

# ENGINEERING EXHIBIT

## Application for Modification of Construction Permit

prepared for

**The WBEZ Alliance, Inc.**

WBEQ(FM) Morris, Illinois

Facility ID 92544

Ch. 214A 1.45 kW 143 m

### Table of Contents

FCC Form 340, Section VII-FM

#### Exhibit 13

Statement A	Request for Waiver of Main Studio Rule § 73.1125(a) Request for Waiver of 'Main Studio' Rule for WBEQ-FM
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#### Exhibit 14

Statement B	Allocation Considerations
Figure 1	Co-Channel Allocation Study
Figure 2	First Adjacent Allocation Study
Figure 3	Second and Third Adjacent Allocation Study
Figure 4	Television Channel 6 Allocation Study

#### Exhibit 22

Statement C	Environmental Considerations
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*This material supplies a "hard copy" of the engineering portions of this application as entered February 27, 2003 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**Section VII Preparer's Certification**

I certify that I have prepared Section VII (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name ROBERT J. CLINTON		Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature		Date 2/27/2003	
Mailing Address CAVELL MERTZ & DAVIS, INC 7839 ASHTON AVENUE			
City MANASSAS		State or Country (if foreign address) VA	Zip Code 20109-
Telephone Number (include area code) 7033929090		E-Mail Address (if available) BCLINTON@CMDCONSULTING.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

**Section VII - FM Engineering on Channels 200-220**

**TECHNICAL SPECIFICATIONS**  
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1.	Channel Number: 214											
2.	Class (select one): <input type="radio"/> D <input checked="" type="radio"/> A <input type="radio"/> B1 <input type="radio"/> B <input type="radio"/> C3 <input type="radio"/> C2 <input type="radio"/> C1 <input type="radio"/> C0 <input type="radio"/> C											
3.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 41 Minutes 17 Seconds 9 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 88 Minutes 25 Seconds 49 <input checked="" type="radio"/> West <input type="radio"/> East											
4.	Antenna Structure Registration Number: 1219556 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA											
5.	Antenna Location Site Elevation Above Mean Sea Level: 175.6 meters											
6.	Overall Tower Height Above Ground Level: 152.4 meters											
7.	Height of Radiation Center Above Ground Level: 141.7 meters(H) 141.7 meters(V)											
8.	Height of Radiation Center Above Average Terrain: 142.6 meters(H) 142.6 meters(V)											
9.	Effective Radiated Power: 1.45 kW(H) 1.45 kW(V)											
10.	Maximum Effective Radiated Power: <input checked="" type="checkbox"/> Not Applicable kW(H) kW(V) (Beam-Tilt Antenna ONLY)											
11.	Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional)  Rotation (Degrees): <input type="checkbox"/> No Rotation											
	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
	0		10		20		30		40		50	
	60		70		80		90		100		110	
	120		130		140		150		160		170	

180	190	200	210	220	230
240	250	260	270	280	290
300	310	320	330	340	350
Additional Azimuths					

Relative Field Polar Plot

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

**CERTIFICATION**

**AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 12-16.**

12. **Main Studio Location.** The proposed main studio location complies with 47 C.F.R. Section 73.1125.  Yes  No  
See Explanation in [Exhibit 13]

13. **Interference.** The proposed facility complies with all of the following applicable rule sections. Check all that apply:  Yes  No  
See Explanation in [Exhibit 14]

**Contour Overlap Requirements.**

a.  47 C.F.R. Section 73.509  
**Exhibit Required.** [Exhibit 15]

**Spacing Requirements.**

b.  47 C.F.R. Section 73.207 with respect to station(s)

**Grandfathered Short-Spaced.**

c.  47 C.F.R. Section 73.213(a) with respect to station(s)  
**Exhibit Required.** [Exhibit 16]

**Contour Protection.**

d.  47 C.F.R. Section 73.215(a) with respect to station(s)  
**Exhibit Required.** [Exhibit 17]

**Television Channel 6 Protection.**

e.  47 C.F.R. Section 73.525 with respect to station(s)  
**Exhibit Required.** [Exhibit 18]

14. **Reserved Channels Above 220.**

a. **Allotment.** The proposed facility complies with the allotment requirements of 47 C.F.R. Section 73.203.  Yes  No  
See Explanation in [Exhibit 19]

b. **Community Coverage.** The proposed facility complies with 47 C.F.R. Section 73.315.  Yes  No  
See Explanation in [Exhibit 20]

15. **International Borders.** The proposed antenna location is not within 320 kilometers of the common border between the United States and Canada or Mexico.  Yes  No  
 Canada  
 Mexico  
If "No," specify the country and provide an exhibit of compliance with all provisions of the relevant International Agreement. [Exhibit 21]

<p>16. <b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Worksheet #7, an <b>Exhibit is required.</b></p> <p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	<p style="text-align: right;"> <input checked="" type="radio"/> Yes   <input type="radio"/> No                 </p> <p style="text-align: right;">See Explanation in [Exhibit 22]</p>
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**PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.**

**Exhibits**

**Exhibit 4**

**Description:** WBEZ ALLIANCE BROADCAST HOLDING

THE WBEZ ALLIANCE, INC. IS THE LICENSEE OF WBEZ-FM, CHICAGO, IL (FACILITY ID 66649), WBEW-FM, CHESTERTON, IN (FACILITY ID 3248) AND AN FM TRANSLATOR W212BH IN MICHIGAN CITY, IN (FACILITY ID 92412). THE WBEZ ALLIANCE, INC. ALSO HOLDS A CONSTRUCTION PERMIT FOR A NEW FM STATION, WBEQ-FM, MORRIS, IL (FACILITY ID 92544) AND HAS A PENDING APPLICATION FOR A NEW TRANSLATOR IN ELGIN, IL, FILE NO. 980914TC (FACILITY ID 91647). THE WBEZ ALLIANCE, INC. ALSO OPERATES WLWU-FM, CHICAGO, IL (FACILITY ID 38939) ON A LMA BASIS.

