	5.30	200.50	595.7	-9.5	-7.2	9.0	3.17	2.89	
685.0	7.00	196.70	684.2	-18.6	-10.2	17.7	1.96	1.91	
774.0	7.90	186.60	772.4	-29.9	-12.5	28.8	1.78	1.01	
862.0	8.70	174.00	859.5	-42.5	-12.5	41.4	2.25	0.91	
903.0	8.50	176.30	900.0	-48.6	-12.0	47.5	0.97	-0.49	
988.0	8.30	177.20	984.1	-61.0	-11.2	59.9	0.28	-0.24	
1,067.0	10.50	174.10	1,062.1	-73.9	-10.2	72.8	2.86	2.78	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Site:</b>	S16-T2N-R65W (Thomason 6 pad)	<b>MD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Well:</b>	Thomason 14-16	<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
1,157.0	11.90	173.50	1,150.3	-91.2	-8.3	90.3	1.56	1.56	
1,245.0	12.80	170.60	1,236.3	-109.9	-5.7	109.1	1.24	1.02	
1,334.0	13.90	174.50	1,322.9	-130.2	-3.1	129.6	1.60	1.24	
1,423.0	15.40	170.80	1,409.0	-152.5	-0.2	152.1	1.99	1.69	
1,511.0	18.00	170.60	1,493.3	-177.5	3.9	177.3	2.96	2.95	
1,601.0	18.80	173.50	1,578.7	-205.6	7.8	205.6	1.35	0.89	
1,691.0	21.00	171.50	1,663.3	-236.0	11.9	236.2	2.56	2.44	
1,779.0	21.20	172.80	1,745.4	-267.4	16.2	267.8	0.58	0.23	
1,869.0	21.40	173.40	1,829.3	-299.8	20.1	300.5	0.33	0.22	
1,958.0	21.50	173.10	1,912.1	-332.1	23.9	333.0	0.17	0.11	
2,047.0	23.00	173.60	1,994.5	-365.6	27.8	366.7	1.70	1.69	
2,135.0	22.30	174.90	2,075.7	-399.3	31.2	400.5	0.98	-0.80	
2,224.0	22.10	173.80	2,158.1	-432.8	34.5	434.2	0.52	-0.22	
2,313.0	22.00	173.10	2,240.6	-466.0	38.4	467.6	0.32	-0.11	
2,402.0	22.40	177.90	2,323.0	-499.5	41.0	501.2	2.09	0.45	
2,490.0	22.70	178.40	2,404.3	-533.2	42.1	534.9	0.40	0.34	
2,578.0	24.50	181.30	2,484.9	-568.4	42.1	570.0	2.43	2.05	
2,666.0	24.50	176.40	2,565.0	-604.9	42.9	606.4	2.31	0.00	
2,756.0	24.00	173.30	2,647.0	-641.7	46.2	643.3	1.52	-0.56	
2,844.0	23.20	174.00	2,727.7	-676.7	50.1	678.6	0.96	-0.91	
2,930.0	24.10	174.80	2,806.5	-711.0	53.4	713.0	1.11	1.05	
3,018.0	25.00	177.00	2,886.5	-747.5	56.0	749.6	1.46	1.02	
3,107.0	25.10	178.50	2,967.1	-785.2	57.5	787.2	0.72	0.11	
3,195.0	25.80	173.00	3,046.6	-822.8	60.3	825.0	2.80	0.80	
3,283.0	23.80	173.30	3,126.5	-859.5	64.7	861.9	2.28	-2.27	
3,373.0	22.10	172.00	3,209.4	-894.3	69.2	896.9	1.97	-1.89	
3,462.0	23.30	172.90	3,291.5	-928.3	73.7	931.2	1.40	1.35	
3,550.0	21.90	180.60	3,372.7	-962.0	75.7	965.0	3.72	-1.59	
3,637.0	21.40	180.30	3,453.6	-994.1	75.4	997.0	0.59	-0.57	
3,725.0	23.20	179.50	3,535.0	-1,027.5	75.5	1,030.3	2.07	2.05	
3,815.0	22.10	182.70	3,618.1	-1,062.1	74.9	1,064.7	1.83	-1.22	
3,904.0	22.30	186.00	3,700.5	-1,095.7	72.3	1,098.0	1.42	0.22	
4,081.0	21.20	171.00	3,865.0	-1,160.7	73.8	1,162.9	3.19	-0.62	
4,169.0	20.90	168.60	3,947.1	-1,191.8	79.4	1,194.4	1.04	-0.34	
4,259.0	19.50	168.70	4,031.6	-1,222.3	85.5	1,225.2	1.56	-1.56	
4,348.0	17.70	169.20	4,115.9	-1,250.1	91.0	1,253.4	2.03	-2.02	
4,437.0	14.60	168.40	4,201.4	-1,274.4	95.8	1,278.0	3.49	-3.48	
4,525.0	11.30	165.60	4,287.2	-1,293.7	100.1	1,297.5	3.82	-3.75	
4,614.0	9.30	164.30	4,374.7	-1,309.0	104.3	1,313.2	2.26	-2.25	
4,702.0	7.50	167.70	4,461.8	-1,321.5	107.4	1,325.8	2.12	-2.05	
4,790.0	6.50	169.40	4,549.1	-1,332.0	109.5	1,336.5	1.16	-1.14	
