

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE:**

**AM BROADCAST STATION WKHB  
BROADCAST COMMUNICATIONS, INC.  
620 KHZ, IRWIN, PENNSYLVANIA**

**Licensed: 0.05 kW-N/5.5 kW-D ND-2-U  
Proposed: 0.25 kW-N/5.5 kW-D DA-N-U**

**18 JULY 2001**

**FCC FACILITY ID NUMBER 72297**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR CONSTRUCTION PERMIT TO  
1) INCREASE NIGHTTIME POWER  
2) INSTALL DIRECTIONAL ANTENNA SYSTEM FOR NIGHTTIME USE  
3) CHANGE FROM A CLASS D TO A CLASS B AM STATION**

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**DECLARATION**

I, Alan E. Gearing, declare and state that I am a graduate electrical engineer with a Bachelor of Science degree in Electrical Engineering from SUNY University at Buffalo, that I am a registered professional engineer in the District of Columbia (since 1979), and that I have provided engineering services in the area of telecommunications since 1973. My qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting broadcast and radio communications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by BROADCAST COMMUNICATIONS, INC., to prepare the instant engineering exhibit and Section III-A of FCC Form 301 (*May 1999 Edition*) in support of *an Application for Construction Permit to: 1) increase nighttime power; 2) install a directional antenna system for nighttime use; and 3) change from a Class D to a Class B AM station* for AM Broadcast station WKHB [FCC FACILITY ID NUMBER 72297].

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under penalty of perjury that the foregoing is true and correct.



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Alan E. Gearing, P.E.  
District of Columbia Number 7406

Executed on the 18<sup>th</sup> day of July 2001

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**NARRATIVE STATEMENT:**

**I. GENERAL:**

This narrative statement and the engineering exhibit of which it is part has been prepared on behalf of BROADCAST COMMUNICATIONS, INC. (BCI), licensee of AM broadcast station WKHB, 620 kHz, Irwin, Pennsylvania [FCC FACILITY ID NUMBER 72297]. WKHB is currently licensed to operate with nighttime power of 50 watts and daytime power of 5,500 watts, employing a nondirectional antenna [See FCC File Number BL-20010416ABD].

BCI now proposes **to install a four-tower nighttime directional antenna array at the site authorized in BMP-19991126AAD, increase nighttime power to 250 watts, and change WKHB from a Class D to a Class B AM station.** Daytime operation will remain non-directional with a power of 5.5 kW.

The changes proposed herein fall within the definition of a minor change as given in §73.3571 of the FCC Rules. The proposed WKHB facilities will be built to comply with the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is categorically excluded from environmental processing pursuant to the provisions of §1.1.306 of the

Commission's rules. A more detailed discussion of environmental factors is included under the Environmental Considerations below.

Answers to questions on Section III-A of FCC Form 301 [May 1999 version] are incorporated in the following paragraphs, and attached figures and tables.

## **II. ENGINEERING DISCUSSION:**

### **A. WKHB Transmitter/Antenna Location:**

For WKHB's proposed 250-watt nighttime operation, BCI proposes to construct a four-tower directional antenna array at the existing WKHB nondirectional site located off Farm Spur Road, 3.2 km north-northeast of Merminie, Pennsylvania. Geographic coordinates of the site are (NAD 27):

|            |     |     |     |
|------------|-----|-----|-----|
| Latitude:  | 40° | 17' | 20" |
| Longitude: | 79° | 42' | 04" |

There are no known radio facilities within the general vicinity of the proposed site. Other than a proposal to collocate co-owned AM broadcast station WKTW, Jeannette, PA, at the WKHB site (see FCC File No. BMJP-0001023DZ) there are no AM, FM, or TV broadcast stations located within three kilometers. Table 1 is a list of other broadcast stations, towers, airfields, and communities within 10 km of the WKHB site.

### **B. Proposed Nighttime Directional Antenna System:**

Figure 1 is a site plat showing the layout of the proposed WKHB directional array towers and ground system and Figure 2 is a series of vertical plan sketches of the proposed antenna structures. Figures 3 through 5 furnish salient information regarding the proposed nighttime array.

Concurrently with the instant application, the Federal Aviation Administration (FAA) is being notified of the proposed WKHB nighttime towers. Upon receipt of an FAA Determination of No Air Hazard, the towers will be registered with the Commission.

**C. Site Map and Site Photographs:**

Since this is an existing site, BCI believes that a site map and site photographs are not required and none are being submitted herein. However, they will be supplied upon Commission request.

**D. Blanketing Contour and Principal Community Coverage:**

Figure 6 and 7 are maps upon which the proposed nighttime 1000 mV/m blanketing contour and the 13.0 mV/m (50% RSS) night limit contours are shown, respectively. The proposed night limit contour fully encompasses the community of license - Irwin, Pennsylvania. The population within the proposed nighttime blanketing contour is much less than 300 people. In fact, an examination of the map of Figure 6 reveals that there are no houses within the proposed nighttime 1000 mV/m contour.

**E. Nighttime Allocation Study:**

Figure 8 is a nighttime channel study to stations co-channel and first adjacent channel to 620 kHz. The study shows the allowable vs actual proposed radiated field strength for the directional pattern proposed herein. This proposal does not increase the RSS of any recognized domestic, Canadian, Mexican, or other Region II station. No protection is provided to facilities operating under post-sunset or pre-sunrise authorizations nor to stations operating with secondary nighttime authorizations. Table 2 furnishes tabulations of measured conductivities employed in determining the locations of nighttime 50% RSS contours for stations requiring clipping studies. Maps

showing the contours and the clipping points used in such studies are included herein as Figures 9-13. Table 3 provides a tabulation of the proposed WKHB night limit contribution toward all stations for which said contribution is greater than 0.5 mV/m. (Since the normally protected contour value for Class B AM stations is 2 mV/m, any contribution below 0.5 mV/m could not enter into the 25% RSS calculation of any station.) Table 4 provides detailed listings for determining the RSS night limits for the more critical stations.

**F. Environmental Considerations:**

BCI believes its proposal will not significantly affect the environment for the following reasons. The WKHB site does not meet any of the criteria specified in §1.1307 of the FCC Rules. Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radiofrequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No. 86 (1986) and ANSI/IEEE C95.1-1992.)

With regard to the last item, the proposed WKHB towers will be surrounded by gated fences, at least seven feet tall. The fences will not be less than three meters from any point on the tower or feed line. This is the "worst case" distance from Section 1 of Supplement A to OET Bulletin No. 65 (Edition 97-01) assuming: A 5.5 kW, 620 kHz, AM station combined with a 0.75 kW, 770 kHz, AM station, with an antenna tower over 0.25 wavelength in height at both frequencies. The fence gates will be kept locked and appropriate warning signs will be posted on each face of each fence. Procedures will be adopted to protect workers requiring access to the tower inside the fenced area, including reduction of power or cessation of operation of both stations to comply with germane exposure guidelines.



**III. SUMMARY:**

BCI proposes to continue operation of AM broadcast station WKHB on 620 kHz at Irwin, Pennsylvania, but as a class B station operating a four-tower nighttime directional array with a power of 250 watts. Daytime operation will continue as authorized with non-directional power of 5500 watts.

The proposed operation will not create or receive prohibited interference and would not have any significant impact on the environment. The proposed operation is believed to be fully in compliance with the Commission's rules and applicable international agreements.



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Alan E. Gearing, P.E.