

# **ENGINEERING EXHIBIT**

## **Application for Digital Television Translator Construction Permit**

prepared for

**WSET, Inc.**

W05AA Roanoke, VA

Facility ID 73989

Ch. 5 (Digital) 0.3 kW

### **Table of Contents**

FCC Form 346, Section III – Engineering Data (Digital)

#### **Exhibit 11**

Statement A	Nature of the Proposal - Allocation Considerations
Figure 1	Antenna Horizontal Plane Radiation Pattern
Figure 2	Antenna Vertical (Elevation) Plane Radiation Pattern
Figure 3	Coverage Contour Comparison
Table I	Interference Analysis Results Summary

#### **Exhibit 12**

Statement B	Environmental Considerations
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*This material supplies a “hard copy” of the engineering portions of this application as entered March 23, 2009 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 DATA (Digital)****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 Number: 5																																																																																																
2.	Translator Input Channel No. : 13																																																																																																
3.	Primary station proposed to be rebroadcast: <table border="1"><tr><td>Facility Identifier</td><td>Call Sign</td><td>City</td><td>State</td><td>Channel</td></tr><tr><td>73988</td><td>WSET-TV</td><td>LYNCHBURG</td><td>VA</td><td>13</td></tr></table>	Facility Identifier	Call Sign	City	State	Channel	73988	WSET-TV	LYNCHBURG	VA	13																																																																																						
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4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 37 Minutes 13 Seconds 56 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 80 Minutes 2 Seconds 51 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																
5.	Antenna Structure Registration Number: <input checked="" type="checkbox"/> Not Applicable [Exhibit 10] <input type="checkbox"/> Notification filed with FAA																																																																																																
6.	Antenna Location Site Elevation Above Mean Sea Level: 591.3 meters																																																																																																
7.	Overall Tower Height Above Ground Level: 16.8 meters																																																																																																
8.	Height of Radiation Center Above Ground Level: 14.9 meters																																																																																																
9.	Maximum Effective Radiated Power (ERP): 0.3 kW																																																																																																
10.	Transmitter Output Power: 0.019 kW																																																																																																
11.	a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://fjallfoss.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm">CDBS Public Access</a> (http://fjallfoss.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional "Off-the-shelf" <input checked="" type="radio"/> Directional composite  Manufacturer SCA Model FOUR HDCA-10 STACKED SKEWED 50 DEGREES  b. Electrical Beam Tilt: degrees <input checked="" type="checkbox"/> Not Applicable  c. Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Directional "Off-the-shelf") Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation <table border="1"><thead><tr><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th></tr></thead><tbody><tr><td>0</td><td>0.376</td><td>10</td><td>0.519</td><td>20</td><td>0.659</td><td>30</td><td>0.833</td><td>40</td><td>0.961</td><td>50</td><td>1</td></tr><tr><td>60</td><td>0.961</td><td>70</td><td>0.833</td><td>80</td><td>0.659</td><td>90</td><td>0.519</td><td>100</td><td>0.376</td><td>110</td><td>0.208</td></tr><tr><td>120</td><td>0.074</td><td>130</td><td>0.025</td><td>140</td><td>0.021</td><td>150</td><td>0.041</td><td>160</td><td>0.068</td><td>170</td><td>0.09</td></tr><tr><td>180</td><td>0.117</td><td>190</td><td>0.156</td><td>200</td><td>0.202</td><td>210</td><td>0.231</td><td>220</td><td>0.243</td><td>230</td><td>0.243</td></tr><tr><td>240</td><td>0.243</td><td>250</td><td>0.231</td><td>260</td><td>0.202</td><td>270</td><td>0.156</td><td>280</td><td>0.117</td><td>290</td><td>0.09</td></tr><tr><td>300</td><td>0.068</td><td>310</td><td>0.041</td><td>320</td><td>0.021</td><td>330</td><td>0.025</td><td>340</td><td>0.074</td><td>350</td><td>0.208</td></tr><tr><td>Additional Azimuths</td><td></td><td>135</td><td>0.019</td><td>225</td><td>0.244</td><td>235</td><td>0.244</td><td>325</td><td>0.019</td><td></td><td></td></tr></tbody></table>	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.376	10	0.519	20	0.659	30	0.833	40	0.961	50	1	60	0.961	70	0.833	80	0.659	90	0.519	100	0.376	110	0.208	120	0.074	130	0.025	140	0.021	150	0.041	160	0.068	170	0.09	180	0.117	190	0.156	200	0.202	210	0.231	220	0.243	230	0.243	240	0.243	250	0.231	260	0.202	270	0.156	280	0.117	290	0.09	300	0.068	310	0.041	320	0.021	330	0.025	340	0.074	350	0.208	Additional Azimuths		135	0.019	225	0.244	235	0.244	325	0.019		
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[Relative Field Polar Plot](#)

