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ENGINEERING EXHIBIT
APPLICATION FOR AUXILIARY ANTENNA CONSTRUCTION PERMIT
KMBC HEARST TELEVISION INC.
STATION KMBC-TV, KANSAS CITY, MISSOURI
CHANNEL 29 91.2 KW 283 METERS

The instant Engineering Exhibit has been prepared on behalf of KMBC Hearst Television Inc. (hereafter, Hearst TV) and is in support of a construction permit application for an auxiliary antenna for digital television station KMBC-TV, Kansas City, Missouri. The auxiliary antenna will operate on channel 29 with an effective radiated power of 91.2 kW (average) and an antenna radiation center height above average terrain of 283 meters.

The antenna that will be employed for auxiliary purposes is one that was used by co-owned Station KCWE, formerly KAIZ, Kansas City, Missouri. It is a Dielectric, Model TUP-04-2-1. The antenna is horizontally polarized, non-directional, and has an electrical beam tilt of 3°. The accompanying figure is the vertical plane radiation pattern for the antenna.

The transmitter power output will be 24.3 kW (average). The transmission line that will convey energy from the transmitter to the antenna has a characteristic impedance of 75 ohms and a nominal diameter of 15.6 cm. The transmission line is 291 meters in length and has a loss of 1.11 dB at Channel 29. The antenna's maximum power gain of 6.81 dB occurs at the 3° electrical beam tilt angle. After taking into account the FCC's administrative rounding procedure, the effective radiated power for the proposed operation is 91.2 kW

The antenna is side-mounted on the KMBC/ KCWE tower with the radiation center 256.94 meters above ground level, 538.5 meters above mean sea level. The tower ASRN is 1006711. The KMBC-TV, Channel 29, main antenna operation is for non-

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directional operation with an ERP of 1000 kW and an antenna radiation center height of 358 meters above average terrain. It is clear that with much lower power and lower antenna height than for the main KMBC operation, the proposed auxiliary operation meets the FCC requirement that its coverage not exceed that for the main antenna.

Environmental impact considerations for the proposed auxiliary antenna operation have been taken into account. Since the proposed site is already employed for broadcasting purposes, only the aspect relating to human exposure to radiofrequency radiation (rfr) from among the list of environmentally sensitive concerns of Section 1.1307 of the Rules, is germane. Consideration of exposure to the public (uncontrolled locations) and exposure to workers (controlled locations) are addressed herein.

In order to determine if compliance with the maximum permitted exposure (MPE) to the public would be achieved, a test calculation of prospective power density, using OET Bulletin 65, Edition 97-01 procedures, has been made. Conservative assumptions that are designed to yield excessive power density levels have been employed. The test calculation was from the bottom of the proposed antenna to a point located two meters above ground level at the tower base. Thus, the energy was assumed to be radiating from the bottom of the antenna. The two meter above ground level target represents the approximate height of a standing person's head. The location at the tower base is the shortest possible distance to the tower that a person could be located.

From the vertical plane pattern of the figure, it is seen that the relative field throughout the depression angle range from 14° to 90° below the horizontal plane does not exceed 0.29. A ray from the bottom of the antenna at a depression angle of 14° below the horizontal plane would impinge on a target that is located 2 meters above ground

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level at a horizontal distance of 1,019 meters from the tower, based on an assumption of flat earth.

Using the relative field value of 0.29 to determine the radiation toward the target at the tower base, together with a recommended ground reflection coefficient of 1.6, yields a power density level of 0.0040 mW/cm^2 . The maximum permissible exposure (MPE) at Channel 29 is 0.375 mW/cm^2 , so the maximum expected power density exposure level that could occur anywhere within a radius of 1,019 meters is only 1.0 % of the MPE.

At a distance of 1,019 meters and beyond, with an assumption of maximum radiation of 91.2 kW, the power density level will not exceed 0.0029 mW/cm^2 , or 0.8 % of the MPE. The contribution of the proposed operation to the ambient power density level, anywhere, is well below the 5% level that triggers the need for cooperative involvement in ameliorating excessive levels of radiation at uncontrolled locations when there are other contributors. The proposed operation will not cause excessive rfr exposure to persons at uncontrolled locations.

As to worker exposure concerns, the tower that will support the antenna is fenced and access within the fenced area is available only to authorized personnel. A radiation hazard warning sign is posted on the fence (one on each side) to alert workers of the prospect for excessive radiation exposure. The fenced area qualifies as a controlled location work zone.

Persons whose activities require climbing of the tower are instructed in rfr overexposure avoidance procedures which must be followed. These procedures include

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termination of excitation to an otherwise energized antenna when the work activity is in the proximity of the antenna, or, when appropriate, the reduction of power into the antenna to an extent sufficient to assure exposure that is less than the MPE at the assigned work position.

