

**ENGINEERING EXHIBIT  
IN SUPPORT OF AN APPLICATION FOR  
POST-TRANSITION DTV CONSTRUCTION PERMIT  
WTVD DURHAM, NORTH CAROLINA  
CHANNEL 11 – 17.9 KW DTV AVERAGE – 615 M HAAT**

Licensee: WTVD Television, LLC

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**ENGINEERING STATEMENT  
IN SUPPORT OF AN APPLICATION FOR  
POST-TRANSITION DTV CONSTRUCTION PERMIT  
WTVD DURHAM, NORTH CAROLINA  
CHANNEL 11 – 17.9 KW DTV AVERAGE – 615 M HAAT**

Licensee: WTVD Television, LLC

I am a consulting engineer, an employee of the Carl. T. Jones Corporation, with offices in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission. I am a Registered Professional Engineer in the Commonwealth of Pennsylvania, Registration Number PE-027589E.

**Introduction**

WTVD Television, LLC is the licensee of television station WTVD, Channel 11, Durham, North Carolina. Through this application WTVD seeks to obtain a construction permit for DTV post-transition facilities which will operate on its presently licensed NTSC channel, channel 11, after the DTV transition.

In the channel election process, WTVD was granted channel 11 for its post-transition operation. WTVD presently operates its DTV facility on channel 52. The WTVD NTSC facilities are described in the present license, which bears FCC File Number BLCT-20010709ACP and the license for the licensed DTV facility which operates on the DTV initial allotment on channel 52 is described in FCC File Number BLCDT-19991117ABU.

The replication pattern that WTVD was assigned in the channel election process bears FCC Antenna ID 74597. It is basically a non-directional pattern with a relative field maximum of 1.0 and a relative field minimum of 0.990.

The presently licensed channel 11 analog antenna is a Dielectric traveling wave model TW-9B11-R with 0.75 degrees electrical beam tilt. This antenna produces a non-directional azimuth pattern. The Appendix B facilities specify an HAAT of 607 meters, which was the HAAT of the WTVD main channel 11 antenna and the HAAT shown for the WTVD channel 52 DTV antenna in Table I. The presently licensed channel 11 antenna is located higher than the channel 52 DTV antenna and has a licensed HAAT of 615 meters.

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Through this application, WTVD seeks a construction permit to use the presently licensed channel 11 antenna for its post-transition DTV operation. Because the presently licensed antenna has an HAAT that is higher than the facilities described in Appendix B, results of an engineering analysis that shows the equivalent coverage of the proposed facility to the Appendix B facility is also included in this engineering exhibit. The proposed ERP of the WTVD post-transition facility is 17.9 KW, slightly less than the 19.2 KW shown in Appendix B because of the proposed increase in HAAT. The proposed HAAT is 615 meters and the HAAT that is assigned in Appendix B is 607 meters.

Except for the higher HAAT which is compensated by the slightly lower ERP, the proposed WTVD post-transition channel 11 DTV facilities are identical to those shown in Appendix B.

**Allocation Considerations and Licensed Facility**

WTVD operates NTSC facilities on channel 11. The WTVD NTSC license authorizes a full facility in Television Zone II of 312 KW at 615 meters HAAT. The WTVD main license bears FCC File Number BLCT-20010709ACP. WTVD has been serving Durham, North Carolina and operating NTSC facilities on channel 11 since September 1954.

WTVD-DT operates DTV facilities on its initial allotment channel 52, with an ERP of 1000 KW and a non-directional antenna at an HAAT of 599 meters. FCC File number BLCDT-19991117ABU contains the description of the WTVD-DT facility. WTVD-DT was an early DTV broadcaster, one of several ABC Owned Television stations that volunteered to begin DTV transmission in November of 1999. WTVD-DT UHF channel 52 antenna is located on the same tower as the NTSC facility. This supporting structure bears Antenna Structure Registration Number 1010348. No changes are proposed to this supporting structure.

Distances to the predicted service contours shown in the figures that are attached as exhibits to this statement were calculated using methods described in the Rules. The noise limited contour, the DTV city of license principal community contour as well as other contours in the exhibits were calculated and plotted in this manner.

