

Azimuths to True North  
 Magnetic North: 8.80°

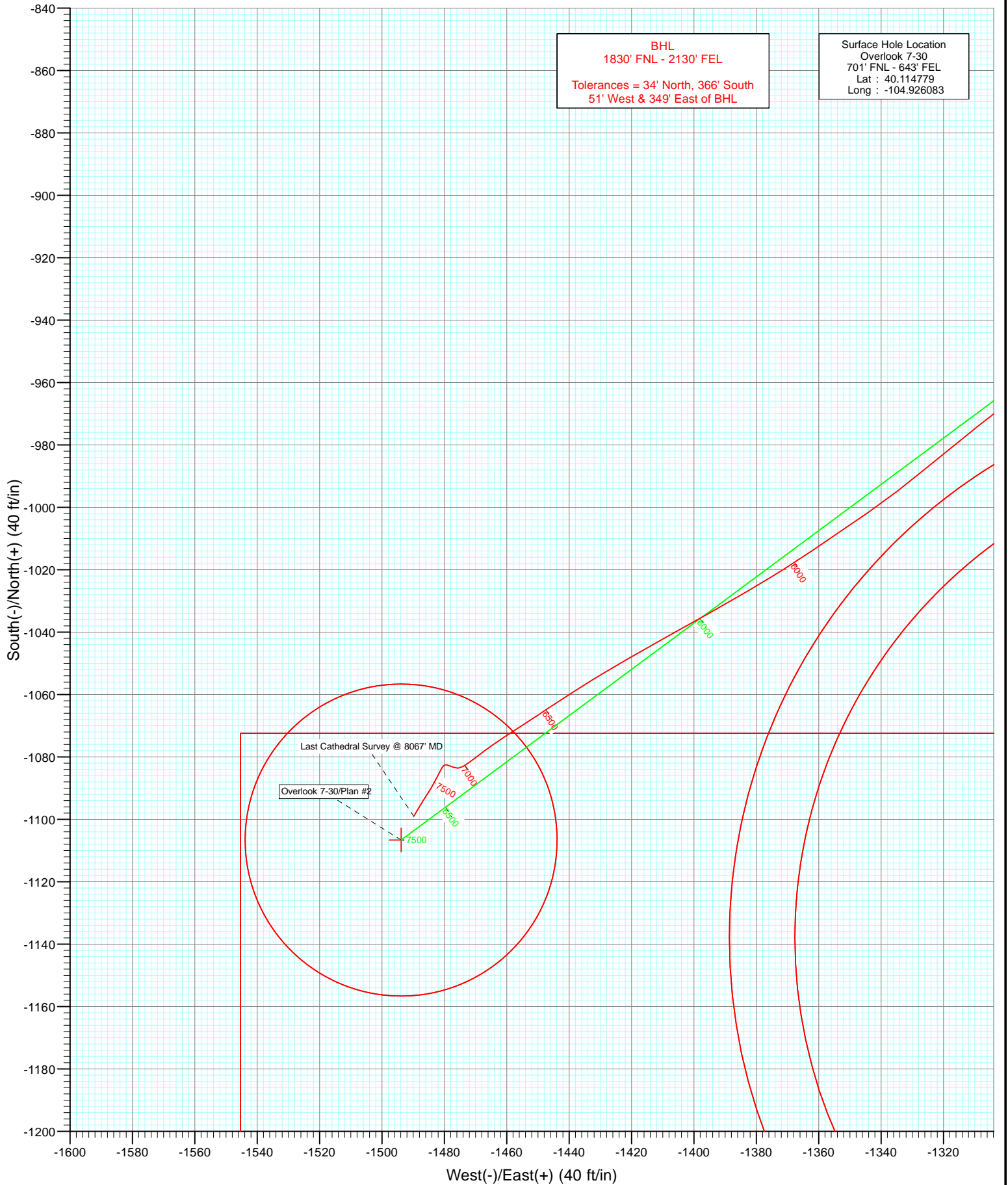
Magnetic Field  
 Strength: 52863.1snT  
 Dip Angle: 66.76°  
 Date: 5/24/2012  
 Model: IGRF2010

DD  
 Overlook 7-30  
 125354; 166255; DN  
 KB=15' @ 5025.0ft (Xtreme 14)  
 North American Datum 1983  
 Well Overlook 7-30, True North

Type	Target	Azimuth	Origin	Type	N/S	E/W	From
Name	Target	TVD	+N/-S	+E/-W	Latitude	Longitude	TVD
Overlook 7-30 PBHL NEW	Overlook 7-30 PBHL	7784.0	-1106.6	-1493.9	40.111741	-104.931424	0.0



