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**Engineering Statement
Minor Change Application for KXLY-TV
Digital Channel 13 at Spokane, Washington
July 2010**

This Engineering Statement has been prepared on behalf of Spokane Television, Inc., licensee of digital television station KXLY-TV at Spokane, Washington. This material has been prepared in connection with a minor modification application for the KXLY-TV post-transition facilities on digital Channel 13.

The following table lists the KXLY-TV post-transition facilities approved in Appendix B of the DTV Seventh Report and Order MO&O¹, as well as the requested post-transition facilities as proposed herein:

	DTV Table Appendix B	Proposed Form 301
Channel	13	13
ERP	23.3 kW	46 kW
HAAT	936 meters	936 meters
Antenna	omnidirectional	omnidirectional
Coordinates	47-55-18 117-06-48	47-55-18 117-06-48
DTV Population (thousand)	655	697 (106%)

¹ See *Advanced Television Systems and their Impact Upon the Existing Television Broadcast Service*, MB Docket No. 87-268, Memorandum Opinion and Order on Reconsideration of the Seventh Report and Order and Eighth Further Notice of Proposed Rulemaking, FCC 08-72, Released March 6, 2008.

I. Domestic Allocation Study

Study has been made of all domestic 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 impermissible interference (i.e. more than 0.5 percent new interference) to any stations beyond that level listed in the post-transition DTV Table Appendix B. This study was performed using the SunDTV program from V-Soft Communications and a **1 km grid spacing and a 0.1 km terrain increment**. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations, with the exception of KUID-DT Ch12 Moscow, and the allotment for Ch13 at La Grande, Oregon.

By Public Notice dated June 17, 2010, the Media Bureau announced that DTV Allotment Table Appendix B facilities would no longer be protected. The proposed KXLY-DT facility provides interference protection to the KTVR-DT Ch13 licensed facility at La Grande. Therefore, the interference indicated to the Ch13 allotment at La Grande is irrelevant.

The licensee of KUID-DT Ch12 Moscow has consented to grant of the instant application. Attached to this application is a consent letter from the KUID-DT licensee.

Based on this allocation and interference study, it is believed that the proposed facility can operate without risk of objectionable interference to other domestic stations.

Summary Study

Percent allowed new interference: 0.500
Percent allowed new interference to Class A: 0.500
Census data selected 2000
Post Transition Data Base Selected ./data_files/pt_tvdb.sff

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 07-09-2010 Time: 12:39:50

Record Selected for Analysis

KXLY-TV USERRECORD-01 SPOKANE WA US
Channel 13 ERP 46. kW HAAT 935. m RCAMSL 01840 m
Latitude 047-55-18 Longitude 0117-06-48
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 0.10 km

Facility does not meet maximum height/power limits
Channel 13 ERP = 46.00 HAAT = 935.

Azimuth (Deg)	ERP (kW)	HAAT (m)	36.0 dBu F(50,90) (km)
0.0	45.696	897.2	137.0
45.0	45.670	913.3	137.4
90.0	45.672	911.8	137.4
135.0	45.970	729.0	133.1
180.0	45.597	959.8	138.6
225.0	45.612	950.3	138.3
270.0	45.439	1062.1	141.1
315.0	45.444	1058.7	141.0

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KXLY-TV 13 SPOKANE WA USERRECORD01

and station

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SHORT TO: KECI-TV 13 MISSOULA MT BPCDT 20100409ABD
 047-01- 4 0114-00-47
 Req. separation 273.6 Actual separation 254.4 Short 19.2 km

SHORT TO: KECI-TV 13 MISSOULA MT DTVPLN DTVP0439
 47 -01-04 114 -00-47
 Req. separation 273.6 Actual separation 254.4 Short 19.2 km

SHORT TO: KXLY-TV 13 SPOKANE WA DTVPLN DTVP0474
 47 -55-18 117 -06-48
 Req. separation 273.6 Actual separation 0.0 Short 273.6 km

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance
 Distance to border = 119.9km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