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**The WTVD Post-Transition Appendix B Facility**

WTVD was assigned channel 11, its NTSC channel, through the channel election process. The post-transition operating parameters found in Appendix B specify an HAAT of 607 meters, and a maximum ERP of 19.2 KW on channel 11. The post-transition channel 11 Appendix B antenna has a pattern with extremely small directional characteristics. The Appendix B antenna pattern bears FCC Antenna ID Number 74597, and has a maximum relative field of 1.00 and a minimum relative field of 0.990.

The post-transition Appendix B pattern is attached as a figure that is labeled Exhibit 3.

**WTVD Service and Section 73.625 Coverage**

In Appendix B, the channel 11 WTVD post-transition facility shows service to 2,807,000 persons. This number is in close agreement with an OET-69 Longley-Rice calculation with all operation utilizing post-transition Appendix B facilities operating with parameters contained in the FCC database of February 26, 2008. The result of the calculations performed produces a result for WTVD service of 2,807,147 persons. This baseline agreement gives confidence that the baseline calculation methodology and the input data used to obtain these results is in agreement with FCC calculation methodology and input data. When evaluated by the same methodology, the proposed facility shows coverage of 2,807,017 persons, which is almost identical to the numbers shown above.

The proposed facility will cover the city of license with a predicted 43 dBu F(50:90) contour as required by Section 73.625 of the Rules. Exhibit 2 is a map which shows the location of the 43 dBu contour and the limits of Durham, North Carolina and demonstrates that the required coverage of the city of license is provided by the proposed facility.

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**Antenna Structure**

The presently licensed channel 11 NTSC antenna is supported by a tower which bears antenna Structure Registration Number 1010348. No change to this structure is needed to construct the proposed WTVD post-transition channel 11 DTV facility. All changes necessary to obtain operation with the parameters requested in the instant application will occur within the confines of the WTVD transmitter building.

**Protection to Class A Stations**

TV\_Process finds no Class A station presently within the study distance and a quick review of the FCC CDBS Database indicates no difference with that finding.

**Requirements of Section 73.685**

After the transition to DTV operation, WTVD-DT will be operating on channel 11, and will be the only broadcast system operating from the site. As such, there is no other facility that operates within 20 percent of the channel limits and within the study limits contained in Section 73.685. In addition, no harmonic, spurious or intermodulation products are expected from interaction with signals from any nearby facility that is located beyond the required study distance in Section 73.685.

**Protection to Post Transition DTV Allotments and Authorized Facilities**

The facilities proposed herein were designed to reproduce coverage that is predicted from the facilities described in Appendix B, but not to exceed these facilities.

By definition, no additional interference can be caused to any post-transition Appendix B facility, and the WTVD post-transition operation meets the Commission's requirements to protect other post-transition facilities.

### **Protection of AM Stations and Protected Receiving Locations**

The Commission's database contains no station within 3.2 kilometers of the WTVD site. The two stations in close proximity to the WTVD transmitter are located beyond 3.2 kilometers and each of the two nearest stations operates with a non-directional antenna. This situation satisfies the requirements of Section 73.1692 of the Rules with regard to protection of AM stations.

The nearest FCC Monitoring Station is Laurel, Maryland and it is located more than 400 kilometers distant from the WTVD transmitter. The greatest study distance for transmission systems that operate in the 198 to 204 MHz range is 80 kilometers, per Section 73.1030(c)(3), and the distance to the monitoring station alone satisfies the requirements of Section 73.1030 to protect FCC Monitoring Stations.

The protected receiving location, Green Bank Observatory, West Virginia is also a great distance from the WTVD transmitter location, and the distance alone satisfies the requirements of Section 73.1030 to protect this receiving environment.

### **Compliance with Radiofrequency Energy Exposure Limits**

The proposed WTVD-DT post-transition operation will comply with the FCC rules and guidelines pertaining to human exposure to electromagnetic energy. Although exposure limits are not approached until workers are very near to the WTVD and WTVD-DT antennas, WTVD has established policies and procedures and has defined the entire tower structure as a controlled area where access is restricted to all persons for physical safety reasons as well as exposure to radiofrequency energy.

