

# **ENGINEERING EXHIBIT 29**

## **FCC FORM 301**

**SHOWING COMPLIANCE WITH RADIOFREQUENCY ELECTROMAGNETIC  
EXPOSURE LIMITS  
IN RESPONSE TO SECTION III-B (17)**

**KPPT-FM, TOLEDO, OR. - MINOR CHANGE APPLICATION  
AGPAL BROADCASTING INC. - NEWPORT OR.**

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August 9, 2001

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### OVERVIEW

The applicant proposes a minor change to the existing facilities of KPPT-FM, moving to an existing tower at 44:45:23N; 124:03:01W, at the Otter Crest Communications Site at Cape Foulweather, approximately 2km northeast of Otter Rock, Oregon. This site is at an established "antenna farm" atop a ridge which is only accessible via a long mountain road protected by a substantial steel locked gate. Public access is strictly restricted. The site is considered to be an "occupational/controlled" area. As such, a Maximum Permissible Exposure ("MPE") power density of  $1000\mu\text{w}/\text{cm}^2$  applies for the frequency range of 30 to 300mhz.

The site is currently home to six licensed primary FM stations on three towers, as follows:

STN	CITY	CH	ERP (kw)	COORD	AGL
KYTE	NEWPORT	274	66.0	44:45:22N; 124:02:57W	40m
KSHL	GLENEDEN BCH	248	17.0	44:45:22N; 124:02:57W	29m
KNCU	NEWPORT	224	3.8	44:45:22N; 124:02:57W	28m
KLCO	NEWPORT	213	3.0	44:45:24N; 124:02:50W	27m
KDEP	DEPOE BAY	288	3.6	44:45:24N; 124:02:50W	28m
KSND	LINCOLN CITY	236	6.0	44:45:24N; 124:02:53W	25m

Additionally, there is one Construction Permit for the site:

KCRF	LINCOLN CITY	244	20.0	44:45:23N; 124:02:57W	41m
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The applicant proposes to move its station to the following existing fourth tower location:

KPPT-FM	NEWPORT	264	17.5	44:45:23N; 124:03:01W	25m
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As shown above, the first three stations - KYTE, KSHL, and KNCU are co-located on the same tower, hereafter referred to as the "KYTE Tower". Even though the KCRF CP shows a

location one second north of the KYTE Tower, it is known that this station will also be located on the same tower. It is also known that KSHL will leave the KYTE Tower before KCRF commences operation on it, but curiously no application is yet on record as having been filed to accomplish this move. So, even though it would result in an unnecessarily pessimistic result, the RF Exposure Study contained herein assumes that all four stations will simultaneously operate from the KYTE Tower.

### **RF EXPOSURE - COMPUTER MODELING**

RF exposure levels were charted at 0.2m radial intervals for each of the six existing FM stations, using Version 2.1 of “FM Model for Windows”, a program written by the Office of Engineering and Technology. The appropriate antenna models for the actual antennas in use were employed. All stations are non-directional.

Next, since the exact antenna to be employed in the future by KCRF was not known, FM Model for Windows was employed to study 3 worst-case possibilities - 1, 2 or 3 bay Jampro “Double V” antennas. All antennas likely to be employed by KCRF would exhibit ground level RF power densities less than or equal to these antenna models.

Next, factory data for the exact make and model of antenna (SWR FM3/4) to be employed by KPPT-FM was obtained, and RF power densities were computed using OET Bulletin 65, Edition 97-01, August 1997, page 24, Equation (10).

Finally, a 5 meter by 5 meter grid was constructed for the entire area, with signal strengths for each station entered and summed. The result was that, as expected, by far the predominant contributors to peak ground level RF power densities were the four stations modeled on the KYTE Tower. The type of antenna to be employed by KCRF was of little consequence. The worst-case peak value predicted from the aggregated stations on the KYTE tower was  $870\mu\text{w}/\text{cm}^2$  at 15 meters from the tower, using a 2 bay antenna for KCRF. Adding the other three existing stations made only about a 1% difference. Adding KPPT-FM to the mix made less than a 1%

change. **The worst-case peak value of all eight stations, current or proposed, added up to 887 $\mu$ w/cm<sup>2</sup>, at a location 15 meters west of the KYTE tower. This is 88.7% of the MPE for controlled areas.** There are also two low power (50 watts or less) FM translators and several land mobile, paging, and microwave transmitters at this antenna farm. They do not make significant contributions to the overall level of RF energy on the ground.

All towers are sufficiently distant from each other such that the peak power density areas emitted from the FM station clusters on each tower do not come close to meeting each other at any point on the ground. Adding KPPT-FM to this site would simply add an additional “donut” of moderate RF power density around its own tower. It would not significantly contribute to the areas of moderate RF power densities already existing elsewhere at this antenna farm. The maximum power density from KPPT-FM alone was predicted to be 232 $\mu$ w/cm<sup>2</sup> at 9.5 meters from the tower, with the power density dropping very rapidly beyond that distance. The KYTE tower is approximately 88 meters from the KPPT-FM proposal.

### **RF EXPOSURE - ACTUAL MEASUREMENTS**

Actual measurements of the Otter Crest Communications Site were taken by the R.S.I. Company, Kiowa, Kansas, on February 16, 2001. They were performed on behalf of the Department of Emergency Communications, Lincoln County, Oregon. A Narda Instruments 8718 with appropriate probes was employed. The six licensed FM stations listed above were on the air at the time of the measurements. The study found a peak reading of 48% of the 200 $\mu$ w/cm<sup>2</sup> MPE limit for general population/uncontrolled areas for the E-Field, and 52% of the limit for the H-Field. R.S.I. does, however, agree that the area qualifies as an occupational/controlled area. Therefore, the peak readings would be 9.6% and 10.4% of the MPE limits, respectively. The location of these peak readings was roughly 15 meters from the KYTE Tower - agreeing nicely with our computer modeling, and consistent with our past experience which shows that actual peak field readings tend to be less than those obtained with computer

modeling. Adding KCRF and KPPT-FM, with any combination of antenna makes or models, would still leave the peak exposures *far* below the MPE limits for occupational/controlled areas.

Should work on the tower itself be necessary, transmitter power will be reduced or operation will cease, in close cooperation with the other site tenants as necessary, to avoid exposures in excess of the MPE limits. The applicant will evaluate the tower, and will insure that it is maintained in a condition as to be highly resistant to unauthorized climbing. If necessary, anti-climb devices and/or fencing will be installed to accomplish this purpose. Signs warning as to the RF exposure danger in climbing the tower, will be posted.