

ENGINEERING EXHIBIT

Application for Post-Transition Digital Television Station Construction Permit

prepared for

Commonwealth Public Broadcasting Corporation

WNVC-DT Fairfax, VA

Facility ID 9999

Ch. 24 45 kW 221 m

Commonwealth Public Broadcasting Corporation (“*Commonwealth*”) is the licensee of television station WNVC(TV), analog Channel 56 and digital Channel 57, Fairfax, VA. *Commonwealth* herein proposes construction of its post-transition digital facility on Channel 24. This channel was established in Appendix B of the Seventh Report and Order in MB Docket 87-278.

The instant proposal specifies an effective radiated power (“ERP”) of 45 kW at 221 meters antenna height above average terrain (“HAAT”), with a nondirectional antenna. These parameters provide a match of the coverage contour associated with the Appendix B parameters of 50 kW ERP and 215 meters HAAT.

The proposed antenna system is a horizontally polarized Dielectric model TFU-26GTH-R 04 and will be side-mounted on the existing WNVC antenna supporting structure, having FCC Antenna Structure Registration number 1017638. The Channel 24 antenna will replace the existing analog Channel 56 transmitting antenna. No change to the overall structure height will result from this proposal.

A map is supplied as **Figure 1**, which depicts the standard predicted coverage contours. This map includes the boundaries of Fairfax, WNVC-DT’s principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1), as the entire principal community will be encompassed by the 48 dBμ contour.

The proposed WNVC-DT facility's predicted service population provides a 100.06 percent match of the Appendix B facility, as detailed in the table below.

Post-Transition Population Summary

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	5,868,928	5,867,398
Not affected by terrain losses	5,843,049	5,847,571
Lost to all interference	4,063	4,964
Net DTV Service	5,838,986	5,842,607
Match of Appendix B	---	100.06%

The map attached as **Figure 2** supplies a comparison of the 41 dB μ digital service contour corresponding to the proposed WNVC-DT facility (45 kW / 221 m) and the Appendix B parameters (50 kW / 215 m). Since no extension in contour location beyond that of the allotment will result, interference analysis to other television facilities is not required.

The nearest FCC monitoring station is 47.5 km distant at Laurel, MD. Using the FCC propagation curves, the proposed F(50,90) signal level at the monitoring station is 0.90 mV/m, which is well below the 10 mV/m threshold of §73.1030(c) for further analysis. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no AM stations within 3.2 kilometers of the WNVC-DT transmitter site, based on information contained within the Commission's database. The site location is beyond the border areas requiring international coordination.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed transmitting antenna will be installed on an existing antenna support structure in place of the existing analog transmitting antenna. 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.

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 10 percent antenna relative field in downward elevations (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $0.38 \mu\text{W}/\text{cm}^2$, which is 0.11 percent of the general population/uncontrolled maximum permitted exposure limit. This is well 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.

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 continue to 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.
February 21, 2008

Chesapeake RF Consultants, LLC
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List of Attachments

Figure 1	Proposed Coverage Contours
Figure 2	Coverage Contour Comparison
Form 340	Saved Version of Engineering Sections from FCC Form at Time of Upload

This material was entered February 21, 2008 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.

