

ENGINEERING STATEMENT  
APPLICATION FOR  
TELEVISION TRANSLATOR  
DIGITAL COMPANION CHANNEL  
W28BF, HARRISONBURG, VIRGINIA  
CHANNEL 30 15 KW MAX ERP 904 METERS RC/AMSL

OCTOBER 2006

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.



## INTRODUCTION

This engineering statement has been prepared on behalf of Virginia Broadcasting Corporation (“VBC”), licensee of TV translator W28BF, Harrisonburg, Virginia (Facility ID 70299). This statement supports the licensee’s request for a digital companion channel to be operated simultaneously with W28BF’s licensed channel 28 analog operation. VBC filed an application (FCC File No. BSFDTT-20060630CZY) for a digital low-power television companion channel during the Auction 85 filing window and the Commission has identified this application as not mutually exclusive with any other submitted proposal and is therefore deemed a “singleton”. In accordance with the procedures outlined in the FCC Public Notice, dated August 31, 2006, VBE hereby requests digital low power facilities on Channel 30 with an effective radiated power (“ERP”) of 15 kW maximum directional at a radiation center above mean sea level (“RCAMSL”) of 904 meters.

### Transmitter Site

The geographic coordinates of the transmitter site are as follows:

North Latitude: 38° 23' 34"

West Longitude: 78° 46' 13"

NAD-27

### Technical Specifications

Antenna Location Site Elevation Above Mean Sea Level	881.4 meters (2891.7 feet)
Overall Tower Height Above Ground Level	24.4 meters (80 feet)

Height of Radiation Center Above Ground Level	22.6 meters (72.8 feet)
Height of Radiation Center Above Mean Sea Level	904 meters (2964.5 feet)
Maximum Effective Radiated Power	15 kW

The existing tower is less than 200 feet and TOWAIR indicates that this structure does not require registration. There are no airports within 8 km (5 miles) of the existing site.

#### Equipment Data

Transmitter:	Type-approved
Transmission Line:	Andrew LDF7-50 length 30 meters 88.1% (0.52 dB Loss) for Ch.30
Transmitter Output Power:	1.51 kW
Out-of-Channel Emission Mask:	Stringent
Antenna	Bogner, B8UO, composite with a microwave cancellation dish at N 271.4°, E T and a maximum gain of 11.3 (10.5 dB) and 0° electrical beam tilt

#### Antenna Azimuth Pattern

<u>Degree</u>	<u>Value</u>	<u>Degree</u>	<u>Value</u>	<u>Degree</u>	<u>Value</u>	<u>Degree</u>	<u>Value</u>	<u>Degree</u>	<u>Value</u>	<u>Degree</u>	<u>Value</u>
0	1.0	60	1.0	120	1.0	180	1.0	240	1.0	300	1.0
10	1.0	70	1.0	130	1.0	190	1.0	250	1.0	310	1.0
20	1.0	80	1.0	140	1.0	200	1.0	260	1.0	320	1.0
30	1.0	90	1.0	150	1.0	210	1.0	270	0.1	330	1.0
40	1.0	100	1.0	160	1.0	220	1.0	280	1.0	340	1.0
50	1.0	110	1.0	170	1.0	230	1.0	290	1.0	350	1.0
Extra Azimuth Relative Field Values				262.8	1.0	266.4	0.707	271.4	0.079	276.4	0.707

As indicated above, the transmitter with typical power output of 1.51 kW will deliver 1.33 kW to the input of the antenna. The antenna, having a maximum power gain of 11.3 and an electrical beam tilt of 0°, will produce a maximum ERP of 15 kW. A coverage map providing the protected contour of the proposed digital facility relative to the currently licensed analog operation of W28BF has been included as Exhibit E-1 of this report.

#### Other Broadcast Facilities

A brief analysis was completed to determine the presence of stations in the vicinity of the W28BF tower using the October 24, 2006, data contained within the Commission's Consolidated Database System ("CDBS"). Within 1 km of the proposed site, there is one authorized FM radio station, no full-service DTV or NTSC television stations, one proposed digital companion channel operation, and three other low-power analog television or television translator stations in addition to the licensed W28BF operation. There are no AM facilities within 3.22 km of the existing tower. Although no adverse technical effects are expected due to the proposed operation, the applicant will take measures to resolve any problems proven to be related to the proposed operation.

