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**Engineering Statement  
Engineering STA for K36PO-D (formerly K49BK-D)  
Channel 36 at Winnemucca, NV  
January 2019**

**I. Background**

This Engineering Statement has been prepared on behalf of Humboldt County ("HC"), licensee of digital TV translator station K49BK-D at Winnemucca, NV, which holds a displacement construction permit as K36PO-D.

Construction of the authorized displacement facility is part-and-parcel of a project which also involves construction of a new tower on Winnemucca Mountain. It is now winter on Winnemucca Mountain, and consequently the tower construction will not be completed until later this year. In the meanwhile, T-Mobile has sent HC a letter indicating that T-Mobile is commencing 600 MHz operations in this area, and requesting that HC cease operation of this translator on its licensed channel. T-Mobile had previously provided its 120-day notification to HC, but that deadline has passed.

HC therefore requests an Engineering STA to operate on Ch36 on a temporary basis from the existing K49BK-D antenna system (coordinates and pattern corrected as specified herein). Grant of this Engineering STA will ensure continued service to the public. The alternative would be that HC would have to shut down this translator until the new tower construction project can be completed, in which case over-the-air viewers in Winnemucca (and in the wider area, as this translator provides a feed to other translators) would lose their access to CBS network programming.

## **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: 2019.01.18 11:05:41

Study build station data: LMS TV 2019-01-17

Proposal: K49BK-D D36 LD STA WINNEMUCCA, NV  
File number: WINN36STA  
Facility ID: 28103  
Station data: User record  
Record ID: 788  
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K29JM	N29	TX	LIC	ELKO, NV	BLTT20111122EKF	160.2 km
No	K35LP-D	D35	LD	CP	BATTLE MOUNTAIN, NV	BNPDTL20100512AHN	100.4
No	K35BR	N35	TX	LIC	CARLIN, NV	BLTTL19891211IX	142.7
No	K35GD-D	D35	LD	LIC	GOLCONDA, NV	BLDTT20100108ABV	29.3
No	KHSL-TV	D36	DT	LIC	CHICO, CA	BLANK0000063624	353.8
No	KXTV	D36	LD	LIC	SACRAMENTO, CA	BLANK0000063113	419.6
No	KXTV	D36	LD	CP	SACRAMENTO, CA	BDRTCDT20140317ACA	419.6
No	KFRE-TV	D36	DT	LIC	SANGER, CA	BLCDT20060421AAI	460.3
No	K36HH-D	D36	LD	LIC	SUSANVILLE, ETC, CA	BLDTT20101207AFN	227.2
No	K36LY-D	D36	LD	LIC	Yuba City, CA	BLANK0000019191	348.6
No	KCDL-LD	D36	LD	CP	BOISE, ID	BLANK0000054798	334.4
No	NEW	D36	LD	APP	BOISE, ID	BNPDTL20090825BKQ	302.9
No	NEW	D36	LD	APP	BOISE, ID	BNPDTL20090825AOL	316.6
No	NEW	D36	LD	APP	BOISE, ID	BNPDTL20090825BNS	334.4
No	K36KC-D	D36	LD	CP	BURLEY, ID	BNPDTL20090825BOD	366.9
No	K36LZ-D	D36	LD	LIC	GARDEN VALLEY, ID	BLDTT20130123ADM	371.2
No	K36LZ-D	D36	LD	CP	GARDEN VALLEY, ID	BDISDTT20110802AAP	371.2
No	K36KB-D	D36	LD	CP	GLENN'S FERRY, ID	BNPDTL20090825BMC	301.8
No	K36KU-D	D36	LD	CP	TWIN FALLS, ID	BNPDTL20090826AAD	336.5
Yes	K4OCA	D36	LD	CP	BEOWAWE, NV	BLANK0000054562	100.3
Yes	K36DC	N36	TX	LIC	BEOWAWE, ETC., NV	BLTTL19940420IH	129.8
No	K36HA-D	D36	LD	LIC	ELKO, NV	BLDTT20090716AAG	174.5
No	KXTY-LP	N36-	TX	LIC	ELY, NV	BLTTL20100315ABF	311.6
No	K36LU-D	D36	LD	LIC	ELY, NV	BLDTT20120119AEG	337.6
No	K36KN-D	D36	LD	LIC	EUREKA, NV	BLDTT20120423AAZ	229.2
No	K36NA-D	D36	LD	CP	FERNLEY, NV	BNPDTL20100512AGY	199.8
No	K36NB-D	D36	LD	CP	INCLINE VILLAGE, NV	BNPDTL20100611AHQ	261.0
Yes	K36GL-D	D36	LD	LIC	LOVELOCK, NV	BLDTT20110721AAT	128.3
No	K36FF-D	D36	LD	LIC	SHURZ, NV	BLDTT20110609AAR	246.5
No	K36OB-D	D36	LD	LIC	Verdi, NV	BLANK0000063369	243.7
No	K36BA-D	D36	LD	LIC	BURNS, OR	BLDTT20100823ACF	306.2
No	K36IB-D	D36	LD	LIC	MIDLAND, ETC., OR	BLDTT20090921ACY	369.8
No	KUEN	D36	DT	APP	OGDEN, UT	BLANK0000067045	469.3
No	KUEN	D36	DT	LIC	OGDEN, UT	BLEDT20030528ACQ	469.3
No	K4OCA	N40	TX	LIC	BEOWAWE, NV	BLTT19881003IB	101.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D36  
Mask: Stringent  
Latitude: 41 0 36.60 N (NAD83)  
Longitude: 117 45 51.70 W  
Height AMSL: 2060.0 m  
HAAT: 0.0 m  
Peak ERP: 0.110 kW  
Antenna: SCA-1X2KBBU (ID 20718) 135.0 deg  
Elev Pattn: Generic

50.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.000 kW	494.7 m	9.9 km
45.0	0.021	727.0	28.8
90.0	0.105	701.9	38.1
135.0	0.095	461.8	32.6
180.0	0.105	737.3	38.6
225.0	0.021	723.5	28.7
270.0	0.000	594.2	10.6
315.0	0.000	711.1	10.4

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 644 m

Hatfield & Dawson Consulting Engineers

Distance to Canadian border: 888.1 km

Distance to Mexican border: 936.3 km

Conditions at FCC monitoring station: Livermore CA  
Bearing: 224.5 degrees Distance: 500.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 91.1 degrees Distance: 1059.5 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 (5 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 0.200 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein broadband panel antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 4.4 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  $5.9 \mu\text{W}/\text{cm}^2$ , which is 1.5% of  $401.3 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 36 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.

January 18, 2019

Erik C. Swanson, P.E.