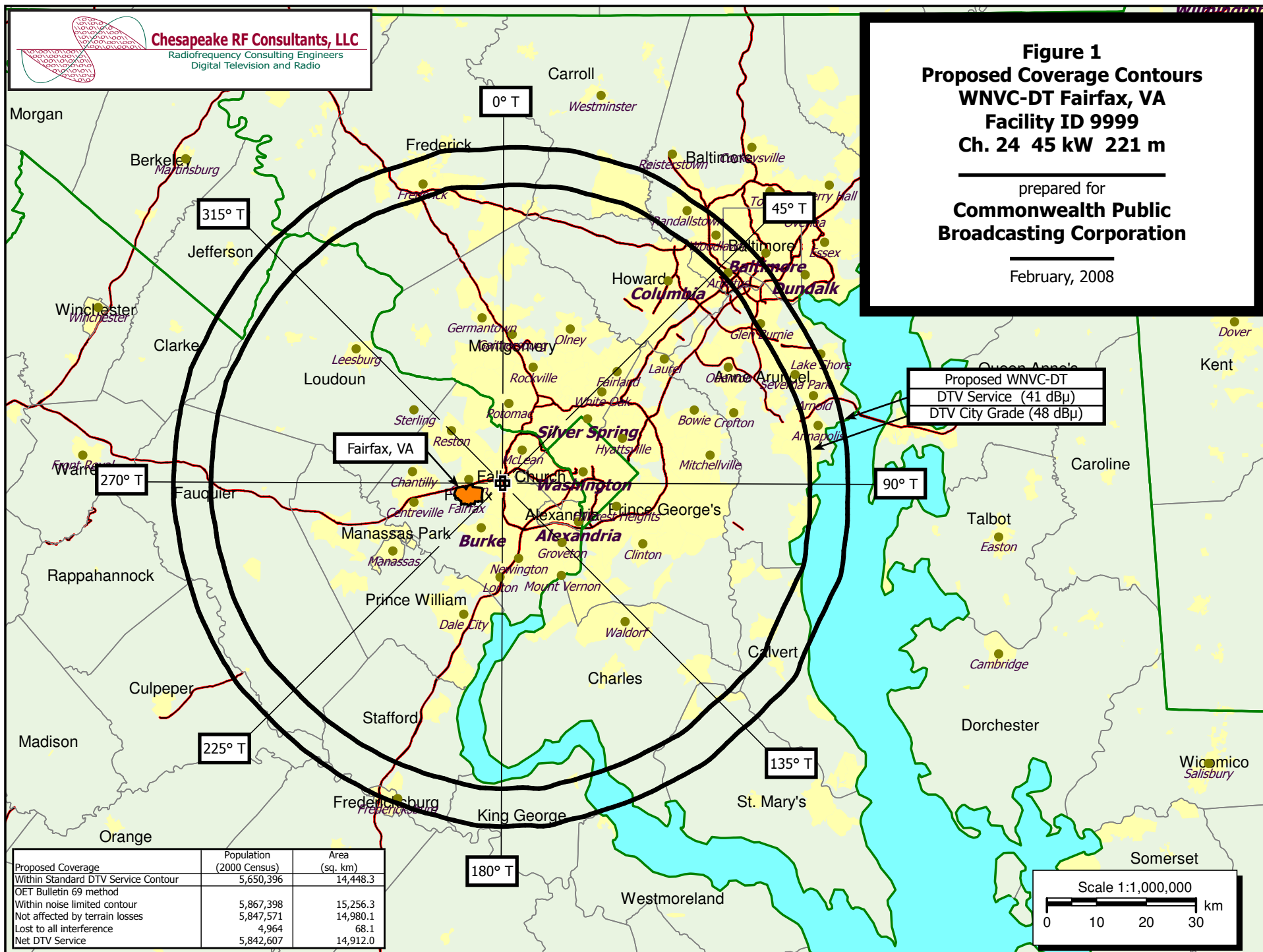


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Proposed Coverage Contours
WNVC-DT Fairfax, VA
Facility ID 9999
Ch. 24 45 kW 221 m

prepared for
Commonwealth Public
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February, 2008