#### Interference Analysis

A study of predicted interference caused by the proposed W28BF low power digital operation has been performed using the Longley-Rice program for which the source data has been posted by the Commission on its website at [http://www.fcc.gov/oet/dtv/dtv\\_apps.html](http://www.fcc.gov/oet/dtv/dtv_apps.html). The FCC's FORTRAN-77 code was modified only to the extent necessary (primarily input/output handling) for the program to run on a Microsoft Windows XP/Intel platform. Comparison of service/interference areas and population indicates this model closely matches the FCC's digital

low power TV/translator evaluation program. Best efforts have been made to use data and calculation identical to the FCC's program. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 1 sq. km. Using 3-second terrain data sampled approximately every 1.0 km at one-degree azimuth intervals with 1990 census centroids, all studies are based upon data in the current CDBS database update of the FCC's engineering database. A Longley-Rice study was performed with the proposed W28BF low power digital facilities and all relevant stations listed in the FCC data base as of October 17, 2006. The study results and the included stations are listed in Exhibit E-2.

#### Agreement to Accept Interference

VBC is proposing in this and a contemporaneously-filed application to construct digital companion channel stations for its two low power television translator stations – W28BF, Harrisonburg, Virginia, with proposed DTV companion channel operation on Channel 30; and W31CE, Bridgewater, et al., Virginia, with proposed DTV companion channel operation on Channel 29. An interference study commissioned by VBC indicates that these two proposed DTV companion channel operations would result in a small degree of interference (approximately 3.7%) caused by the proposed Channel 30 companion channel operation to the proposed Channel 29 companion channel operation. Both W28BF and W31CE are licensed to applicant VBC and are used to retransmit the signal of VBC's full power station WVIR-TV/DT, Charlottesville, Virginia. VBC hereby indicates its agreement to accept any and all interference which may be caused by either of the two proposed DTV companion channel operations to the other proposed DTV companion channel operation. The two proposed companion channel

operations therefore should not be viewed by the Commission as in any manner mutually exclusive with one another.

Green Bank, West Virginia, Quiet Zone

Although the present W28BF translator site is located in the West Virginia Quiet Zone, notification pursuant to Section 73.1030 is not considered necessary due to the following circumstances:

It is proposed to use the same method of controlling the signal radiated towards the Green Bank National Radio Astronomy Observatory (“NRAO”) at N 273.4° E as currently used by W28BF.

Currently an out-of-phase signal is aimed at the NRAO Green Bank, West Virginia facility by means of a highly directional parabolic antenna that will effectively cancel the proposed Channel 30 signal over a very narrow arc.

However, VBC shall provide notification in writing, simultaneously with the filing of this application with the Commission, to the Green Bank NRAO of the particulars of the proposed operation to satisfy the criteria outlined in Section 73.1030(a)(1) of the FCC Rules.

FCC Rule, Section 1.1307

The proposed 15 kW nondirectional operation will utilize a Bogner, Type B8UO, composite with a microwave cancellation dish at N 271.4° E, T with a center of radiation above ground of 22.6 meters. The antenna will be side-mounted on an existing tower with an overall height of 24.4 meters above ground. The proposed digital operation of W28BF will create a radio frequency field level of less than 47.2  $\mu\text{W}/\text{cm}^2$  at the base of the tower. This level is less

than 12.7% of the Maximum Permissible Exposure (“MPE”) level for the general population and uncontrolled environment.

Authorized personnel and rigging contractors will be alerted to the potential zone of high radio frequency field levels on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

#### Environmental Assessment

An environmental assessment (“EA”) is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the applicant indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.
- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities will be located on a tower which was built prior to the adoption of WT Docket No. 03-128 and will not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.

- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.