For administrative and safety purposes, the entire WTVD tower is treated as a Controlled Area where only those who have been properly instructed with regard to safety procedures when working aloft are allowed.

For administrative and safety purposes, the entire WTVD tower is treated as a Controlled Area where only those who have been properly instructed with regard to RF Safety are allowed.

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In July, 2004, an RF Safety Report was prepared by RF Safety Solutions, LLC by Robert Strickland. There have been no changes to the broadcast facilities operating at the site since the time of the measurements that are described in the Report. Results of ground level measurements are contained in this Report and indicate that at ground level to two meters above the ground, the level of radiofrequency exposure does not exceed approximately 1 percent of the maximum permissible exposure level as defined in Section 1.1310 of the Rules. This level holds true for all modes of operation. Very low levels of energy, in the order of 2 percent of the Uncontrolled Limit were observed in the WTVD transmitter building.

After the transition, only WTVD-DT will be operating from this site. Given the high location of the antennas, and the fact that less energy will be emanating from the site, the proposed post-transition operation is expected to fully comply with the Commission's Rules regarding human exposure to radiofrequency energy.

The WTVD site anywhere at ground level meets the requirements of Section 1.1307 of the Commission's Rules and the exposure limits found in Section 1.1310 of the Rules.

**Conclusion**

The proposed WTVD post-transition facility meets the requirements of the Commission with regard to human exposure to radiofrequency energy.

The proposed WTVD post-transition facility is equivalent to the WTVD Appendix B facility, and meets all Commission requirements for post-transition operation.

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The facility proposed in the instant application meets the Commission's requirements for expedited processing as described the Report and Order in the Third Periodic Review proceeding, and a grant of this application is in the public interest and will further the transition to digital television broadcasting.

**Certification**

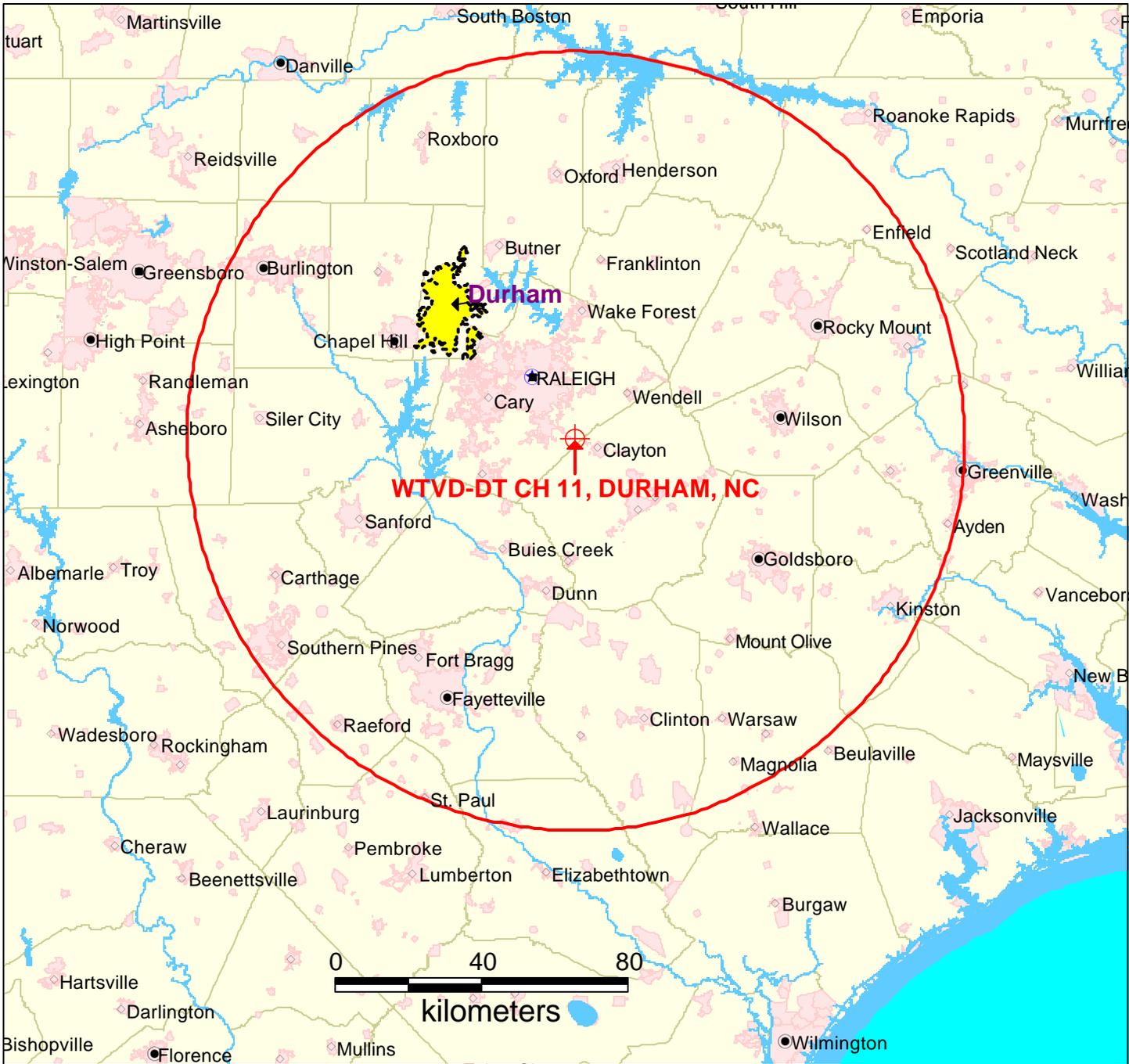
I certify that, on behalf of the WTVD Television, LLC, licensee of WTVD and WTVD-DT, I have prepared the information contained in this Engineering Statement, and that after such preparation, I have examined it and found it to be accurate and true to the best of my knowledge and belief.



