

THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE

JAMES B. HATFIELD, PE
BENJAMIN F. DAWSON III, PE
CONSULTANTS

HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

**Engineering Statement
Engineering STA for K30PX-D (formerly K45BJ-D)
Channel 30 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 K45BJ-D at Winnemucca, NV, which holds a displacement construction permit as K30PX-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 Ch30 on a temporary basis from the existing K45BJ-D antenna system (coordinates 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 ABC 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.

The study shows interference predicted to a pending application (i.e. it has no authorization) for a new digital LPTV station on Channel 30 at Winnemucca (BNPDTL-20100512AHJ). However, the Channel 30 displacement construction permit for the instant facility took precedence over the application for a new Channel 30 station at this same community. Therefore, no interference protection is assumed necessary for this Engineering STA request.

Study created: 2019.01.18 11:05:11

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

Proposal: K45BJ-D D30 LD STA WINNEMUCCA, NV
File number: WINN30STA
Facility ID: 28100
Station data: User record
Record ID: 787
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	K29KJ-D	D29	LD	LIC	OROVADA, NV	BLDTT20120321ADQ	57.1
No	K29EV-D	D29	LD	LIC	VALMY, NV	BLDTT20111122CSI	32.0
No	KKTF-LD	D30	LD	LIC	CHICO, CA	BLDTL20100716AAP	353.4
No	KFSN-TV	D30	DT	APP	FRESNO, CA	BPCDT20121206AAP	460.3
No	KFSN-TV	D30	DT	LIC	FRESNO, CA	BLCDT20110914ABW	460.3
No	K30PZ-D	D30	LD	LIC	LITCHFIELD, CA	BLANK0000063161	237.3
No	KAHC-LD	D30	LD	CP	SACRAMENTO, CA	BLANK0000059635	411.5
No	K30KR-D	D30	LD	LIC	BOISE, ID	BLDTL20140121ABM	302.9
No	K44JA-D	D30	LD	APP	BURLEY, ETC., ID	BLANK0000054122	378.1
Yes	K30LB-D	D30	LD	LIC	BEOAWA, NV	BLDTT20111230AAS	100.3
Yes	K30HF	N30	TX	LIC	BEOAWA, NV	BLTT20051006ADT	100.3
No	K30CD	N30	TX	LIC	CARLIN, NV	BLTTL19891211IY	142.7
No	K30CN-D	D30	LD	LIC	ELY, NV	BLDTT20100111AAK	337.8
No	K30FS-D	D30	LD	LIC	HAWTHORNE, NV	BLDTT20101122AJR	296.0
No	K30DS-D	D30	LD	LIC	LOVELOCK, NV	BLDTT20091030ADK	128.3
No	K39KZ-D	D30	LD	CP	SHURZ, NV	BLANK0000054385	246.5
No	K30HY-D	D30	LD	LIC	VERDI/MOGUL, NV	BLDTT20081006AFE	243.7
No	K30NJ-D	D30	LD	CP	WELLS, NV	BNPDTL20100512AHW	224.4
Yes	NEW	D30	LD	APP	WINNEMUCCA, NV	BNPDTL20100512AHJ	5.9
No	K30QD-D	D30	LD	LIC	ONTARIO, ETC., OR	BLANK0000064027	346.5
No	KTVX	D30	DT	CP	SALT LAKE CITY, UT	BLANK0000029840	469.3
No	KTVX	D30	DT	BL	SALT LAKE CITY, UT	DTVBL68889	469.3
No	K31LB	N31	TX	LIC	ELKO, NV	BLTT20111122EKG	160.2
No	K31FU-D	D31	LD	LIC	GOLCONDA, NV	BLDTT20120203ACA	29.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D30
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 Patrn: Generic

50.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.000 kW	494.7 m	10.3 km
45.0	0.021	727.0	29.5
90.0	0.105	701.9	38.8
135.0	0.095	461.8	33.4
180.0	0.105	737.3	39.4
225.0	0.021	723.5	29.4
270.0	0.000	594.2	11.0
315.0	0.000	711.1	10.8

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

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%

**MX with BNPDTL20100512AHJ APP scenario 1, 14.48% interference caused

---- Below is IX received by proposal WINN30STA ----

**MX with BNPDTL20100512AHJ APP scenario 1, 97.13% interference received

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 $\mu W/cm^2$, which is 1.6% of 377.3 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 30 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.