ENGINEERING EXHIBIT

Application for a Class A TV Station Construction Permit

prepared for

Victory Christian Center, Inc.
WGTB-CD Charlotte, North Carolina
Facility ID 70097
Ch. 27 15 kW 646 m AMSL

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Schedule E - Statement A

COMPREHENSIVE ENGINEERING STATEMENT

prepared for

Victory Christian Center, Inc.

WGTB-CD Charlotte, North Carolina

Facility ID 77097

Ch. 27 15 kW 646 m AMSL

Victory Christian Center, Inc. ("Victory") is the licensee of Class A television station WGTB-CD, Channel 28, Charlotte, North Carolina, Facility ID 77097 (CDBS File No. BLDTA-20121102ABD) and has been granted a Post-Repack Construction Permit to operate on Channel 27 (File No. 0000028505). *Victory* herein proposes to modify the Construction Permit to increase its operating power and rotate the directional pattern, using the currently authorized antenna. Specifically, *Victory* proposes to operate at 15 kW Effective Radiated Power, rotated to 90 degrees True, with an antenna radiation center of 646 meters AMSL.

Nature of the Proposal

The proposed antenna system for the WGTB-CD operation is a directional antenna which is side-mounted on an existing tower structure with the Antenna Structure Registration Number 1006705. No change in structure overall height is necessary to carry out this proposal. Since no change to the structure's overall height is proposed, no change to structure marking/lighting requirements set forth in the aeronautical study will result.

The proposed digital facility will operate on Channel 27 using a "Full Service" out of channel emission mask, a maximum effective radiated power of 15 kW, and an antenna height of 646 meters AMSL. **Schedule C - Figure 1** depicts the 51 dBμ F(50,90) coverage contours of the authorized and proposed facilities. As demonstrated on the provided map, the service area overlap shown demonstrates compliance with §74.787(b)(1)(ii). WGTB-CD is requesting a power increase, which qualifies under §74.787(b) as a minor change application[1].

[1] The FCC recently lifted the freeze on Full Power and Class A television station minor modifications. See Public Notice, "*MEDIA BUREAU LIFTS THE FREEZE ON THE FILING OF MINOR MODIFICATION APPLICATIONS THAT EXPAND THE CONTOUR OF FULL POWER AND CLASS A TELEVISION STATIONS FOR CERTAIN REPACKED STATIONS, EFFECTIVE IMMEDIATELY*", DA 19-684, July 22, 2019.

Allocation Considerations

The instant proposal complies with the Commission's interference protection requirements toward all DTV, television translator, LPTV, and Class A stations. A detailed interference study was conducted using the FCC's TV Study program version 2.2.5. The interference study results are provided as an attachment to this Engineering Statement and show that any new interference does not exceed the Commission's interference limits (0.5 percent to full service and Class A stations). Accordingly, the instant proposal complies with FCC Rules regarding interference protection to DTV, television translator, LPTV and Class A television facilities.

International Coordination

The proposed transmitter site is located 710.1 km from the U.S.-Canadian border, and 1,829.6 km from the U.S.-Mexican border, which is greater than the required coordination distance specified for digital low power television stations in the Letter of Understanding[2] and is greater than the 400 km distance required for full-service facilities. Thus, it is believed that international coordination will not be necessary for the instant proposal.

Other Allocation Considerations

The nearest FCC monitoring station is at Powder Springs, GA, at a distance of 366.5 km from the proposed site. This exceeds by a great margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The proposed site is also located outside the areas specified in §73.1030(a)(1) and §73.1030(b). Thus, notification of the instant proposal to the National Radio Astronomy Observatory at Green Bank, West Virginia, or the Table Mountain Radio Receiving Zone in Boulder County, Colorado is not required. There are no AM broadcast stations located within 3.2 km (2 miles) of the proposed site, according to information extracted from the Commission's engineering database.

[2] The Letter of Understanding Between the Federal Communications Commission of the United States of America and Industry Canada Related to the Use of the 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-806 MHz Bands for the Digital Television Broadcasting Service Along the Common Border, September 29, 2000, paragraph 12.

Environmental Considerations

The instant proposal is not believed to have a significant environmental impact as defined under §1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required. *Victory* herein proposes to construct the proposed facility on an existing tower structure with the Antenna Structure Registration Number 1006705.

The use of existing tower structure 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.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency electromagnetic field using the procedures outlined in the Commission's OET Bulletin 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds 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 WGTB-CD Channel 27 antenna center of radiation will be 400 meters above ground level. An effective radiated power of 15 kilowatts, elliptically polarized, will be employed utilizing a typical UHF low power antenna. A "worst-case" relative field value of 100 percent is assumed for purposes of the calculation. The "uncontrolled/general population" limit specified in §1.1310 for Channel 27 (center frequency 551 MHz) is 367.3 $\mu W/cm^2$.

OET 65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility

in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the average power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (10) in OET 65.

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

Where:

S = power density in microwatts/cm^2
ERP = total (average) ERP in Watts
F = relative field factor
D = distance in meters

Using this formula and the above assumptions, the proposed facility would contribute a power density of 6.3 μW/cm² at two meters above ground level near the antenna support structure, or 1.72 percent of the general population/uncontrolled limit.

§1.1307(b)(3) states that facilities are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent of the exposure limit. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level or near the base of the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, access will be restricted and controlled through the use of a locked gate. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the

tower or in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. 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.

Conclusion

Based on the preceding, it is believed that the instant proposal complies with all Commission Rules and policies.