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**Engineering Statement
Displacement of K39CX-D
Channel 28 at Imlay, NV
May 2018**

This Engineering Statement has been prepared on behalf of Humboldt County ("HC"), licensee of digital TV translator station K39CX-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.

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Study created: 2018.05.03 14:15:12

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

Proposal: K39CX-D D28 LD APP IMLAY, NV
File number: TOULON28
Facility ID: 28102
Station data: User record
Record ID: 631
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

User records included:

610 K29EV-D D29 LD APP VALMY, NV GOLC29
633 K40LI-D D27 LD APP VALMY, NV GOLC27
643 K48EB-D D28 LD APP MCDERMITT, NV HIGH28
661 K41GI-D D27 LD APP IMLAY, NV FLORIDA27

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K40MV-D	D27	LD	APP	SUSANVILLE, ETC, CA	BLANK0000052276	142.9 km
No	K41GI-D	D27	LD	APP	IMLAY, NV	FLORIDA27	66.3
No	K27LV-D	D27	LD	CP	INCLINE VILLAGE, NV	BMPDTT20130204AAI	133.5
No	K27MF-D	D27	LD	CP	OROVADA, NV	BDCCDTT20120601ARM	161.0
No	NEW	D27	LD	APP	RENO, NV	BNPDTL20090825BTW	133.5
No	NEW	D27	LD	APP	RENO, NV	BNPDTL20090825BOO	102.9
No	K40LI-D	D27	LD	APP	VALMY, NV	GOLC27	145.0
No	K43LV-D	D28	LD	APP	CHALFANT VALLEY, CA	BLANK0000052608	281.3
No	KBVU	D28	DT	LIC	EUREKA, CA	BLCDT20130607AAU	448.8
No	K28DB-D	D28	LD	LIC	FALL RIVER MILLS, CA	BLDTT20080826AAR	252.5
No	K28CY-D	D28	LD	LIC	LEWISTON, CA	BLDTT20081007AFA	353.1
No	K28MZ-D	D28	LD	CP	NEWMAN, CA	BNPDTL20100513ADV	366.6
No	K28LC-D	D28	LD	LIC	REDDING, CA	BLDTL20140221ACT	314.2
No	KBCW	D28	DT	CP	SAN FRANCISCO, CA	BLANK0000033563	415.4
No	KCNZ-CD	D28z	DC	LIC	SAN FRANCISCO, CA	BLDTA20100419ACP	419.2
No	KDTV-CD	D28	DC	LIC	SANTA ROSA, CA	BLDTA20100730ADZ	371.3
No	KMMW-LD	D28	LD	LIC	STOCKTON, CA	BLDTL20090518ADI	281.0
No	KMPH-TV	D28	DT	LIC	VISALIA, CA	BLCDT20030204AGN	383.8
No	KMPH-TV	D28	DT	APP	VISALIA, CA	BLANK0000035647	383.8
No	K28LA-D	D28	LD	LIC	YREKA, CA	BLDTL20140221ACN	364.8
No	KKPM-CD	D28+	DC	APP	Yuba City, CA	BLANK0000036125	283.3
No	KKPM-CD	D28+	DC	LIC	Yuba City, CA	BLDTA20100914AHF	283.3
No	K28LH-D	D28	LD	LIC	BEOWAWE, NV	BLDTT20111230AAR	181.5
No	K28IZ-D	D28	LD	LIC	ELY, NV	BLDTT20100111AAJ	368.2
No	K28LM-D	D28	LD	LIC	EUREKA, NV	BLDTT20111230AAN	245.4
No	K48EB-D	D28	LD	APP	MCDERMITT, NV	HIGH28	241.6
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825BFX	108.9
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825AXH	120.0
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825BON	102.9
No	NEW	D28	LD	APP	RENO, NV	BNPDTL20090825AON	108.9
No	K28NA-D	D28	LD	CP	ROCKY POINT, NV	BNPDTL20100512AIA	368.3
No	NEW	D28	LD	APP	SPARKS, NV	BNPDTL20090825BDO	109.0
No	K28GX-D	D28	LD	LIC	WALKER LAKE, NV	BLDTT20111208ACF	170.4
Yes	K28MY-D	D28	LD	CP	WINNEMUCCA, NV	BNPDTL20100512AHI	125.1
No	K28LO-D	D28	LD	LIC	PAISLEY, OR	BLDTT20120524AHT	287.4
No	K46HL-D	D29	LD	APP	SUSANVILLE, ETC, CA	BLANK0000052280	142.9
No	K29ES-D	D29	LD	LIC	CARSON CITY, NV	BLDTT20091105AAY	134.3
No	K29KJ-D	D29	LD	LIC	OROVADA, NV	BLDTT20120321ADQ	161.0
No	K29BN-D	D29	LD	LIC	SILVER SPRINGS, ETC., NV	BLDTT20120524AIJ	85.8
No	K29EV-D	D29	LD	LIC	VALMY, NV	BLDTT20111222CSI	145.1
No	K29EV-D	D29	LD	APP	VALMY, NV	GOLC29	145.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D28
Mask: Stringent
Latitude: 40 7 4.60 N (NAD83)
Longitude: 118 43 43.30 W
Height AMSL: 2090.3 m
HAAT: 0.0 m
Peak ERP: 0.850 kW
Antenna: SCA-PR450U (ID 72430) 38.0 deg
Elev Pattnr: Generic

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50.1 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.010 kW	237.6 m	15.0 km
45.0	0.629	613.0	48.7
90.0	0.004	769.4	21.3
135.0	0.004	838.5	22.0
180.0	0.002	589.1	16.5
225.0	0.000	587.0	11.0
270.0	0.004	687.5	20.5
315.0	0.003	651.0	18.5

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 622 m

Distance to Canadian border: 976.1 km

Distance to Mexican border: 844.4 km

Conditions at FCC monitoring station: Livermore CA
Bearing: 225.5 degrees Distance: 373.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 85.5 degrees Distance: 1144.0 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

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 (4.1 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 4.165 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 $8.3 \mu\text{W}/\text{cm}^2$, which is 2.2% of $369.3 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 28 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.