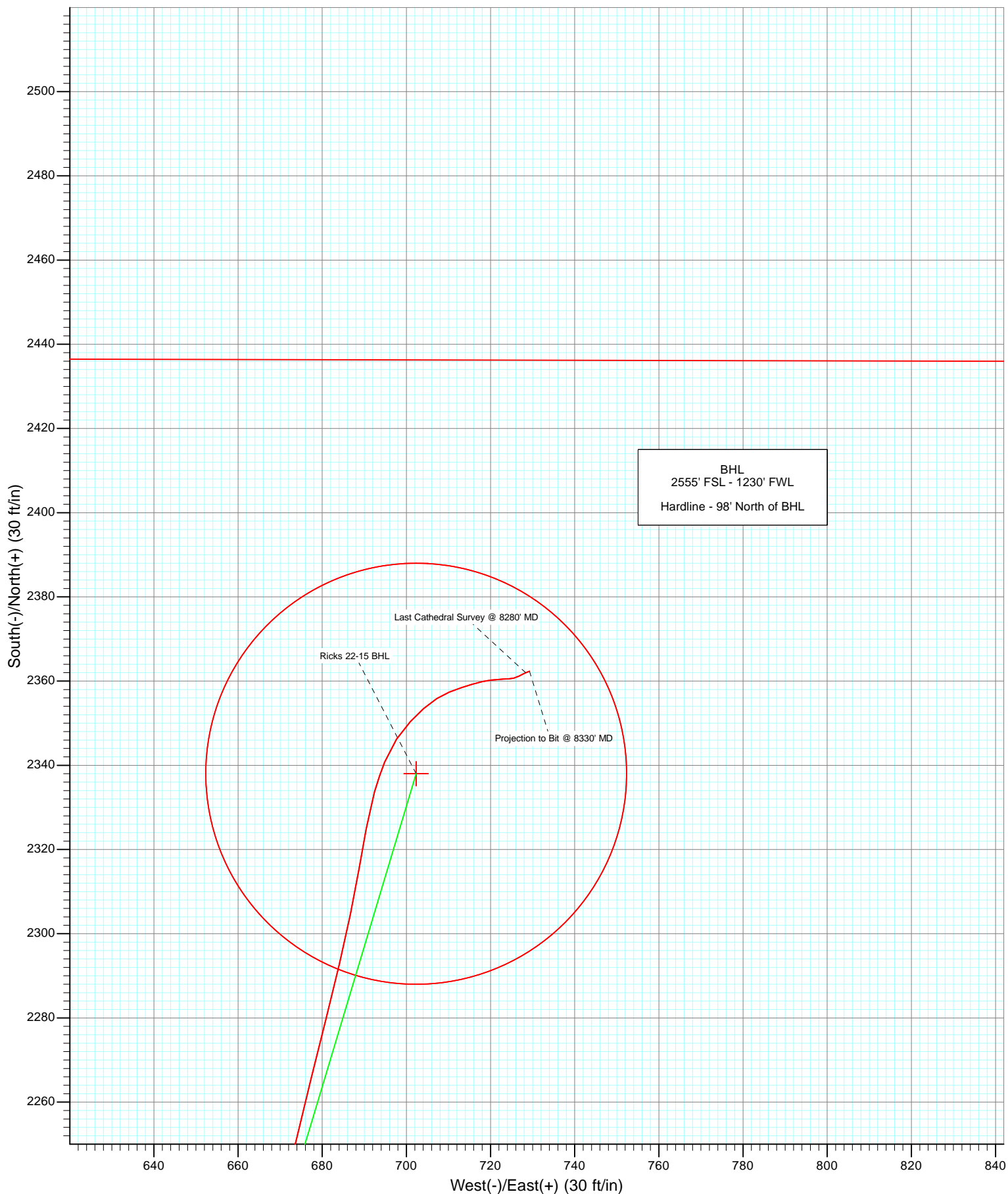


Azimuths to True North  
Magnetic North: 8.77°

Magnetic Field  
Strength: 52993.5snT  
Dip Angle: 66.85°  
Date: 7/13/2011  
Model: IGRF2010