Signed: \_\_\_\_\_  
Alfred E. Resnick, P. E.

Dated: March 17, 2008

	<b>WTVD, DURHAM, NC</b> <b>(DTV - Appendix B Facility)</b> <b>Latitude: 35 40 05 Longitude: 78 31 58</b> <b>CH. 11, 19.19 kW, 607 mHAAT,</b> <b>688 mRCAMSL, 74597 D-ANT</b> <b>PREDICTED 36 dBu, F(50,90)</b> <b>NOISE LIMITED CONTOUR</b>	<b>WTVD, DURHAM, NC</b> <b>(DTV - Proposed Post Transition)</b> <b>Latitude: 35 40 05 Longitude: 78 31 58</b> <b>CH. 11, 17.9 kW, 615 mHAAT,</b> <b>696 mRCAMSL, NON-D ANT</b> <b>PREDICTED 36 dBu, F(50,90)</b> <b>NOISE LIMITED CONTOUR</b>
Radial	Distance (km)	Distance (km)
0	119.1	118.7
45	118.9	118.6
90	118.8	118.5
135	118.5	118.3
180	118.9	118.6
225	118.2	118.1
270	117.5	117.5
315	118.1	117.9



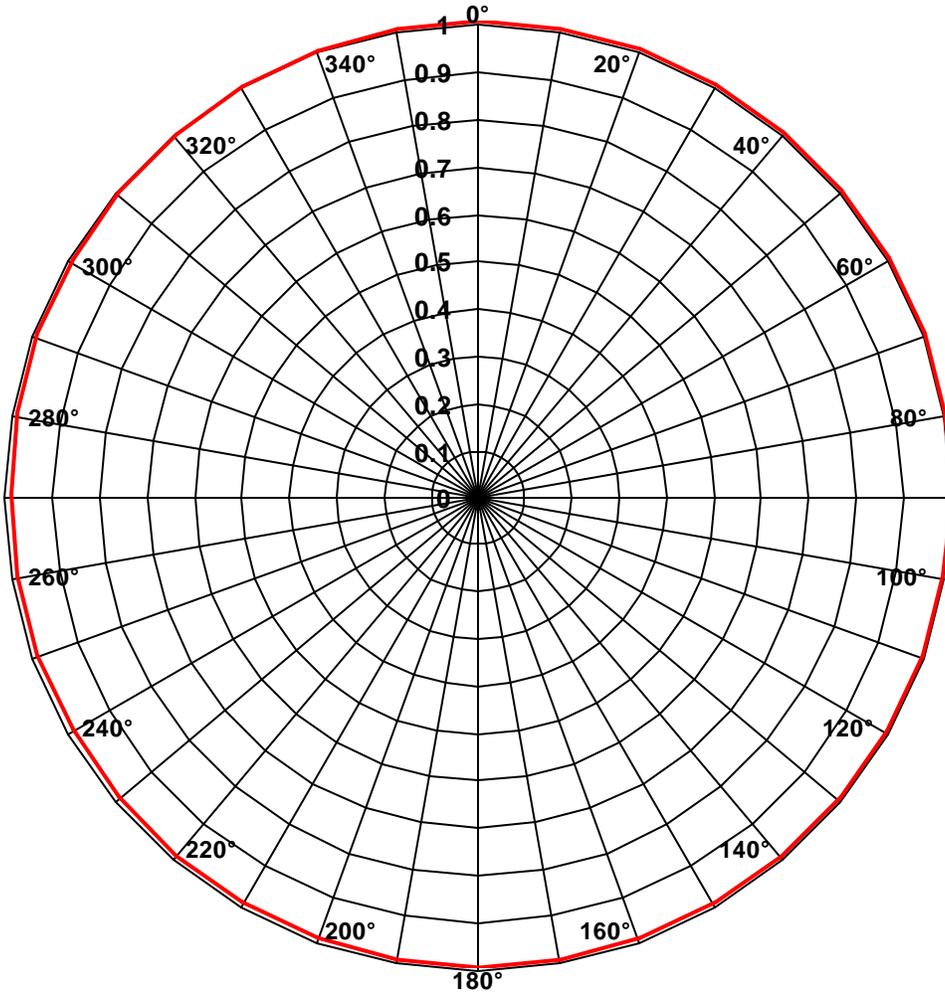
**PREDICTED COVERAGE CONTOUR**

**PROPOSED WTVD-DT Ch 11, DURHAM, NC**  
**17.9 kW, 615 mHAAT, 696 mRCAMSL, NON-D ANT**  
**Predicted Principal Community Coverage Contour**  
**F(50,90), 43 dBu**

MARCH 2008



True North



Azimuth (deg T.)	Relative Field	ERP (kilowatts)	ERP (dBk)
