

ENGINEERING EXHIBIT

Application for Replacement Digital Low Power Television Translator Construction Permit

prepared for

KXTV, Inc.

KXTV(DT) Sacramento, California

Ch. 36 (Digital) 15 kW

Table of Contents

FCC Form 346, Section III – Engineering Data (Digital)

Exhibit 13

Statement A	Comprehensive Engineering Statement
Figure 1	Coverage Contour
Table I	Interference Analysis Results Summary

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Exhibit 13 - Statement A
COMPREHENSIVE ENGINEERING STATEMENT
prepared for
KXTV, Inc.
KXTV(DT) Sacramento, California
Replacement Digital Low Power Television Translator
Ch. 18 (Digital) 15 kW

KXTV, Inc. (“*KXTV*”) is the licensee of full service digital television station KXTV(DT), Channel 10, Sacramento, California, Facility ID 25048 (BLCDT-20120201AAM). Since KXTV commenced digital operation in 2009, the station has received a flood of complaints from former analog viewers with less than optimal antenna systems who can no longer receive the Channel 10 programming. The Commission is aware of the problems with reception of high-band VHF stations. Accordingly, *KXTV* proposes herein to construct a replacement digital low power television translator¹ on Channel 36 to aid in restoring KXTV and ABC network programming to off-air viewers in the downtown Sacramento area.

The attached **Exhibit 13 – Figure 1** depicts the 51 dB μ service contour for the proposed translator. Also shown is the digital service contour for the currently licensed digital facility and the Grade B contour for the formerly licensed, pre-transition, KXTV analog Channel 10 facility. As demonstrated, the service contour for the proposed translator is completely contained within the former KXTV analog Grade B contour.

The proposed digital translator facility will be top-mounted on an existing tower structure located at the KXTV studio. The antenna, a Jampro model JSL-12/D36 TEO, is elliptically polarized with 0.5 degrees of electrical beam tilt. The proposed ERP for the translator is 15 kW.

Allocation Considerations

Consistent with Commission policy regarding potential interference from LPTV and television translator facilities, a detailed interference study was conducted in accordance with the terrain dependent Longley-Rice point-to-point propagation model, per the Commission’s Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV*

¹ Report and Order, *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, MB Docket No. 08-253, FCC 09-36, released May 8, 2009.

Exhibit 13 - Statement A
COMPREHENSIVE ENGINEERING STATEMENT
(Page 2 of 5)

Coverage and Interference, February 6, 2004 (“OET 69”).² A “simple” out-of-band emissions mask is specified.

The interference study examined the change in predicted interference to existing facilities, CPs and applications that would result from the proposed facility. The results from the study, summarized in **Exhibit 13–Table I**, indicate that the instant proposal complies with §74.793 regarding interference protection to digital television, low power television, television translator, and Class A television facilities.

Other Allocation Considerations

The nearest FCC monitoring station is at Livermore, California, at a distance of 95.7 km from the proposed site. This exceeds by a great margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The proposed site is also located outside the area specified in §73.1030(b)(1). Thus, notification of the instant proposal to the Table Mountain Receiving Zone at Boulder, Colorado, is not required. The facility is located 778 km from the nearest point of the common U.S.-Mexican border and 1085 km from the U.S.-Canadian border. Thus, international coordination is not believed to be necessary. There are no AM broadcast stations located within 3.2 km (2 miles) of the proposed site, according to information extracted from the Commission’s engineering database.

Thus, this proposal is believed to be in compliance with the current Commission’s Rules and policy with respect to allocation matters.

Environmental Considerations

The instant proposal is not believed to have a significant environmental impact as defined under §1.1306 of the Commission’s Rules. Consequently, preparation of an Environmental Assessment is not required.

² The implementation of OET 69 for this study followed the guidelines of OET-69 as specified therein. **A cell size of 1 km and a terrain increment of 1.0 km were employed.** Comparisons of various results of this computer program (run on a Sun processor) to the Commission’s implementation of OET 69 show excellent correlation.

Exhibit 13 - Statement A
COMPREHENSIVE ENGINEERING STATEMENT
(Page 3 of 5)

The use of an existing tower structure has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. A slight increase in overall structure height is proposed, however, the proposed overall height of 94.8 m will not exceed maximum height of 106.7 m (350') shown on the most recent FAA Determination of No Hazard.³ Therefore, no change in current structure marking and lighting requirements is anticipated. The Antenna Structure Registration will be updated to reflect the new overall height once the Construction Permit is issued. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency electromagnetic field using the procedures outlined in the Commission's OET Bulletin 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The proposed antenna center of radiation will be 90.8 meters above ground level. An effective radiated power of 15 kilowatts, elliptically polarized (85/15 power division), will be employed utilizing a Jampro model JSL-12/D36 TEO omni-directional antenna. According to information provided by the manufacturer, the "worst-case" relative field value from 10° to 90° below the horizontal is 20 percent. That value is used herein for purposes of the calculation. The "uncontrolled/general population" limit specified in §1.1310 for Channel 36 (center frequency 605 MHz) is 403.3 $\mu\text{W}/\text{cm}^2$.

