

ENGINEERING EXHIBIT

**APPLICATION FOR DIGITAL TELEVISION
STATION LICENSE – USE OF FORMERLY LICENSED
FACILITY AS AN AUXILIARY ANTENNA**

prepared for
**Greater Washington Educational
Telecommunications Association, Inc.**

WETA-DT Washington, DC
Facility ID 65670
Ch. 27 (Auxiliary) 30 kW 177 m

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FCC Form 302-DTV, Section III Engineering

Exhibit 12

Statement A
Figure 1

Use of Formerly Licensed Facility As An Auxiliary Antenna
Coverage Contour Comparison

This material supplies a “hard copy” of the engineering portions of this application as entered December 6, 2007 for filing electronically. Since the FCC’s electronic filing system may be accessed by anyone with the applicant’s name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

Section III - Engineering		
TECHNICAL SPECIFICATIONS		
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.		
TECH BOX		
1. Channel: 27		
2. Operating Constants		
Transmitter power output (average power at input to transmission line, after any filter attached to the transmitter, if used)		Transmission line power loss
6.88 dBk 4.9 kW		1.23 dB
Antenna Input power	Maximum antenna power gain	Maximum effective radiated power
5.65 dBk	9.12 dB	14.77 dBk 30 kW
3. Antenna Data		
Manufacturer	Model	
DIE	TFU-8JST-R03	
NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.		
CERTIFICATION		
4.	Main Studio Location. The main studio location complies with 47 C.F.R. Section 73.1125.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 6]
5.	Constructed Facility The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 7]
6.	Special Operating Conditions. The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit. An exhibit may be required. Review the underlying construction permit	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 8]
7.	Transmitter. The transmitter complies with 47 C.F.R. Section 73.1660.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 9]

APPLICATION FILED PURSUANT TO 47 C.F.R. SECTIONS 73.1675(c) OR 73.1690(c).

Only applicants filing this application pursuant to 47 C.F.R. Sections 73.1675(c) or 73.1690(c) must complete the following section.

8.	Changing transmitter power output. Is this application being filed to authorize a change in transmitter power output caused by the replacement of an omnidirectional antenna with another omnidirectional antenna or an alteration of the transmission line system? See 47 C.F.R. Sections 73.1690(c)(1) and (c)(10).	<input type="radio"/> Yes <input type="radio"/> No
9.	Replacing a directional antenna. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(3) to replace a directional antenna with a nother directional antenna? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
	a. Pattern of Directional Antenna. The proposed theoretical antenna pattern complies with 47 C.F.R. Section 73.1690(c)(3). Exhibit is required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 10]
10.	Use a formerly licensed main facility as an auxiliary facility. Is this application being filed pursuant to 47 C.F.R. Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility? If "Yes" to the above, the applicant certifies the following:	<input checked="" type="radio"/> Yes <input type="radio"/> No
	a. Auxiliary antenna service area. The proposed auxiliary facility complies with 47 C.F.R. Section 73.1675(a). Exhibit is required.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 11]
	b. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1 306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 12]
11.	Change the license status. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(9) to change the license status from commercial to noncommercial or from noncommercial to commercial? If "Yes" to above, submit an exhibit providing full particulars. For applications changing license status from commercial to noncommercial, include Section II of FCC Form 340 as an exhibit to this application.	<input type="radio"/> Yes <input type="radio"/> No [Exhibit 13]

PREPARER'S CERTIFICATION ON PAGE 6 MUST BE COMPLETED AND SIGNED**SECTION III - PREPARER'S CERTIFICATION**

I certify that I have prepared Section III (Engineering data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name	Relationship to Applicant (e.g., Consulting Engineer)
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RICHARD H. MERTZ		CONSULTANT
Signature		Date 12/6/2007
Mailing Address CAVELL, MERTZ & ASSOCIATES, INC. 7839 ASHTON AVENUE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -
Telephone Number (include area code) 7033929090	E-Mail Address (if available) RMERTZ@CAVELLMERTZ.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Exhibits

Exhibit 11

Description: SEE EXHIBIT 12

Attachment 11

Exhibit 12

Description: WETA-DT AUXILIARY ANTENNA EXHIBIT 12 STATEMENT A

EXHIBIT 12 CONTAINS STATEMENT A USE OF FORMERLY LICENSED FACILITY AS AN AUXILIARY ANTENNA AND FIGURE 1.

Attachment 12

Description

[WETA-DT Auxiliary Antenna Exhibit 12 – Statement A](#)

Exhibit 12 - Statement A
**USE OF FORMERLY LICENSED FACILITY
AS AN AUXILIARY ANTENNA**

prepared for
The Greater Washington Educational Telecommunications Association, Inc.

WETA-DT Washington, D.C.

Facility ID: 65670

Ch. 27 (Auxiliary) 30 kW 177 m

The Greater Washington Educational Telecommunications Association, Inc. (“*GWETA*”) is the licensee of digital television station WETA-DT, Washington, D.C. (FCC File No. BLEDT-20070727ACJ). With its new digital facility in operation, *GWETA* proposes herein to operate the formerly licensed WETA-DT facility (FCC File No. BLEDT-19981207KF) as an auxiliary antenna to be employed when the main WETA-DT facility is out of service. The instant statement and attached exhibits have been prepared to support operation of the proposed auxiliary antenna.

Specifically, *GWETA* proposes to employ the formerly licensed WETA-DT facility without any physical or equipment changes. However, a reduction in the effective radiated power (“ERP”) to 30 kW is required so that the service contour of the proposed auxiliary facility does not extend past that of the licensed service contour in compliance with Section 73.1675(a) of the FCC Rules, see **Figure 1**.

Human Exposure to Radiofrequency Radiation

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission’s OET Bulletin No. 65 (“OET 65”). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The proposed auxiliary antenna facility will employ the existing Dielectric Model TFU-8JST-R03 non-directional antenna with 1 degree of electrical beam tilt. The antenna radiation center will remain at 126 meters above ground level. The antenna has a maximum relative field of 23 percent or less from 10 to 90 degrees below the horizontal plane (i.e.: below the antenna). Thus, a value of 23 percent relative field is used for this calculation. The

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“uncontrolled/general population” limit specified in §1.1310 for Channel 27 (center frequency 551 MHz) is 367.3 $\mu\text{W}/\text{cm}^2$.

OET-65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the *average* power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

<i>S</i>	=	power density in microwatts/cm ²
<i>ERP</i>	=	total (average) ERP in Watts
<i>F</i>	=	relative field factor
<i>D</i>	=	distance in meters

Using this formula, the proposed facility would contribute a power density of 3.4 $\mu\text{W}/\text{cm}^2$ at two meters above ground level near antenna support structure, or 0.9 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

§1.1307(b)(3) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of the any other facilities using this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the

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Commission's guidelines. Nevertheless, tower access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will continue to be employed protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

Conclusion

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

