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***B. W. St. Clair, Inc.***

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**ENGINEERING STATEMENT IN SUPPORT OF AN  
APPLICATION TO MODIFY BPCDT-20000110AAG  
KFNB-DT, FI 74256, CHANNEL 20, CASPER, WY**

**Introduction**

This application requests a change to a different tower, #1008931, a location change of 4.2 km at 266°. It also requests a change of antenna orientation from 290° to 10° true and an HAAT reduction of 20.5 m. With the proposed parameters, no interference to analog, digital full service and Class A stations was found using Longley-Rice methodology.

**Environmental Assessment**

The station will operate using an existing tower and the KGWC (analog) equipment building. There is no construction and consequently no associated environmental impact.

There are four contributors to non-ionizing radiation on this mountain top. FM transmission facilities over 1 km were excluded since their contribution would be significantly less than 5%. OET Bulletin 65 exempts radiation sources producing less than 5% of the limit from calculations involving other sources, if any, in the same vicinity.

The three stations using the common transmitting antenna at this site generate most of the non-ionizing radiation that requires study. KUWC-FM is located on this tower. Using OET Bulletin 65 methodology, all four stations' contributions were slightly over the 5% limit that would have excluded them from the calculations. The worst case non-ionizing radiation in the vicinity of the tower occurs at 67.0° below horizontal. The power density at this angle and two meters above ground calculated in accordance with OET Bulletin 65 is 19.55  $\mu\text{W}/\text{cm}^2$  which is 5.8% of the allowable public exposure limit for KFNB-DT. KTWB-DT generated 16.27  $\mu\text{W}/\text{cm}^2$  or 6.06%. KGWC-DT generated 19.88  $\mu\text{W}/\text{cm}^2$  or 6.34%. KUWC-FM contributes 13.1  $\mu\text{W}/\text{cm}^2$  or 6.54%. This totals 24.75% which is well below the radiation limit of 100%.

The applicant recognizes its responsibility to reduce the transmitter power to a safe limit when any installation, maintenance or tower work is performed.

**Required Coverage of the Principal Community**

The 48 dB $\mu$  F50/90 contour extends well beyond the principal community of Casper, WY. This is demonstrated in the contour plot, Exhibit A.

**Appendix B Service Contour**

The FCC rules allow the predicted contour to exceed the Appendix B contour by up to 5 miles. Due to economic necessity, KFNB-DT has to share an antenna system with two other DTV stations in Casper. The original CP antenna orientation was 290° while the common antenna orientation is 10°. With the common antenna orientation, three areas exceed the 5 mile limit.

Exhibit B shows two areas to the east that exceed the 5 mile limit by 0.72 miles and 1.4 miles, respectively. To the west, there is an area that exceeds the 5 mile limit by 5.13 miles due to the movement to the west of the transmission location by 4.2 km. To reach the 5 mile rule limit, the ERP will have to decrease from 53.4 kW to 20 kW and that will decrease covered population by 2,597.

Applicant respectfully requests a waiver of the 5 mile Appendix B Service Contour rule as no interference will be caused by the exemption and it will avoid having to re-file to increase the ERP once the full-service TV and Class A stations freeze is lifted.

### **Covered Population**

The population within the proposed noise limited contour is 73,140 compared to 70,929 for FCC Appendix B. This difference amounts to 3.12%. However, given the small size of this market it is a matter of economic necessity that this digital station be co-located with and combined into the same antenna as KTWB-DT, channel 17, and KGWC-DT, channel 14.<sup>1</sup>

### **Allocation Considerations**

The underlying CP is a "check list" facility. The co-channel and adjacent channel interference contours are contained within the corresponding contours of the CP with the exception of one small, southwest sector. However, a Longley-Rice analysis was performed according to OET Bulletin 69 methodology. That outgoing interference analysis shows that there is no impact to any full service digital station or any Class A station, analog or digital.

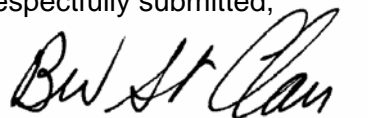
### **Protected Installations**

The nearest FCC monitoring station is at Grand island, NE. The spacing is 688 km and protection based on this distance is automatic. The only radio astronomy facility that needs consideration is "Table Mountain" in Boulder, CO. The nearest edge of this facility is 302 km, substantially exceeding the culling distance for notification of 80 km.

### **Consultants Declaration**

This "Engineering Statement" is based on information supplied by the antenna manufacturer, the applicant and the FCC tower registration record. Interference determinations were made using the Techware supplied version of the FCC's OET Bulletin 69 interference analysis program. The contour plot was prepared using the V-Soft Probe III software. The results and statements presented herein are true and correct to the best of my knowledge and belief.

Respectfully submitted,



B. W. St. Clair Engineering Consultant  
May 14, 2008

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<sup>1</sup> For consistency, all population calculations are based on the same Longley-Rice computer program and databases.