

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-2:**

**RADIO STATION WHTG-FM  
PRESS COMMUNICATIONS, LLC  
EATONTOWN, NEW JERSEY**

**Ch. 292A 1.1 KW 161 M HAAT**

**APRIL 23, 2003**

**ENGINEERING STATEMENT IN SUPPORT OF  
AN AMENDMENT TO  
A PENDING APPLICATION FOR  
MODIFICATION OF A AUXILIARY FM FACILITY  
(TOTAL REPLACEMENT OF ENGINEERING  
NOW PROPOSING TO MAKE IT A MAIN FACILITY)**

File No. BXPB-20020910AAL - Facility ID: 72324

ATTACHED TO EXHIBIT 24 OF FCC FORM 301

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**TABLE OF CONTENTS:**

1. F.C.C. Form 301.
2. Declaration of Engineer
3. Narrative Statement
4. Figure 1, Topographic Map Showing Proposed Site. (Not Required)
5. Figure 2, Proposed Coverage Map.
6. Figure 3, Vertical Tower Sketch. (Not Required)
7. Figure 4, Channel Allocation.
8. Figure 5, Contour Protection Map.
9. Figure 5-A, Contour Protection Map to WJJZ.
10. Figure 5-B, Grandfathered Discussion.

## 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 amendment to a pending application for Construction Permit by FM radio station WHTG-FM, licensed to Eatontown, New Jersey (FCC Facility ID Number: 72324).

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 23<sup>rd</sup> day of April 2003.

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PRESS COMMUNICATIONS, LLC  
EATONTOWN, NEW JERSEY**

**Ch. 292A 1.1 KW 161 M HAAT**

**NARRATIVE STATEMENT:**

**I. General:**

This engineering statement has been prepared on behalf of Press Communications, LLC, licensee of Radio Station WHTG-FM on Ch. 292A at Eatontown, New Jersey. The purpose of this statement is to amend (**totally replace**) its pending application for a Construction Permit for a modified auxiliary FM facility. This amendment modifies the auxiliary to now make it the main FM facility based upon the coverage/interference footprint of the newly granted CP (BMPH-20010806AAA) authorizing operation with a directional antenna. That CP requires the existing AM/FM tower to be substantially increased in height. However, that required increase in tower height remains a very controversial issue within the local community. As a result, Press is proposing a very minor modification of the tower height at the existing auxiliary site and the conversion of the **auxiliary site to become the main FM site for WHTG-FM.**

WHTG-FM proposes to operate its herein proposed main facilities with an ERP of 1.1 KW and an HAAT of 161 Meters. This application proposes facilities which are in compliance with the contour protection requirements of Section 73.215 and it qualifies for processing in accordance with Section 73.213(a) regarding 2<sup>nd</sup> adjacent

WLTW. It also relies on the policy which permits the received interference to be increased provided caused interference is decreased and provided there is no net increase in interference.

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 "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:**

WHTG-FM's existing auxiliary site will become its main site. A topographic map showing the proposed site is not required (Figure 1 omitted). The NAD-27 geographic coordinates are:

Latitude: 40° 16' 41"

Longitude: 74° 04' 51"

The current Antenna Structure Registration number for the increase in tower height (25' taller) is **1237989**.

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

A dual polarized 2-bay half wave spaced FM antenna will be mounted near the top

of the modified tower. The tip height of the structure will be increased to 159.7 m (524') AGL / 185.6 m (609') AMSL. The antenna center of radiation will be 155.4 m (510') AGL / 181.4 m (595') AMSL.

**C. Effective Radiated Power:**

Giving consideration for the maximum antenna gain, transmitter power and line loss, the maximum Effective Radiated Power is 1.1 KW for the Horizontal and 1.1 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 Class A operations at an HAAT of 161 Meters requires the ERP to be no greater than 2.4 KW at 6 kW equivalency and 1.2 kW at 3 kW equivalency.

**D. Channel Allocation:**

**Figure 4** is a channel allocation study from the proposed main site which is also the auxiliary site. The proposed site is short spaced under the 6 KW rules to **five** stations, one of which (WHCY) is a newly created short spacing. The short

spacing with WLTW has existed since before 1964 (73.213(a)) and as a 2<sup>nd</sup> adjacent facility the rules permit it to be totally ignored. The remaining three short spacings are being protected in accordance with 73.215 - contour protection. Two of the short spacings are a direct result of the 6 kW rules and as such WHTG-FM qualifies for 3 kW facilities towards WFAF & WBLI . In all other respects this application is in compliance with Section 73.207(a).

WHTG-FM was recently granted a CP for a directional antenna operation (BMPH-20010806AAA) for use at its currently licensed main site (co-located with WHTG AM). **Figure 5** is a contour protection map which illustrates the coverage & interference contours of both the recently granted CP and the contours as proposed herein. With a very minor exception, the CP contours totally encompass those proposed herein.

### **Detailed Discussion On Each Short Spacing**

The short spacing with **WJJZ** on 291B at Philadelphia resulted from an ordered channel change in 1965. The FCC Staff has previously evaluated this short spacing and agrees that WHTG is entitled to maximum 3 kW facilities since it is not restricted by 73.213(a). **Figure 5A** is a detailed look at both the overlap caused & received. Clearly the overlap caused is being reduced while the overlap received by WHTG-FM is being increased by 8 square kilometers. However, as indicated on the map, the **net change in overlap** is being **reduced by 35 sq.km** and the population is **being reduced by 189 persons**. Attached hereto as **Figure 5-B** is Press's analysis of the grandfathered status of WHTG-FM insofar as WJJZ is concerned.

