

ENGINEERING EXHIBIT

**Application for Auxiliary
Antenna Construction Permit**
prepared for
WCVB HEARST-ARGYLE TV, INC.

WCVB-TV (DT)(Auxiliary Antenna)
Boston, Massachusetts
Facility ID 65684
Ch. 20 200 kW (DA) 191 m

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FCC Form 301, Section III-D - DTV Engineering

Exhibit 41

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Figure 2	Vertical Plane (Elevation) Radiation Pattern
Figure 3	Main vs Auxiliary Coverage Contour Comparison
Figure 4	Proposed Coverage Contours

Exhibit 44

Statement B	Environmental Considerations
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This material supplies a "hard copy" of the engineering portions of this application as entered December 18, 2006 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.

7.	Height of Radiation Center Above Ground Level:	188 meters
8.	Height of Radiation Center Above Average Terrain :	191.2 meters
9.	Maximum Effective Radiated Power :	200 kW

10. Antenna Specifications:

a. Manufacturer DIE Model TLP-16M(C)

b. Electrical Beam Tilt:
1 degrees Not Applicable

c. Mechanical Beam Tilt:
degrees toward azimuth
degrees True Not Applicable

Attach as an Exhibit all data specified in 47 C.F.R. Section 73.685. [Exhibit 40]

d. Polarization:
 Horizontal Circular Elliptical

e. Directional Antenna Relative Field Values: Not applicable (Nondirectional)

[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.]
[Relative Field Values]

10e. Directional Antenna Relative Field Values

[Fill in this subform for a composite directional (not off-the-shelf) antenna, only.]

e. Directional Antenna Relative Field Values:

Rotation (Degrees): No Rotation

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0	0.908	10	0.921	20	0.942	30	0.974	40	0.995	50	0.985
60	0.94	70	0.865	80	0.775	90	0.684	100	0.593	110	0.497
120	0.392	130	0.28	140	0.197	150	0.184	160	0.226	170	0.257
180	0.227	190	0.183	200	0.194	210	0.278	220	0.393	230	0.502
240	0.599	250	0.688	260	0.778	270	0.873	280	0.951	290	0.993
300	0.998	310	0.976	320	0.944	330	0.918	340	0.901	350	0.895
Additional Azimuths		42	0.996	146	0.179	194	0.178	297	1		

[Relative Field Polar Plot](#)

If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. **Exhibit required.** [Exhibit 41]

11. Does the proposed facility satisfy the interference protection provisions of 47 C.F.R. Section 73.623 (a)? (Applicable only if **Certification Checklist** items 1(a), (b), or (c) are answered "No".) Yes No [Exhibit 42]

If No, attach as an Exhibit justification therefore, including a summary of any previously granted waivers. [Exhibit 42]

12. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach [Exhibit 43]

as an Exhibit justification therefore. (Applicable only if **Certification Checklist** item 3 is answered "No.")

13. **Environmental Protection Act. Submit in an Exhibit** the following: [Exhibit 44]
If **Certification Checklist** Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.
- By checking "Yes" to **Certification Checklist** Item 2, 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.
- If **Certification Checklist** Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.

PREPARERS CERTIFICATION ON SECTION III 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 MARK PEABODY	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 12/18/2006	
Mailing Address CAVELL, MERTZ & DAVIS, 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) MPEABODY@CMDCONSULTING.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 41

Description: EXHIBIT 41 - PROPOSED AUX DIRECTIONAL ANTENNA SYSTEM & ALLOCATION CONSIDERATIONS

ATTACHED AS EXHIBIT 41

Attachment 41

Description
Exhibit 41 - Proposed Aux Directional Antenna System & Allocation Considerations

Exhibit 44

Description: EXHIBIT 44 - ENVIRONMENTAL CONSIDERATIONS

ATTACHED AS EXHIBIT 44

Attachment 44

Description
Exhibit 44 - Environmental Considerations

Exhibit 44 - Statement B
ENVIRONMENTAL CONSIDERATIONS
prepared for
WCVB Hearst-Argyle TV, Inc.
WCVB-DT(Auxiliary Antenna)
Boston, Massachusetts
Facility ID 65684
Ch. 20 200 kW (DA) 191 m

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

Nature of The Proposal

WCVB Hearst-Argyle TV, Inc. ("*Hearst-Argyle*") is the licensee of analog station WCVB-TV Channel 5, Boston, Massachusetts and the paired digital Channel 20 WCVB-DT facility (file number BLCDDT-20020102AAH). *Hearst-Argyle* herein proposes to modify its existing, licensed DTV auxiliary antenna (BXMLCDT-20021129AAE) for WCVB-DT Channel 20 by rotating the orientation. The existing proposed WCVB-DT auxiliary antenna is presently side-mounted on the existing WCVB-TV antenna supporting structure, having FCC Antenna Structure Registration number 1003433. The auxiliary antenna is centered at 188 meters above ground level.

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the Commission's Rules. No increase in overall structure height is proposed, thus no change in structure lighting or marking is anticipated. Thus, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's Rules.

Human Exposure to Radiofrequency Electromagnetic Field

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

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that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The proposed WCVB-DT Channel 20 antenna center of radiation height is 188 meters above ground. A maximum ERP of 200 kilowatts, horizontally polarized, will be employed. Based on calculated vertical plane (elevation) pattern data provided by the antenna manufacturer, the proposed antenna has a relative field of less than 18 percent from 10 to 90 degrees below the horizontal plane (i.e.: below the antenna). Thus, a value of 18 percent relative field is used for this calculation. The “uncontrolled / general population” limit specified in §1.1310 for Channel 20 (center frequency 509 MHz) is 339.3 $\mu\text{W}/\text{cm}^2$.

For DTV facilities, 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 6.26 $\mu\text{W}/\text{cm}^2$ at two meters above ground level near the antenna support structure, or 1.84 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) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant

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situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near 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 proposed facility 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 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 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.