



**ENGINEERING STATEMENT OF CYNTHIA M. JACOBSON, P.E.
IN SUPPORT OF AN APPLICATION FOR CONSTRUCTION PERMIT
FOR AN AUXILIARY ANTENNA
KPDQ-FM - PORTLAND, OREGON
LICENSED MAIN: Ch. 230C1 – 52.0 kW ERP (Max) – 387 M HAAT
PROPOSED AUXILIARY: Ch.230 – 20.0 kW ERP – 311 M HAAT**

Facility ID No: 58629

Licensee: Salem Media of Oregon, Inc.

I am a Radio Engineer, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia.

My education and experience are a matter of record with the Federal Communications Commission. I am a Registered Professional Engineer in the Commonwealth of Virginia, Registration No. 027914.

GENERAL

This office has been authorized by Salem Media of Oregon, Inc., licensee of FM Broadcast Station KPDQ-FM, Portland, Oregon, to prepare this narrative, FCC Form 301 Section III-B, and the associated figures in support of an Application for Construction Permit to develop an auxiliary transmission system for KPDQ-FM. The auxiliary antenna will be employed when the main facility is off the air during emergencies or for equipment maintenance.

TECHNICAL FACILITIES

It is proposed to mount a nondirectional antenna for the auxiliary system below the authorized licensed main antenna of KPDQ-FM. This site is uniquely described by the NAD-27 coordinates of:

North Latitude: 45° 29' 20"

West Longitude: 122° 41' 40".

The proposed antenna system will be side-mounted on an existing support structure. The tower is a self-supporting structure located on Council Crest in Portland, Oregon. The antenna structure registration number is 1033770.

The applicant proposes to utilize a 4-bay, omnidirectional, circularly polarized, $\frac{1}{2}$ wavelength spaced, ERI SHPX-4AC-HW antenna. The FM antenna will be side-mounted on the tower such that the radiation centerline is 94 meters above ground level (404 meters above mean sea level). The overall height of the existing tower is 189.0 meters above ground (499.3 meters above mean sea level).

The proposed effective radiated power will be 20.0 kW (H & V) while employing a nondirectional antenna pattern.

PREDICTED COVERAGE CONTOURS

The predicted coverage contours were calculated in accordance with the method described in Section 73.313 of the Rules, utilizing the appropriate F(50, 50) propagation curves from the Rules (Section 73.333, Figure 1), effective radiated power and antenna height above average terrain as determined for each profile radial. The average terrain

on the eight cardinal radials from 3.2 kilometers to 16.1 kilometers from the proposed site was determined using the National Geophysical Data Center Thirty Second Point Topography Database (TPG-0050), as prescribed in Section 73.312(d) of the Rules. The antenna site elevation was determined from data on file with the FCC for KPDQ-FM.

The predicted 1.0 mV/m coverage contours for the licensed main facility and the proposed auxiliary facility are shown in Figure 1. As shown, the proposed auxiliary 1.0 mV/m contour is predicted to be entirely within the licensed main 1.0 mV/m contour as required by 73.1675(a)(1)(ii) of the Rules. To insure compliance, the contours were calculated for every one degree of azimuth.

ENVIRONMENTAL CONSIDERATIONS

RADIO-FREQUENCY IMPACT

Effective October 15, 1997, the FCC adopted its current guidelines and procedures for evaluating environmental effects of radiofrequency emissions. The current guidelines are generally based on recommendations by the National Council on Radiation Protection and Measurements (NCRP) in NCRP Report No. 86 (1986), and by the American National Standards Institute and the Institute of Electrical and Electronic Engineers, Inc. (IEEE) in ANSI/IEEE C95.1-1992 (IEEE C95.1-1991). The FCC guidelines provide a maximum permissible exposure (MPE) level for occupational or “controlled” situations, as well as “uncontrolled” situations that apply in cases that affect the general public. The FCC’s Office of Engineering and Technology (OET) Division issued a technical bulletin (OET

Bulletin No. 65) entitled, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (Edition 97-01, August 1997), to aid in the determination of whether FCC-regulated transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency electromagnetic fields as adopted by the Commission in 1996. The Bulletin contains updated and additional technical information for evaluating compliance with the current FCC policies and guidelines.

CO-LOCATED FACILITIES

In addition to the proposed KPDQ-FM auxiliary facility, there are several other stations at the Council Crest location. As a result, the instant transmitter site is considered a multiple use site. In accordance with Section 1.1307(b) of the FCC Rules, "when performing an evaluation for compliance with the FCC RFR guidelines, all significant contributors to the ambient RF environment should be considered." As discussed below, the predicted KPDQ-FM contribution at the multiple use site is not considered significant and does not require consideration.

Radio station KPDQ-FM proposes herein to install a four-bay, 1/2 wavelength spaced, ERI antenna for auxiliary use on an existing tower. The KPDQ-FM auxiliary facility will operate, when necessary, with an ERP of 20.0 kW at an antenna radiation centerline height of 94 meters above ground level ("RCAGL"). Ground level calculations are based upon a reference height of 2 meters above ground level to approximate the

height of a person standing in the vicinity of the tower. A type 3, rototiller element pattern was used for the power density calculations.

