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**ENGINEERING EXHIBIT EE:**

**RADIO STATION WWZY(FM)  
LONG BRANCH, NEW JERSEY**

**Ch. 296A 5.0 KW 110 M HAAT**

**MAY 28, 2004**

ENGINEERING STATEMENT IN SUPPORT OF  
AN APPLICATION FOR A  
MODIFICATION OF AN EXISTING FM STATION

File No. BLH-19980521KB - Facility ID: 32983

ATTACHED TO EXHIBIT 24 OF FCC FORM 301

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## - Existing site - Not Required.

## Declaration

I, John J. Mullaney, declare and state that I am a graduate electrical engineer with a B.E.E. and my qualifications are known to the Federal Communications Commission, and that I am an principal engineer in the firm of Mullaney Engineering, Inc., and that I have provided engineering services in the area of telecommunications since 1977. My qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission.

The firm of Mullaney Engineering, Inc., has been requested by Press Communications, LLC, to prepare the instant engineering exhibit in support of an application for Construction Permit for a non-directional maximum equivalent 6 kW Class A FM in accordance with an interference agreement.

All facts contained herein are true of my own knowledge except where stated to be on information or 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.

/s/ John J. Mullaney

John J. Mullaney, Consulting Engineer

Executed on the 28th day of May 2004.

**ENGINEERING EXHIBIT EE:**

**RADIO STATION WWZY(FM)  
LONG BRANCH, NEW JERSEY**

**Ch. 296A 5.0 KW 110 M HAAT**

**NARRATIVE STATEMENT:**

**I. General:**

This engineering statement has been prepared on behalf of Press Communications, LLC, licensee of WWZY on Ch. 296A at Long Branch, New Jersey. The purpose of this statement is to request a Construction Permit to build a non-directional maximum equivalent 6 kW Class A FM in accordance with an interference agreement. WWZY will operate with an ERP of 5.0 KW and an HAAT of 110 Meters from its existing licensed site. This application proposes facilities which are in compliance with Section 73.213(C) in so far as WWZY has signed a Class A **interference agreement** with WKDN on Ch. 295B at Camden, NJ.

The application is not a major environmental action, as defined by Section 1.1307 of the Commission's Rules. The proposed facility is in full compliance with both the "controlled" & "un-controlled" FCC Radiation Guidelines. Since the proposed facility contributes less than 5% of the "un-controlled" or 1% of the "controlled" standard it is categorically excluded from further consideration.

Answers to questions contained in F.C.C. Form 301, are incorporated in the following paragraphs and figures.

## **II. Engineering Discussion:**

### **A. Proposed Location:**

WWZY proposes to remain at its existing tower site. The only difference is that it will now operate non-directionally with equivalent 6 kW facilities.

The current Antenna Structure Registration number is 1045608.

### **B. Antenna System and Tower:**

A dual polarized 2-bay FM half wave spaced antenna will be mounted near the top of the tower. **Figure 3** is a sketch of the tower.

### **C. Effective Radiated Power:**

Giving consideration for the maximum antenna gain, transmitter power and line loss, the maximum Effective Radiated Power is 5.0 KW for the Horizontal and 5.0 KW for the Vertical Component.

A Class-A FM station is restricted to a maximum of 6 KW (ERP) up to a maximum Height Above Average Terrain (HAAT) of 100 Meters. This proposal will operate with an HAAT that exceeds the maximum and consequently must reduce its ERP in order to obtain equivalent coverage within the 1.0 mV/m contour.

Current F.C.C. policy permits stations that are beyond 320 kilometers from the Mexican or Canadian Borders to use the F(50,50) curves to determine what reduced power at their HAAT will provide the equivalent maximum 1.0 mV/M coverage allowed.

Using the curve, it was determined that maximum equivalent Class A operations at an HAAT of 110 Meters requires the ERP to be no greater than 5 KW.

