

Diversified Communications Systems
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ENGINEERING STATEMENT OF RICHARD C. POGSON, CSRE

Prepared for: True Light Broadcasting, Inc.

Regarding: KSAF-LP Construction Permit

This engineering statement is prepared in representation of KSAF-LP, which is operated by True Light Broadcasting, Inc. KSAF-LP is located in Minot, ND. True Light Broadcasting, Inc. is the permittee for a Low Power FM Construction Permit, FCC File Number BMPL-20050614ACX. The purpose of this engineering statement is to address the potential effect on the directional radiation patterns of KCJB(AM), which is located within 3.2 kilometers of the KSAF-LP antenna structure.

The construction permit for KSAF-LP contains the following special operating conditions or restrictions as detailed in paragraph 2:

“Prior to the construction of the tower authorized herein, permittee shall notify the AM Station KCJB, Minot, North Dakota (Facility ID No.; 55681) so that, if necessary, the AM station may determine operating power by the indirect method and request temporary authority from the FCC in Washington, DC to operate with parameters at variance in order to maintain monitoring field strengths within authorized limits”.

The condition continues, “Permittee shall be responsible for the installation and continued maintenance of the detuning apparatus necessary to prevent adverse affects upon the radiation pattern of the AM station. Both prior to construction of the pole and subsequent to the installation of all appurtenances thereon a partial proof of performance, as defined by Section 73.154(a) of the Commission’s Rules, shall be conducted to establish that the AM array has not been adversely affected and, prior to or simultaneous with the filing of the application for license to cover this permit, the results submitted to the Commission”.

The distance to the KCJB(AM) antenna array is 1.95 kilometers at a bearing of 179 degrees. KCJB(AM) is a DA-2 directional AM broadcast station licensed to Minot, ND. KCJB (AM) operates at a frequency of 910 KHz with daytime facilities of 5 kilowatts and nighttime facilities of 1 kilowatt. KCJB(AM) has been notified of the construction of the KSAF-LP tower structure and is currently determining operating power by the direct method and has not requested temporary authority to operate with parameters at variance.

The KSAF-LP antenna system consists of a single bay FM antenna mounted on a 1.5 meter mast, which in turn is affixed to a tower structure. Overall height of the structure is 15 meters above ground level. The tower structure is grounded and attached to the side of an adjacent building.

In evaluating the potential effect of the above-described installation on the KCJB (AM) directional radiation patterns the following facts were considered.

The wavelength of the 15-meter tower structure is .045 or 16.4 degrees at 910 Khz. At this miniscule fraction of a full wavelength the potential for re-radiation and subsequent distortion of the KCJB(AM) pattern is minimal.

At 1.95 kilometers, the KSAF-LP tower structure is located at a significant distance from the KCJB (AM) antenna array.

Based on the above, a study was conducted to determine the effect of the KSAF-LP tower structure on the daytime and nighttime directional radiation patterns of KCJB (AM).

Initially considered was the potential effect on the KCJB (AM) daytime directional pattern. A "worst case" study was performed in that a perfectly conducting ground is assumed at the KSAF-LP site. The antenna structure base resistance was calculated to be 1 ohm at 910 KHz and the induced current from the reception of the daytime KCJB (AM) field strength was calculated as .004 amperes. The re-radiation from the antenna structure is then calculated at .000016 watts.

Based on Figure 8 of FCC 47 C.F.R Section 73.190 a radiator of .045 wavelengths will produce an effective field strength of 185 mV/m at 1 kilometer. Utilizing this information the calculated inverse field re-radiated from the KSAF-LP antenna structure is .023 mV/m at 1 kilometer.

The potential effect on the KCJB (AM) nighttime directional pattern was then considered. As above a perfectly conducting ground was assumed and an antenna structure base resistance of 1 ohm was utilized in the calculations. The induced current from the reception of the KCJB (AM) nighttime field strength was calculated as .0089 amperes. The re-radiation from the antenna structure is therefore calculated at .000079 watts. The calculated inverse field re-radiated from the KSAF-LP antenna structure is .052 mV/m at 1 kilometer.

Based on the above calculations it can be concluded that the construction of the KSAF-LP antenna system has not had a measurable impact on the KCJB(AM) radiated pattern. Therefore, de-tuning of the tower structure and a subsequent partial proof of performance would not be necessary in this situation.

Respectfully Submitted By,
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Diversified Communications Systems