

**MINOR CHANGE APPLICATION**  
**NEW AUXILIARY FM ANTENNA SYSTEM**  
**KJUL LICENSE, LLC**  
**KSTJ RADIO STATION**  
**CH 274C - 102.7 MHZ - 8.0 KW**  
**BOULDER CITY, NEVADA**  
**December 2003**

**EXHIBIT A**

**Radio Frequency Assessment**

A study has been made to determine whether this proposal is in compliance with 47 C.F.R. §1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997 ("Bulletin"), regarding human exposure to radio frequency radiation in the vicinity of broadcast towers.<sup>2</sup> This study considers all nearby contributing stations, specifically co-located TV stations KNIC-DT, K43FO and KTVY-LP, as well as nearby FM booster stations KOAS-FM1, KVGs-FM1 and KRRN-FM1,<sup>3</sup> and utilizes the appropriate formulas contained in the OET Bulletin.<sup>4</sup>

The proposed KSTJ antenna system will be mounted with its center of radiation 61.0 meters (200.0 feet) above the ground at the tower location and operate with an effective radiated power of 8.0 kilowatts in the horizontal and vertical planes (circularly polarized). The proposed KSTJ auxiliary antenna will be a Shively 6813, three bay antenna (FCC/EPA type #6). At two meters, the height of an average person above the ground, at the base of the tower, the KSTJ auxiliary antenna system will contribute 0.0145 mw.<sup>5</sup> Based on exposure limitations for a

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- 2) For the purposes of this analysis, all broadcast facilities within 60 meters of this proposal are considered.
  - 3) The FM booster stations are located 30 meters from the proposed KSTJ auxiliary antenna location, but are considered co-located for the purposes of this analysis.
  - 4) The contributions of the FM stations were calculated with the FMModel program. The EPA single bay dipole antenna was used for calculations unless otherwise noted.
  - 5) This level of contribution occurs at 30.4 meters out from the tower and is considered worst case.

controlled environment, 1.5% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 7.3% of the ANSI limit is reached at two meters above the ground at the base of the tower.

While typically the main antenna and auxiliary would not operate at the same time, out of an abundance of caution, we assume that both antennas are operating simultaneously, as a worst case scenario. The authorized KSTJ antenna system is mounted with its center of radiation 73.0 meters (239.5 feet) above the ground at the tower location and operates with an effective radiated power of 99.0 kilowatts in the horizontal and vertical planes (circularly polarized). The authorized KSTJ main antenna system is an Electronics Research, Inc., six bay rototiller style system (FCC/EPA type #3). At two meters, the height of an average person above the ground, at the base of the tower, the KSTJ main antenna system contributes 0.08956 mw.<sup>6</sup> Based on exposure limitations for a controlled environment, 9.0% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 44.8% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The authorized KVGS-FM1 booster antenna system is mounted with its center of radiation 56.0 meters (183.7 feet) above the ground at the tower location and operates with an effective radiated power of 0.08 kilowatt (80 watts) in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person above the ground, at the

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6) This level of contribution occurs at 22.4 meters out from the tower and is considered worst case.

base of the tower, the KVGS-FM1 antenna system contributes 0.0011 mw.<sup>7</sup> Based on exposure limitations for a controlled environment, 0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 0.6% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The proposed KOAS-FM1 booster antenna system will be mounted with its center of radiation 56.0 meters (183.7 feet) above the ground at the tower location and operate with an effective radiated power of 0.10 kilowatt (100 watts) in the horizontal and vertical planes (circularly polarized).<sup>8</sup> At two meters, the height of an average person above the ground, at the base of the tower, the KOAS-FM1 antenna system will contribute 0.0014 mw.<sup>9</sup> Based on exposure limitations for a controlled environment, 0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 0.7% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The authorized KRRN-FM1 booster antenna system is mounted with its center of radiation 43.0 meters (141.0 feet) above the ground at the tower location and operates with an effective radiated power of 0.05 kilowatts (50 watts) in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person above the ground, at the base of the tower, the KRRN-FM1 antenna system contributes 0.0012 mw.<sup>10</sup> Based on exposure

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7) This level of contribution occurs at 37.3 meters out from the tower and is considered worst case.

8) The licensed KOAS-FM1 booster system is located at the same height as the proposed facility, but operates with 0.08 kilowatt. Therefore, the proposed facility was considered as a worst case contributor.

9) This level of contribution occurs at 14.4 meters out from the tower and is considered worst case.

10) This level of contribution occurs at 11.2 meters out from the tower and is considered worst case.

limitations for a controlled environment, 0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 0.6% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The KINC-DT Channel 16 antenna system will be mounted with its center of radiation 37.3 meters (122.4 feet) above the ground at the existing tower location and operate with an effective radiated power of 1,000 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the KINC-DT antenna system radio frequency radiation calculations were made based on an effective radiated power of 10.0 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the KINC-DT antenna system will contribute 0.1072 mw. Based on exposure limitations for a controlled environment, 6.7% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 33.4% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The K43FO Channel 43 antenna system is mounted with its center of radiation 12.3 meters (40.4 feet) above the ground at the existing tower location and operates with an effective radiated power of 5.1 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the K43FO antenna system radio frequency radiation calculations were made based on

an effective radiated power of 0.051 kilowatt. At two meters, the height of an average person, above the ground at the base of the tower, the K43FO antenna system contributes 0.0100 mw. Based on exposure limitations for a controlled environment, 0.5% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 2.3% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The authorized KTVY-LP Channel 55 antenna system is mounted with its center of radiation 14.3 meters (46.9 feet) above the ground at the existing tower location and operates with an effective radiated power of 34.8 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the KTVY-LP antenna system radio frequency radiation calculations were made based on an effective radiated power of 0.348 kilowatt. At two meters, the height of an average person, above the ground at the base of the tower, the KTVY-LP antenna system contributes 0.0476 mw. Based on exposure limitations for a controlled environment, 2.0% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 10.0% of the ANSI limit is reached at two meters above the ground at the base of the tower.

Combining the contributions of the proposed KSTJ auxiliary, KSTJ main, KVGS-FM1, KOAS-FM1, KRRN-FM1, KINC-DT, K43FO and KTVY-LP, a total of 99.7% of the uncontrolled environment is reached at two meters above the base of the tower. Since this level

for uncontrolled environments is below the 100% limit defined by the Commission, the proposed KSTJ auxiliary antenna is believed to be in compliance with the radio frequency radiation exposure limits as required by the Federal Communications Commission. Further, KJUL License, LLC (“KLL”) has posted warning signs in the vicinity of the tower warning of potential radio frequency radiation hazards at the site. In addition, KLL will reduce the power of the proposed facility or cease operation, in cooperation and coordination with the other tower users, as necessary, to protect persons having access to the site, tower or antenna from radio frequency radiation in excess of FCC guidelines. Based on the above factors, this proposal is categorically excluded from environmental processing pursuant to §1.1306 of the Commission’s rules.<sup>11</sup>

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11) If necessary, the applicant will take RF intensity measurements in the vicinity of the KSTJ tower site to verify there are no points which exceed the Commissions limits in the immediate vicinity of the tower.