

ENGINEERING EXHIBIT

Application for Modification of Construction Permit

prepared for

Gray Television Licensee, Inc.

KAKE-DT Wichita, Kansas

Facility ID 65522

Ch. 21 850 kW 310 m

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This material supplies a "hard copy" of the engineering portions of this application as entered November 1, 2004 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:	315.4 meters																																																																																																																								
8.	Height of Radiation Center Above Average Terrain :	309.8 meters																																																																																																																								
9.	Maximum Effective Radiated Power :	850 kW																																																																																																																								
10.	<p>Antenna Specifications:</p> <p>a. Manufacturer DIE Model TUV-28GTH/10HV-R-O6/O3</p> <p>b. Electrical Beam Tilt: 0.75 degrees <input type="checkbox"/> Not Applicable</p> <p>c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable</p> <p style="text-align:right;">Attach as an Exhibit all data specified in 47 C.F.R. Section 73.685. [Exhibit 40]</p> <p>d. Polarization: <input checked="" type="radio"/> Horizontal <input type="radio"/> Circular <input type="radio"/> Elliptical</p> <p>e. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional)</p> <p>[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values]</p> <div style="text-align:center; border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>10e. Directional Antenna Relative Field Values</p> <p>[Fill in this subform for a composite directional (not off-the-shelf) antenna, only.]</p> </div> <table border="1" style="width:100%; border-collapse: collapse; margin: 10px 0;"> <tr> <td colspan="12">e. Directional Antenna Relative Field Values:</td> </tr> <tr> <td colspan="12">Rotation (Degrees): <input type="checkbox"/> No Rotation</td> </tr> <tr> <td style="width:8%;">Degrees</td><td style="width:12%;">Value</td><td style="width:8%;">Degrees</td><td style="width:12%;">Value</td><td style="width:8%;">Degrees</td><td style="width:12%;">Value</td><td style="width:8%;">Degrees</td><td style="width:12%;">Value</td><td style="width:8%;">Degrees</td><td style="width:12%;">Value</td><td style="width:8%;">Degrees</td><td style="width:12%;">Value</td> </tr> <tr> <td>0</td><td></td><td>10</td><td></td><td>20</td><td></td><td>30</td><td></td><td>40</td><td></td><td>50</td><td></td> </tr> <tr> <td>60</td><td></td><td>70</td><td></td><td>80</td><td></td><td>90</td><td></td><td>100</td><td></td><td>110</td><td></td> </tr> <tr> <td>120</td><td></td><td>130</td><td></td><td>140</td><td></td><td>150</td><td></td><td>160</td><td></td><td>170</td><td></td> </tr> <tr> <td>180</td><td></td><td>190</td><td></td><td>200</td><td></td><td>210</td><td></td><td>220</td><td></td><td>230</td><td></td> </tr> <tr> <td>240</td><td></td><td>250</td><td></td><td>260</td><td></td><td>270</td><td></td><td>280</td><td></td><td>290</td><td></td> </tr> <tr> <td>300</td><td></td><td>310</td><td></td><td>320</td><td></td><td>330</td><td></td><td>340</td><td></td><td>350</td><td></td> </tr> <tr> <td colspan="2">Additional Azimuths</td><td colspan="10"></td> </tr> </table> <p style="text-align:center;">Relative Field Polar Plot</p>		e. Directional Antenna Relative Field Values:												Rotation (Degrees): <input type="checkbox"/> No Rotation												Degrees	Value	0		10		20		30		40		50		60		70		80		90		100		110		120		130		140		150		160		170		180		190		200		210		220		230		240		250		260		270		280		290		300		310		320		330		340		350		Additional Azimuths																					
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	<p>If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. Exhibit required. [Exhibit 41]</p>																																																																																																																									
11.	<p>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".)</p> <p>If No, attach as an Exhibit justification therefore, including a summary of any previously granted waivers.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>[Exhibit 42]</p>																																																																																																																								

12.	If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if Certification Checklist item 3 is answered "No.")	[Exhibit 43]
13.	<p>Environmental Protection Act. Submit in an Exhibit the following:</p> <p>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.</p> <p>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.</p> <p>If Certification Checklist Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.</p>	[Exhibit 44]
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 ROBERT J. CLINTON		Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature		Date 11/1/2004	
Mailing Address CAVELL, MERTZ, & DAVIS, INC. 7839 ASHTON AVENUE			
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -2883	
Telephone Number (include area code) 7033929090	E-Mail Address (if available) BCLINTON@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 42

Description: EXHIBIT 42 - STATEMENT A - ALLOCATION

EXHIBIT 42 - STATEMENT A - ALLOCATION CONSIDERATIONS

Attachment 42

Description
EXHIBIT 42 - STATEMENT A - ALLOCATION

Exhibit 44

Description: EXHIBIT 44 - STATEMENT B - ENVIRONMENTAL

EXHIBIT 44 - STATEMENT B - ENVIRONMENTAL CONSIDERATIONS

Attachment 44

Description
EXHIBIT 44 - STATEMENT B - ENVIRONMENTAL

Exhibit 44 - Statement B
ENVIRONMENTAL CONSIDERATIONS
prepared for
Gray Television Licensee, Inc.
KAKE-DT Wichita, Kansas
Facility ID 65522
Ch. 21 850 kW 310 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

Gray Television Licensee, Inc., ("Gray") proposes herein to modify the Construction Permit for KAKE-DT, DTV Channel 21, Wichita, Kansas (file number BPCDT-19991025AEG). The instant proposal herein seeks a minor modification to specify a lower effective radiated power ("ERP") and a higher antenna height above average terrain ("HAAT") than that currently authorized.

No change in the overall antenna supporting structure height is proposed, thus no change in structure lighting or marking is anticipated. 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 FCC Rules. Therefore, 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 radio-frequency (RF) 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 Radio-frequency 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.

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ENVIRONMENTAL CONSIDERATIONS
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The KAKE-DT Channel 21 antenna will be situated such that its center of radiation is 315.4 meters above ground. An ERP of 850 kilowatts, horizontally polarized, will be employed. The proposed transmitting antenna has a relative field of less than 10 percent from 10 to 90 degrees below the horizontal plane (*i.e.*, below the antenna), according to data provided by the manufacturer. Thus, a value of 10 percent relative field is used for this calculation. The “uncontrolled/general population” limit specified in §1.1310 for Channel 21 is 343.3 $\mu\text{W}/\text{cm}^2$.

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 2.9 $\mu\text{W}/\text{cm}^2$ at two meters above ground level near the antenna support structure, or 0.84 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)(3) states that facilities 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 any other facilities near this site may be

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ENVIRONMENTAL CONSIDERATIONS
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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 KAKE-DT 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 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.