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Engineering Statement
Displacement of K42AI-D
Channel 24 at Baker Valley, OR
September 2017

This Engineering Statement has been prepared on behalf of Blue Mountain Translator District ("BMTD"), licensee of the digital TV translator station referenced above. This material has been prepared in connection with a displacement application and request for Special Temporary Authority.

I. Background and Waiver Request

The translator currently operates on a channel above Channel 36, which will be the highest channel remaining for terrestrial television broadcasting per the results of the 2017 spectrum auction. The translator licensee has received a 120-day notice from T-Mobile informing it that the translator station is likely to cause interference in areas where the wireless licensee intends to commence operations or FFA testing. Included with this Engineering Statement is a copy of that notice. Termination of operations would need to occur before the Special Displacement Window opens.

Under these circumstances, BMTD respectfully requests a waiver of the Displacement Freeze, in accordance with the procedures announced by Public Notice on June 14, 2017. (See DA 17-584, *Incentive Auction Task Force and Media Bureau Set Forth Tools Available to LPTV/Translator Stations Displaced Prior to the Special Displacement Window*.) Grant of this waiver will allow the station to continue providing service to viewers with as little disruption as possible.

Accordingly, BMTD is filing both a displacement application, and a request for Special Temporary Authority to begin operations on the requested channel.

II. Interference 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 Commission's TVStudy software.

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 interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2017.09.12 14:16:08

Study build station data: LMS TV 2017-09-11 (40)

```
    Proposal: K42AI-D D24 LD LIC BAKER VALLEY, OR
 File number: BEAVER24
 Facility ID: 5949
Station data: User record
   Record ID: 212
     Country: U.S.
```

Build options:
Protect records not on baseline channel

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
K23DB-D	D23	LD	LIC	LA GRANDE, OR	BLANK0000004187	79.1 km
KIVI-TV	D24	DT	LIC	NAMPA, ID	BLCDT20140506ADA	163.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

```
    Channel: D24
       Mask: Simple
   Latitude:  44 35 56.50 N (NAD83)
  Longitude: 117 47  1.70 W
Height AMSL: 1966.0 m
       HAAT: 0.0 m
   Peak ERP: 1.00 kW
    Antenna: SCA-4X1KBBU (ID 20754) 350.0 deg
Elev Pattrn: Generic
```

49.8 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.922 kW	715.4 m	53.5 km
45.0	0.112	647.0	39.1
90.0	0.002	356.6	12.0
135.0	0.000	564.2	11.2
180.0	0.010	698.4	25.8
225.0	0.002	528.3	15.9
270.0	0.002	361.8	13.7
315.0	0.384	661.9	47.0

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 567 m

Distance to Canadian border: 489.2 km

Distance to Mexican border: 1335.1 km

Conditions at FCC monitoring station: Ferndale WA
Bearing: 324.8 degrees Distance: 605.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 111.3 degrees Distance: 1139.7 km

Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.

III. RF Exposure Study

OET Bulletin 65 *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* (Edition 97-01) states in pertinent 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.

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

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 (13 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 4X1 Kathrein broadband panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 10 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 2.0 μW/cm², which is 0.6% of 353 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 24 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 RF exposure 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 exposure in excess of FCC guidelines.

September 12, 2017
Erik C. Swanson, P.E.