ENGINEERING EXHIBIT

Application for an LPTV Station Construction Permit

prepared for

D.T.V. LLC
W21CQ Bennington, Vermont
Facility ID 46730
Ch. 23 14.9 kW 472.5 m AMSL

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Statement A

COMPREHENSIVE ENGINEERING STATEMENT

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D.T.V. LLC

W21CQ Bennington, Vermont

Facility ID 46730

Ch. 23 14.9 kW 472.5 m AMSL

D.T.V. LLC ("DTV") is the licensee of analog television translator station W21CQ, Channel 21, Bennington, Vermont, Facility ID 46730 (LMS File No. BLTTL-20061201AAG). W21CQ is currently silent under STA extension, file number 0000113243. *DTV* herein requests a Channel 23 Construction Permit as a flash cut and displacement to a different channel at a new location. Specifically, *DTV* proposes to operate from registered structure (ASRN 1004249) with coordinates of 42° 47' 09.0" N Latitude and 73° 37' 41.0" W Longitude (NAD 83) at 14.9 kW Effective Radiated Power, using an ALIVE model ATC-BCE38PR-V0-23 directional antenna with an 80 degree rotation and centered at 472.5 meters AMSL.

Nature of the Proposal

The proposed antenna system for the W21CQ operation is a directional antenna which will be side-mounted on an existing tower structure with the Antenna Structure Registration Number 1004249. 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 23 using a "Full Service" out of channel emission mask, a maximum effective radiated power of 14.9 kW, and an antenna height of 472.5 meters AMSL. **Figure 1** depicts the 74 dBµ F(50,50) contour of the authorized analog facility and the 51 dBµ F(50,90) coverage contour of the proposed facility, as well as the 48 km (30 mile) move limit for minor modifications from the licensed coordinates. As demonstrated on the provided map, the service area overlap shown demonstrates compliance with §74.787 of the Rules for minor modifications.

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[1]. 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 or 2.0 percent to LPTV 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 246.4 km from the U.S.-Canadian border. However, the worst case 24.66 dBμ interfering contour does not cross the border. The proposal is also 2,821.1 km from the U.S.-Mexican border, which is greater than the required coordination distance specified for digital low power television stations. 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 Canandaigua, NY, at a distance of 296.8 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.

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. *DTV* herein proposes to construct the facility on an existing tower structure with the Antenna Structure Registration Number 1004249. The use of an existing tower

[1] The TV Study program was configured to perform its calculations using a cell size of 0.5 km and a terrain profile increment of 0.1 km. It is believed that this setting better reflects terrain variations than the default setting.

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 W21CQ Channel 23 antenna center of radiation will be 182.9 meters above ground level. An effective radiated power of 14.9 kilowatts, elliptically polarized, will be employed utilizing an ALIVE model ATC-BCE38PR-V0-23 UHF low power antenna. Based on the manufacturer's data, a "worst-case" relative field value of 25 percent is assumed for purposes of the calculation. For simplicity, circular polarization is assumed as a worst case. The "uncontrolled/general population" limit specified in §1.1310 for Channel 23 (center frequency 527 MHz) is 351.3 $\mu W/cm^2$.

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 1.9 μW/cm² at two meters above ground level near the antenna support structure, or 0.54 percent of the general population/uncontrolled limit.

§1.1307(b)(3) states that facilities at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities using 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).

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level near 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, tower site access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

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.

