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**Engineering Statement  
Minor Modification Application for KFFV  
Post-Transition Channel 44 at Seattle, WA  
April 2011**

This Engineering Statement has been prepared on behalf of North Pacific International Television (“NPIT”), licensee of digital television station KFFV at Seattle, Washington. KFFV operates on digital Channel 44

The following table lists the KFFV post-transition facilities approved in Appendix B of the DTV Seventh Report and Order<sup>1</sup>, as well as NPIT’s requested post-transition facilities as proposed herein:

	<b>DTV Table Appendix B</b>	<b>Construction Permit</b>	<b>Proposed Form 301</b>
<b>Channel</b>	44	44	44
<b>ERP</b>	240 kW	235 kW	169 kW
<b>HAAT</b>	714 meters	210 meters	210 meters
<b>Antenna</b>	Bogner BU(I)24N-G directional	Bogner B16UG directional	Bogner B16UG directional
<b>Coordinates</b>	47-30-17 121-58-06	47-36-56 122-18-29	47-36-56 122-18-29
<b>DTV Population (thousand)</b>	3,632	3,341	3,306

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<sup>1</sup> See *Advanced Television Systems and their Impact Upon the Existing Television Broadcast Service*, MB Docket No. 87-268, Seventh Report and Order and Eighth Further Notice of Proposed Rulemaking, FCC 07-138, Released August 6, 2007.

## I. Allocation 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 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. 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.

### Summary Study

```
Percent allowed new interference: 0.500
Percent allowed new interference to non Class A LPTV: 2.000
Census data selected 2000
Data Base Selected
./data_files/pt_tvdb.sff
TV INTERFERENCE and SPACING ANALYSIS PROGRAM
```

Date: 04-01-2011 Time: 13:06:43

#### Record Selected for Analysis

```
KFFV USERRECORD-01 SEATTLE WA US
Channel 44 ERP 169. kW HAAT 209. m RCAMSL 00245 m
Latitude 047-36-56 Longitude 0122-18-29
Status APP Zone 2 Border Site number: 01
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.
Last update Cutoff date Docket
Comments
Applicant
```

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility (site # 01) meets maximum height/power limits

Site number	1		
Azimuth	ERP	HAAT	41.0 dBu F(50,90)
(Deg)	(kW)	(m)	(km)
0.0	169.000	170.8	71.1
45.0	27.040	221.7	65.6
90.0	7.453	201.1	57.8
135.0	6.760	202.6	57.4
180.0	60.840	175.1	66.4
225.0	138.415	227.3	74.3
270.0	27.040	242.6	67.0
315.0	29.106	233.9	66.8

Evaluation toward Class A Stations from site # 01

No Spacing violations or contour overlap  
to Class A stations from site # 01

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KFFV 44 SEATTLE WA USERRECORD01 Site # 01

and station

SHORT TO: KHCV 44 SEATTLE WA DTVPLN DTVP1597  
47 -30-17 121 -58-06  
Req. separation 223.7 Actual separation 28.4 Short 195.3 km

LANDMOBILE SPACING VIOLATIONS FOUND

NONE from Site # 01

Checks to Site Number 01

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 = 101.6km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

		Proposed Station		
Channel	Call	City/State	ARN	
44	KFFV	SEATTLE WA	USERRECORD01	

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
44	KVEW	KENNEWICK WA	294.1	LIC	BLCDT	20090326ACW

%%%

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

NONE.

## II. 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.

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

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.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (117 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 40 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.150 at these angles for the horizontally-polarized Bogner B16UG antenna proposed in this application. This relative field value yields a worst-case adjusted effective radiated power of 3803 Watts at depression angles between 40 and 90 degrees below the horizontal. Assuming this worst-case effective radiated 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 9.3  $\mu\text{W}/\text{cm}^2$ , which is 2% of 435  $\mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 44 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 locations between 1 and 1000 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 applicants 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 non-ionizing radiation 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 radiation in excess of FCC guidelines.

April 1, 2011

Erik C. Swanson