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**Engineering Statement  
Digital Flash Cut Application for K29EL  
Channel 29 at La Grande, OR  
August 2009**

This Engineering Statement has been prepared on behalf of Blue Mountain Translator District, licensee of TV translator station K29EL 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: 13:31:53

Record Selected for Analysis

K29EL USERRECORD-02 LA GRANDE OR US  
Channel 29 ERP 0.35 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 USRPAT02 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	21.2
45.0	0.000	519.9	6.0
90.0	0.002	475.3	14.5
135.0	0.014	300.0	18.4
180.0	0.244	832.0	45.1
225.0	0.180	1163.3	47.9
270.0	0.205	1320.4	50.5
315.0	0.191	1068.5	47.1

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

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Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
29	K29EL	LA GRANDE OR	USERRECORD02

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
26	K26FV	ELGIN OR	0.0	LIC	BLTT	-20011212AAD
28	K28JC	ENTERPRISE OR	28.7	LIC	BLTT	-20060428ACN
28	K28JC	ENTERPRISE OR	28.7	CP	BDFCDTT	-20080325AHJ
28	K28GD	HEPPNER, ETC. OR	122.7	CP	BDFCDTT	-20081022AAO
28	K28GD	HEPPNER, ETC. OR	122.7	LIC	BLTT	-20020419ABE
28	K55GC	MILTON-FREEWATER OR	71.1	APP	BDISDTT	-20090728ADM
28	K28FT	WALLA WALLA WA	97.7	LIC	BLTTL	-19991018AAC
29	K29GV	HAGERMAN ID	354.3	APP	BDFCDTT	-20090615ACT
29	K29GV	HAGERMAN ID	354.3	LIC	BLTT	-20080822ABE
29	K29CV	FLORENCE MT	315.2	LIC	BLTT	-19940909IA
29	K29ID	WEEKSVILLE MT	318.1	APP	BDFCDTT	-20090617ABH
29	K29ID	WEEKSVILLE, ETC. MT	318.1	LIC	BLTT	-20080912ABS
29	K29EG	MILTON, ETC OR	71.1	CP	BDFCDTT	-20090728AFA
29	K29EG	MILTON, ETC. OR	73.0	LIC	BLTT	-20030107ABA
29	K29CI	PRINEVILLE, ETC. OR	284.3	LIC	BLTT	-19911031SK
29	K67AD	THE DALLES OR	267.3	CP	BDISTT	-20071121ACT
29	K29FF	KENNEWICK, ETC. WA	139.8	LIC	BLTTL	-20040616AAO
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	K31GN	LA GRANDE OR	0.0	LIC	BLTT	-20030609AAT
32	K32DE	PENDLETON, ETC. OR	122.7	LIC	BLTT	-19950127JH
33	K33FS	ELGIN OR	0.0	LIC	BLTT	-20011212AAB
36	K36DP	PENDLETON, ETC. OR	122.7	LIC	BLTT	-19950512IH
36	K36HV	WALLOWA OR	28.7	LIC	BLTT	-20080902ABL
36	K36EW	COLLEGE PARK WA	95.3	LIC	BLTTL	-19991018AAB
36	KBWU-LD	RICHLAND, ET AL WA	139.8	APP	BSTA	-20070516AAW

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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.

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

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 3.5 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  $7.3 \mu\text{W}/\text{cm}^2$ , which is 1.9% of  $375 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 29 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.