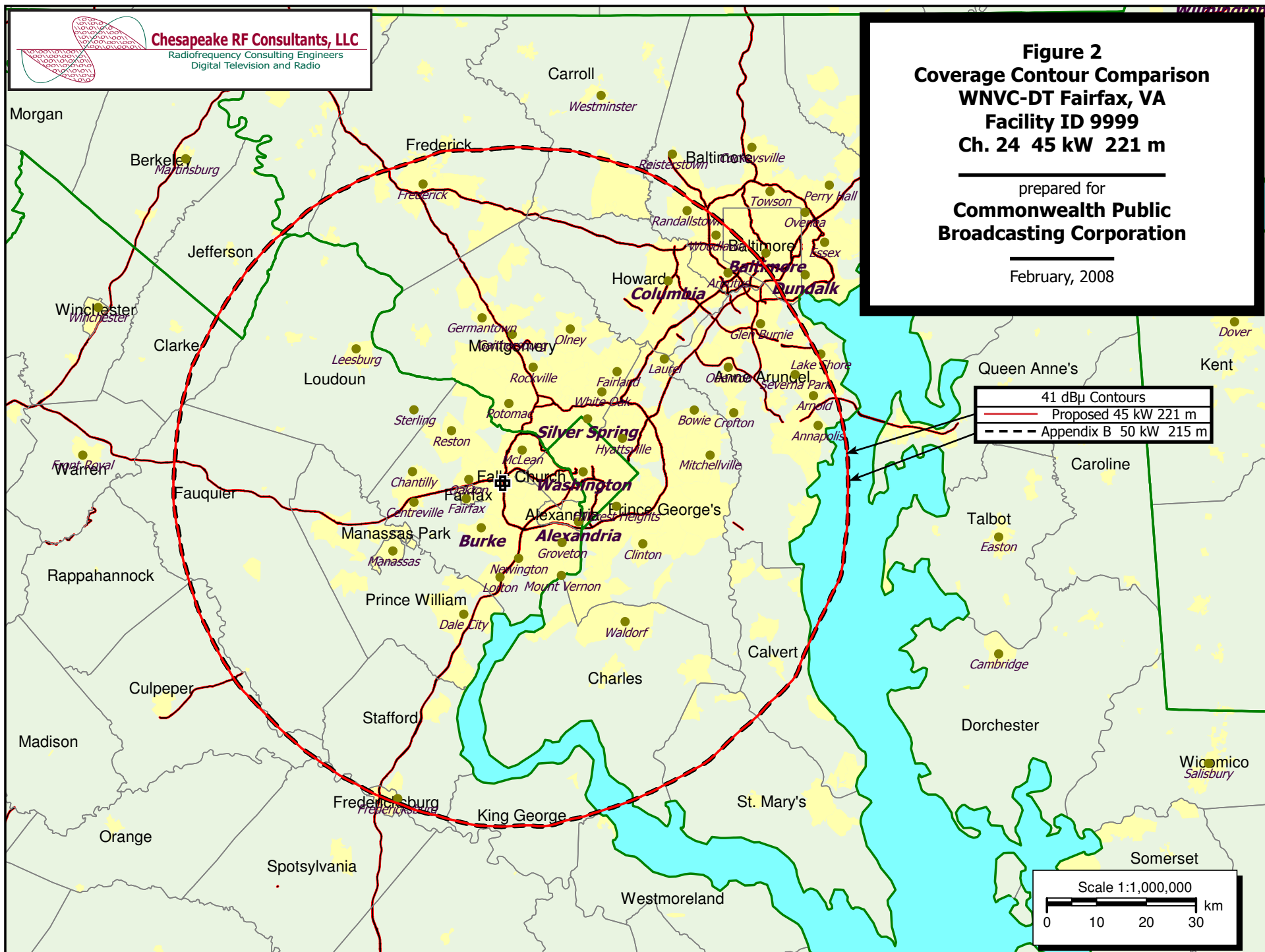


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Figure 2
Coverage Contour Comparison
WNVC-DT Fairfax, VA
Facility ID 9999
Ch. 24 45 kW 221 m

prepared for
**Commonwealth Public
Broadcasting Corporation**

February, 2008



Section VII Preparer's Certification

I certify that I have prepared Section VII (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 02/21/2008	
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	

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).

SECTION VII - DTV Engineering

Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.

Pre-Transition Certification Checklist: An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

Post-Transition Expedited Processing. An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.

- | | | |
|----|--|---|
| 1. | The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:
(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.
(b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.
(c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B. | <input checked="" type="radio"/> Yes <input type="radio"/> No
<input type="radio"/> Yes <input type="radio"/> No
<input type="radio"/> Yes <input type="radio"/> No
<input checked="" type="radio"/> Yes <input type="radio"/> No
<input type="radio"/> N/A
<input checked="" type="radio"/> Yes <input type="radio"/> No
<input type="radio"/> N/A |
| 2. | The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307.
Applicant must submit the Exhibit called for in Item 13. | <input checked="" type="radio"/> Yes <input type="radio"/> No |
| 3. | Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community. | <input checked="" type="radio"/> Yes <input type="radio"/> No |
| 4. | The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable. | <input checked="" type="radio"/> Yes <input type="radio"/> No |
| 5. | The antenna structure to be used by this facility has been registered by the Commission and will not require registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7. | <input checked="" type="radio"/> Yes <input type="radio"/> No |

**SECTION VII - DTV Engineering
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: DTV 24 Analog TV, if any 56
2.	Zone: <input checked="" type="radio"/> I <input type="radio"/> II <input type="radio"/> III
3.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 38 Minutes 52 Seconds 28 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 77 Minutes 13 Seconds 24 <input checked="" type="radio"/> West <input type="radio"/> East
4.	Antenna Structure Registration Number: 1017638 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5.	Antenna Location Site Elevation Above Mean Sea Level: 110.3 meters
6.	Overall Tower Height Above Ground Level: 210 meters
7.	Height of Radiation Center Above Ground Level: 200.5 meters
8.	Height of Radiation Center Above Average Terrain (HAAT): 221.1 meters
9.	Maximum Effective Radiated Power (average power): 45 kW
10.	Antenna Specifications: a. Manufacturer DIE Model TFU-26GTH-R 04 b. Electrical Beam Tilt: 0.75 degrees <input type="checkbox"/> Not Applicable c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). [Exhibit 33] d. Polarization: <input checked="" type="radio"/> Horizontal <input type="radio"/> Circular <input type="radio"/> Elliptical e. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional) [For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values] <div>If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. Exhibit required. [Exhibit 34]</div>
11.	Does the proposed facility satisfy the pre-transition 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.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616? <input checked="" type="radio"/> Yes <input type="radio"/> No [Exhibit 35] If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.
12.	If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefor. (Applicable only if Certification Checklist item 3 is answered "No.") [Exhibit 36]
13.	Environmental Protection Act. Submit in an Exhibit the following: [Exhibit 37] a. 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. 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. If Certification Checklist Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.
PREPARERS CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.	