DD Ricks 22-15 115318, 97658; BH KBE @ 4897.0ft (Original Well Elev) North American Datum 1983 Well Ricks 22-15, True North						
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
Target	Ricks 22-15 BHL	16.72	Slot	0.0	0.0	0.0
Name		TVD	+N/-S	+E/-W	Latitude	Longitude
Ricks 22-15 TGT		6380.0	2338.0	702.3	40.138407	-104.655211
Ricks 22-15 BHL		7765.0	2338.0	702.3	40.138407	-104.655211



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Ricks 22-15
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Site:</b>	SWSW Sec15-2N-R65W (Ricks)	<b>MD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Well:</b>	Ricks 22-15	<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		SWSW Sec15-2N-R65W (Ricks)			
Site Position:		Northing:	1,292,048.25 ft	Latitude:	40.131989
From:	Lat/Long	Easting:	3,235,497.23 ft	Longitude:	-104.657780
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.54 °

Well	Ricks 22-15					
Well Position	+N/-S	0.0 ft	Northing:	1,292,048.36 ft	Latitude:	40.131989
	+E/-W	0.0 ft	Easting:	3,235,513.16 ft	Longitude:	-104.657723
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,875.0 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	7/13/2011	8.77	66.85	52,993

<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	16.72	

<b>Survey Program</b>	<b>Date</b>	8/13/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
90.0	8,330.0	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		
90.0	1.00	273.40	90.0	0.0	-0.8	-0.2	1.11	1.11		
184.0	0.80	345.40	184.0	0.7	-1.8	0.2	1.14	-0.21		
277.0	1.80	358.70	277.0	2.8	-2.0	2.1	1.12	1.08		
371.0	3.40	356.80	370.9	7.1	-2.2	6.2	1.70	1.70		
462.0	5.80	7.90	461.6	14.3	-1.7	13.2	2.80	2.64		
550.0	7.30	20.20	549.0	24.0	0.9	23.2	2.32	1.70		
638.0	8.30	20.50	636.2	35.2	5.0	35.1	1.14	1.14		
725.0	9.80	17.30	722.1	48.1	9.4	48.8	1.82	1.72		
813.0	11.60	15.20	808.6	63.8	14.0	65.1	2.09	2.05		
890.0	12.30	13.10	883.9	79.3	17.9	81.1	1.07	0.91		
979.0	12.00	10.90	970.9	97.6	21.8	99.7	0.62	-0.34		
1,068.0	11.60	20.50	1,058.0	115.1	26.6	117.9	2.25	-0.45		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Ricks 22-15
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Site:</b>	SWSW Sec15-2N-R65W (Ricks)	<b>MD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Well:</b>	Ricks 22-15	<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
1,155.0	13.30	25.20	1,143.0	132.3	34.0	136.5	2.27	1.95	
1,245.0	15.90	26.30	1,230.1	152.7	43.8	158.9	2.91	2.89	
1,334.0	18.10	27.10	1,315.2	176.0	55.5	184.5	2.49	2.47	
1,423.0	19.30	26.80	1,399.5	201.4	68.5	212.6	1.35	1.35	
1,511.0	21.10	23.10	1,482.1	229.0	81.2	242.7	2.51	2.05	
1,600.0	22.80	19.20	1,564.6	260.0	93.2	275.8	2.52	1.91	
1,688.0	25.30	16.60	1,645.0	294.1	104.2	311.7	3.08	2.84	
1,776.0	25.80	15.20	1,724.4	330.6	114.6	349.6	0.89	0.57	
1,863.0	26.80	14.90	1,802.4	367.8	124.6	388.1	1.16	1.15	
1,951.0	27.40	13.80	1,880.7	406.7	134.5	428.2	0.89	0.68	
