

## **ENGINEERING EXHIBIT**

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

prepared for

#### **WGAL Hearst Television, Inc.**

WGAL(DT) Lancaster, PA  
Replacement Digital Translator  
Lancaster, PA Ch. 51 15 kW

*WGAL Hearst Television, Inc.* (“*Hearst*”) is the licensee of television station WGAL, Facility ID 53930, Lancaster, PA. WGAL is operating on its post-transition digital Channel 8, its pre-transition analog channel. Pursuant to the procedures adopted in MB Docket 08-253,<sup>1</sup> *Hearst* herein proposes to construct a new replacement digital television translator station on Channel 51 to aid in serving its principal community of Lancaster, PA and vicinity.

Except for the channel number, the translator facility proposed herein will employ the same site and technical specifications as the WGAL replacement digital translator on Channel 15 recently authorized by Construction Permit (“CP”, file number BDRTCDT-20090824ADT, granted on February 22, 2010). The FCC’s grant of the CP for BDRTCDT-20090824ADT is the subject of a Petition for Reconsideration filed by Lancaster County, PA. Lancaster County has a pending waiver request to use frequencies within the television channel 15 spectrum for public safety purposes.

*Hearst* herein seeks to specify Channel 51 for its Lancaster PA translator which would not be in conflict with Lancaster County’s waiver request for Channel 15. Upon grant of a CP for the Channel 51 translator, and the grant becoming effective, *Hearst* will request cancellation of the Channel 15 translator CP (BDRTCDT-20090824ADT) as described in a separate statement.

The proposed digital translator facility will employ a new antenna system to be side-mounted on an existing rooftop tower structure, associated with Antenna Structure Registration

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<sup>1</sup>Report and Order, *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, MB Docket 08-253, FCC 09-36, released May 8, 2009.

number 1044369. No change to the overall structure height is proposed. The proposed facility will operate using a “stringent” out of channel emission mask and an effective radiated power of 15 kW utilizing a circularly polarized nondirectional antenna.

**Figure 1** depicts the 51 dB $\mu$  coverage contour of the proposed translator, along with the current WGAL digital Channel 8 noise limited contour (BLCDT-20090804ABL pending) and the pre-transition analog Channel 8 Grade B contour (BLCT-19981009KE). The translator’s service contour will not extend beyond WGAL’s former analog Grade B contour.

Detailed interference studies per OET Bulletin 69<sup>2</sup> show that the proposal complies with the Commission’s interference protection requirements toward all post-transition digital television, television translator, LPTV, and Class A stations. The results, summarized in **Table 1**, show that any new interference does not exceed the Commission’s interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) except with respect to the pending application for a new digital translator on Channel 51 at Harrisburg, PA (BNPDTL-20100208ACJ), which would receive 2.15 percent interference. However BNPDTL-20100208ACJ does not present a conflict, as the proposed WGAL replacement digital translator has priority.<sup>3</sup>

Accordingly, the instant proposal complies with §§73.6012 – 73.6020 regarding interference protection to digital television, low power television, television translator, Class A television, and land mobile facilities.

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<sup>2</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 (“OET-69”). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission’s implementation of OET-69 show excellent correlation.

<sup>3</sup>As a replacement digital translator application, the proposal has the same priority as a displacement application and therefore has priority over earlier-filed nondisplacement applications (see FCC 09-36). Further, BNPDTL-20100208ACJ should be dismissed since it does not comply with the geographic restrictions of DA 09-1487 (2.5 km to Harrisburg, PA and 112.1 km to Baltimore, MD, for examples see dismissals of BNPDTL-20090825AIG, BNPDTL-20090825AXU, and BNPDTL-20090825BWG; nationwide filing has been postponed to July 25, 2010 by DA 09-2611).

The proposed site is located 382 km from the U.S. – Canadian border. The worst-case 12.4 dB $\mu$  F(50,10) co-channel DTV-to-DTV interfering contour is depicted in **Figure 2** and does not extend across the border. Thus it is believed that the instant proposal complies with all international agreements at this time.

The nearest FCC monitoring station is 107 km distant at Laurel, MD. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no nondirectional AM stations within 0.8 kilometers of the site and no directional AM stations within 3.2 km of the site, based on information contained within the Commission’s database.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed transmitting antenna will be side-mounted on an existing rooftop antenna support structure. 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.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission’s OET Bulletin Number 65. Based on OET-65 equation (10), and considering 20 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is 8.7  $\mu$ W/cm<sup>2</sup>, which is 1.9 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal’s contribution is less than five percent.