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EXHIBIT E-2  
LONGLEY-RICE ANALYSIS  
FOR THE PROPOSED DIGITAL OPERATION OF  
W28BF-D, HARRISONBURG, VIRGINIA  
CH 30 15 KW MAX ERP 904 METERS RC/AMSL  
OCTOBER 2006

<u>Station</u>	<u>City</u>	<u>State</u>	<u>Channel</u>	<u>Distance</u> km	<u>Status</u>	<u>FCC File No.</u>	<u>Interference</u>
WISF-LP	ONEONTA	NY	15	546.2	LIC	BLTTL-19900425JZ	Beyond Distance
W59DL	CHILLICOTHE	OH	15	380.3	CP	BPTT-20031003ACE	Beyond Distance
WFLV-LP	FARMVILLE	VA	15	123.2	LIC	BLTTL-19941205JC	Beyond Distance
NEW	ELKINS WV	WV	15	110.2	APP	BNPTT-20000831COO	Beyond Distance
W15AD	WARDENSVILLE, ETC.	WV	15	88.4	LIC	BLTT-19890724IO	Beyond Distance
WVAW-LP	CHARLOTTESVILLE	VA	16	52.0	LIC	BLTTL-20040902ABJ	No Interference
WAZC-LP	LURAY	VA	16	30.7	LIC	BLTTL-20020508AAB	No Interference
NEW	ELKINS	WV	22	110.2	APP	BNPTT-20000831CON	Beyond Distance
W22CV	MOOREFIELD	WV	22	66.6	LIC	BLTT-20030429AAL	Beyond Distance
NEW	HARRISONBURG	VA	23	13.5	APP	BNPTTL-20000818AAS	No Interference
WDWA-LP	LURAY	VA	23	90.0	APP	BMP TTL-20060731AAA	Beyond Distance
WDWA-LP	LURAY	VA	23	42.1	CP	BNPTTL-20000831CJR	No Interference
WCVE-TV	RICHMOND	VA	23	141.7	LIC	BLET-20030520AKD	No Interference
W69AC	ROMNEY	WV	23	102.7	CP	BPTTL-20050209AMN	Beyond Distance
WAHU-CA	CHARLOTTESVILLE	VA	27	52.0	LIC	BLTTA-20050124AGC	No Interference
W28BF	HARRISONBURG	VA	28	0.0	LIC	BLTT-19951011IA	No Interference
WAZF-CA	WINCHESTER/FRONT ROY	VA	28	102.9	LIC	BLTTL-19940422IK	Beyond Distance
WWCP-TV	JOHNSTOWN	PA	29	201.5	LIC	BLCDT-20050606AIE	Beyond Distance
NEW	BRIDGEWATER, ET. AL	VA	29	53.7	APP	BSFDTT-20060630CZA	3.70%
WVIR-TV	CHARLOTTESVILLE	VA	29	52.0	LIC	BLCT-19930210KE	0.70%
NEW	OCEAN CITY	MD	30	313.2	APP	BSFDTL-20060630BBG	No Interference
NEW	OCEAN CITY	MD	30	313.2	APP	BSFDTL-20060630BYA	No Interference
WRAY-TV	WILSON	NC	30	290.0	LIC	BLCT-20041103AAV	No Interference
NEW	SPRINGVILLE	NJ	30	355.2	APP	BSFDTL-20060630BNW	No Interference
WQCW	PORTSMOUTH	OH	30	375.1	LIC	BLCT-19981116KI	No Interference
NEW	PHILADELPHIA	PA	30	355.0	APP	BSFDTL-20060630CSX	No Interference

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CH 30 15 KW MAX ERP 904 METERS RC/AMSL  
OCTOBER 2006

