

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-1:**

**CAPITAL BROADCASTING, INC.  
RADIO STATION WGDJ (AM)  
RENSSELAER, NEW YORK**

**HAS: 1300 KHZ 5.0 KW D, 5.0 KW N, DA-2  
PROPOSED: 1300 KHZ 10.0 KW D, 8.0 KW N, DA-2**

**FEBRUARY 2008**

**FCC FACILITY NUMBER  
40768**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR A CONSTRUCTION PERMIT TO MAKE  
MINOR CHANGES TO  
STANDARD BROADCAST STATION  
WGDJ  
CLASS B AM STATION  
RENSSELAER, NEW YORK**

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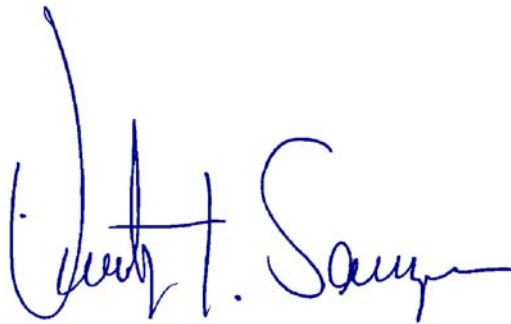
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## **DECLARATION**

I, Timothy Z. Sawyer, declare and that I have provided engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting radio telecommunications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by CAPITAL BROADCASTING, INC., to prepare the instant engineering exhibit in support of *an application to make Minor Technical Changes to WGDJ (AM) Standard Broadcast Station, Rensselaer, New York, FCC Facility ID Number: 40768.*

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 the penalty of perjury that the foregoing is true and correct.



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Timothy Z. Sawyer

Executed on the 29th day of February 2008

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**NARRATIVE STATEMENT:**

**I. GENERAL:**

This engineering statement and the instant engineering exhibit of which it is part has been prepared on behalf of CAPITAL BROADCASTING, INC., (hereinafter "CBI").

By means of the instant application, CBI proposes to modify the facilities of WGDJ (AM) by increasing the daytime operating power from 5-kilowatts to 10-kilowatts. CBI proposes no changes to the daytime directional antenna operating parameters other than an increase in operating power.

CBI also proposes to make changes in the nighttime directional antenna system, by increasing the operating power from 5-kilowatts to 8-kilowatts and make minor changes to the antenna operating parameters of the nighttime directional antenna system.

CBI proposes no changes to the currently authorized transmitter site location of Station WGDJ, or the physical antenna systems in use.

The nature of the changes proposed herein are electrical modifications to antenna phasing and tuning units of the current day and nighttime directional antenna systems to accommodate the proposed power increases to each mode of operation.

The facilities will be built to comply with the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is believed to be excluded from further environmental processing as no changes are proposed that would require any new construction at the site, or physical alterations to any of the existing plant facilities or the supporting infrastructure.

A more detailed discussion of the environmental factors is included under the heading Environmental Considerations below.

Information requested by exhibits in response to questions on Section III-A of FCC Form 301 is incorporated in the following paragraphs, figures, and tables.

## **II. ENGINEERING DISCUSSION:**

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

CBI proposes to modify the electrical parameters of the directional antenna systems in use by WGDJ. No change in location of the current antennas or construction of additional antennas will occur. Therefore the FAA has not been notified of this proposal as no notification is required.

The proposed towers are less than 61 meters in overall height and pass the FCC ASR Tower/Slope Test.

FCC tower registration is also not required. The result of the FCC tower slope to airport program is included herein as Figure 1.

**Site Map:**

A large-scale topographic map upon which the current site has been clearly marked is included herein as Figure 2. No change in location is proposed, and the site map is provided only to confirm the location of the existing transmitter site.

**Existing Towers - Vertical Sketch of Antenna:**

CBI proposes to utilize the existing antenna systems of WGDJ. A vertical sketch of the towers used by the antenna systems is on-file (see FCC application BP-19791105AI) and are not included herein.

The vertical heights/elevations of each tower are, as stated, on-file with the Commission, and no changes are proposed. However, should the Commission believe that a vertical sketch of the towers is required, one will promptly be submitted as an amendment to the application.

**B. Site Plat, Site Photograph, and 1V/m Groundwave Contour:**

A site plat with the ground system details is on-file (see FCC application BP-19791105AI) with the Commission and is not being submitted at this time. However, should the Commission believe that a site plat is required, one will promptly be submitted as an amendment to the application. No changes to the existing antenna ground system or the property boundaries are proposed.

Two high-resolution satellite/aerial photographs are provided in Figure 4, an aerial photograph of the site (a general site plat) and an aerial photograph

upon which the 1 V/m daytime and nighttime groundwave blanketing contours have been are drawn are included in Figure 4.

