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**Engineering Statement
Digital Flash Cut Application for K31GN
Channel 31 at La Grande, OR
August 2009**

This Engineering Statement has been prepared on behalf of Blue Mountain Translator District, licensee of TV translator station K31GN at La Grande, 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

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 08-27-2009 Time: 13:48:24

Record Selected for Analysis

K31GN USERRECORD-03 LA GRANDE OR US
Channel 31 ERP 0.37 kW HAAT 771. m RCAMSL 02182 m SIMPLE MASK
Latitude 045-18-35 Longitude 0117-43-58
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT03 Beam tilt N Ref Azimuth 245.
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	0.010	489.6	21.5
45.0	0.000	519.9	6.2
90.0	0.003	475.3	14.7
135.0	0.015	300.0	18.7
180.0	0.258	832.0	45.5
225.0	0.190	1163.3	48.2
270.0	0.217	1320.4	50.9
315.0	0.202	1068.5	47.4

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 quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Call	City/State	ARN
31	K31GN	LA GRANDE OR	USERRECORD03

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
29	K29EL	LA GRANDE OR	0.0	LIC	BLTT	-20011212AAF
30	K30EW	MONUMENT, ETC. OR	122.7	LIC	BLTTL	-19950818JD
30	K30EW	MONUMENT, ETC. OR	122.7	APP	BDFCDTL	-20090824ACH
30	K30EW	MONUMENT, ETC. OR	122.7	CP	BDFCDTL	-20060331BDB
30	K30IV	WALLOWA OR	28.7	LIC	BLTT	-20080902ABO
31	K31FD	BOISE ID	216.0	LIC	BLTTA	-20011128ACV
31	K31FD	BOISE ID	216.0	CP	BDFCDTA	-20090811AAD
31	K31DS-D	COOLIN ID	364.8	LIC	BLDTT	-20090807AAM
31	K31IF	HAGERMAN ID	354.3	LIC	BLTT	-20080822ABG
31	K31IF	HAGERMAN ID	354.3	APP	BDFCDTT	-20090720ACQ
31	NEW	TWIN FALLS ID	406.9	APP	BNPTTL	-20000829AXN
31	NEW	TWIN FALLS ID	403.3	APP	BNPTTL	-20000830BEJ
31	NEW	KALISPELL MT	395.3	APP	BNPTTL	-20000829AJP
31	NEW	PLAINS MT	318.1	APP	BNPDTT	-20090825AAB
31	K05KI	LAKEVIEW OR	405.6	APP	BDISDTL	-20090824AKG
31	K31CR-D	PRINEVILLE, ETC. OR	284.3	LIC	BLDTT	-20081016AEI
31	K31HZ	THE DALLES, ETC. OR	267.3	CP	BDFCDTT	-20081022AAP
31	K31HZ	THE DALLES, ETC. OR	267.3	LIC	BLTT	-20070813ADC
31	K31AK	ELLENSBURG, ETC. WA	267.1	LIC	BLTT	-19880615IE
31	K31AH	OMAK, ETC. WA	368.9	LIC	BLTTL	-19841015IA
31	K28FT	WALLA WALLA WA	97.7	APP	BDISDTA	-20090318ADP
32	KLEW-TV	LEWISTON ID	136.7	CP	BPCDT	-19991021ACJ
32	K32DE	PENDLETON, ETC. OR	122.7	LIC	BLTT	-19950127JH
32	K33EJ	WALLA WALLA WA	82.3	APP	BDISDTA	-20090806AAN
33	K33FS	ELGIN OR	0.0	LIC	BLTT	-20011212AAB
33	K33EJ	WALLA WALLA WA	82.3	CP	BPTTA	-20090604ABY
33	K33EJ	WALLA WALLA WA	82.3	LIC	BLTTA	-20090504ABM
34	K34DI	LA GRANDE OR	122.7	LIC	BLTT	-19920304II
34	K34IF	WALLOWA OR	28.7	LIC	BLTT	-20080902ACX
35	K35BW	LEWISTON ID	137.5	LIC	BLTT	-19890203IC
35	K35GA	LA GRANDE OR	0.0	LIC	BLTT	-20011212AAE
35	K35FO	MILTON-FREEWATER OR	73.0	LIC	BLTT	-20020724AAD
38	K38AH	PENDLETON, ETC. OR	122.7	LIC	BLTT	-19950612II
39	K39CT	COTTONWOOD, ETC. ID	129.7	LIC	BLTT	-19911104IR
39	K39HZ	CROUCH ID	191.6	CP	BNPTTL	-20000831BFM
39	K39FD	ELGIN OR	0.0	LIC	BLTT	-20011212AAC

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.

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

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 (4 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 0.100 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Scala 4X2KBBU broadband antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 3.7 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 $7.7 \mu\text{W}/\text{cm}^2$, which is 2.0% of $383 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 31 frequency).

These calculations show that the worst-case 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.

August 27, 2009

Erik C. Swanson, P.E.