

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-1:**

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

**Ch. 292A 3.7 KW-DA 128 M HAAT**

**SEPTEMBER 3, 2002**

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

**File No. BPH-20010806AAA - Facility ID: 72324**

**ATTACHED TO EXHIBIT 24 OF FCC FORM 301**

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Figures 2-6 are dated July 2002. Although the application is being filed in September these figures need no revision.

## 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 3<sup>rd</sup> day of September 2002.

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**Ch. 292A 3.7 KW-DA 128 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 to re-locate its main FM facility. This amendment no longer seeks a re-location but now requests use of a directional FM antenna which will permit it to achieve equivalent maximum 6 KW facilities from its currently licensed/CP site. WHTG-FM proposes to operate with an ERP of 3.7 KW-DA and an HAAT of 128 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.

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 (dated July 2002).

## **II. Engineering Discussion:**

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

WHTG-FM proposes to remain at its licensed site which is co-located with WHTG(AM). A topographic map showing the proposed site is not required. The NAD-27 geographic coordinates (as previously corrected) are:

Latitude: 40° 16' 12"

Longitude: 74° 04' 22"

Both the AM & FM hold a CP to increase the existing tower height. This amendment propose to continue with this tall tower proposal. The current Antenna Structure Registration number is 1219237.

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

A dual polarized 2-bay FM antenna will be pole mounted near the top of the replacement tower. Figure 3 is a sketch of the proposed tower.

WHTG-FM proposes to install an FM antenna with a directional Horizontal pattern. Figure 6 is a plot of the proposed vertical radiation pattern. Figure 6-A is a polar plot & tabulation of the relative horizontal field pattern. The antenna will be mounted in accordance with recommendations from the directional antenna manufacturer. In addition, no top mounted platforms or other antennas will exist in close proximity of the FM antenna unless approved by the antenna manufacturer.

**C. Effective Radiated Power:**

Giving consideration for the maximum antenna gain, transmitter power and line loss, the maximum Effective Radiated Power is 3.7 KW-DA for the Horizontal and 3.7 KW-DA 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 128 Meters requires the ERP to be no greater than 3.7 KW.

**D. Channel Allocation:**

Figure 4 is a channel allocation study from the proposed site which is also the licensed site. The proposed site is short spaced under the 6 KW rules to **four** stations. One of the short spacing (WLTW) has existed since before 1964 (73.213(a)) and 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. In all other respects this application is in compliance with Section 73.207(a).

### **Eatontown Qualifies Under 73.213(a)**

With an effective date of September 7, 1965, Docket No. 15969 re-allotted channel 292A to Eatontown, NJ. At first blush one would initially conclude that this allotment does not qualify for processing under Section 73.213(a). However, as will be shown despite the fact that it was not effective until after November 1964 the **292A allotment does indeed qualify for processing under 73.213(a).**

Originally, Eatontown was allotted Ch. 288A. However, upon adoption of the spacing table the Eatontown allotment had a severe (29 km or 18 mile) co-channel short spacing which the FCC was determined to eliminate. Through the adoption of Docket 15969 the FCC **moved** the 292A allotment from Red Bank, NJ, and **substituted** that channel (292A) for 288A at Eatontown, NJ. Since the Red Bank allotment was currently dark/vacant at time of adoption in 1965 it was not necessary to replace the channel, so it was simply deleted. The 292A allotment proposed at Eatontown had no co-channel short spacing and therefore, was a significant overall improvement in the eyes of the FCC. However, the proposed 292A allotment still **remained** short spaced with one 1<sup>st</sup> adjacent station (291B/Philadelphia) and with two 2<sup>nd</sup> adjacent stations (290B/Newark & 294B/New York City). All three of these short spacings existed when the channel was at Red Bank and they continued to some degree when the channel moved to Eatontown. Since that time (during the 1990s) the short spacing with the Newark allotment was eliminated when that facility downgraded from 290B to 290B1.

The Eatontown docket only briefly acknowledged the two 2<sup>nd</sup> adjacent short spacing in a spacing summary table contained in an appendix. Based upon the fact that absolutely no discussions was provided in the

Report & Order it is evident that the FCC believed that both 2<sup>nd</sup> adjacent short spacings fell under the newly adopted Section 73.213 which did not require any protection of grandfathered 2<sup>nd</sup> or 3<sup>rd</sup> adjacent short spacings. Both of these short spacings were improved or lessened. However, the Eatontown docket did discuss at great length the 2 mile increase in short spacing to Philadelphia/291B. Because of the objections filed by the Philadelphia licensee, the FCC **temporarily restricted** the ERP of the Eatontown 292A facility **until the next renewal** date which was August 1, 1966. Based upon this temporary restriction imposed by the FCC on Eatontown it was clear that they did not believe Section 73.213 was sufficient to mandate the change. Subsequently, in 1989 the FCC listed Eatontown as one of the Class A facilities operating below the 100 meter HAAT that could increase its ERP to compensate for that fact. Had Eatontown been a 73.213(a) station with respect to Philadelphia /291B they would not have qualified for this increase in ERP since distances to the 60 dBu of grandfathered pre-1964 stations were frozen at that point (1989).

### **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). The directional antenna pattern proposed herein limits the relative field to 0.707 over the arc towards WJJZ. This equates to the 1.85 kW ERP at 128 meters HAAT which is currently authorized by the existing non-directional CP.



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 current short spacing is 14.9 km.

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. 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. This application proposes contour protection per Section 73.215 of the rules.

### **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) proposed by this application. 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) 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 which authorizes an ERP of 1.85 kW at 128 meters HAAT (black lines).

Use of the directional antenna **does not result** in a change 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. WLTW is not shown since it is ignored per 73.213(a).

As can be seen, through use of a directional antenna system, 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 site 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:**

Besides the co-located operation of WHTG(AM) on 1410 kHz, there are no known AM Broadcast Stations within 3.2 kilometers 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 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:

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, **the only significant facility** that will exist is the WHTG-FM facility. As will be shown, WHTG-FM will contribute less than 5% of the permitted FM level at ground level and, therefore, it is categorically excluded from having to make a complete RF Analysis. However, Press also owns WHTG(AM) and, thus, understands it must install a fence extending at least 2 meters as specified in the AM CP.

## 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 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 15.8 meters (52 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 1.8% of the FCC “controlled” standard. For FM, the “un-controlled” standard is 20% and, therefore, this proposal is in full compliance and **is categorically excluded from further consideration since it is less than**

**5%.**

The tower will be 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, WHTG-FM 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. In the instance of a multiple use site, a single site access policy incorporating the above philosophy will be established. All procedures will be reviewed & updated as necessary.

**III. SUMMARY:**

Press Communications, LLC, herein amends its pending application for modification of its 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. In other respects this engineering proposal is in full compliance with the Commission's Rules.

/s/ John J. Mullaney

John J. Mullaney, Consulting Engineer

September 3, 2002.