It should be noted that 73.213(a) talks in terms of

interference. However, other sections of the FM rules talk in terms of overlap. Thus, the no net increase evaluation has been presented in terms of overlap since 73.213(a) does not totally apply. However, similar results would be expected under an interference analysis.

The short spacing with **WLTW** on 294B at New York City has existed since before 1964 and therefore, qualifies for processing under Section 73.213(a). Because the existing WHTG-FM site is located within the protected 54 dBu contour of WLTW some interference theoretically exists. It should be noted that grandfathered stations governed by Section 73.213(a) of the rules are **not required** to provide protection to other GF short spaced stations which operate on 2<sup>nd</sup> or 3<sup>rd</sup> adjacent channels. The proposed short spacing is 15.7 km or 0.8 km greater than what currently exists.

The short spacing with **WFAF** on 292A at Mount Kisco is the direct result of the 6 kW rules. The proposed spacing exceeds the 105 km required by the old 3 kW rules. Although not required, this application proposes contour protection per Section 73.215 of the rules.

The short spacing with **WBLI** on 291B at Patchogue is the direct result of the 6 kW rules. The proposed spacing exceeds the 105 km required by the old 3 kW rules. Although not required, this application proposes contour protection per Section 73.215 of the rules.

The short spacing with **WHCY** on 292A at Blirstown is newly created by the



move to this site. This application proposes contour protection per Section 73.215 of the rules. It should be noted that although the recently granted CP was not short spaced to Blairstown, overlap already existed if WHCY is given presumed maximum Class A facilities. The operation proposed herein eliminates the interference caused while reducing the interference received.

### **Contour Protection - Section 73.215:**

**Figure 5** is a map of the protected 60 dBu and the co-channel & 1<sup>st</sup> adjacent interfering 40 & 48 dBu contours (red lines for CP and Gray lines for operation proposed herein). In addition, the map shows the protected 54 or 60 dBu for Class B / A stations and their appropriate interference contours towards WHTG-FM. The WJJZ contours are based upon its existing facilities (purple lines) and the WFAF/292A (green lines), WBLI/291B (purple lines) & WHCY/292A (green lines) are based upon maximum permissible ERP and HAAT for their respective Class.

The map also shows the location of the WHTG-FM contours based upon its existing CP for its currently licensed site which authorizes an ERP of 3.7 kW-DA at 128 meters HAAT (red lines).

Use of the reduced omni operation **does not result** in an “net” increase in the existing grandfathered overlap to/from WJJZ (to the southwest). The overlap from WFAF is totally **over water** (no land is involved). WBLI is fully protected. The existing grandfathered overlap to/from the WHCY-CP has been reduced. WLTW is not shown since it is ignored per 73.213(a).

As can be seen, through use of a reduced omni operation, no prohibited overlap occurs. All contours are based upon terrain radials spaced every 5 degrees.

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

Terrain profile data was extracted from the NGDC 30 Second Digitized Terrain Data Base provided out of Boulder, Colorado. At least twenty-four bearings (every 15 degrees) were used to obtain the proposed coverage data. The standard eight bearings (every 45 degrees) were used to obtain the proposed HAAT.

The predicted service contours, as shown in the attached report, were computed using a mathematical model adapted for computer use of data shown in Figure 1 of Section 73.333. This is the Commission's computer program TV FM FS REPORT RS-76-01, dated January 1976.

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

The N-30-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. Coverage Area and Population:**

The area contained within the 60 dBu (1.0 mV/M) contour has been computed mathematically. The population within this contour was obtained through a computerized analysis of the census designated places population data contained in the 2000 census.

**H. FM Blanketing Contour:**

WHTG-FM 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 (0.8 km) and is in a sparsely populated area. Given that this is the current auxiliary site from which the station has operated pursuant to granted & pending STA requests and given the fact that the antenna height will be increased and a 2 bay half-wave spaced antenna will be used no problems are anticipated.

**I. Other Services in Area:**

The auxiliary site is located 1.12 km (0.7 miles) from the operation of WHTG(AM) on 1410 kHz. This is a non-directional AM operation and as such is located outside the 0.8 km protection radius. There are no other known AM Broadcast Stations within 3.2 km of the proposed site.

Besides what exists at the current site 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, WHTG-FM will investigate and correct such cases in accordance with the Commission's Rules.

**J. Environmental Assessment Statement:**

WHTG-FM 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 minimal 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:

Frequency Range (MHz)	Power Density (mW/sq.cm)
*****	*****
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

WHTG-FM 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, there are multiple two-way type facilities in existence. However, as will be shown, because of the small contribution at ground level **WHTG-FM is categorically excluded** from a complete evaluation of all contributors.

### FM Broadcast Stations

For FM Broadcast Stations the following formula is used:

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

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 very 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 106.3 MHz and an “un-controlled” Power Density of 0.2 milli-watts results in a minimum distance of 19.2 meters (63 feet) from the antenna. Inasmuch as the lowest element on the proposed antenna will be approximately 153.9 meters (505 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 0.32% of the FCC “controlled” standard. For FM, the “un-controlled” standard is 20.0% and, therefore, this proposal is in full compliance and is **categorically excluded** from further consideration since it is less than 5.0%.

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

Access to the tower is currently restricted such that workers are not permitted in an area subject to over exposure.

### III. SUMMARY:

Press Communications, LLC, herein amends its pending application for modification of its auxiliary FM facility to switch it to a main FM facility, WHTG-FM on Ch. 292A at Eatontown, New Jersey. This engineering **completely replaces** that currently on file. This application requires processing under Sections 73.213(a) - Pre-1964 Grandfathered Short Spacing and 73.215 - Contour Protection previously discussed with the Audio Services Staff is in full compliance with the Commission's Rules.

/s/ John J. Mullaney

John J. Mullaney, Consulting Engineer

April 23, 2003.