

Engineering Statement
CBS Broadcasting Inc.
WWJ-TV(Aux) Detroit, Michigan
Facility ID 72123
Ch. 21 750 kW(Max-DA) 326.7 m

CBS Broadcasting Inc. (ViacomCBS) seeks a Construction Permit for an auxiliary antenna system for WWJ-TV Detroit, MI. The proposed facility would utilize a directional, elliptically polarized antenna system with a height 326.7 meters above average terrain (HAAT) and an effective radiated power (ERP) of 750 kW (Max-DA). This Statement addresses allocations, environmental, and radiofrequency factors related to this proposal.

The attached coverage map **Figure 1** demonstrates that the proposed service contour will not extend beyond that of the main WWJ-TV antenna as required by FCC Rule §73.1675.¹ Only one AM broadcast station, WRDT Monroe, MI, has an antenna system within 3 kilometers of the proposed facility.² However, as WWJ-TV will be using an existing antenna requiring no construction at a location separated from the non-directional AM antenna by more than one WRDT wavelength, FCC Rule §1.30002 is not triggered. The nearest FCC monitoring station is 229 km distant at Allegan, MI, well beyond the protection radius specified in §73.1030(c). Thus, it is believed that the proposed facility satisfies all allocation matters.

The proposed facility uses an existing tower with no change in overall height, marking specifications, or lighting specifications.³ Consequently, this application is categorically excluded from environmental processing.

The existing, elliptically polarized antenna is located 242.3 meters above ground level and will have a maximum effective radiated power of 750 kilowatts horizontal polarization and 163 kilowatts vertical polarization. According to the manufacturer, the proposed antenna

¹ See FCC file number 0000125983. §73.1675 specifies an analysis of Grade B contours. Because “Grade B” is not defined for DTV stations, **Figure 1** provides dipole-corrected 41 dBμ contours instead.

² See FCC file number BMML-20110811ACK. The proposed facility is near WRDT’s non-directional nighttime antenna system. The directional WRDT daytime antenna system shares the same file number but is located 65 kilometers away from the proposed WWJ-TV auxiliary antenna.

³ See Antenna Structure Registration 1007996.

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relative field elevation pattern is less than 15 percent toward elevation angles 25 degrees or more below the horizon. Therefore, a relative field value of 15 percent is used for the following radiofrequency exposure calculation.

The proposed operation was evaluated for human exposure to radiofrequency energy using equation ten (10) from the Commission's OET Bulletin No. 65. Calculations show that the proposed facility would contribute a power density of $11.9 \mu\text{W}/\text{cm}^2$ at two meters above ground level near antenna support structure, or 3.4 percent of the FCC's $347.3 \mu\text{W}/\text{cm}^2$ "uncontrolled/general population" exposure limit for UHF Channel 22 (521 MHz). RF power density is expected to be even lower at ground level locations away from the base of the tower, due to the increasing distance from the transmitting antenna.

According to §1.1307(b)(3), facilities at locations with multiple emitters are categorically excluded from responsibility for taking corrective action in areas where their contribution is less than five percent of the limit. Since the calculated exposure is less than five percent at all ground level areas, the impact of other possible contributors should not be a factor.

Tower access will continue to be controlled and appropriate RF exposure warning signs will continue to be posted. A site exposure policy is in effect that includes restriction of access, power reduction, or the complete shutdown of facilities when work must be performed where predicted RF levels would otherwise exceed appropriate guidelines. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

