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Engineering Statement
Displacement of K41GI-D
Channel 27 at Imlay, NV
May 2018

This Engineering Statement has been prepared on behalf of Humboldt County ("HC"), licensee of digital TV translator station K41GI-D at Imlay, NV. This material has been prepared in connection with a displacement application.

I. Background

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. Accordingly, HC is filing this displacement application during the Commission's Special Displacement Window, which is scheduled for April 10 through June 1, 2018.

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 authorized or pending proposed facilities. 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: 2018.05.03 14:42:38

Study build station data: LMS TV 2018-05-03 (122)

```
    Proposal: K41GI-D D27 LD APP IMLAY, NV
 File number: FLORIDA27
 Facility ID: 28092
Station data: User record
   Record ID: 661
     Country: U.S.
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Build options:
Protect pre-transition records not on baseline channel

User records included:
603 K26GG-D D26 LD APP GOLCONDA, NV SAIPAN26
631 K39CX-D D28 LD APP IMLAY, NV TOULON28
633 K40LI-D D27 LD APP VALMY, NV GOLC27
643 K48EB-D D28 LD APP MCDERMITT, NV HIGH28

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K20HX	N20	TX	LIC	BEOWAWE, NV	BLTTL20051006ADR	129.6 km
No	K26EH-D	D26	LD	LIC	AUSTIN, NV	BLDTT20130603AHT	155.5
No	K26KG-D	D26	LD	LIC	BEOWAWE, NV	BLDTT20111230AAQ	129.6
No	K26GG-D	D26	LD	LIC	GOLCONDA, NV	BLDTT20090507ADJ	90.4
No	K26GG-D	D26	LD	APP	GOLCONDA, NV	SAIPAN26	90.4
No	KREN-TV	D26	DT	LIC	RENO, NV	BLCDT20090227AAM	199.1
No	KUCO-LP	N27+	TX	LIC	CHICO, CA	BLTTL20050405AAP	303.5
No	KUCO-LP	D27	LD	CP	CHICO, CA	BDFCDTL20110404AFA	303.5
No	KGMC	D27	DT	CP	CLOVIS, CA	BLANK0000028225	435.2
No	K27DV	N27z	TX	LIC	CROWLEY LAKE-LONG VA, CA	BLTTL19940429JZ	320.2
No	K27GZ	D27+	LD	CP	MARIPOSA, CA	BLANK0000022396	357.2
No	K42JQ-D	D27	LD	APP	REDDING, CA	BLANK0000034998	363.2
No	KBTV-CD	D27	DC	LIC	SACRAMENTO, CA	BLDTA20140908ADO	357.2
No	K40MV-D	D27	LD	APP	SUSANVILLE, ETC, CA	BLANK0000052276	180.9
No	KBAX-LD	D27	LD	LIC	TWIN FALLS, ID	BLDTL20120207AOC	396.7
No	K27DY	N27	TX	LIC	CARLIN, NV	BLTT19930413JE	178.8
No	K27LV-D	D27	LD	CP	INCLINE VILLAGE, NV	BMPDTT20130204AAI	199.3
No	K45HV-D	D27	LD	APP	MINA / LUNING, NV	BLANK0000052575	242.5
No	K27MF-D	D27	LD	CP	OROVADA, NV	BDCCDTT20120601ARM	101.1
No	NEW	D27	LD	APP	RENO, NV	BNPDTL20090825BTW	199.4
No	NEW	D27	LD	APP	RENO, NV	BNPDTL20090825BOO	167.7
No	K27JZ-D	D27	LD	LIC	ROUND MOUNTAIN, NV	BLDTT20111005AAV	239.1
No	K40LI-D	D27	LD	APP	VALMY, NV	GOLC27	80.8
No	K27KM	N27z	TX	LIC	WENDOVER, UT	BLTTL20121207ACE	354.9
No	K27KM	D27	LD	CP	WENDOVER, UT	BDFCDTL20141023AAV	354.9
No	K28LH-D	D28	LD	LIC	BEOWAWE, NV	BLDTT20111230AAR	129.6
No	K39CX-D	D28	LD	APP	IMLAY, NV	TOULON28	66.3
No	K48EB-D	D28	LD	APP	MCDERMITT, NV	HIGH28	180.5
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825BFX	173.3
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825BON	167.7
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825AON	173.3
No	K28MY-D	D28	LD	CP	WINNEMUCCA, NV	BNPDTL20100512AHI	58.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

```
    Channel: D27
       Mask: Stringent
   Latitude:  40 34 23.00 N (NAD83)
  Longitude: 118 13 24.70 W
Height AMSL: 1780.8 m (Adjusted based on actual ground elevation calculation)
       HAAT: 0.0 m
   Peak ERP: 0.200 kW
    Antenna: SCA-PR450U (ID 72223) 35.0 deg
Elev Pattrn: Generic
```

50.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.004 kW	471.8 m	17.3 km
45.0	0.128	340.3	31.9
90.0	0.000	-16.9	3.1
135.0	0.000	-301.5	3.2
180.0	0.000	-31.2	2.5
225.0	0.000	461.1	6.7
270.0	0.000	480.3	11.7

```
315.0      0.000      512.5     11.0

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m   Computed HAAT: 240 m

Distance to Canadian border: 936.7 km

Distance to Mexican border: 889.9 km

Conditions at FCC monitoring station: Livermore CA
Bearing: 225.0 degrees   Distance: 439.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 88.2 degrees   Distance: 1098.4 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.
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III. RF Exposure Study

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 (3 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 0.070 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Scala PR-450U antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 0.98 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 from the proposed facility is calculated to be 3.6 μW/cm², which is 1% of 365.3 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 27 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 500 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 applicant's 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.

May 3, 2018
Erik C. Swanson, P.E.