

**ENGINEERING EXHIBIT**  
  
**APPLICATION FOR  
MODIFICATION OF  
CONSTRUCTION PERMIT  
BMP-20060307AYC**

prepared for

**Bernard Ohio, LLC**  
WV KO Columbus, Ohio  
Facility ID 22341  
1580 kHz 3.2 kW-D 0.29 kW-N U DA-2

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FCC Form 301, Section III-A

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Exhibit 11 - Statement A  
**NATURE OF THE PROPOSAL AND NIGHTTIME  
ANTENNA SYSTEM DESCRIPTION**

prepared for  
**Bernard Ohio, LLC**  
WV KO Columbus, Ohio  
Facility ID 22341  
1580 kHz 3.2 kW-D 0.29 kW-N U DA-2

**Nature of the Proposal**

Bernard Ohio, LLC (“*Bernard Ohio*”) is the current licensee of WV KO(AM) 1580 kHz, Columbus, Ohio (Facility ID 22341). *Bernard Ohio* holds a Construction Permit (file number BMP-20060307AYC) to relocate the transmitting facilities using a new daytime and nighttime directional antenna pattern. The construction of the authorized antenna system has been completed and a license application is being filed concurrently with the instant modification application. As shown in the license application, it was not possible to achieve an adjustment of the nighttime directional antenna pattern such that the measured directional radiation along the 15°, 39.5°, 195°, and 350.5° radials would be entirely contained within the standard radiation pattern. Consequently the instant application proposes a modified (augmented) standard pattern that will completely encompass the measured nighttime directional pattern of WV KO.

In addition, after construction of the towers the consulting engineers performing the tune-up and proof of performance discovered that the center tower of the nighttime array is approximately one foot east of the specified location. This change results in the orientation of Tower 2 being 194° when referenced to Tower 1 of the array (instead of 195° as proposed in the original Construction Permit.) The orientation of Tower 3 remains 195°. This minor change in tower parameters has a de minimis effect on the pattern shape and, as will be demonstrated herein, continues to meet all nighttime allocations restrictions. No changes have been made or are proposed to the daytime operation of this station<sup>1</sup>. Information entered on the FCC Form 301 is identical to that shown in BMP-20060307AYC.

**Modified Standard Pattern**

The instant application proposes to modify the pattern specified in BMP-20060307AYC by adding augmentations to the 15°, 39.5°, 195°, and 350.5° radials. As will be shown herein, the augmentation of these radials results in a modified standard pattern that entirely encompasses the measured radials and also meets all nighttime allocations protections. **Exhibit 11 - Table I** is a description of the modified nighttime antenna system and radiation pattern tabulation. The modified standard radiation pattern is shown in graphical form in **Exhibit 11 - Figure 1**.

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<sup>1</sup> The daytime array does not employ Tower 2 of the night array and is therefore not affected by the change in tower parameters.

Exhibit 11 - Statement A  
**NATURE OF THE PROPOSAL AND NIGHTTIME**  
**ANTENNA SYSTEM DESCRIPTION**  
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The nighttime antenna system consists of four guyed, uniform cross-section, steel towers, each 90 electrical degrees tall. According to information provided by technical representatives of the applicant, the ground system consists of 120 radial wires spaced as evenly as possible around the base of each tower. Each wire is approximately 0.25 wavelengths long. Other than the minor error in the location of Tower 2, no physical changes to the towers or ground radials were made during this construction which differ from that shown in the original Application for Construction Permit. Consequently, the site map, tower elevation, and site plat plans submitted with BMP-20060307AYC are still valid and have not been included in this application.

Exhibit 11 - Table I  
**PROPOSED NIGHTTIME**  
**DIRECTIONAL ANTENNA PARAMETERS AND**  
**MODIFIED STANDARD RADIATION PATTERN**

prepared for  
**Bernard Ohio, LLC**  
WVKO Columbus, Ohio  
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<b>Directional Antenna Parameters</b>					
<b>Tower Number</b>	<b>Field Ratio</b>	<b>Phase (deg)</b>	<b>Spacing (deg)</b>	<b>Bearing (deg)</b>	<b>Height (deg)</b>
1	1.000	0.0	0.0	0.0	90.0
2	1.700	292.0	135.0	194.0	90.0
3	0.740	220.0	270.0	195.0	90.0