The foregoing demonstrates that the proposed operation will comply with FCC criteria for the avoidance of excessive rfr exposure at uncontrolled and controlled locations according to the adopted standard. An environmental assessment is not required for the proposed operation.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 8, 2010.

Bernard R. Segal, P.E.

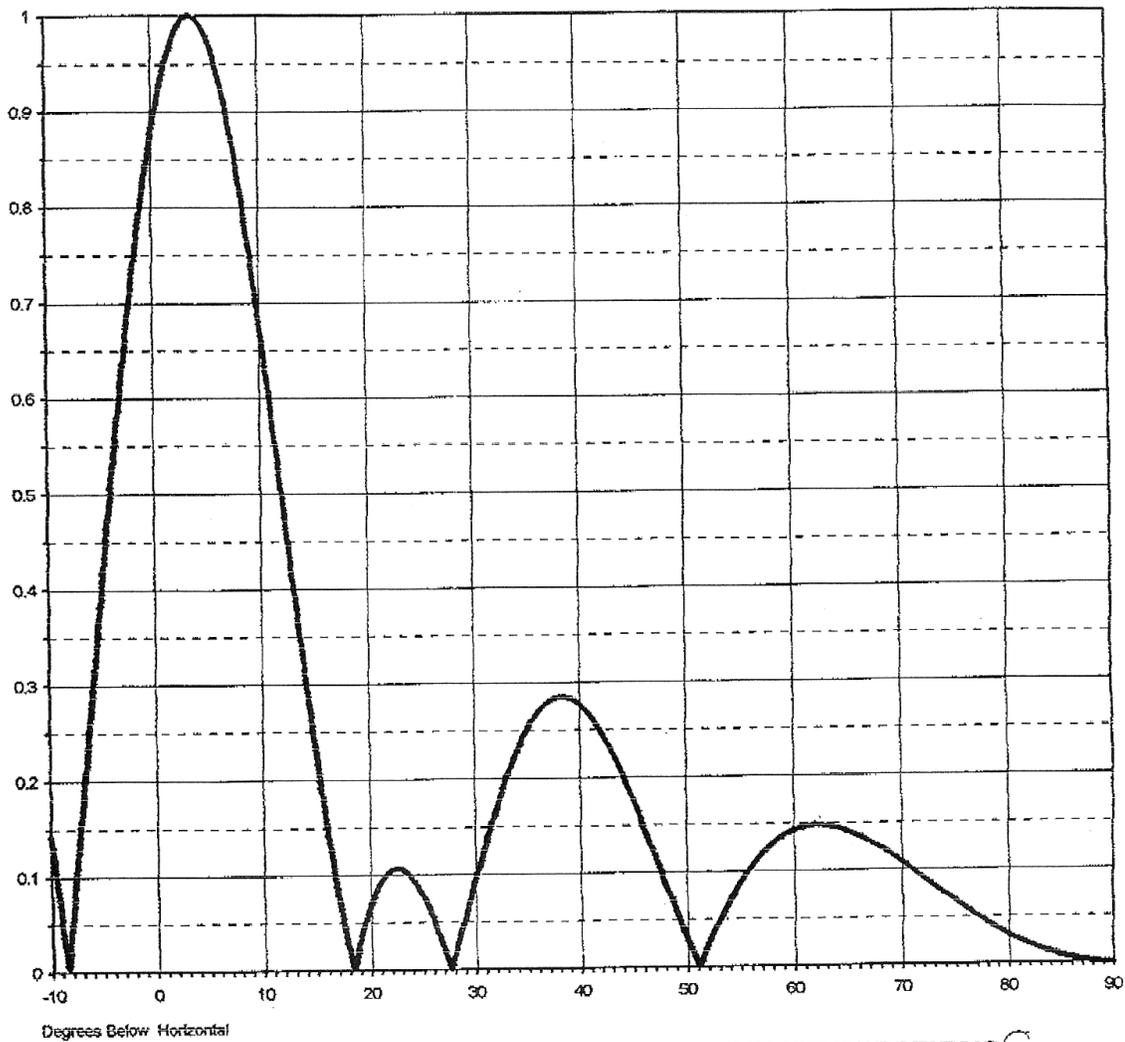
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Date 26-Apr-96
Call Letters KAIZ Channel 29
Location Kansas City, MO
Antenna Type TUP-O4-2-1

ELEVATION PATTERN

RMS Gain at Main Lobe	4.80 (6.81 dB)	Beam Tilt	3.00 deg
RMS Gain at Horizontal	3.30 (5.19 dB)	Frequency	563.00 MHz
Calculated / Measured	Calculated	Drawing #	02U048300



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