0	1	19.190	12.831
10	1	19.190	12.831
20	1	19.190	12.831
30	1	19.190	12.831
40	0.999	19.152	12.822
50	0.999	19.152	12.822
60	0.998	19.113	12.813
70	0.998	19.113	12.813
80	0.998	19.113	12.813
90	0.998	19.113	12.813
100	0.997	19.075	12.805
110	0.997	19.075	12.805
120	0.997	19.075	12.805
130	0.995	18.999	12.787
140	0.995	18.999	12.787
150	0.997	19.075	12.805
160	0.997	19.075	12.805
170	0.998	19.113	12.813
180	0.999	19.152	12.822
190	0.998	19.113	12.813
200	0.997	19.075	12.805
210	0.995	18.999	12.787
220	0.994	18.960	12.778
230	0.993	18.922	12.770
240	0.992	18.884	12.761
250	0.991	18.846	12.752
260	0.99	18.808	12.743
270	0.989	18.770	12.735
280	0.991	18.846	12.752
290	0.991	18.846	12.752
300	0.992	18.884	12.761
310	0.993	18.922	12.770
320	0.993	18.922	12.770
330	0.994	18.960	12.778
340	0.997	19.075	12.805
350	0.998	19.113	12.813

**DIRECTIONAL ANTENNA HORIZONTAL PLANE  
 WTVD-DT CH 11, DURHAM, NC  
 WTVD POST-TRANSITION ANTENNA PATTERN 74597  
 APPENDIX B (FCC 07-138 AND FCC 08-72)**