**Blanketing Contour:**

The population within the blanketing contours (day and night) meets the requirements of §73.24(g) of the Commission's Rules.

**C. Daytime Directional Antenna:**

Figure 5, contains the details of the proposed daytime directional antenna system as well as a map of the present and proposed service contours.

The city of license, Rensselaer, New York, is well within the 5.0 mV/m groundwave contour from the proposed daytime facility as shown in Figure 5. Therefore, the daytime proposal is in full compliance with the Commission's Rules concerning service to its city of license.

**D. Daytime Allocation Study:**

The FCC Conductivity Map (M3), was used to establish the effective soil conductivity values for all stations over the azimuth span (direction) of concern in the absence of measured soil conductivity values.

However, measured soil conductivity values were used in this application concerning the proposed daytime operation of WGDJ.

Field strength measurement data was collected on several radials (directions) from WGDJ toward distance stations of concern during October 2007 by this office. The measurement data (tabulations) and their associated graphs to



determine the soil conductivity values along paths of concern are included in Figure 6.

Where applicable, the equivalent distance method was used to establish the distances to the various signal level contours.

The FCC's "Consolidated Data Base System" (CDBS) has been used to obtain operational information and antenna parameters of all stations considered in the allocation studies except for the proposed operation which is specified herein.

This proposal as shown in Figure 6, with the use of the measured soil conductivity values, demonstrates that prohibitive overlap of the proposed daytime contours to or from this proposal do not occur, therefore a grant of the proposal will not cause or receive prohibitive signal overlap with any station of concern during daytime hours and is in compliance with the Commission's Rules.

A grant of this proposal is in the public interest as it will allow the station to increase its daytime service area while providing a general improvement in signal reception to the public.

**E. Critical Hours Operation:**

Operation on 1300 kilohertz, a U.S. Regional Channel does not require protection to any U.S. Class A Stations. Therefore, no limitations on daytime power during critical hours is required. Figure 7 is provided for informational purposes only.

**F. Nighttime Study, Nighttime Directional Antenna Pattern Details, and Nighttime Service Area:**

A full nighttime allocation study, and the details of the proposed nighttime directional antenna pattern, as well as the predicted nighttime service area are provided in Figure 8.

The city of license, Rensselaer, New York, is well within the predicted 50 percent RSS nighttime limit signal (the “nighttime interference free contour”) from the proposed nighttime facility as shown in Figure 8. Therefore, the nighttime proposal is in full compliance with the Commission’s Rules concerning service to its city of license.

The nighttime proposal as demonstrated herein does not produce prohibitive interference to any other facilities of concern during nighttime hours. Therefore, a grant of the nighttime proposal is in compliance with the Commission’s Rules.

A grant of this proposal is in the public interest as it will allow the station to increase its nighttime service area while providing a general improvement in signal reception to the public.

**G. Environmental Considerations:**

The applicant believes its proposal will not significantly affect the environment for the following reasons:

1. No new, or additional construction of physical facilities that might impact the local environment will occur at the site. No grading of the property, no road work, no erection of towers, no outside activities that

might impact the area are required. The applicant simply wishes to make electrical parameter changes to its existing antenna system.

2. Operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency 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 towers are surrounded by individual gated fences. The fences are not less than 2 meters (6 feet) 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 10-kW, 1300 kHz, AM station with an antenna/tower approaching 0.25 wavelength in height. The fence gates will be kept locked and appropriate warning signs posted on each face of the fence.

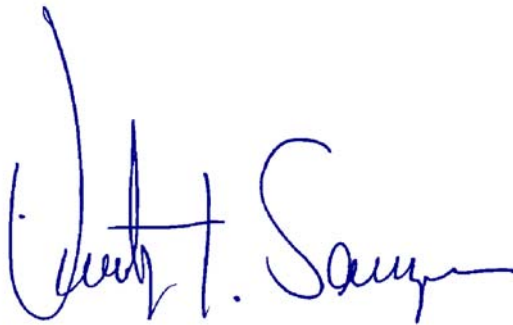
Procedures have been adopted to protect workers requiring access to the tower inside the fenced area, including reduction of power or cessation of operation, to comply with the exposure guidelines. The applicant is the sole user and owner of this site, however, should additional users be authorized at the site, the applicant/licensee will fully-cooperate and coordinate with all site users as required by the Commission's rules.

**III. SUMMARY:**

CBI proposes to make certain technical changes to existing Station WGDJ which will result in improved service to its community of license and service areas by utilizing a directional antenna system during all modes of operation with increased power levels.

Operation as proposed herein will not increase any existing overlap of normally prohibited contours, and will not cause any new prohibited contour overlap to any existing facilities or applications presently on-file or pending with the Commission. It is believed that based on information presented herein, that the proposal will not have any significant impact on the environment.

29 February 2008



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Timothy Z. Sawyer

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