2,039.0	28.20	14.00	1,958.5	446.5	144.4	469.2	0.92	0.91	
2,127.0	28.60	15.10	2,035.9	487.0	154.9	511.0	0.75	0.45	
2,215.0	30.10	14.30	2,112.6	528.8	165.8	554.1	1.76	1.70	
2,303.0	29.30	13.60	2,189.1	571.1	176.3	597.7	0.99	-0.91	
2,392.0	29.50	12.20	2,266.6	613.7	186.1	641.2	0.80	0.22	
2,482.0	29.40	12.50	2,345.0	656.9	195.6	685.4	0.20	-0.11	
2,571.0	30.20	13.40	2,422.2	700.0	205.5	729.5	1.03	0.90	
2,661.0	29.30	12.50	2,500.4	743.5	215.5	774.1	1.12	-1.00	
2,751.0	29.60	12.70	2,578.7	786.7	225.1	818.2	0.35	0.33	
2,840.0	30.50	13.30	2,655.8	830.1	235.2	862.7	1.07	1.01	
2,926.0	30.80	13.10	2,729.8	872.8	245.2	906.4	0.37	0.35	
3,016.0	31.90	14.70	2,806.6	918.2	256.4	953.2	1.53	1.22	
3,106.0	29.80	17.10	2,883.9	962.6	269.1	999.3	2.70	-2.33	
3,193.0	29.10	16.80	2,959.6	1,003.5	281.5	1,042.1	0.82	-0.80	
3,281.0	28.80	18.30	3,036.6	1,044.1	294.4	1,084.7	0.89	-0.34	
3,371.0	29.00	19.80	3,115.4	1,085.3	308.6	1,128.1	0.84	0.22	
3,460.0	30.00	20.30	3,192.9	1,126.4	323.6	1,171.9	1.16	1.12	
3,549.0	29.10	21.30	3,270.3	1,167.5	339.2	1,215.7	1.15	-1.01	
3,637.0	29.10	20.30	3,347.2	1,207.5	354.4	1,258.4	0.55	0.00	
3,725.0	29.50	21.50	3,424.0	1,247.7	369.7	1,301.3	0.81	0.45	
3,811.0	29.20	20.50	3,498.9	1,287.0	384.8	1,343.3	0.67	-0.35	
3,900.0	29.60	17.60	3,576.5	1,328.3	399.1	1,387.0	1.66	0.45	
3,988.0	30.20	17.60	3,652.8	1,370.1	412.4	1,430.9	0.68	0.68	
4,076.0	28.40	17.30	3,729.5	1,411.2	425.3	1,473.9	2.05	-2.05	
4,164.0	28.80	15.90	3,806.8	1,451.6	437.3	1,516.0	0.89	0.45	
4,250.0	30.30	18.40	3,881.6	1,492.1	449.8	1,558.4	2.26	1.74	
4,340.0	30.60	18.80	3,959.1	1,535.3	464.4	1,604.0	0.40	0.33	
4,429.0	31.20	18.20	4,035.5	1,578.7	478.9	1,649.7	0.76	0.67	
4,517.0	30.50	18.30	4,111.1	1,621.5	493.0	1,694.8	0.80	-0.80	
4,607.0	29.90	17.20	4,188.8	1,664.6	506.8	1,740.1	0.91	-0.67	
4,695.0	29.40	17.90	4,265.3	1,706.2	519.9	1,783.6	0.69	-0.57	
4,785.0	29.80	18.00	4,343.6	1,748.4	533.6	1,828.0	0.45	0.44	
4,875.0	29.80	17.00	4,421.7	1,791.1	547.1	1,872.8	0.55	0.00	
4,964.0	30.30	15.50	4,498.7	1,833.9	559.5	1,917.3	1.01	0.56	
5,053.0	29.00	15.00	4,576.1	1,876.4	571.1	1,961.3	1.49	-1.46	
5,142.0	28.20	14.30	4,654.2	1,917.6	581.9	2,003.9	0.97	-0.90	
5,232.0	25.90	15.40	4,734.4	1,957.1	592.4	2,044.8	2.62	-2.56	
5,322.0	24.50	15.20	4,815.8	1,994.1	602.5	2,083.1	1.56	-1.56	
5,411.0	22.40	15.40	4,897.4	2,028.3	611.8	2,118.5	2.36	-2.36	
5,501.0	22.10	17.30	4,980.7	2,061.0	621.4	2,152.6	0.87	-0.33	
5,590.0	20.10	17.60	5,063.8	2,091.5	631.0	2,184.6	2.25	-2.25	
5,680.0	19.10	18.10	5,148.5	2,120.3	640.3	2,214.8	1.13	-1.11	
5,769.0	18.30	13.50	5,232.8	2,147.7	648.1	2,243.3	1.88	-0.90	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Ricks 22-15
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Site:</b>	SWSW Sec15-2N-R65W (Ricks)	<b>MD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Well:</b>	Ricks 22-15	<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