OET 65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility

Exhibit 13 - Statement A
COMPREHENSIVE ENGINEERING STATEMENT
(Page 4 of 5)

in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the average power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (10) in OET 65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

- S = power density in microwatts/cm²
- ERP = total (average) ERP in Watts
- F = relative field factor
- D = distance in meters

Using this formula and the above assumptions, the proposed facility would contribute a power density of 2.98 μ W/cm² at two meters above ground level near the antenna support structure, or 0.74 percent of the general population/uncontrolled limit.

§1.1307(b)(3) states that facilities are categorically excluded from responsibility for taking any corrective action in the areas where their contribution does not exceed five percent of the exposure limit. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level or near the base of the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will be restricted and controlled through the use of a gated and locked fence. Additionally, appropriate RF exposure warning signs will be posted.

³ See FAA Study Number 1998-AWP-0518-OE.

Exhibit 13 - Statement A
COMPREHENSIVE ENGINEERING STATEMENT
(Page 5 of 5)

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level or at the base of the top mounted tower structure. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

Conclusion

Based on the preceding, it is believed that the instant proposal complies with all Commission Rules and policies.

Exhibit 13 - Table I
INTERFERENCE STUDY RESULTS

prepared for
KXTV, Inc.
 KXTV(DT) Sacramento, CA
 Ch. 36 15 kW

<u>Channel</u>	<u>Affected Station</u>	<u>City, State</u>	<u>File Number</u>	<u>Calculated Baseline (2000 Census)</u>	<u>Interference Population without Proposal (2000 Census)</u>	<u>Interference Population with Proposal (2000 Census)</u>	<u>New Interference Population</u>	<u>Percentage</u>
32	KSTV-LP	Sacramento, CA	BLTTL-20070716ADI	940,175	185,456	187,056	1,600	0.142 %
34	KACA-LP	Modesto, CA	BLTTL-20080813AEP			--- No Interference ---		
35	K35DO	Hopland, CA	BDFCDTT-20090824AJS			--- No Interference ---		
35	K35DO	Hopland, CA	BLTT-19940509JJ			--- No Interference ---		
35	K35DO	Hopland, CA	BSTA-20130308ADP			--- No Interference ---		
35	KCRA-TV	Sacramento, CA	BMLCDT-20110630AGB	4,981,970	1,069,338	1,082,950	13,612	0.273 %
35	KGO-TV	San Jose, CA	BLCDT-20111201NYO			--- No Interference ---		
35	K35JX-D	Westwood, CA	BLDTT-20100722HYE			--- No Interference ---		
35	NEW	Carson City, NV	BNPDTL-20090825ANC			--- No Interference ---		
35	NEW	Reno, NV	BNPDTL-20090825AOX			--- No Interference ---		
35	NEW	Sun Valley, NV	BNPDTL-20090825BER			--- No Interference ---		
36	K36BT	Blue Lake, CA	BLTTL-19940223IE			--- No Interference ---		
36	K36LY-D	Durham, CA	BNPDTL-20100608AIL	143,037	8,453	10,637	2,184	1.527 %
36	KJCN-LP	Paso Robles, CA	BLTTL-19870602IA			--- No Interference ---		
36	KHSL-TV	Redding, CA	BLCDT-20091221AGI			--- No Interference ---		
36	KICU-TV	San Jose, CA	BMPCDT-20080619AIP	6,615,521	318,779	329,388	10,609	0.160 %
36	KICU-TV	San Jose, CA	BLCDT-20090709ALH	6,529,198	319,820	338,580	18,760	0.287 %
36	KFRE-TV	Sanger, CA	BLCDT-20060421AAI	1,436,353	71	102	31	0.002 %
36	KTVJ-LP	Santa Rosa, CA	BLTTL-20061201BPQ			--- No Interference ---		
36	K36HH-D	Susanville, Etc, CA	BLDTT-20101207AFN			--- No Interference ---		
36	K36NA-D	Fernley, NV	BNPDTL-20100512AGY			--- No Interference ---		
36	K36NB-D	Incline Village, NV	BNPDTL-20100611AHQ	22,912	8,696	8,696	0	0.000 %
36	K36GL-D	Lovelock, NV	BLDTT-20110721AAT			--- No Interference ---		
36	KNVV-LD	Reno, NV	BDISDTL-20100804ABD			--- No Interference ---		
36	K36FF-D	Shurz, NV	BLDTT-20110609AAR			--- No Interference ---		
36	K36IB-D	Midland, Etc., OR	BLDTT-20090921ACY			--- No Interference ---		
38	DKSGO-LP	Chico, CA	BDISTTL-20060331ATE			--- No Interference ---		
44	KRJR-LP	Sacramento, CA	BLTTL-20081112AEY			--- No Interference ---		