MR. GARY WEITMAN, WHO SERVES ON THE BOARD OF DIRECTORS OF THE WBEZ ALLIANCE, IS THE VICE PRESIDENT OF COMMUNICATIONS FOR THE TRIBUNE COMPANY WHICH IS A MAJOR PRINT AND ELECTRONIC MEDIA COMPANY AND THE HOLDER OF NUMEROUS FCC LICENSES AND AUTHORIZATIONS. DETAILED INFORMATION ABOUT THOSE MEDIA HOLDINGS ARE AVAILABLE AT WWW.TRIBUNE.COM INCLUDING THE COMPANY'S LATEST ANNUAL REPORT TO THE SEC FILED MARCH 18, 2002 ON FORM 10-K. MR. WEITMAN DOES NOT SERVE ON THE GOVERNING BOARD OF THE TRIBUNE COMPANY OR ON THE COMPANY'S CORPORATE MANAGEMENT COMMITTEE. IN ADDITION, MR. WEITMAN DOES NOT EXERCISE ANY OVERSIGHT RESPONSIBILITY OVER ANY OF THE TRIBUNE COMPANY'S MEDIA HOLDINGS.

**Attachment 4**

**Exhibit 13**

**Description:** REQUEST FOR WAIVER OF 'MAIN STUDIO' RULE FOR WBEQ-FM

SEE ATTACHED.

**Attachment 13**

Description
WBEQ Request for Main Studio Waiver
Exhibit 13 - Statement A

**Exhibit 14**

**Description:** EXHIBIT 14 - STATEMENT B

SEE ATTACHED

**Attachment 14**

Description
Exhibit 14 - Statement B - Allocation

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**Exhibit 15**

**Description:** EXHIBIT 15

SEE EXHIBIT 14 - STATEMENT B

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**Attachment 15**

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**Exhibit 18**

**Description:** EXHIBIT 18

SEE EXHIBIT 14 - STATEMENT B

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**Attachment 18**

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**Exhibit 21**

**Description:** EXHIBIT 21

SEE EXHIBIT 14 - STATEMENT B

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**Attachment 21**

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**Exhibit 22**

**Description:** EXHIBIT 22 - STATEMENT C

SEE EXHIBIT 22 - STATEMENT C - ENVIRONMENTAL

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**Attachment 22**

Description
EXHIBIT 22 - STATEMENT C - ENVIRONMENTAL

Exhibit 22 - Statement C  
**ENVIRONMENTAL CONSIDERATIONS**  
prepared for  
**The WBEZ Alliance, Inc.**  
WBEQ(FM) Morris, Illinois  
Facility ID 92544  
Ch. 214A 1.45 kW 143 m

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

### **Nature of The Proposal**

*The WBEZ Alliance, Inc.* ("WBEZ") herein seeks to modify the Construction Permit for WBEQ(FM), Morris, Illinois, Channel 214A (file number BPED-19981228MA). The proposed antenna will be mounted on an existing tower at a new location (Antenna Structure Registration number 1219556).

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. Since no change in overall structure height is proposed, no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

### **Human Exposure to Radiofrequency Radiation**

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

Exhibit 22 - Statement C  
**ENVIRONMENTAL CONSIDERATIONS**  
(Page 2 of 3)

The proposed WBEQ(FM) antenna will have a center of radiation 141.7 meters above ground level. A maximum ERP of 1.45 kilowatts, circularly polarized, will be employed. The “uncontrolled/general population” limit specified in §1.1310 for the FM radio band is 200  $\mu\text{W}/\text{cm}^2$ .

Calculations were made per OET 65 to predict power density attributable to the proposed facility at location points two meters above ground level in the immediate vicinity of the tower. A “worst case” relative field of 100 percent downward radiation is assumed for this calculation.

The formula used for calculating FM signal density in this analysis is the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

<i>S</i>	=	power density in microwatts/cm <sup>2</sup>
<i>ERP</i>	=	total ERP in Watts
<i>F</i>	=	relative field factor
<i>D</i>	=	distance in meters

Using this formula, the proposed facility would contribute a power density of 5.0  $\mu\text{W}/\text{cm}^2$  at two meters above ground level near antenna support structure, or 2.5 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is lower, due to the increasing distance from the transmitting antenna. If the vertical radiation pattern of the antenna is considered, the calculated exposure is even lower.

§1.1307(b)(3) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas,

Exhibit 22 - Statement C  
**ENVIRONMENTAL CONSIDERATIONS**  
(Page 3 of 3)

the impact of the any other facilities using this site or at a nearby site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

**Safety of Tower Workers and the General Public**

As demonstrated herein, excessive levels of RF energy will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will continue to be employed protecting maintenance workers from excessive exposure when work must be performed on the tower (or on nearby towers) in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

**Conclusion**

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.