Access to the building rooftop, the rooftop antenna support structure, and any areas within the building that may exceed exposure limits will be controlled by the building owner. *Hearst* will participate in the building’s RF exposure safety program along with other broadcasters and FCC licensees that utilize the building as a transmission site. As necessary, based on calculations or actual

measurements considering all emitters, exposure abatement procedures will be confirmed and amended as necessary. The RF safety program will be employed protecting maintenance and installation workers from excessive exposure when work must be performed in locations where high RF levels may be present. Such areas will be placed under strict restricted access and properly identified.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



Joseph M. Davis, P.E.  
March 17, 2010

**Chesapeake RF Consultants, LLC**  
11993 Kahns Road  
Manassas, VA 20112  
703-650-9600

### List of Attachments

Figure 1	Coverage Contour Comparison
Figure 2	Interfering Contour to Canada
Table 1	Interference Analysis Results Summary
Form 346	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered March 17, 2010 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number 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.*

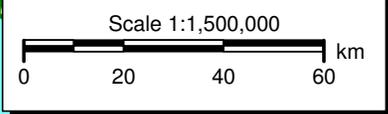
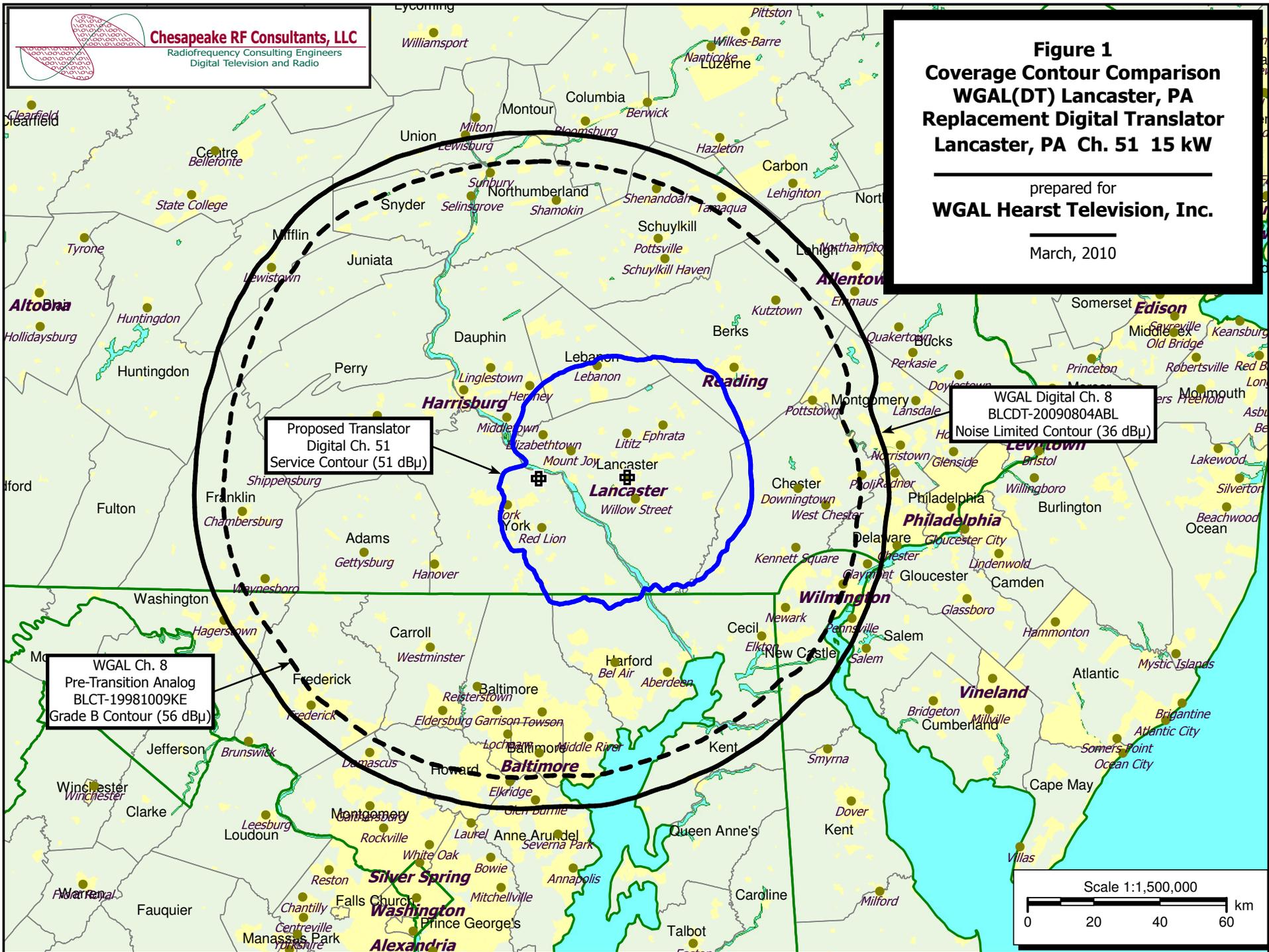
**Figure 1**  
**Coverage Contour Comparison**  
**WGAL(DT) Lancaster, PA**  
**Replacement Digital Translator**  
**Lancaster, PA Ch. 51 15 kW**