The current FCC MPE level for “uncontrolled” environments is 0.2 milliwatt per centimeter squared (mW/cm^2) for FM facilities. The MPE level for FM facilities in a “controlled” environment is $1.0 \text{ mW}/\text{cm}^2$.

The highest calculated power density at 2 meters above ground level is $0.00395 \text{ mW}/\text{cm}^2$ occurring at a distance of 358.4 meters from the base of the tower. This represents only 0.395% of the FCC guideline value in a “controlled” environment and 1.975% in an “uncontrolled” environment.

Pursuant to Section 1.1307(b)(3) of the FCC Rules, because the proposed KPDQ-FM auxiliary facility would contribute less than 5% of the uncontrolled and controlled exposure limit at the multiple use site, the proposal’s power density contribution is insignificant.

OCCUPATIONAL SAFETY

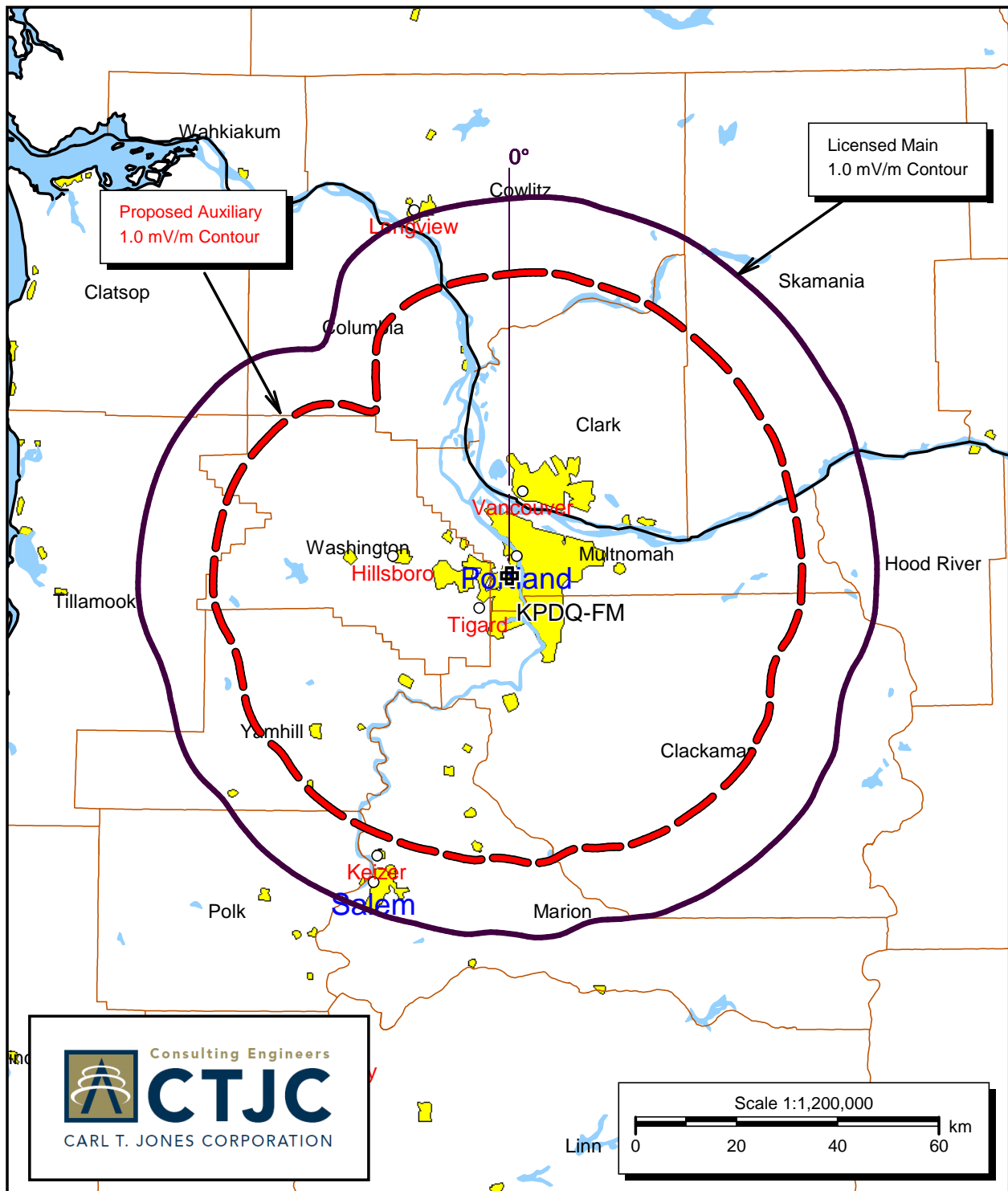
Radio station KPDQ-FM will cooperate/coordinate with other site users and reduce power and/or cease operation during times of service or maintenance of the transmission systems as necessary to avoid potentially harmful exposure to personnel.

In light of the above, the proposed facility should be categorically excluded from RF environmental processing under Section 1.1307(b) of the Commission's Rules.

DATED: August 7, 2014



FIGURE 1



**LICENSED MAIN AND PROPOSED AUXILIARY
PREDICTED 1.0 MV/M CONTOURS**
KPDQ-FM - CH.230C1 - PORTLAND, OREGON
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AUGUST, 2014