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**Engineering Statement  
Application for Digital Displacement for TV Translator Station  
K52DT at La Grande, Oregon  
August 2011**

This Engineering Statement has been prepared on behalf of Blue Mountain Translator District, in connection with an application for a digital displacement for TV translator station K52DT at La Grande, Oregon. This translator currently operates on a channel which is outside the core television spectrum.

**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

Percent allowed new interference: 0.500  
Percent allowed new interference to non Class A LPTV: 2.000  
Census data selected 2000  
Data Base Selected  
./data\_files/pt\_tvdb.sff  
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 08-30-2011 Time: 12:54:32

Record Selected for Analysis

K52DT USERRECORD-02 LA GRANDE OR US  
Channel 41 ERP 1.2 kW HAAT 527. m RCAMSL 01575 m SIMPLE MASK  
Latitude 045-26-15 Longitude 0117-53-49  
Status APP Zone 2 Border Site number: 01  
Dir Antenna Make usr Model USRPAT02 Beam tilt N Ref Azimuth 280.  
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  
Service Class = LD  
Maximum height/power limits not checked

Site number	1			
Azimuth	ERP	HAAT	51.0	dBu F(50,90)
(Deg)	(kW)	(m)	(km)	
0.0	0.390	619.9	44.6	
45.0	0.015	427.9	21.7	
90.0	0.002	189.6	9.1	
135.0	0.010	196.5	13.1	
180.0	0.120	751.1	39.5	
225.0	1.119	748.2	53.5	
270.0	0.859	560.9	48.5	
315.0	0.938	718.8	51.8	

Contour Overlap to Proposed Station

Contour Overlap Evaluation to Proposed Station Complete

NO LANDMOBILE SPACING VIOLATIONS FOUND

Checks to Site Number 01

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance  
Distance to border = 396.0km

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	Call	Proposed Station City/State	ARN
41	K52DT	LA GRANDE OR	USERRECORD02

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
26	K26CK	CRAIGMONT, ETC. ID	131.4	LIC	BLTT	-19890921IH
26	K26FV	ELGIN OR	19.1	LIC	BLTT	-20011212AAD
27	KIDQ-LP	LEWISTON ID	132.5	LIC	BLTTL	-20071018BEB
27	K54DU	RICHLAND WA	141.6	CP	BPTTL	-20050330AOZ
33	K33FS	ELGIN OR	19.1	LIC	BLTT	-20011212AAB
33	K33EJ	WALLA WALLA WA	64.4	LIC	BLTTA	-20090928AKK
34	K34DI	LA GRANDE OR	112.0	LIC	BLTT	-19920304II
34	K34IF	WALLOWA OR	39.9	LIC	BLTT	-20080902ACX
38	K38AH	PENDLETON, ETC. OR	112.0	LIC	BLTT	-19950612II
39	K39CT	COTTONWOOD, ETC. ID	131.4	LIC	BLTT	-19911104IR
39	K39FD	ELGIN OR	19.1	LIC	BLTT	-20011212AAC
40	K40AJ	BAKER VALLEY OR	93.6	CP	BDFCDTT	-20090921ABY
40	K40AJ	BAKER VALLEY, ETC. OR	92.6	LIC	BLTT	-19820816IE
40	K40FM	MILTON-FREEWATER OR	54.0	LIC	BLTT	-20030108AAW
40	K40FM	MILTON-FREEWATER OR	52.1	CP	BDFCDTT	-20090728ADR
40	K40IK	WALLOWA OR	39.9	LIC	BLTT	-20080902ABE
40	K40IK	WALLOWA OR	39.9	CP	BDFCDTT	-20110418AAV
40	K40KS-D	KENNEWICK WA	129.9	CP	BNPDTL	-20090825BJB
40	K40EE	PULLMAN WA	167.8	LIC	BLTT	-19951130JT
41	KBTI-LP	BOISE ID	234.5	LIC	BLTTL	-20041206AEC
41	KBTI-LP	BOISE ID	234.5	CP	BDFCDTL	-20090821ADF
41	K41FJ	COEUR D'ALENE, ETC. ID	270.1	LIC	BLTT	-20021023AAB
41	K41EO-D	CROUCH/GARDEN VALLEY ID	208.1	LIC	BLDTT	-20091106ACO
41	K41JF-D	HAGERMAN ID	373.4	CP MOD	BMPDTT	-20091125AFT
41	K41JF-D	HAGERMAN ID	373.4	APP	BMAPDTT	-20091007ABP
41	K41JF-D	HAGERMAN ID	373.4	LIC	BLDTT	-20100113ADD
41	K41GW	JULIAETTA ID	157.4	APP	BSTA	-20110706AAX
41	K41GW	JULIAETTA ID	157.4	LIC	BLTT	-20020122ABK
41	K41GW	JULIAETTA ID	157.4	CP	BDFCDTT	-20110705AJL
41	K41HS-D	MCCALL ID	152.9	LIC	BLDTT	-20090515AAY
41	K41MH-D	MULLAN ID	280.3	CP	BNPDTL	-20100505AFF
41	K41IW-D	POLSON MT	379.8	LIC	BLDTT	-20110701ABS
41	KBND-LP	BEND OR	310.4	CP	BDFCDTL	-20090430ABC
41	KBND-LP	BEND OR	310.4	LIC	BLTT	-20041025AEO
41	KBND-LP	BEND OR	310.4	CP MOD	BMPDTL	-20090521AEQ
41	K41HZ	BURNS OR	229.0	LIC	BLTT	-20060526ALC
41	KORK-LD	PORTLAND OR	389.2	APP	BSTA	-20090413AFO
41	KORK-LD	PORTLAND OR	378.0	LIC	BLDTL	-20090908ACU
41	K41IP-D	RAINIER OR	392.2	LIC	BLDTL	-20100615AOG
41	K41CK	ELLENSBURG WA	254.0	LIC	BLTT	-19890227IN
41	K21HL	PATEROS WA	327.8	CP	BDISDTL	-20090810ACS
41	KCYU-LD	YAKIMA WA	235.7	LIC	BLDTL	-20081219AAC
42	K42AI	BAKER OR	92.6	LIC	BLTT	-19820511IC
42	K42AI	BAKER VALLEY OR	93.6	CP	BDFCDTT	-20090921ABV
42	K42IT-D	PENDLETON OR	55.7	LIC	BLDTT	-20091124AHC
42	KVBI-LP	CLARKSTON WA	130.4	LIC	BLTTL	-20010807AAP
42	KVBI-LP	CLARKSTON WA	130.4	CP	BPTTA	-20060324AAQ
42	K42JY-D	RICHLAND WA	163.5	CP	BNPDTL	-20090825AGL
43	K43CI	GRANGEVILLE, ETC. ID	131.4	LIC	BLTT	-19890705IJ



## II. RF Exposure 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 (12 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 panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 12 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  $2.8 \mu\text{W}/\text{cm}^2$ , which is  $<1\%$  of  $421 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 41 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.

August 30, 2011

Erik C. Swanson, P.E.