4,878.0	5.10	171.60	4,636.7	-1,340.8	111.0	1,345.3	1.61	-1.59	
4,967.0	4.40	178.60	4,725.4	-1,348.1	111.7	1,352.7	1.02	-0.79	
5,055.0	2.60	175.40	4,813.2	-1,353.4	111.9	1,358.0	2.06	-2.05	
5,145.0	1.70	192.80	4,903.1	-1,356.8	111.8	1,361.4	1.22	-1.00	
5,233.0	0.90	190.40	4,991.1	-1,358.7	111.4	1,363.3	0.91	-0.91	
5,320.0	0.60	210.50	5,078.1	-1,359.8	111.0	1,364.3	0.45	-0.34	
5,411.0	0.60	268.40	5,169.1	-1,360.2	110.3	1,364.7	0.64	0.00	
5,499.0	0.10	174.30	5,257.1	-1,360.3	109.9	1,364.7	0.70	-0.57	
5,589.0	0.10	174.50	5,347.1	-1,360.5	109.9	1,364.9	0.00	0.00	
5,679.0	0.40	210.50	5,437.1	-1,360.8	109.7	1,365.2	0.36	0.33	
5,767.0	0.70	353.10	5,525.1	-1,360.5	109.5	1,364.9	1.19	0.34	
5,856.0	0.50	45.20	5,614.1	-1,359.7	109.7	1,364.1	0.63	-0.22	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Site:</b>	S16-T2N-R65W (Thomason 6 pad)	<b>MD Reference:</b>	KBE @ 4907.0ft (Original Well Elev)
<b>Well:</b>	Thomason 14-16	<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
5,944.0	1.10	14.10	5,702.1	-1,358.6	110.2	1,363.1	0.82	0.68	
6,034.0	0.60	48.20	5,792.1	-1,357.5	110.8	1,362.0	0.77	-0.56	
6,122.0	0.80	44.80	5,880.1	-1,356.7	111.5	1,361.3	0.23	0.23	
6,210.0	0.80	79.90	5,968.1	-1,356.2	112.6	1,360.9	0.55	0.00	
6,297.0	0.90	82.30	6,055.0	-1,356.0	113.8	1,360.8	0.12	0.11	
6,386.0	0.90	78.60	6,144.0	-1,355.8	115.2	1,360.6	0.07	0.00	
6,476.0	1.10	49.60	6,234.0	-1,355.1	116.6	1,360.0	0.60	0.22	
6,565.0	1.10	68.70	6,323.0	-1,354.2	118.0	1,359.3	0.41	0.00	
6,653.0	1.10	37.30	6,411.0	-1,353.2	119.3	1,358.4	0.68	0.00	
6,741.0	1.10	28.30	6,499.0	-1,351.8	120.2	1,357.1	0.20	0.00	
6,830.0	0.50	40.70	6,588.0	-1,350.8	120.9	1,356.1	0.70	-0.67	
6,917.0	0.30	25.80	6,675.0	-1,350.3	121.2	1,355.6	0.26	-0.23	
7,006.0	1.10	28.60	6,764.0	-1,349.3	121.7	1,354.7	0.90	0.90	
7,094.0	1.20	11.90	6,851.9	-1,347.7	122.3	1,353.1	0.40	0.11	
7,184.0	1.50	19.70	6,941.9	-1,345.6	122.9	1,351.1	0.39	0.33	
7,273.0	1.30	16.40	7,030.9	-1,343.6	123.6	1,349.1	0.24	-0.22	
7,362.0	0.70	34.30	7,119.9	-1,342.2	124.2	1,347.7	0.75	-0.67	
7,450.0	0.70	347.70	7,207.9	-1,341.2	124.4	1,346.8	0.63	0.00	
7,539.0	0.70	35.00	7,296.9	-1,340.2	124.6	1,345.8	0.63	0.00	
7,575.0	0.30	63.00	7,332.9	-1,340.0	124.8	1,345.6	1.27	-1.11	Last Cathedral Survey @ 7,575' MD
7,630.0	0.30	63.00	7,387.9	-1,339.9	125.1	1,345.5	0.00	0.00	Projection to Bit @ 7,630'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Thomason 14-16 TGT	0.00	0.00	4,900.0	-1,345.7	104.6	1,292,333.39	3,231,853.29	40.132866	-104.670802
- hit/miss target									
- survey misses target center by 13.2ft at 5141.5ft MD (4899.6 TVD, -1356.7 N, 111.8 E)									
- Point									
Thomason 14-16 BHL	0.00	0.00	7,360.0	-1,345.7	104.6	1,292,333.39	3,231,853.29	40.132866	-104.670802
- survey misses target center by 34.3ft at 7575.0ft MD (7332.9 TVD, -1340.0 N, 124.8 E)									
- Circle (radius 50.0)									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,575.0	7,332.9	-1,340.0	124.8	Last Cathedral Survey @ 7,575' MD
7,630.0	7,387.9	-1,339.9	125.1	Projection to Bit @ 7,630'

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