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**Engineering Statement
Digital Flash Cut Application for K36FG
Channel 36 at Hood River, OR
October 2008**

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting, licensee of TV translator station K36FG at Hood River, 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

1990 Census data selected
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 10-06-2008 Time: 18:18:16

Record Selected for Analysis

K36FG USERRECORD-02 HOOD RIVER, ETC. OR US
Channel 36 ERP 1.2 kW HAAT 346. m RCAMSL 00799 m STRINGENT MASK
Latitude 045-44-31 Longitude 0121-34-43
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT02 Beam tilt N Ref Azimuth 120.
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	0.021	58.3	8.9
45.0	0.513	572.8	45.6
90.0	0.793	386.5	43.1
135.0	0.733	523.8	46.9
180.0	1.040	495.4	48.1
225.0	0.080	197.3	22.7
270.0	0.016	286.2	18.5
315.0	0.003	245.6	10.6

Contour Overlap to Proposed Station

Station
K66AZ 36 PRINEVILLE OR BDISTTL20060329AGX causes

Contour overlap to Digital LPTV station
K36FG 36 HOOD RIVER, ETC. OR USERRECORD02
Required D/U ratio: 2.0

Station
KORS-CA 36 SALEM OR BLTTA20020722ABK causes

Contour overlap to Digital LPTV station
K36FG 36 HOOD RIVER, ETC. OR USERRECORD02
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 Mountain

Proposed facility is within the Canadian coordination distance
Distance to border = 309.0km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
36	K36FG	HOOD RIVER, ETC. OR	USERRECORD02

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
21	K21HG	RAINIER OR	108.9	LIC	BLTT	-20070209ABR
22	KPXG	SALEM OR	119.9	LIC	BLCT	-19811130KE
28	K28CQ	HOOD RIVER OR	0.0	CP	BPTT	-20070822AAQ
28	K28CQ	HOOD RIVER, ETC. OR	0.5	LIC	BLTT	-19890324IE
28	K28IH	RAINIER OR	108.9	LIC	BLTT	-20070502ABX
29	K67AD	THE DALLES OR	36.0	CP	BDISTT	-20071121ACT
29	KIMA-TV	YAKIMA WA	120.5	LIC	BLCT	-2586
32	KRCW-TV	SALEM OR	100.7	LIC	BLCT	-19990816KE
33	K33CJ	WASCO/HEPPNER OR	79.5	LIC	BLTTL	-19980903JE
34	K40AM	HOOD RIVER OR	0.0	CP	BDISTT	-20070815ABG
34	K40AM	HOOD RIVER, ETC. OR	0.5	APP	BSTA	-20070815ABP
34	K34HK	LONGVIEW WA	116.8	APP	BSTA	-20061109ADS
34	K34HK	LONGVIEW WA	116.7	LIC	BLTTL	-20080509AAL
35	K35HU	GRAYS RIVER, ETC. OR	171.6	LIC	BLTT	-20061018ABS
35	KORK-CA	PORTLAND OR	93.9	LIC	BLTTA	-20070831ACZ
35	K35HJ	PRINEVILLE & REDMOND OR	178.1	CP	BNPTTL	-20000829AQZ
35	K35CR	TILLAMOOK, ETC. OR	179.3	CP	BDFCDTL	-20060331BEU
35	K35CR	TILLAMOOK-LINCOLN CI OR	179.3	LIC	BLTTL	-19940829IB
35	KAPP	YAKIMA WA	120.4	LIC	BLCT	-2022
36	K36BA	BURNS OR	309.1	LIC	BLTT	-19880222IE
36	NEW	CHEMULT OR	285.1	APP	BDCCDTT	-20061030ABI
36	K36BX	COOS BAY OR	330.3	LIC	BLTT	-19890512IG
36	KXOR-LP	EUGENE OR	228.0	LIC	BLTTL	-20020806AAT
36	K36HL	GRANTS PASS OR	394.3	LIC	BLTT	-20051110AED
36	K62BE	MIDLAND, ETC. OR	405.2	CP	BDISTTL	-20060331BFG
36	K36DP	PENDLETON, ETC. OR	187.4	LIC	BLTT	-19950512IH
36	K66AZ	PRINEVILLE OR	153.0	CP	BDISTTL	-20060329AGX
36	K36GU	ROCKAWAY & VICINITY OR	183.1	LIC	BLTT	-20030610AAE
36	KTVC	ROSEBURG OR	310.9	LIC	BLCT	-19940726KG
36	KORS-CA	SALEM OR	148.5	LIC	BLTTA	-20020722ABK
36	K36HV	WALLOWA OR	328.3	LIC	BLTT	-20080902ABL
36	K36EW	COLLEGE PARK WA	249.8	LIC	BLTTL	-19991018AAB
36	K36EW	COLLEGE PLACE WA	250.7	CP	BDFCDTA	-20080618ATZ
36	K36DG	LONGVIEW WA	109.1	CP	BDFCDTT	-20060328AJU
36	K36DG	LONGVIEW WA	108.7	LIC	BLTT	-19931202IF
36	KBWU-LP	RICHLAND, ET AL WA	193.5	APP	BSTA	-20070516AAW
36	KBWU-LP	RICHLAND, ETC., WA	193.5	LIC	BLDTL	-20080701AEM
36	KSKN	SPOKANE WA	385.9	APP	BPCDT	-20080617AEM
36	KSKN	SPOKANE WA	385.9	LIC	BLCDT	-20050113ACT
36	KSKN	SPOKANE WA	385.9	CP MOD	BMPCDT	-20031110AMP

36	KSTW	TACOMA WA	215.5	LIC	BLCDT	-20050509ABV
36	KCWK-LD	YAKIMA WA	120.4	CP	BDCCDTT	-20061030ATA
38	K53EI	HOOD RIVER OR	0.0	CP	BDISTT	-20070822ABB
38	KKEI-CA	PORTLAND OR	93.9	LIC	BLTTA	-20070831ADB
39	K39ES	HEPPNER, ETC. OR	79.5	LIC	BLTT	-19980803JH
39	K59EK	THE DALLES OR	36.0	CP	BDISTT	-20071120AET
39	K39FU	YAKIMA WA	121.1	LIC	BLTTL	-20040616AAS
40	K40AM	HOOD RIVER, ETC. OR	0.5	LIC	BLTT	-19940505JE
40	960920WH	PORTLAND OR	81.8	APP	BPCT	-19960920WH
40	960724LF	PORTLAND OR	93.2	APP	BPCT	-19960724LF
43	K43FH	HEPPNER, ETC. OR	79.5	LIC	BLTT	-19980803JJ
43	K43GY	YAKIMA, ETC. WA	121.1	LIC	BLTTL	-20040615ACA
44	K44HM	RAINIER OR	108.9	LIC	BLTT	-20070209ABN

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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 K36FG 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.

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

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 horizontally-polarized 2X2 Kathrein K723417 panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 27 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 $3.5 \mu\text{W}/\text{cm}^2$, which is 0.9% of $403 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 36 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.

October 9, 2008

Erik C. Swanson, P.E.