<u>Station</u>	<u>City</u>	<u>State</u>	<u>Channel</u>	<u>Distance</u> km	<u>Status</u>	<u>FCC File No.</u>	<u>Interference</u>
NEW	PHILADELPHIA	PA	30	355.0	APP	BSFDTL-20060630AKB	No Interference
WBPA-LP	PITTSBURGH	PA	30	257.0	CP	BPTTL-20060215ADN	No Interference
WBPA-LP	PITTSBURGH	PA	30	257.0	LIC	BLTTL-20060103AFK	No Interference
WGCB-TV	RED LION	PA	30	252.5	LIC	BLCDDT-20050615AAB	0.25%
W30AN	WILLIAMSPORT	PA	30	350.3	CP	BDFCDTT-20060403AKV	Beyond Distance
W30AN	WILLIAMSPORT	PA	30	350.3	LIC	BLTT-19890815IH	Beyond Distance
WNVT	GOLDVEIN	VA	30	118.7	LIC	BLEDT-20031230AAR	0.00%
W30BV	NORFOLK	VA	30	276.4	LIC	BLTTL-20020520AAY	No Interference
W41AC	ONANCOCK	VA	30	286.3	CP	BPTT-20041129AUP	No Interference
WSLS-TV	ROANOKE	VA	30	179.4	CP M	OD BMPCDT-20050329ACK	0.30%
W30CH	CLARKSBURG	WV	30	169.5	CP	BNPTT-20000830BIL	No Interference
NEW	WHEELING	WV	30	252.0	APP	BSFDTT-20060630AWR	No Interference
NEW	WASHINGTON	DC	31	102.4	APP	BSFDTL-20060630AJR	No Interference
WRZB-LP	CROFTON	MD	31	195.2	CP	BPTTL-20020701ABJ	Beyond Distance
WWPB	HAGERSTOWN	MD	31	156.0	LIC	BLET-19960828KE	No Interference
W31CE	BRIDGEWATER, ET. AL	VA	31	53.7	LIC	BLTT-20020506AAJ	1.34%
NEW	CLARKSBURG	WV	31	164.5	APP	BNPTTL-20000831BAN	Beyond Distance
W31CQ	ELKINS	WV	31	113.7	CP	BNPTTL-20000804ACJ	No Interference
W40BM	LYNCHBURG	VA	32	115.5	LIC	BLTT-19930218JE	Beyond Distance
W33AC	CENT.ROCKINGHAM COUN	VA	33	26.6	LIC	BLTT-19840131II	No Interference
W33AD	CONCORD	VA	33	118.4	LIC	BLTTL-19821108IO	Beyond Distance
W38DV	CHARLOTESVILLE	VA	38	34.9	CP	BNPTTL-20000830BHY	No Interference
W38AV	LURAY	VA	38	26.1	LIC	BLTT-19890620IE	No Interference

**Section III - Engineering (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: \_\_\_\_\_
- 2. Translator Input Channel No. \_\_\_\_\_
- 3. Station proposed to be rebroadcast:

Call Sign	City	State	Channel
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- 4. Antenna Location Coordinates: (NAD 27)  
\_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "  N  S Latitude  
\_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "  E  W Longitude

- 5. Antenna Structure Registration Number: \_\_\_\_\_  
 Not applicable  See Explanation in Exhibit No.  FAA Notification Filed with FAA

- 6. Antenna Location Site Elevation Above Mean Sea Level: \_\_\_\_\_ meters
- 7. Overall Tower Height Above Ground Level: \_\_\_\_\_ meters
- 8. Height of Radiation Center Above Ground Level: \_\_\_\_\_ meters
- 9. Maximum Effective Radiated Power (ERP): \_\_\_\_\_ kW
- 10. Transmitter Output Power: \_\_\_\_\_ kW

- 11. a. Transmitting Antenna:  Nondirectional  Directional  Directional composite

Manufacturer	Model
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- b. Electrical Beam Tilt: \_\_\_\_\_ degrees  Not applicable

c. Directional Antenna Relative Field Values:

Rotation: \_\_\_\_\_ °  No rotation  N/A (Nondirectional)

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

**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.**

12. **Out-of-Channel Emission Mask:** Simple  Stringent

**CERTIFICATION**

13. **Interference.** 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.  Yes  No See Explanation in Exhibit No.

14. **Environmental Protection Act.** 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 **Exhibit is required.**  Yes  No See Explanation in Exhibit No.

Exhibit No.

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.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees 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.

**PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.**

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

- Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees 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,
- 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 agreement(s) with 700 MHz public safety regional planning committee(s) and state frequency 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.
- Pursuant to Section 74.786(e), an 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.

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 Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date October 26, 2006	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100			
City Washington		State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111		E-Mail Address (if available) cde@attglobal.net	

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).