Project: DJ Wattenberg  
Site: NENE Sec30-T2N-R67W (Overlook 1-30 pad)  
Well: Overlook 7-30  
Wellbore: DD  
Design: Final Survey



# Cathedral Energy Services

## Survey Report

<b>Company:</b> Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b> Well Overlook 7-30
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> KB=15' @ 5025.0ft (Xtreme 14)
<b>Site:</b> NENE Sec30-T2N-R67W (Overlook 1-30 pad)	<b>MD Reference:</b> KB=15' @ 5025.0ft (Xtreme 14)
<b>Well:</b> Overlook 7-30	<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		

<b>Site</b> NENE Sec30-T2N-R67W (Overlook 1-30 pad)				
<b>Site Position:</b>	<b>Northing:</b>	1,285,208.05 ft	<b>Latitude:</b>	40.114856
<b>From:</b> Lat/Long	<b>Easting:</b>	3,160,505.89 ft	<b>Longitude:</b>	-104.926131
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.37 °

<b>Well</b> Overlook 7-30				
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,285,180.08 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,160,519.50 ft
			<b>Longitude:</b>	-104.926083
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	5,010.0 ft

<b>Wellbore</b> DD					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/24/2012	8.80	66.76	52,863

<b>Design</b> DD				
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	226.76

<b>Survey Program</b>		<b>Date</b> 5/31/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
111.0	8,067.0	Survey #1 (DD)	MWD	Geolink MWD