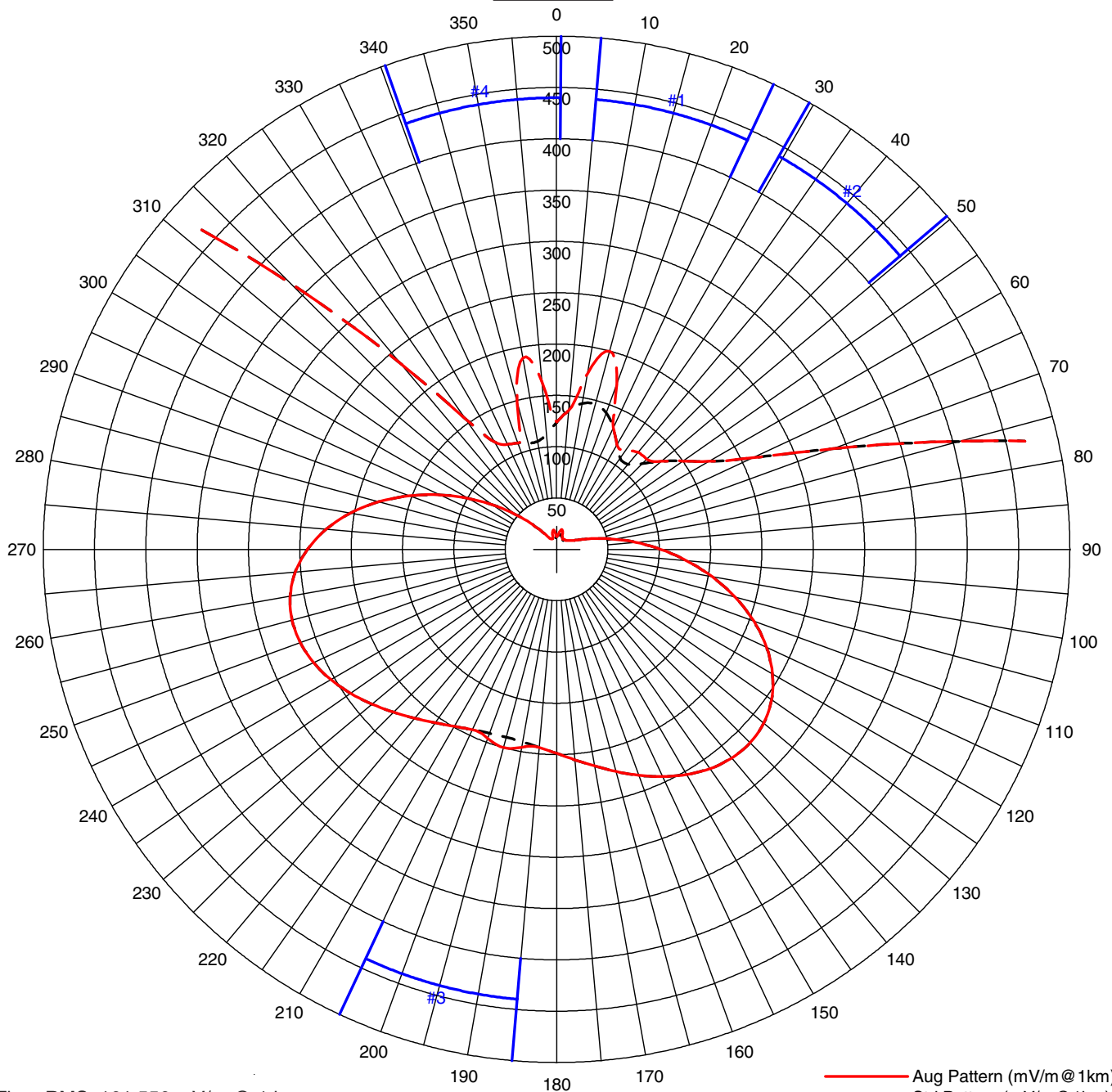
<b>Power (kW)</b>	<b>Theoretical RMS (mV/m)</b>	<b>Standard RMS (mV/m)</b>	<b>Augmented RMS (mV/m)</b>	<b>Q Factor (mV/m)</b>
0.29	161.556	169.958	170.332	10.0

<b>Augmentations</b>		
<b>Azimuth (deg)</b>	<b>Radiation (mV/m)</b>	<b>Span (deg)</b>
15.0	20.0	20.0
39.5	12.3	20.0
195.0	200.0	20.0
350.5	19.0	20.0

<b>Modified Standard Radiation Pattern</b>							
<b>Azimuth (Deg)</b>	<b>Field (mV/m)</b>	<b>Azimuth (Deg)</b>	<b>Field (mV/m)</b>	<b>Azimuth (Deg)</b>	<b>Field (mV/m)</b>	<b>Azimuth (Deg)</b>	<b>Field (mV/m)</b>
0	12.36	90	101.51	180	198.84	270	242.60
5	13.57	95	127.32	185	193.65	275	225.15
10	14.42	100	153.98	190	190.48	280	203.67
15	14.65	105	180.14	195	189.45	285	179.10
20	14.16	110	204.44	200	190.58	290	152.63
25	13.08	115	225.69	205	193.84	295	125.60
30	11.77	120	242.94	210	199.12	300	99.35
35	10.82	125	255.59	215	206.20	305	75.12
40	10.82	130	263.41	220	214.79	310	53.94
45	11.83	135	266.54	225	224.47	315	36.59
50	13.34	140	265.44	230	234.68	320	23.66
55	15.00	145	260.80	235	244.73	325	15.57
60	17.14	150	253.45	240	253.84	330	12.09
65	21.13	155	244.31	245	261.13	335	11.28
70	28.69	160	234.23	250	265.68	340	11.03
75	40.74	165	224.03	255	266.68	345	10.73
80	57.28	170	214.39	260	263.41	350	10.68
85	77.80	175	205.85	265	255.43	355	11.26

# AM Directional Pattern

True North



Theo RMS: 161.556 mV/m @ 1 km  
 Std RMS: 169.958 mV/m @ 1 km  
 Aug RMS: 170.332 mV/m @ 1 km  
 Q: 10.0 mV/m @ 1 km

Horizontal Plane Augmented Pattern

— Aug Pattern (mV/m@1km)  
 - - - Std Pattern (mV/m@1km)  
 — Aug Pattern X10  
 - - - Std Pattern X10

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Switch	#	Azimuth (deg)	Radiation (mV/m@1km)	Span (deg)
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1	1.000	0.0	0.0	0.0	90.0	0	1	15.00	20.00	20.0
2	1.700	292.0	135.0	194.0	90.0	0	2	39.50	12.30	20.0
3	0.740	220.0	270.0	195.0	90.0	0	3	195.00	200.00	20.0
							4	350.50	19.00	20.0

## EXHIBIT 11 - FIGURE 1 PROPOSED DAYTIME MODIFIED STANDARD RADIATION PATTERN

prepared June 2007 for  
**Bernard Ohio, LLC**  
 WVKO(AM) Columbus, Ohio  
 Facility ID 22341  
 1580 kHz 3.2 kW-D 0.29 kW-N DA-2

Cavell, Mertz & Associates, Inc.  
 Manassas, Virginia