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**Engineering Statement  
Digital Flash Cut Application for K17GK  
Channel 17 at Arlington, OR  
March 2008**

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting, licensee of TV translator station K17GK at Arlington, Oregon. 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

2000 Census data selected  
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 03-20-2008 Time: 18:28:11

Record Selected for Analysis

K17GK USERRECORD-03 ARLINGTON OR US  
Channel 17 ERP 0.3 kW HAAT 226. m RCAMSL 00553 m STRINGENT MASK  
Latitude 045-45-50 Longitude 0120-14-40  
Status APP Zone 2 Border  
Dir Antenna Make usr Model USRPAT03 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	0.004	33.0	4.4
45.0	0.065	143.4	18.4
90.0	0.286	393.1	37.1
135.0	0.270	339.6	34.9
180.0	0.286	291.8	33.6
225.0	0.065	344.9	27.1
270.0	0.004	233.7	11.4
315.0	0.002	33.0	3.9

Contour Overlap to Proposed Station

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 Mountain

Proposed facility is within the Canadian coordination distance  
Distance to border = 359.7km

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
17	K17GK	ARLINGTON OR	USERRECORD03

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
14	KRHP-LP	THE DALLES OR	70.8	LIC	BLTTL	-19950905IC
15	K15EY	WASCO/HEPPNER OR	24.1	LIC	BLTT	-19980818JA
15	KVVK-CA	KENNEWICK WA	88.5	LIC	BLTTA	-20021227ABJ
16	KUNP	LA GRANDE OR	202.0	LIC	BLCT	-20011221AAN
16	951207KH	LA GRANDE OR	202.0	APP	BPCT	-19951207KH
16	K16EM	PRINEVILLE, ETC. OR	157.8	LIC	BLTT	-20070809AAT
16	KORS-CA	SALEM OR	196.2	STA	BSTA	-20050310AEV
16	KORS-CA	SALEM OR	196.2	APP	BPTTA	-20040902AAJ
16	K55FO	EAST WENATCHEE WA	173.2	CP	BPTT	-20060928AKP
16	KORX-CA	WALLA WALLA WA	162.5	LIC	BLTTA	-20050202ADO
16	KNDO	YAKIMA WA	87.9	CP	BPCDT	-19991027ACH
17	K17ED	PAYETTE ID	323.7	LIC	BLTTL	-19980713JE
17	K17HA	ASTORIA OR	287.7	LIC	BLTT	-20050616AAQ
17	KABH-LD	BEND OR	206.2	CP	BDCCDTL	-20061025ADR
17	K17IJ-D	BUTTE FALLS OR	400.2	CP	BDCCDTT	-20061030AHC
17	K17DU	CHRISTMAS VALLEY OR	293.2	LIC	BLTTL	-19970505JE
17	KWVT-LP	EOLA OR	242.5	LIC	BLTTL	-20071005ADR
17	KWVT-LP	EOLA OR	242.5	APP	BSTA	-20070626ARA
17	KMTR	EUGENE OR	283.7	LIC	BLCDT	-20030618AAY
17	K17GV	RAINIER OR	206.2	LIC	BLTT	-20070209ABT
17	KWVT-LP	SALEM OR	242.5	CP	BPTTL	-20071119AKI
17	K69BE	ELLENSBURG, ETC. WA	125.8	CP	BDISTT	-20061002AEO
17	KWSU-TV	PULLMAN WA	265.4	LIC	BLEDT	-20060726ATL
18	K18HH	THE DALLES OR	67.9	LIC	BLTT	-20070622ABB
18	K18AD	EAST WENATCHEE, ETC. WA	168.3	CP	BDFCDTT	-20060329AKH
18	K18AD	EAST WENATCHEE, ETC. WA	168.3	LIC	BLTT	-19841203ID
18	KEPR-TV	PASCO WA	89.5	LIC	BLCDT	-20070228ABD
19	K63BZ	ELLENSBURG WA	125.8	CP	BDISTT	-20061002AEP
19	KEPR-TV	PASCO WA	89.5	LIC	BLCT	-2582
20	K20EH	HOOD RIVER OR	103.7	LIC	BLTTL	-19940114JR
20	K20EH	HOOD RIVER OR	103.5	CP	BPTTL	-20070815ABA
20	K20ES	PENDLETON, ETC. OR	96.0	LIC	BLTTL	-19960301JC
24	K24DX	PENDLETON, ETC OR	96.0	LIC	BLTTL	-19960301JB
24	NEW	WARM SPRINGS OR	130.9	APP	BNPTTL	-20000831BZN
25	K25FP	ELLENSBURG WA	125.7	LIC	BLTTL	-19971103IP
25	KNDU	RICHLAND WA	94.1	LIC	BLCT	-19800708KE

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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 of K17GK 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 (22 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 0.150 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein K723417 panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 6.75 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  $0.5 \mu\text{W}/\text{cm}^2$ , which is 0.15% of  $327 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 17 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.

March 20, 2008

Erik C. Swanson