<b>Survey</b>									
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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
111.0	0.40	40.10	111.0	0.3	0.2	-0.4	0.36	0.36	
204.0	0.50	43.40	204.0	0.8	0.7	-1.1	0.11	0.11	
297.0	0.30	76.80	297.0	1.2	1.3	-1.7	0.32	-0.22	
406.0	1.50	206.70	406.0	0.0	0.9	-0.6	1.57	1.10	
494.0	4.00	220.50	493.9	-3.4	-1.6	3.5	2.92	2.84	
582.0	6.10	223.10	581.5	-9.1	-6.8	11.2	2.40	2.39	
670.0	8.70	221.00	668.8	-17.6	-14.4	22.5	2.97	2.95	
758.0	11.00	224.70	755.5	-28.6	-24.6	37.5	2.71	2.61	
846.0	11.90	227.80	841.7	-40.6	-37.3	55.0	1.24	1.02	
929.0	12.80	222.60	922.8	-53.1	-49.8	72.7	1.72	1.08	
1,018.0	12.70	227.80	1,009.6	-67.0	-63.8	92.3	1.29	-0.11	
1,107.0	14.10	235.10	1,096.2	-79.7	-79.9	112.8	2.46	1.57	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Overlook 7-30
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KB=15' @ 5025.0ft (Xtreme 14)
<b>Site:</b>	NENE Sec30-T2N-R67W (Overlook 1-30 pad)	<b>MD Reference:</b>	KB=15' @ 5025.0ft (Xtreme 14)
<b>Well:</b>	Overlook 7-30	<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
1,195.0	15.60	237.10	1,181.3	-92.3	-98.6	135.1	1.80	1.70	
1,285.0	17.10	239.70	1,267.6	-105.6	-120.2	159.9	1.85	1.67	
1,372.0	18.50	235.10	1,350.5	-119.9	-142.6	186.0	2.28	1.61	
1,461.0	17.80	234.50	1,435.0	-135.9	-165.2	213.5	0.81	-0.79	
1,548.0	17.30	233.60	1,518.0	-151.3	-186.5	239.5	0.65	-0.57	
1,638.0	18.20	235.30	1,603.7	-167.2	-208.8	266.7	1.15	1.00	
1,728.0	18.60	236.60	1,689.1	-183.1	-232.3	294.7	0.64	0.44	
1,817.0	17.40	235.40	1,773.7	-198.5	-255.1	321.9	1.41	-1.35	
1,905.0	16.70	235.50	1,857.9	-213.1	-276.4	347.4	0.80	-0.80	
1,994.0	16.50	236.50	1,943.2	-227.4	-297.5	372.5	0.39	-0.22	
2,083.0	16.90	240.70	2,028.4	-240.7	-319.3	397.5	1.43	0.45	
2,172.0	18.30	242.90	2,113.2	-253.4	-343.0	423.4	1.74	1.57	
2,261.0	18.70	242.90	2,197.6	-266.2	-368.2	450.6	0.45	0.45	
2,350.0	19.20	243.90	2,281.8	-279.2	-394.0	478.3	0.67	0.56	
2,440.0	19.70	242.30	2,366.7	-292.7	-420.7	507.0	0.81	0.56	
2,528.0	19.80	239.20	2,449.5	-307.2	-446.7	535.9	1.20	0.11	
2,618.0	19.00	236.90	2,534.4	-323.1	-472.0	565.2	1.23	-0.89	
2,707.0	19.00	232.80	2,618.6	-339.7	-495.7	593.8	1.50	0.00	
2,796.0	18.80	230.20	2,702.8	-357.7	-518.3	622.6	0.97	-0.22	
2,884.0	19.20	228.70	2,786.0	-376.3	-540.0	651.2	0.72	0.45	
2,971.0	19.00	228.00	2,868.2	-395.2	-561.3	679.6	0.35	-0.23	
3,061.0	18.00	229.40	2,953.5	-414.1	-582.7	708.2	1.22	-1.11	
3,149.0	18.40	227.80	3,037.1	-432.2	-603.4	735.6	0.73	0.45	
3,235.0	17.50	227.20	3,118.9	-450.1	-622.9	762.1	1.07	-1.05	
3,325.0	17.90	226.50	3,204.7	-468.9	-642.9	789.5	0.50	0.44	
3,413.0	17.70	225.80	3,288.5	-487.5	-662.3	816.4	0.33	-0.23	
3,501.0	17.50	228.50	3,372.3	-505.6	-681.8	843.0	0.96	-0.23	
3,591.0	17.50	231.80	3,458.2	-522.9	-702.5	870.0	1.10	0.00	
3,679.0	17.90	233.10	3,542.0	-539.2	-723.7	896.6	0.64	0.45	
3,769.0	17.60	238.60	3,627.7	-554.6	-746.4	923.7	1.89	-0.33	
3,856.0	18.10	239.90	3,710.6	-568.3	-769.3	949.7	0.73	0.57	
3,943.0	19.60	238.10	3,792.9	-582.7	-793.4	977.2	1.85	1.72	
4,031.0	20.70	236.70	3,875.5	-599.1	-818.9	1,007.0	1.36	1.25	
4,119.0	19.60	236.10	3,958.1	-615.9	-844.2	1,036.9	1.27	-1.25	
4,207.0	18.20	235.60	4,041.4	-631.8	-867.8	1,065.0	1.60	-1.59	
4,296.0	18.70	233.70	4,125.8	-648.1	-890.8	1,092.9	0.88	0.56	
4,384.0	19.10	233.40	4,209.0	-665.1	-913.7	1,121.2	0.47	0.45	
4,471.0	19.20	232.30	4,291.2	-682.3	-936.4	1,149.6	0.43	0.11	
4,559.0	19.60	232.00	4,374.2	-700.3	-959.5	1,178.7	0.47	0.45	
4,647.0	19.60	229.20	4,457.1	-719.0	-982.3	1,208.1	1.07	0.00	
4,735.0	20.20	229.00	4,539.9	-738.6	-1,005.0	1,238.1	0.69	0.68	
4,823.0	19.80	228.60	4,622.6	-758.4	-1,027.6	1,268.2	0.48	-0.45	
4,912.0	18.90	227.30	4,706.5	-778.2	-1,049.5	1,297.6	1.12	-1.01	
5,000.0	18.50	228.10	4,789.9	-797.2	-1,070.4	1,325.8	0.54	-0.45	
5,089.0	18.10	234.40	4,874.4	-814.6	-1,092.1	1,353.7	2.27	-0.45	
5,177.0	18.60	236.50	4,957.9	-830.3	-1,114.9	1,381.0	0.94	0.57	
5,265.0	19.20	234.90	5,041.2	-846.4	-1,138.5	1,409.2	0.90	0.68	
5,355.0	19.50	236.70	5,126.1	-863.2	-1,163.1	1,438.6	0.74	0.33	
5,443.0	19.60	232.10	5,209.0	-880.3	-1,187.1	1,467.8	1.75	0.11	
5,531.0	18.80	232.00	5,292.1	-898.1	-1,209.9	1,496.6	0.91	-0.91	
5,618.0	17.40	232.50	5,374.8	-914.6	-1,231.3	1,523.5	1.62	-1.61	
5,706.0	16.50	232.70	5,459.0	-930.2	-1,251.6	1,549.1	1.02	-1.02	
5,794.0	15.90	233.20	5,543.5	-945.0	-1,271.2	1,573.5	0.70	-0.68	

