

BENJAMIN F. DAWSON III, PE
THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE

PAUL W. LEONARD, PE
ERIK C. SWANSON, PE
THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, EIT

HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

JAMES B. HATFIELD, PE
CONSULTANT

MAURY L. HATFIELD, PE
CONSULTANT
OAKHURST, NSW
AUSTRALIA

**Engineering Statement
Digital Flash Cut Application for K31HZ
Channel 31 at The Dalles, OR
October 2008**

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting, licensee of TV translator station K31HZ at The Dalles, 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: 17:37:53

Record Selected for Analysis

K31HZ USERRECORD-01 THE DALLES, ETC. OR US
Channel 31 ERP 1.03 kW HAAT 598. m RCAMSL 00982 m STRINGENT MASK
Latitude 045-42-43 Longitude 0121-06-58
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	1.030	460.5	46.7
45.0	1.030	410.3	45.4
90.0	1.030	472.0	47.1
135.0	1.030	760.0	53.1
180.0	1.030	795.1	53.7
225.0	1.030	737.2	52.7
270.0	1.030	670.1	51.5
315.0	1.030	477.2	47.3

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 = 327.8km

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
31	K31HZ	THE DALLES, ETC. OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
16	KORS-CA	SALEM OR	128.4	APP	BPTTA	-20040902AAJ
17	K17GK	ARLINGTON OR	67.9	LIC	BLTT	-20060522ADH
17	K69BE	ELLENSBURG, ETC. WA	140.6	CP	BDISTT	-20061002AEO
23	KNDO	YAKIMA WA	102.6	LIC	BLCT	-1836
24	KNMT	PORTLAND OR	127.6	LIC	BLCT	-19891205KH
24	NEW	WARM SPRINGS OR	95.2	APP	BNPTTL	-20000831BZN
27	KCWK-LP	YAKIMA WA	102.5	LIC	BLTTL	-20040122ABW
28	K28CQ	HOOD RIVER OR	36.0	CP	BPTT	-20070822AAQ
28	K28CQ	HOOD RIVER, ETC. OR	36.3	LIC	BLTT	-19890324IE
29	K67AD	THE DALLES OR	0.0	CP	BDISTT	-20071121ACT
29	KIMA-TV	YAKIMA WA	102.5	LIC	BLCT	-2586
30	K30EW	MONUMENT, ETC. OR	152.4	LIC	BLTTL	-19950818JD
30	K30EW	MONUMENT, ETC. OR	152.4	CP	BDFCDTL	-20060331BDB
30	KPTV	PORTLAND OR	128.6	LIC	BLCDDT	-20001102AAP
30	KPDJ	VANCOUVER WA	128.6	CP MOD	BMPCDT	-20080619AGD
30	K30KA-D	WENATCHEE WA	182.0	CP	BDCCDTT	-20061030AGI
30	KUNW-LD	YAKIMA WA	102.5	CP	BDISDTL	-20080804AFC
31	KLSR-TV	EUGENE OR	246.8	LIC	BLCDDT	-20070104ADQ
31	K31JS-D	GOLD HILL OR	394.8	CP	BDCCDTT	-20061030AMT
31	KDKF	KLAMATH FALLS OR	403.9	LIC	BLCT	-19891026KE
31	K31GN	LA GRANDE OR	267.3	LIC	BLTT	-20030609AAT
31	K31CR	PRINEVILLE, ETC. OR	168.7	CP	BDFCDTT	-20080721ABK
31	K31CR	PRINEVILLE, ETC. OR	168.7	LIC	BLTT	-19920505IK
31	K31HK	RAINIER OR	143.2	LIC	BLTT	-20070502ABR
31	K31AE	SUTHERLIN OR	302.4	LIC	BLTT	-19970513JB
31	K31AK	ELLENSBURG, ETC. WA	143.7	LIC	BLTT	-19880615IE
31	KONG-TV	EVERETT WA	233.2	LIC	BLCDDT	-20060627ADG
31	KONG-TV	EVERETT WA	233.2	APP	BPCDDT	-20080617AEE
31	K59BX	GRAYS RIVER WA	205.2	CP	BDISTT	-20060328AGL
31	K31AH	OMAK, ETC. WA	333.6	LIC	BLTTL	-19841015IA
31	KTNW	RICHLAND WA	159.8	LIC	BLET	-20000628AET
32	K32CC	MONTGOMERY RANCH, ETC OR	206.6	LIC	BLTT	-19881013IC
32	K32DE	PENDLETON, ETC. OR	152.4	LIC	BLTT	-19950127JH
32	KRCW-TV	SALEM OR	123.3	LIC	BLCT	-19990816KE
32	K32CC	SUNRIVER OR	206.6	CP	BPTT	-20050606AIB
32	K32IG-D	ELLENSBURG, ETC. WA	140.6	CP	BDCCDTT	-20061030AHJ
32	K32FN	WENATCHEE WA	182.0	LIC	BLTT	-20030605AEC
32	KUNW-LD	YAKIMA WA	102.5	CP MOD	BMPDTL	-20070625ADS
33	K33CJ	WASCO/HEPPNER OR	44.2	LIC	BLTTL	-19980903JE
34	K40AM	HOOD RIVER OR	36.0	CP	BDISTT	-20070815ABG
34	K40AM	HOOD RIVER, ETC. OR	36.3	APP	BSTA	-20070815ABP
35	KAPP	YAKIMA WA	102.5	LIC	BLCT	-2022
38	K53EI	HOOD RIVER OR	36.0	CP	BDISTT	-20070822ABB
38	KKEI-CA	PORTLAND OR	128.4	LIC	BLTTA	-20070831ADB
39	K39ES	HEPPNER, ETC. OR	44.2	LIC	BLTT	-19980803JH
39	K59EK	THE DALLES OR	0.0	CP	BDISTT	-20071120AET
39	DK39DM	ELLENSBURG WA	140.7	CP	BPTTL	-20060127ARI
39	K39FU	YAKIMA WA	103.0	LIC	BLTTL	-20040616AAS

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 K31HZ 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 0.3 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein 771304 antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 92.7 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 $12.1 \mu\text{W}/\text{cm}^2$, which is 3.2% of $383 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 31 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.