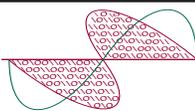
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prepared for  
**WGAL Hearst Television, Inc.**

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March, 2010





**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 2**  
**Interfering Contour to Canada**  
**WGAL(DT) Lancaster, PA**  
**Replacement Digital Translator**  
**Lancaster, PA Ch. 51 15 kW**

prepared for  
**WGAL Hearst Television, Inc.**

March, 2010

Proposed Translator  
12.4 dBμ Contour F(50,10)

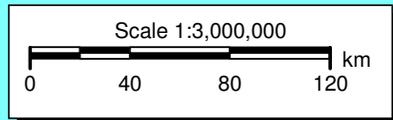
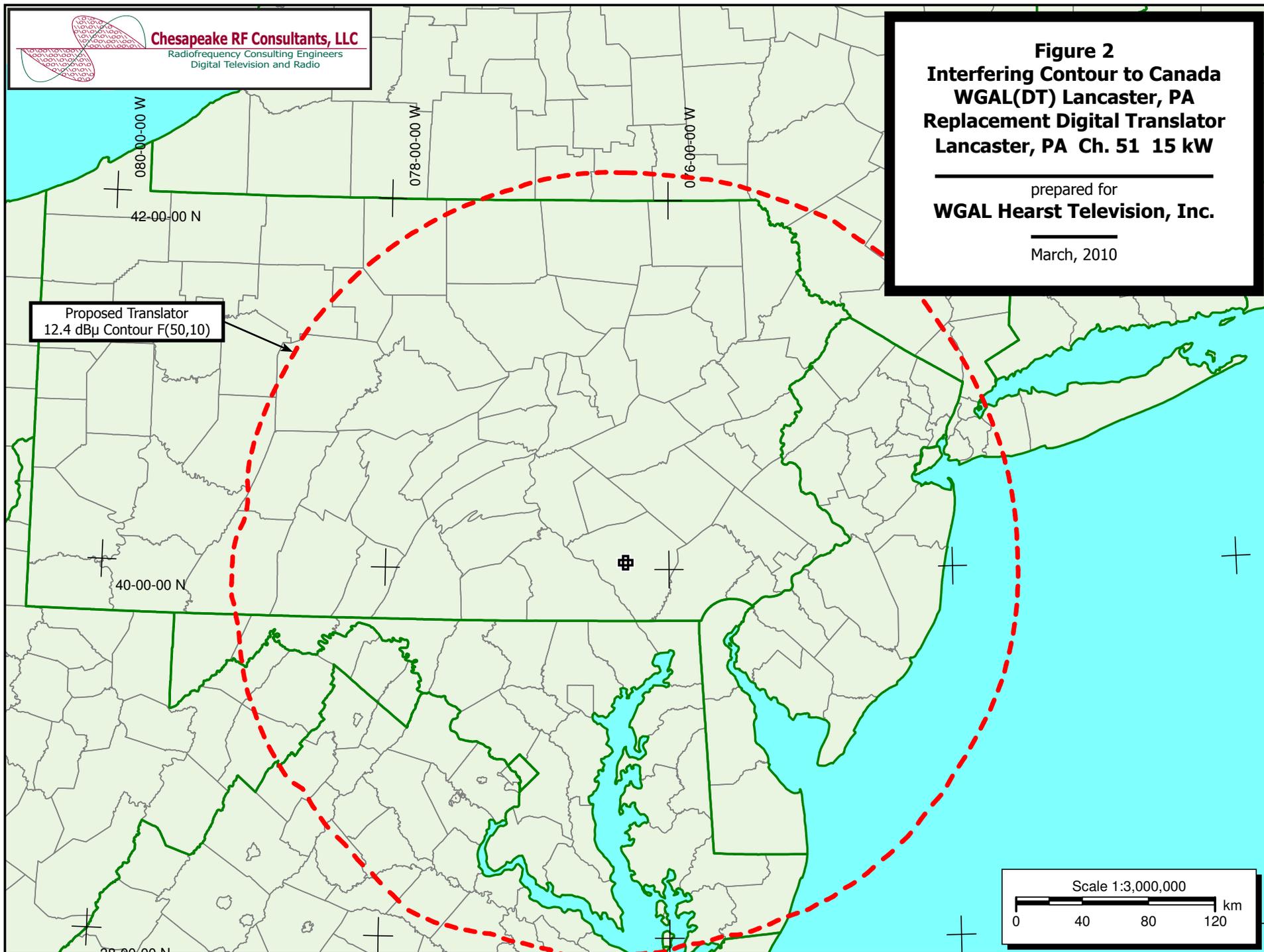