**D. Channel Allocation:**

**Figure 4** is a channel allocation study from the proposed site. The proposed site is short spaced under the 6 KW rules to four stations. The **first** short spacing of -27.6 kilometers is to WXPB on Ch. 296A at Briarcliff Manor, NY. Under a previous mutual interference **agreement** both stations are permitted and currently operate with maximum facilities. The **second** short spacing of -19.8 kilometers is to WLTW on Ch. 294B at New York City, NY. The **third** short spacing of -19.8 kilometers is to WBLS on Ch. 298B at New York City, NY. The short spacings with both WLTW and WBLS have existed since **before 1964** and thus, are governed by Section 73.213(a). In accordance with that section both WLTW and WBLS can be **ignored** since they are 2<sup>nd</sup> adjacent channel relationships. The **fourth** short spacing of -8.3 kilometers is to WKDN on Ch. 295B at Camden, NJ. Currently, WWZY operates a directional antenna which maintains an equivalent 3 kW ERP in the direction of WKDN. As part of this application, WWZY and WKDN have signed an **interference agreement** whereby WWZY will be permitted to eliminate its directional antenna and to operate with maximum equivalent 6 kW facilities. In all other respects this application is in compliance with Section 73.207(a).

**1. Contour Protection - 6 kW Interference Agreement:**

**Figure 5** is a map of the protected 60 dBu and the first adjacent interfering 48 dBu contours proposed by this non-directional application. In addition, the map shows the protected 54 dBu and interfering 54 dBu contours for WKDN using their

existing licensed facilities (38 kW at 168 meters HAAT). Both WKDN & WWZY are **aware of and agree to** the resulting contour overlap received by WKDN.

**E. Terrain Profile Data & Coverage:**

The HAAT proposed in this application (110 meters) is based upon the fact that the proposed center of radiation is 117 meters AGL or 3 meters **below** the licensed facility which is also located at this site and which has a licensed HAAT of 113 meters.

**F. Terrain Profile to City of License:**

The N-270-E radial is the direct path to the City of License. From the proposed site the 3.16 mV/M or 70 dBu City Grade Contour will completely encompass the City of License without major terrain obstruction.

**G. FM Blanketing Contour:**

WWZY recognizes its obligation to resolve related interference complaints for a one year period within its 115 dBu "FM Blanketing Contour" as required by Section 73.318 of the FCC Rules.

The radius around the base of the tower in which Blanketing interference is possible is fairly small (0.88 km). Given the height of the proposed antenna and the fact that this has been the existing site for many years with a similar ERP, no problems are anticipated.

**H. Other Services in Area:**

There are **no known AM** Broadcast Stations within 3.2 kilometers of the proposed site.

Besides what already exists on the tower, there are no known transmission facilities within 60 meters (197 feet) of the proposed antenna.

There are other known FM or TV transmitters within 10 kilometers (6.2 miles) of the proposed site, however, based upon the type of transmitter proposed, and the frequency & power involved no intermodulation interference problems with existing transmitting facilities is expected. In the unlikely event some problems would occur, WWZY will investigate and correct such cases in accordance with the Commission's Rules.

**I. Environmental Assessment Statement:**

WWZY believes its proposal will not significantly affect the environment since it does not meet any of the criteria specified in Section 1.1307 of the rules. Since an existing tower will be used with no change in overall height the only remaining environmental issue is R.F. Exposure. Specifically the proposed facility:

- 1) Will NOT involve the exposure of workers or the general public to levels of Radio Frequency radiation in excess of the guidelines recommended by the FCC - OET Bulletin 65 (August 25, 1997).

The following is a more detailed discussion of this protection standard:

**A. National Environmental Policy Act of 1969:**

In 1969, Congress enacted the National Environmental Policy Act (NEPA), which requires the FCC to evaluate the potential environmental significance of the facilities it regulates and authorizes. Human exposure to Radio Frequency (RF) radiation had been identified as an issue that the FCC must consider.



Beginning with the filing of applications after January 1, 1986, broadcast stations were required to “certify compliance” with FCC prescribed guidelines on human exposure to RF radiation. The FCC standard was based upon the American National Standards Institute’s (ANSI) RF radiation protection guides (ANSI C95.1-1982). These exposure limits are expressed in terms of milli-watts per square centimeter.