 Start of Interference Analysis

	Proposed Station		
Channel	Call	City/State	ARN
13	KXLY-TV	SPOKANE WA	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
12	KUID-TV	MOSCOW ID	138.2	LIC	BLEDT	-20060804AFK
12	KUID-TV	MOSCOW ID	138.2	PLN	DTVPLN	-DTVP0361
13	KECI-TV	MISSOULA MT	253.7	CP	BPCDT	-20100409ABD
13	KECI-TV	MISSOULA MT	253.7	PLN	DTVPLN	-DTVP0439
13	KTVR	LA GRANDE OR	294.2	LIC	BLEDT	-20090619AAD
13	KTVR	LA GRANDE OR	294.2	PLN	DTVPLN	-DTVP0454
13	KCPQ	TACOMA WA	427.5	CP MOD	BMPCDT	-20080619AFY
13	KCPQ	TACOMA WA	427.5	PLN	DTVPLN	-DTVP0475

%%%

Study of this proposal found the following interference problem(s):

The following station failed the de minimis interference criteria.
 13D WA SPOKANE USERRECORD01
 ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
 Antenna usr USRPAT01

Due to interference to the following station and scenario: 1
 12D ID MOSCOW BLEDT 20060804AFK
 ERP 78.00 kW HAAT 340.0 m RCAMSL 1186.0 m
 Antenna CDB 99999999999999

Percent new interference from proposal: 5.4365 to BLEDT 20060804AFK

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The following station failed the de minimis interference criteria.

13D WA SPOKANE USERRECORD01
ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 2

12D ID MOSCOW BLEDT 20060804AFK
ERP 78.00 kW HAAT 340.0 m RCAMSL 1186.0 m
Antenna CDB 999999999999999

Percent new interference from proposal: 5.4364 to BLEDT 20060804AFK

The following station failed the de minimis interference criteria.

13D WA SPOKANE USERRECORD01
ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 1

12D ID MOSCOW DTVPLN DTVP0361
ERP 78.00 kW HAAT 340.0 m RCAMSL 1186.0 m
Antenna CDB 999999999999999

Percent new interference from proposal: 5.4365 to DTVPLN DTVP0361

The following station failed the de minimis interference criteria.

13D WA SPOKANE USERRECORD01
ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 2

12D ID MOSCOW DTVPLN DTVP0361
ERP 78.00 kW HAAT 340.0 m RCAMSL 1186.0 m
Antenna CDB 999999999999999

Percent new interference from proposal: 5.4364 to DTVPLN DTVP0361

The following station failed the de minimis interference criteria.

13D WA SPOKANE USERRECORD01
ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 1

13D OR LA GRANDE DTVPLN DTVP0454
ERP 31.78 kW HAAT 775.0 m RCAMSL 2193.0 m
Antenna CDB 00000000074341

Percent new interference from proposal: 2.6605 to DTVPLN DTVP0454

The following station failed the de minimis interference criteria.

13D WA SPOKANE USERRECORD01
ERP 46.00 kW HAAT 935.0 m RCAMSL 1840.0 m
Antenna usr USRPAT01

Due to interference to the following station and scenario: 2

13D OR LA GRANDE DTVPLN DTVP0454
ERP 31.78 kW HAAT 775.0 m RCAMSL 2193.0 m
Antenna CDB 00000000074341

Percent new interference from proposal: 2.6605 to DTVPLN DTVP0454

II. NIER Study

The power density calculations shown below were made using the techniques and formulas outlined in the OET Bulletin 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.

$$S(\text{mW} / \text{cm}^2) = \frac{33.40981 \times \text{AdjERP}(\text{Watts})}{D^2}$$

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 KXLY-DT facility were calculated for an elevation of 2 meters above ground (52 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 0.115 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Andrew ATW9V8H antenna proposed in this application. This relative field value yields a worst-case adjusted effective radiated power of 608.4 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 is calculated to be 7.5 $\mu\text{W}/\text{cm}^2$, which is 3.8% of 200 $\mu\text{W}/\text{cm}^2$ (the FCC maximum at the Channel 13 frequency for uncontrolled environments).

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 radiation in excess of FCC guidelines.

August 4, 2010

Erik C. Swanson

Hatfield & Dawson Consulting Engineers