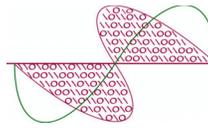
Table 1

**Interference Analysis Results Summary**

prepared for

**WGAL Hearst-Argyle Television, Inc.**

Replacement Digital Translator Ch. 51 Lancaster, PA



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

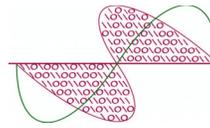
WGAL-RD	USERRECORD-01	LANCASTER	PA US
Channel 51	ERP 15. kW	HAAT 64. m	RCAMSL 00179 m
STRINGENT MASK			
Latitude 040-02-17 Longitude 0076-18-23			
Nondirectional			

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	---Population (2000 Census)---	
						Baseline	New Interference
43	W43CH	BELVIDERE NJ	133.0	LIC	BLTT-20060622AAE	---	none
47	WMDO-CA	WASHINGTON DC	139.0	LIC	BLTTA-20080428AAQ	---	none
47	W47AO	BERWICK PA	107.8	LIC	BLTTL-19940815IF	---	none
49	WWT-D-LP	WASHINGTON DC	139.0	LIC	BLTTL-20060711ABI	---	none
50	WDCW	WASHINGTON DC	134.6	CP MOD	BMPCDT-20080619AGG	---	none
50	W50DQ-D	GEORGETOWN DE	166.9	CP	BDCCDTL-20061005AAR	---	none
50	W50DO-D	HACKETTSTOWN NJ	151.0	CP	BDCCDTT-20060925AEB	---	none
50	W25AW	TRENTON NJ	95.0	CP	BDISDTA-20090408ALY	---	none
50	W66AI	POTTSVILLE, ETC. PA	71.5	CP	BDISDTT-20060403ADI	---	none
50	WNEP-TV	SCRANTON PA	132.4	CP	BPCDT-20090311AAG	2,301,316	1,130 (0.05%)
50	WNEP-DR	SCRANTON PA	132.5	APP	BPRM-20080619ALP	2,253,093	1,416 (0.06%)
50	W50DE	MARTINSBURG WV	163.2	LIC	BLTT-20040510ABB	---	none
51	WNHX-LP	NEW HAVEN CT	320.4	LIC	BLTTL-20071011ADF	---	none
51	WETA-DR	WASHINGTON DC	137.9	APP	BPRM-20080620AOX	5,575,411	1,080 (0.02%)
51	WDMR-LP	SPRINGFIELD MA	378.0	CP	BDFCDTL-20080804ACW	---	none
51	WDMR-LP	SPRINGFIELD MA	378.0	LIC	BLTTL-20061113AAL	---	none
51	WPSJ-LD	HAMMONTON NJ	129.4	CP	BDCCDTL-20061030ABJ	---	none
51	WNJN	MONTCLAIR NJ	200.4	LIC	BLEDT-20061121ADG	17,190,806	4,539 (0.03%)
51	WNJN	MONTCLAIR NJ	200.4	CP	BPEDT-20080620ALF	17,568,344	2,343 (0.01%)
51	WHSU-CA	SYRACUSE NY	335.9	LIC	BLTTL-19980821JM	---	none
51	WHSU-CA	SYRACUSE NY	335.9	APP	BDFCDTA-20090105AHY	---	none
51	W51CV	UTICA NY	357.7	LIC	BLTT-20020620AAQ	---	none
51	W51CV	UTICA NY	357.7	CP	BDFCDTT-20060222ACH	---	none
51	W51BN-D	WHITE LAKE NY	221.2	LIC	BLDTL-20091026ADM	---	none
51	W51CY	CHAMBERSBURG PA	109.8	CP	BDFCDTT-20090505ABE	---	none
51	W51CY	CHAMBERSBURG PA	109.8	LIC	BLTT-20020812ACR	---	none
51	W51BP	CLARKS SUMMIT, ETC. PA	167.2	LIC	BLTT-19901105JR	513,177	2,471 (0.48%)
51	NEW	HARRISBURG PA	54.8	APP	BNPDTL-20100208ACJ	364,550	7,835 (2.15%) <b>see note 1</b>
51	WTAE-TV	PITTSBURGH PA	298.2	LIC	BLCDT-20041014AEY	---	none
51	WFMZ-TV	READING PA	49.3	APP	BDRTCT-20090604ABH	150,737	463 (0.31%)
51	WVIA-TV	WILLIAMSPORT PA	141.3	CP	BDRTEDT-20090824ACM	---	none

