

Environmental Exhibit
System Shenandoah Valley Educational TV Corporation
WVPT-TV DTS, Channel 12, 10 kW H, DA

Elliott Knob Site:

This is an isolated, Forestry controlled, antenna site located on a high elevation hilltop, overlooking a wide expanse of terrain with a rapid fall off of elevation in the direction of the proposed major lobe.

The site is at the top of a long winding 4-5 mile steep road up the mountain. There is a gate under lock and key at the start of this road with warning signs posted. Consequently, the site is off limits to vehicles, however hikers are allowed past the gate and are often seen walking along the road. The area cannot be fenced off under instructions from the Forest Service which prohibit fencing at the site. Therefore, this site can be considered uncontrolled.

Based on the manufacturer's provided vertical elevation field tables and the formulas expressed in the OET Bulletin, No. 65, August 1997 as amended, "Evaluating Compliance with FCC guidelines for Human Exposure to Radio Frequency Electronic Magnetic Fields", published by the Federal Communications Commission's Office of Science and Engineering, the proposed 10 kW facility, operating on 207 MHz, with its antenna radiation center 10 meters above ground level, with a vertical elevation field of 0.2, is predicted to produce a maximum power density at a position 2 meters above the tower base (head level) of 0.4 uW/cm², which is 5.22 percent of the 200 uW/cm² maximum.

In an effort to protect hikers on the road below the antenna, (see picture) another OET 65 calculation was made to a point directly south (pt. #1) on the hiker's road. The distance to this point is 23 meters. Considering the antenna's height of 10 meters and adding the difference in elevation along the steep incline of 10 meters, we have a total relative height to head level of 18 meters. The proposed antenna has a depression angle of 38 degrees to the point on the road. At this point, the ERP can be calculated by squaring the product of the azimuth field (0.7) times the vertical elevation field at 38 degrees (0.21) and multiplying that times the maximum ERP of 10 kW. This results in a power radiated toward the depression angle of 1.47 kW. When we calculate the power density level at this point on the road, using the OET 65 formula, we find it to be 92.8 uW/cm² microwatts per square centimeter. This is 46.4 percent of the maximum for an uncontrolled area.

Another set of calculations was made for a point on the road located 36 meters from the WVPT antenna along the main the antenna's major lobe of 150 degrees true north (See pt. #2). The azimuth field level along this heading is 100 percent. The depression angle to this point is 31.4

degrees. The vertical elevation field at this depression angle is 0.0914. The ERP at this point calculates to be 0.084 kW. ($0.0914^2 * 10 \text{ kW}$). The difference in elevation is 14 meters and the antenna height remains 8 meters to head height for a total relative antenna height above ground of 22 meters. This amounts to 22.19 microwatts per square centimeter which is 11.1 percent of the maximum.

It is possible, but not probable, that hikers could choose to not use the road and walk on the steeply inclining hillside. Though the power densities appear not to exceed the uncontrolled maximum on the road, the applicant will post appropriate warning signs along the road segment having the higher power densities. Hikers will be warned with these signs to stay on the road.



WHSV-TV operates a DTS transmitter on channel 51 from this site using the old WVPT channel 51 antenna. This antenna is a unique “billboard” antenna design that now operates at an ERP of 0.5 kW. This antenna also has its center at 10 meters above the ground. Using a vertical field of 0.2, the OET 65 formulas show us that this antenna’s power density at head height at the antenna’s nadir is 10.44 uW/cm². This is 2.25 percent of the maximum. Since this is an existing facility at an antenna farm, no further action was deemed necessary. (Sec. 1.1307 (b) (3) ii)

The FM station, WTON-FM operating with an ERP of 0.34 kW, is located some 25 meters meters to the east of the WVPT-TV antenna. Its EPA type #3 antenna center is 12 meters above ground level. Using OET 65 as amended for the EPA antenna type 3, the power density at head height at the base of the station’s tower, is 6.82 uW/cm²., which is 0.68 percent of the maximum for an uncontrolled area. Since this is an existing facility at an antenna farm that produces no

more than 5% of the maximum, no further action was deemed necessary. (Sec. 1.1307 (b) (3) ii), however in concern for hikers on the road an additional calculation was made at pt. #1. Using OET 65 as amended for the EPA antenna type 3, the power density, at head height at a distance 61 meters, on the roadway point, is 5.84 microwatts per square centimeter, which is 0.58 percent of the maximum for an uncontrolled area.

The licensed facility of W41DT is located some 159 meters to the east of the point on the road that we have been observing. This station uses an ERP of 15 kW at 28 meters above ground. Using a vertical elevation field of 0.2, this station produces 4.56 uW/cm at head height at its tower base which is 1.1 percent of the maximum. Based on similar installations at this distance and the frequency in use, this station's contribution at the WVPT-TV site would be negligible. Since this is an existing facility at an antenna farm that produces no more than 5% of the maximum, no further action was deemed necessary. (Sec. 1.1307 (b) (3) ii.)

It should be noted that, due to the highly directional antenna that protects the Green Bank Observatory, nearly all the transmitter power for the WVPT-TV is aimed to the south and south southeast with little or no power going north, consequently, we have focused our calculations along and around the main lobe of the antenna. (Please see the antenna azimuth graph and vertical elevation field table attached to this application under the antenna exhibit.)

Charlottesville Site:

This site uses a Scala DRV-1. The manufacturer indicates the field at the nadir is 0.08 percent. Using the more conservative field at the nadir of the conventional 0.2 percent, this antenna that transmits with 0.1 kW of horizontally polarized power from an antenna height of 66 meters. The power density is calculated to be 0.031 microwatts per square centimeter at head height when using the standard elevation field at the nadir of 0.2. This amounts to 0.0153 percent of the maximum of 200 uW/cm². Since this value is well below 5%, no further analysis of this site was deemed necessary.

Monterey Site:

This site uses the Scala CL-713 antenna. The manufacturer indicates the field at the nadir is .02 percent. Using the more conservative field of 0.2 percent, this antenna that transmits with 0.008 kW of power from an antenna height of 41 meters to head height, producing a power density of 0.00245 uW/cm². This amounts to 0.0012 percent of the maximum of 200 uW/cm². There are no other sources of R.F. emissions at this site. Since this value is well below 5%, no further analysis of this site was deemed necessary.

The emissions of the WVPT-TV main site antenna falls well below the maximum threshold for an uncontrolled area. The Charlottesville and Monterey sites are equally protective of the environment, consequently we are confident that the applicant will fully comply with the FCC's maximum RF power density standards for uncontrolled areas. The WVPT-TV main site area is posted with warning signs. As a total system, considering all its DTS transmitters, the applicant will be in full compliance with the Commission's human exposure to radiofrequency electromagnetic fields rules.

The applicant will protect workers by either reducing R.F. emissions or terminating operations when workers are on the site or on towers where excessive exposure to electromagnetic radiation can be received. The applicant will cooperate with all other stations at the site to assure that there will be no excess exposures to workers or the public.