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<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Overlook 7-30
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KB=15' @ 5025.0ft (Xtreme 14)
<b>Site:</b>	NENE Sec30-T2N-R67W (Overlook 1-30 pad)	<b>MD Reference:</b>	KB=15' @ 5025.0ft (Xtreme 14)
<b>Well:</b>	Overlook 7-30	<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
5,884.0	15.40	232.30	5,630.2	-959.7	-1,290.6	1,597.6	0.62	-0.56	
5,973.0	14.30	232.00	5,716.2	-973.7	-1,308.6	1,620.3	1.24	-1.24	
6,062.0	14.70	230.10	5,802.4	-987.7	-1,325.9	1,642.5	0.70	0.45	
6,152.0	15.00	235.20	5,889.4	-1,001.7	-1,344.2	1,665.5	1.49	0.33	
6,238.0	14.10	236.30	5,972.6	-1,013.9	-1,362.1	1,686.8	1.09	-1.05	
6,328.0	13.20	239.20	6,060.1	-1,025.2	-1,380.0	1,707.6	1.26	-1.00	
6,416.0	13.10	241.00	6,145.8	-1,035.2	-1,397.4	1,727.1	0.48	-0.11	
6,504.0	11.20	240.40	6,231.8	-1,044.2	-1,413.5	1,745.1	2.16	-2.16	
6,593.0	9.10	239.70	6,319.4	-1,052.1	-1,427.1	1,760.4	2.36	-2.36	
6,683.0	7.50	236.90	6,408.4	-1,058.9	-1,438.2	1,773.1	1.83	-1.78	
6,772.0	6.20	237.10	6,496.8	-1,064.6	-1,447.1	1,783.5	1.46	-1.46	
6,859.0	5.40	236.10	6,583.4	-1,069.5	-1,454.4	1,792.2	0.93	-0.92	
6,948.0	4.70	237.00	6,672.0	-1,073.8	-1,461.0	1,799.9	0.79	-0.79	
7,036.0	3.20	234.30	6,759.8	-1,077.2	-1,466.0	1,805.9	1.72	-1.70	
7,123.0	2.20	231.70	6,846.7	-1,079.6	-1,469.3	1,810.0	1.16	-1.15	
7,211.0	1.90	234.30	6,934.6	-1,081.5	-1,471.8	1,813.1	0.36	-0.34	
7,299.0	1.50	237.30	7,022.6	-1,083.0	-1,473.9	1,815.7	0.47	-0.45	
7,386.0	1.00	273.80	7,109.6	-1,083.6	-1,475.6	1,817.3	1.05	-0.57	
7,474.0	1.10	287.50	7,197.6	-1,083.3	-1,477.2	1,818.2	0.31	0.11	
7,562.0	1.40	293.70	7,285.6	-1,082.6	-1,479.0	1,819.1	0.37	0.34	
7,651.0	1.90	210.60	7,374.5	-1,083.4	-1,480.8	1,820.9	2.49	0.56	
7,739.0	2.80	205.40	7,462.5	-1,086.6	-1,482.4	1,824.3	1.05	1.02	
7,828.0	2.50	212.40	7,551.4	-1,090.2	-1,484.4	1,828.2	0.50	-0.34	
7,918.0	2.40	212.40	7,641.3	-1,093.5	-1,486.5	1,831.9	0.11	-0.11	
8,006.0	2.50	210.80	7,729.2	-1,096.7	-1,488.4	1,835.6	0.14	0.11	
8,061.3	2.59	209.80	7,784.4	-1,098.8	-1,489.7	1,837.9	0.18	0.16	Overlook 7-30 PBHL NEW
8,067.0	2.60	209.70	7,790.1	-1,099.0	-1,489.8	1,838.2	0.18	0.16	Last Cathedral Survey @ 8067' MD - Overlook 7

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Overlook 7-30 PBHL NE - hit/miss target - Shape	0.00	0.00	7,784.0	-1,106.6	-1,493.9	1,284,063.81	3,159,032.84	40.111741	-104.931424
- actual wellpath misses target center by 8.9ft at 8061.3ft MD (7784.4 TVD, -1098.8 N, -1489.7 E)									
- Circle (radius 50.0)									
Overlook 7-30 PBHL - hit/miss target - Shape	0.00	0.00	7,784.0	-1,406.8	-1,495.8	1,283,763.63	3,159,032.81	40.110917	-104.931431
- actual wellpath misses target center by 307.9ft at 8067.0ft MD (7790.1 TVD, -1099.0 N, -1489.8 E)									
- Circle (radius 50.0)									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,067.0	7,790.1	-1,099.0	-1,489.8	Last Cathedral Survey @ 8067' MD

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