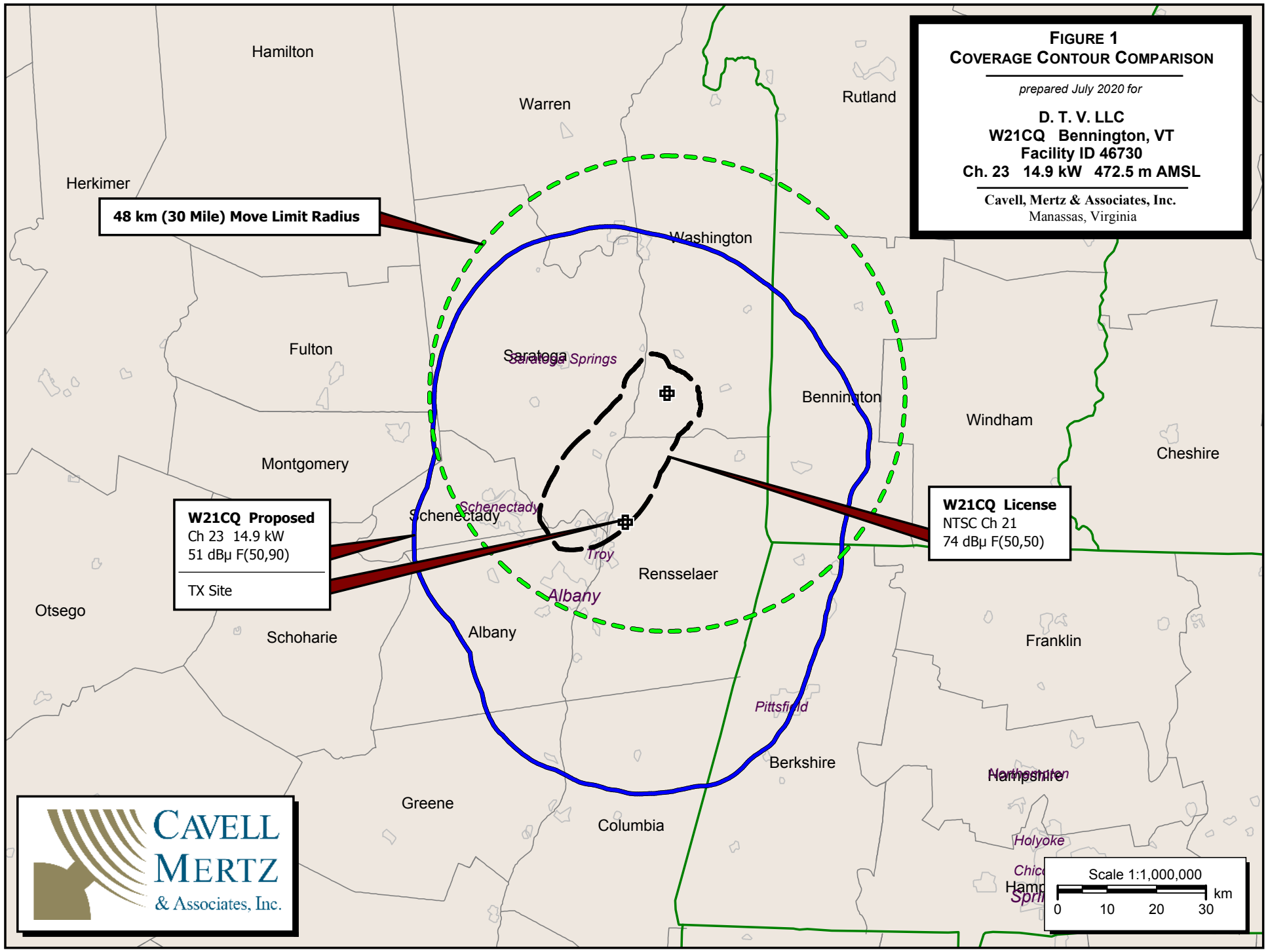
FIGURE 1
COVERAGE CONTOUR COMPARISON
prepared July 2020 for
D. T. V. LLC
W21CQ Bennington, VT
Facility ID 46730
Ch. 23 14.9 kW 472.5 m AMSL
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
48 km (30 Mile) Move Limit Radius
W21CQ Proposed
Ch 23 14.9 kW
51 dBµ F(50,90)
TX Site
W21CQ License
NTSC Ch 21
74 dBµ F(50,50)
Hamilton
Warren
Rutland
Herkimer
Washington
Fulton
Saratoga
Saratoga Springs
Bennington
Windham
Cheshire
Montgomery
Schenectady
Troy
Rensselaer
Albany
Otsego
Schoharie
Albany
Franklin
Pittsfield
Berkshire
Hampshire
Greene
Columbia
Holyoke
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