In October 1997, the FCC implemented a two tier evaluation criteria utilizing recommendations of the National Council on Radiation Protection and Measurement (NCRP). The “controlled” tier involves areas which have restricted access while the “un-controlled” tier involves areas which have unrestricted access. The Maximum Permissible Exposure (MPE) limits for “controlled” areas are the same as adopted in 1985, while the “un-controlled” limits for FM and TV frequencies are one-fifth or 20% of the limits for “controlled” areas.

These exposure limits are time-averaged over any six minute period and vary depending upon the frequency involved. The following are the Maximum Permissible Exposure (MPE) limits for “controlled” areas:

<b>Frequency Range (MHz)</b>	<b>Power Density (mW/sq.cm)</b>
*****	*****
0.3 to 3	100 AM
3 to 30	$900/(\text{Freq}^2)$
30 to 300	1.0 VHF TV & FM
300 to 1,500	$\text{Freq}/300$ UHF TV
1500 to 100,000	5.0

WWZY recognizes that compliance with the above criteria at sites involving multiple AM, FM and/or TV facilities is based upon the contributions of all such facilities. At the site discussed in this application, **the only significant facility** that will exist is the WWZY FM facility.

### FM Broadcast Stations

For FM Broadcast Stations the following formula is used:

$$D = \frac{\text{SQRT}(F^2 * [HERP + VERP])}{1.667 * \text{SQRT}(PD) * 3.2808}$$

Where:

- D = the closest distance in meters that a human should come to an operating antenna (To obtain feet multiply by 3.2808)
- F = typical relative field factor in downward direction (F=1 is worst case main lobe)
- HERP = Horizontal ERP in watts (above a dipole)
- VERP = Vertical ERP in watts (above a dipole)
- PD = highest Power Density in milli-watts/cm<sup>2</sup>
- SQRT = Square Root
- Freq = Frequency in mega-cycles/sec. (MHz)

The vertical radiation pattern of the FM antenna specified in this application is narrow and, therefore, the power density as seen by an observer on the ground near the base of the tower will be less than 20 percent of the total ERP.

The application of the above equation (assuming maximum ERP), in our case, for a frequency of 107.1 MHz and an “un-controlled” Power Density of 0.2 milli-watts results in a minimum distance of 40.9 meters (135 feet) from the antenna. Inasmuch as the lowest element on the proposed antenna will be approximately 112.8 meters (370 feet) above the ground level, it is self-evident that no hazard

from radiation will exist to persons at ground level. At approximately 2 meters above the ground and assuming **maximum** downward radiation, the proposed FM facility contributes **2.5%** of the FCC “controlled” standard. However, using a **more realistic** form factor of  $F=0.6$ , the proposed FM facility contributes **0.9%** of the FCC “controlled” standard. This proposal is in full compliance and is categorically excluded from further consideration since it is less than 5% of the “un-controlled” or 1% of the “controlled” standard.

The tower is surrounded by a locked fence to limit access.

Workers employed to climb the tower or work in a potential overexposure location will not be permitted to enter the work area until cleared by the station manager or other responsible person. Appropriate warning signs will be posted to ensure safety. In addition, WWZY will establish and enforce work rules and safety procedures applicable in a potential over-exposure area. The rules will establish how close a worker can get to the antenna when it is operating at normal power and specify the power reduction required in order to make other locations safe. It is recognized that maintenance or installation work on or near the antenna may require the station to completely shutdown or switch temporarily to an auxiliary antenna or an auxiliary transmitter site. All employees, contract and other persons having access to areas of potential exposure will be required to sign a site management guide indicating they are aware of and will comply with all safety rules.

**III. SUMMARY:**

Press Communications, LLC, requests a Construction Permit to build a non-directional maximum equivalent 6 kW Class A FM in accordance with an interference agreement. WWZY will operate with an ERP of 5.0 KW and an HAAT of 110 Meters from its existing licensed site. This application proposes facilities which are in compliance with Section 73.213(c) in so far as WWZY has signed a Class A **interference agreement** with WKDN on Ch. 295B at Camden, NJ. This engineering proposal is in full compliance with the Commission's Rules.

/s/ John J. Mullaney

John J. Mullaney, Consulting Engineer

May 28, 2004.