

**CONSTRUCTION PERMIT MODIFICATION
ENGINEERING STATEMENT**

Prepared May 2016 for

Rector and Visitors of the University of Virginia

WXTJ-LP Charlottesville, VA Facility ID 194838

100.1 MHz Ch. 261L1 0.030 kW 62 m HAAT

Summary

The Rector and Visitors of the University of Virginia (“UVA”), licensee of WXTJ-LP licensed to Charlottesville, VA, hereby submits a proposal to modify the existing Construction Permit, FCC File Number BMPL-20150520ACG to specify a location 2.7 kilometers from the authorized site, and a slight ERP increase from 0.027 kW to 0.03kW. According to FCC Rule Section 73.870(a), a transmitter site relocation less than 5.6 kilometers is a minor change.

UVA proposes to relocate WXTJ-LP to the originally-proposed site¹ located at 38° 01’ 55” N, 78° 31’ 10.1” W (NAD 27). The proposed antenna supporting structure is a 7.0 meter tall pole, which requires no ASR number. The proposed facility proposes to operate with a circularly-polarized ERP of 0.03 kW utilizing an SWR FMEC/2 two-bay, half-wave spaced antenna.

As demonstrated below, the proposed facility satisfies all of the pertinent Commission Rules and policies now in effect regarding LPFM allocation and environmental matters.

Allocation Considerations

A study of nearby FM facilities on co-channel, adjacent-channel, and intermediate frequencies was conducted to identify which stations require further study to demonstrate compliance under §73.807(a).

¹ See File Number BNPL-20131113BJE

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REFERENCE		DISPLAY DATES
38 01 55.0 N.	CLASS = L1	DATA 05-11-16
78 31 10.1 W.	Current Spacings to 2nd Adj.	SEARCH 05-11-16
----- Channel 261 - 100.1 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
WCYK-FM	LIC 259B	Staunton	VA 278.3	25.32	66.5	-41.2
WXTJ-LP	CP 261L1	Charlottesville	VA 94.0	2.64	23.5	-20.9
WVBE-FM	LIC-N 261C3	Lynchburg	VA 217.2	81.03	77.5	3.5
W261CV	LIC-D 261D	Harrisonburg	VA 337.8	49.51	38.5	11.0
WZEZ	LIC 263A	Goochland	VA 117.1	58.00	28.5	29.5
WYFJ	LIC 260A	Ashland	VA 118.8	106.94	55.5	51.4
WBIG-FM	LIC-N 262B	Washington	DC 50.0	149.17	96.5	52.7

Reference station has protected zone issue: WV Quiet Zone
All separation margins include rounding

Protection of second-adjacent station WCYK-FM (shown in the table above) is achieved by demonstrating that the proposed translator's interfering contour does not reach populated areas. The WCYK-FM FCC contour-method field strength is at least 76.85 dB μ at the proposed WXTJ-LP site. Thus, based on the 40 dB desired-to-undesired ratio, the appropriate second-adjacent interfering contour at this location is 116.85 dB μ . There are no populated areas within 150 meters of the proposed facility. Using the distance from the proposed antenna and the proposed antenna vertical plane (elevation) pattern, predicted field strengths were calculated and plotted in **Figure 1**. As shown, a maximum field strength of 108.2 dB μ is predicted on the ground at 150 meters from the base of the tower. Thus, considering the antenna height and elevation pattern, the proposed translator signal does not reach the level of 116.85 dB μ that would be considered interference to surrounding population. UVA hereby requests a waiver of the second-adjacent spacing requirements.

A review of translator stations within 10 km of the proposed site revealed no translator having an input channel on the same or adjacent channel as that proposed in the instant application. The proposed site is located 500 km from the U.S.-Canadian border, which is beyond the "border area" specified in the Canadian Agreement.² The nearest FCC monitoring station is 194.2 km distant at Laurel, MD. This distance exceeds by a great margin the threshold

² *Agreement between the Government of Canada and the Government of the United States of America Relating to the FM Broadcasting Service and the Associated Working Arrangement*, publication date June, 1997.

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minimum distance specified in §73.1030 that would suggest consideration of the monitoring station. There are no AM broadcast stations within 3.2 km (2 miles) of the proposed site according to information extracted from the Commission's engineering database. The proposed facility is within the West Virginia Quiet Zone, and the National Radio Astronomy Observatory NQRZ administrator has been notified of this application.

It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect regarding allocation matters.

Environmental Considerations

The proposed facility will operate with a circularly-polarized ERP of 0.03 kW utilizing an SWR FMEC/2 two-bay half-wave antenna mounted at 6 meters AGL on the proposed 7-meter pole structure.

Human Exposure to Radiofrequency Radiation

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility meets the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The general population/uncontrolled maximum permitted exposure ("MPE") limit specified in §1.1310 for the entire FM broadcast band is $200 \mu\text{W}/\text{cm}^2$. For the purpose of this study, "public access" will be considered at the base of the tower at a location two-meters above ground.

The formula used for calculating FM signal density in this analysis is essentially the same as equation ten (10) in OET 65:

$$S = (33.4098) (F^2) (ERP) / D^2$$

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Where:

S = power density in microwatts/cm²
 F = relative field factor
 ERP = total (average ERP in Watts)
 D = distance in meters

Using the above formula, facility ERP, the assumption of a non-directional azimuth pattern, and 100% of the elevation pattern relative-field values, it was determined that the proposed facility would contribute a worst-case RF power density of 62.7 percent of the general population/uncontrolled limit at 2 meters above ground level at the base of the antenna support structure.

As demonstrated herein, excessive levels of RF energy will not be caused by the proposal at publicly accessible areas at ground level near the antenna supporting structure. There are no other RF facilities in the vicinity.

The applicant will ensure that public access to the site is restricted by fencing, anti-climb devices or other appropriate measures. The site will be posted with appropriate RF exposure warning signs. If structure access by authorized personnel becomes necessary, transmitter power will be reduced or operation will cease as necessary, so as to not exceed the Occupational Exposure limits.

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

Conclusion

It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect.

EXHIBIT 11 - FIGURE 1
ANTENNA PATTERN - VERTICAL

prepared May 2016 for

University of Virginia

WXTJ(LP) Charlottesville, VA

Fac ID 194838

Ch 261L1 0.03kW 62 m HAAT

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Manassas, Virginia