Table 1

**Interference Analysis Results Summary**

(page 2 of 2)



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

<u>Ch.</u>	<u>Call</u>	<u>City/State</u>	<u>Dist</u> <u>(km)</u>	<u>Status</u>	<u>Application Ref. No.</u>	<u>---Population (2000 Census)---</u>	
						<u>Baseline</u>	<u>New Interference</u>
51	W51DO	HAMPTON VA	329.2	LIC	BLTTL-20040213AFO	---	none
51	WRID-LD	RICHMOND VA	302.3	CP	BDCCDTL-20061027ADC	---	none
51	WHSV-TV	STAUNTON VA	332.6	APP	BDRTCT-20090501AAN	---	none
51	WWPX-DR	MARTINSBURG WV	190.3	APP	BPRM-20080619ALR	4,352,199	181 (0.00%)
52	W52DW	PORT JERVIS NY	201.3	LIC	BLTTL-20070220AAN	---	none
53	W36DO-D	TALLEYVILLE DE	70.5	STA	BSTA-20040806AGQ	---	none
58	WIAV-LP	WASHINGTON DC	126.3	LIC	BLTTL-19940825IK	---	none

**Note 1: 2.15% predicted interference to BNPDTL-20100208ACJ (Ch. 51 Harrisburg, PA) should be disregarded, as the WGAL replacement digital translator application has priority over an application for a new translator such as BNPDTL-20100208ACJ. Further, BNPDTL-20100208ACJ should be dismissed as it fails to comply with the geographic restrictions specified in DA 09-1487 (nationwide filing postponed to July 25, 2010 by DA 09-2611).**

<b>SECTION III - ENGINEERING DATA (Digital)</b>												
<b>TECHNICAL SPECIFICATIONS</b>												
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.												
<b>TECH BOX</b>												
1.	Channel Number: 51											
2.	Translator Input Channel No. : 8											
3.	Primary station proposed to be rebroadcast:											
	Facility Identifier	Call Sign	City	State	Channel							
	53930	WGAL	LANCASTER	PA	8							
4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 40 Minutes 2 Seconds 17 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 76 Minutes 18 Seconds 23 <input checked="" type="radio"/> West <input type="radio"/> East											
5.	Antenna Structure Registration Number: 1044369 <input type="checkbox"/> Not Applicable [Exhibit 10] <input type="checkbox"/> Notification filed with FAA											
6.	Antenna Location Site Elevation Above Mean Sea Level: 108.8 meters											
7.	Overall Tower Height Above Ground Level: 78.6 meters											
8.	Height of Radiation Center Above Ground Level: 70 meters											
9.	Maximum Effective Radiated Power (ERP): 15 kW											
10.	Transmitter Output Power: 4 kW											
11.	a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm">CDBS Public Access</a> (http://licensing.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 checked="" type="radio"/> Nondirectional <input type="radio"/> Directional "Off-the-shelf" <input type="radio"/> Directional composite  Manufacturer DIE Model TFU-8DSB-A CIRCULARLY POLARIZED  b. Electrical Beam Tilt: 1 degrees <input type="checkbox"/> Not Applicable											
	c. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> N/A (Nondirectional or Directional "Off-the-shelf") Rotation (Degrees): <input type="checkbox"/> No Rotation											
	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	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											

[Relative Field Polar Plot](#)

<b>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.</b>	
12.	<b>Out-of-channel Emission Mask:</b> <input type="radio"/> Simple <input checked="" 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. <span style="float: right;"><input checked="" type="radio"/> Yes <input type="radio"/> No</span>  <span style="float: right;">See Explanation in [Exhibit 11]</span>
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> <span style="float: right;"><input checked="" type="radio"/> Yes <input type="radio"/> No</span>  <span style="float: right;">See Explanation in [Exhibit 12]</span>  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 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.

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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 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.

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.

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.

**PREPARERS CERTIFICATION ON PAGE 3 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 JOSEPH M. DAVIS, P.E.		Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature		Date 3/17/2010	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 11993 KAHNS ROAD			
City MANASSAS		State or Country (if foreign address) VA	Zip Code 20112 -
Telephone Number (include area code) 7036509600		E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	