	<b>NOTE:</b> 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.
12.	Out-of-channel Emission Mask: <input checked="" type="radio"/> Simple <input type="radio"/> Stringent
<b>CERTIFICATION</b>	

13.	<b>Interference</b> : The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 11]
14.	<b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (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). Unless the applicant can determine RF compliance, an <b>Exhibit is required.</b>  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]
15.	<b>Channels 52-59.</b> If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:	
	<input type="checkbox"/> The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.	
	<input type="checkbox"/> Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.	
16.	<b>Channels 60-69.</b> If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:	
	<input type="checkbox"/> Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application , all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.	
	<input type="checkbox"/> Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.	
	<input type="checkbox"/> Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.	
<b>PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.</b>		

### 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 3/23/2009	
Mailing Address CAVELL, MERTZ & ASSOCIATES, 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@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 3

**Description:** EXHIBIT 3

EXHIBIT 3--A PETITION TO DENY RAISING CHARACTER ISSUES WAS FILED AGAINST THE LICENSE RENEWAL APPLICATION OF ACC LICENSEE, INC. ('ACC'), LICENSEE OF WJLA-TV, WASHINGTON, DC (FCC FILE NO. BRCT-20040526ADY). ACC IS A COMMONLY-CONTROLLED AFFILIATE OF WSET, INCORPORATED.

### Attachment 3

### Exhibit 10

**Description:** EXHIBIT 10

ANTENNA SUPPORT STRUCTURE IS LESS THAN 60.96 METERS TALL AND IS NOT LOCATED WITHIN 8 KILOMETERS OF AN AIRPORT. THEREFORE, REGISTRATION WITH THE COMMISSION IS NOT REQUIRED.

### Attachment 10

### Exhibit 11

**Description:** EXHIBIT 11 - STATEMENT A

EXHIBIT 11 - STATEMENT A - NATURE OF THE PROPOSAL, ALLOCATION CONSIDERATIONS - ATTACHED AS A PDF DOCUMENT

### Attachment 11

Description
<a href="#">EXHIBIT 11 - STATEMENT A</a>

### Exhibit 12

**Description:** EXHIBIT 12 - STATEMENT B

EXHIBIT 12 - STATEMENT B - ENVIRONMENTAL CONSIDERATIONS (WITH TABLE OF CONTENTS AND COPY OF FORM 346, SECTION III)

### Attachment 12

Description
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<a href="#">EXHIBIT 12 - STATEMENT B</a>
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Exhibit 12 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
prepared for  
**WSET, Inc.**  
W05AA Roanoke, VA  
Facility ID 73989  
Ch. 5 (Digital) 0.3 kW

**Introduction**

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.

*WSET, Inc.* herein proposes to convert television translator station W05AA, Channel 5, Roanoke, VA, Facility ID 73989 (BLTTV-19820929JK) to digital operation. The existing transmitting antenna will be employed. No change in structure overall height is proposed.

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. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. 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 radiofrequency electromagnetic field 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.

Exhibit 12 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
(Page 2 of 3)

The W05AA Channel 5 antenna center of radiation is 14.9 meters above ground level. An effective radiated power of 0.3 kilowatts, horizontally polarized, will be employed. The “uncontrolled/general population” limit specified in §1.1310 for Channel 5 (center frequency 79 MHz) is 200  $\mu\text{W}/\text{cm}^2$ .

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 (10) in OET-65.

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

Where:

- S = power density in microwatts/ $\text{cm}^2$
- ERP = total (average) ERP in Watts
- F = relative field factor
- D = distance in meters

Power density calculations were made based on the actual vertical plane pattern of the W05AA antenna (see **Exhibit 11 - Figure 2**). These calculations, which accounted for a minor rise in ground elevation near the W05AA tower, were made at one-foot intervals outwards from the base of the tower to a distance of 91 meters (300 feet). The results of these calculations showed that W05AA’s maximum calculated power density at two meters above ground level is 4.9  $\mu\text{W}/\text{cm}^2$ , or 2.45 percent of the general population/uncontrolled limit.

§1.1307(b)(3) 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 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).

Exhibit 12 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
(Page 3 of 3)

**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 Commission's guidelines. Nevertheless, tower access will be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will 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 or nearby towers 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.