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Engineering Statement
Digital Flash Cut Application for K19EI
Channel 19 at Pacific City, OR
February 2009

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting, licensee of TV translator station K19EI at Pacific City. This material has been prepared in connection with an application for digital flash-cut.

I. Allocation Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any facilities with which contour overlap exists. This study was performed using the SunDTV program from V-Soft Communications and a 1 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations.

Based on the foregoing allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Summary Study

1990 Census data selected
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 02-13-2009 Time: 18:02:39

Record Selected for Analysis

K19EI USERRECORD-01 PACIFIC C/CLOVERDALE OR US
Channel 19 ERP 0.55 kW HAAT 661. m RCAMSL 00975 m STRINGENT MASK
Latitude 045-12-48 Longitude 0123-45-14
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Not full service station

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	0.431	679.3	46.2
45.0	0.015	569.8	24.8
90.0	0.004	496.6	17.3
135.0	0.002	641.8	15.8
180.0	0.116	635.1	37.4
225.0	0.530	681.1	47.5
270.0	0.109	839.2	40.3
315.0	0.238	748.1	43.6

Contour Overlap to Proposed Station

Station
K67GU 19 SALEM OR BPTTL20020521AAX causes

Contour overlap to Digital LPTV station
K19EI 19 PACIFIC C/CLOVERDALE OR USERRECORD01
Required D/U ratio: 2.0

Contour Overlap Evaluation to Proposed Station Complete

LANDMOBILE SPACING VIOLATIONS FOUND

NONE
Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountian

Proposed facility is within the Canadian coordination distance
Distance to border = 334.9km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
19	K19EI	PACIFIC C/CLOVERDALE OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
15	K15DS	NEWPORT, ETC. OR	55.8	LIC	BLTTL	-19961220JB
16	KMTR	EUGENE OR	135.8	APP	BSTA	-20071113AJC
16	KMTR	EUGENE OR	135.8	LIC	BLCT	-19821013KF
16	KORS-CA	SALEM OR	85.9	CP	BPTTA	-20040902AAJ
16	K16HT-D	SALT CREEK OR	40.8	CP	BNPTTL	-20000831BPI
17	K17HA	ASTORIA OR	119.8	LIC	BLTT	-20050616AAQ
17	KWVT-LP	EOLA OR	54.7	APP	BSTA	-20070626ARA
17	K17GV	RAINIER OR	126.7	LIC	BLTT	-20070209ABT
17	KWVT-LP	SALEM OR	54.8	LIC	BLTTL	-20080512AFV
18	K18EA	COTTAGE GROVE OR	169.3	LIC	BLTT	-19940919IE
18	K18EL	NEWBERG/TIGARD OR	61.9	APP	BSTA	-20060608ACM
18	K18EL	NEWBERG/TIGARD OR	61.9	LIC	BLTTL	-19940506IN
18	K18EL	NEWBERG/TIGARD OR	61.9	CP	BDFCDTL	-20060331BBL
18	K18FR	NEWPORT OR	55.8	CP	BPTT	-20080321ACA
18	K18FR	NEWPORT OR	55.7	LIC	BLTT	-20021217AAQ
18	K18FR	NEWPORT OR	55.8	APP	BDFCDTT	-20090210AAG
19	K19HI-D	ASHLAND, ETC. OR	333.9	CP	BDCCDTT	-20061030AHA
19	K19GH	EUGENE, ETC. OR	135.8	CP	BDISTTL	-20060331BGE
19	K19HS-D	GRANTS PASS OR	304.9	CP MOD	BMPDTT	-20071015AJY
19	K19HS-D	GRANTS PASS OR	304.9	LIC	BLDTT	-20080714ACF
19	KQRE-LP	HAMPTON OR	318.4	APP	BPTT	-20030317LIW
19	K19EC	MAPLETON OR	127.8	LIC	BLTT	-20011009ACD
19	K19HH-D	MIDLAND, ETC. OR	385.9	CP MOD	BMPDTT	-20080603AAE
19	KQRE-LP	PRINEVILLE OR	236.9	CP	BPTTL	-20060403ANE
19	KQRE-LP	RILEY OR	236.9	APP	BSTA	-20061114ABF
19	KQRE-LP	RILEY OR	272.9	LIC	BLTTL	-20060403ANB
19	KPIC	ROSEBURG OR	222.5	CP	BPCDT	-20080618ATJ
19	KPIC	ROSENBURG OR	222.5	LIC	BLCDT	-20060707ADF
19	K67GU	SALEM OR	63.7	APP	BPTTL	-20020521AAX
19	KBCB	BELLINGHAM WA	391.4	LIC	BLCDT	-20040128AKD
19	KCKA	CENTRALIA WA	158.5	LIC	BLEDT	-20051005AAZ
19	KCKA	CENTRALIA WA	158.5	APP	BPEDT	-20080620ABA
19	K63BZ	ELLENSBURG WA	316.1	CP	BDISTT	-20061002AEP
19	KEPR-TV	PASCO WA	367.8	LIC	BLCT	-2582
20	K20DD	ALBANY, ETC. OR	100.6	CP	BDFCDTL	-20060331BCA
20	K20DD	ALBANY, ETC. OR	100.6	LIC	BLTTL	-19940114JN
20	K52CV	COTTAGE GROVE OR	169.3	CP	BDISTT	-20051122AGJ
20	K52CV	COTTAGE GROVE OR	169.2	CP	BDFCDTT	-20080729AAF
20	K20EH	HOOD RIVER OR	179.4	LIC	BLTTL	-19940114JR
20	K20EH	HOOD RIVER OR	179.4	CP MOD	BMPDTL	-20071030AAD
20	K20EH	HOOD RIVER OR	179.4	CP	BPTTL	-20070815ABA
20	K63GK	PORTLAND OR	120.9	APP	BPTTL	-20020627AAR
20	K20HT	ROCKAWAY OR	60.7	LIC	BLTT	-20030609AGF
20	KOXI-CA	CAMAS WA	85.9	LIC	BLTTA	-20070831ACY
21	K21FS	EUGENE OR	128.2	LIC	BLTT	-20011005ABD
21	K21HG	RAINIER OR	126.7	LIC	BLTT	-20070209ABR
21	K21GX	SALEM OR	54.7	LIC	BLTTL	-20070103AAN
21	K21DE	SEASIDE-ASTORIA OR	119.8	LIC	BLTTL	-19940902IE

22	KPXG	SALEM OR	86.5	LIC	BLCT	-19811130KE
23	K23GK	ASTORIA OR	119.8	LIC	BLTT	-20051014ADU
23	K52ET	TILLAMOOK OR	0.1	CP	BDISTT	-20061212ABH
26	K26DB	ASTORIA OR	119.8	LIC	BLTT	-19911016IG
26	K26AY	CORVALLIS, ETC. OR	100.6	LIC	BLTT	-20040909AAB
26	K26GJ	PORTLAND OR	97.8	LIC	BLTTL	-20040419AAA
26	K26HS	TILLAMOOK OR	26.2	LIC	BLTTL	-20070625ADJ

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Study of this proposal found the following interference problem(s):

NONE.

II. NIER Study

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

> When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . .For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(mW/cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (16 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in

this report assume a worst-case relative field value of 0.15 at these angles, based on the manufacturer's vertical plane pattern for the 2-level horizontally-polarized Kathrein K723147 panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 12.4 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be 1.6 $\mu W/cm^2$, which is 0.5% of 335 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 19 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease

operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

February 18, 2009

Erik C. Swanson, P.E.