5,857.0	16.50	13.30	5,316.8	2,173.3	654.2	2,269.6	2.05	-2.05	
5,947.0	14.70	14.40	5,403.5	2,196.8	660.0	2,293.8	2.03	-2.00	
6,037.0	12.70	13.50	5,490.9	2,217.5	665.1	2,315.1	2.23	-2.22	
6,126.0	11.10	15.70	5,578.0	2,235.2	669.7	2,333.4	1.87	-1.80	
6,214.0	9.70	13.40	5,664.6	2,250.6	673.7	2,349.3	1.66	-1.59	
6,302.0	10.10	13.90	5,751.3	2,265.3	677.3	2,364.4	0.46	0.45	
6,389.0	9.40	14.10	5,837.0	2,279.6	680.8	2,379.1	0.81	-0.80	
6,477.0	8.40	13.30	5,923.9	2,292.8	684.1	2,392.7	1.15	-1.14	
6,563.0	7.70	11.50	6,009.1	2,304.6	686.7	2,404.7	0.87	-0.81	
6,650.0	6.90	10.20	6,095.4	2,315.4	688.8	2,415.7	0.94	-0.92	
6,736.0	6.00	9.90	6,180.8	2,324.9	690.4	2,425.3	1.05	-1.05	
6,826.0	5.40	15.90	6,270.4	2,333.7	692.4	2,434.2	0.94	-0.67	
6,915.0	4.30	22.40	6,359.1	2,340.8	694.8	2,441.7	1.38	-1.24	
7,003.0	3.70	33.30	6,446.9	2,346.2	697.7	2,447.7	1.10	-0.68	
7,093.0	3.10	43.80	6,536.7	2,350.4	700.9	2,452.7	0.96	-0.67	
7,181.0	2.70	47.70	6,624.6	2,353.5	704.1	2,456.6	0.51	-0.45	
7,270.0	2.30	58.50	6,713.5	2,355.8	707.2	2,459.7	0.69	-0.45	
7,358.0	2.10	66.80	6,801.4	2,357.4	710.2	2,462.0	0.43	-0.23	
7,446.0	2.00	73.10	6,889.4	2,358.5	713.1	2,463.9	0.28	-0.11	
7,534.0	1.50	73.00	6,977.4	2,359.3	715.7	2,465.4	0.57	-0.57	
7,624.0	1.60	77.20	7,067.3	2,359.9	718.0	2,466.7	0.17	0.11	
7,713.0	1.10	84.80	7,156.3	2,360.2	720.1	2,467.6	0.60	-0.56	
7,802.0	0.90	85.20	7,245.3	2,360.4	721.7	2,468.2	0.22	-0.22	
7,891.0	0.90	86.90	7,334.3	2,360.5	723.0	2,468.7	0.03	0.00	
7,980.0	0.80	85.90	7,423.3	2,360.5	724.4	2,469.1	0.11	-0.11	
8,070.0	0.70	75.30	7,513.3	2,360.7	725.5	2,469.7	0.19	-0.11	
8,159.0	0.90	65.80	7,602.2	2,361.2	726.7	2,470.4	0.27	0.22	
8,247.0	0.80	59.30	7,690.2	2,361.7	727.8	2,471.3	0.16	-0.11	
8,280.0	1.10	69.20	7,723.2	2,362.0	728.3	2,471.7	1.03	0.91	Last Cathedral Survey @ 8280' MD
8,330.0	1.10	69.20	7,773.2	2,362.3	729.2	2,472.2	0.00	0.00	Projection to Bit @ 8330' MD

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Ricks 22-15
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Site:</b>	SWSW Sec15-2N-R65W (Ricks)	<b>MD Reference:</b>	KBE @ 4897.0ft (Original Well Elev)
<b>Well:</b>	Ricks 22-15	<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

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									
Ricks 22-15 BHL	0.00	0.00	7,765.0	2,338.0	702.3	1,294,392.92	3,236,193.24	40.138407	-104.655211
- survey misses target center by 36.1ft at 8321.1ft MD (7764.4 TVD, 2362.3 N, 729.1 E)									
- Circle (radius 50.0)									
Ricks 22-15 TGT	0.00	0.00	6,380.0	2,338.0	702.3	1,294,392.92	3,236,193.24	40.138407	-104.655211
- survey misses target center by 8.0ft at 6935.9ft MD (6380.0 TVD, 2342.2 N, 695.5 E)									
- Point									

Survey Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
8,280.0	7,723.2	2,362.0	728.3	Last Cathedral Survey @ 8280' MD
8,330.0	7,773.2	2,362.3	729.2	Projection to Bit @ 8330' MD

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