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**Engineering Statement  
Minor Modification Application for KPST-DT  
Post-Transition Channel 44 at Seattle, WA  
June 2010**

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

The following table lists the KOPB-DT 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>Proposed Form 340</b>
<b>Channel</b>	44	44
<b>ERP</b>	240 kW	235 kW
<b>HAAT</b>	714 meters	210 meters
<b>Antenna</b>	Bogner BU(I)24N-G directional	Bogner B16UG directional
<b>Coordinates</b>	47-30-17 121-58-06	47-36-56 122-18-29
<b>DTV Population (thousand)</b>	3,632	3,341

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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 and a 1 km grid spacing. 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.

```
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: 06-28-2010 Time: 16:45:55

Record Selected for Analysis

```
KPST      USERRECORD-01      SEATTLE      WA US
Channel 44 ERP 235. kW HAAT 209. m RCAMSL 00245 m
Latitude 047-36-56 Longitude 0122-18-29
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 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	41.0 dBu F(50,90) (km)
0.0	235.000	170.8	72.8
45.0	37.600	221.7	67.3
90.0	10.363	201.1	59.4
135.0	9.400	202.6	59.0
180.0	84.600	175.1	68.0
225.0	192.471	227.3	76.0
270.0	37.600	242.6	68.7
315.0	40.473	233.9	68.5

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KPST 44 SEATTLE WA USERRECORD01

and station

SHORT TO: KHCV 44 SEATTLE WA DTVPLN DTVP1596
47 -30-17 121 -58-06
Req. separation 223.7 Actual separation 28.4 Short 195.3 km

LANDMOBILE SPACING VIOLATIONS FOUND

NONE

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

Channel Proposed Station
44 KPST SEATTLE WA ARN 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
44 KVEW KENNEWICK WA 294.1 PLN DTVPLN -DTVP1595

%%%

Analysis of Interference to Affected Station 1

Analysis of current record

Channel Call City/State Application Ref. No.
44 KVEW KENNEWICK WA BLCDT -20090326ACW

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
44	KHCV	SEATTLE WA	266.1	PLN	DTVPLN	-DTVP1596
44	KPST	SEATTLE WA	294.1	APP	USERRECORD-01	

Proposal causes no interference

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Analysis of Interference to Affected Station 2

Analysis of current record

Channel	Call	City/State	Application	Ref. No.
44	KVEW	KENNEWICK WA	DTVPLN	-DTVP1595

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
44	KHCV	SEATTLE WA	266.1	PLN	DTVPLN	-DTVP1596
44	KPST	SEATTLE WA	294.1	APP	USERRECORD-01	

Proposal causes no interference

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Analysis of Interference to Affected Station 3

Analysis of current record

Channel	Call	City/State	Application	Ref. No.
44	KPST	SEATTLE WA	USERRECORD-01	

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
44	KVEW	KENNEWICK WA	294.1	LIC	BLCDT	-20090326ACW
44	KVEW	KENNEWICK WA	294.1	PLN	DTVPLN	-DTVP1595

Total scenarios = 1

Result key: 1  
 Scenario 1 Affected station 3  
 Before Analysis

Results for: 44A WA SEATTLE USERRECORD01 APP  
 HAAT 209.0 m, ATV ERP 235.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	3381766	14115.5
not affected by terrain losses	3341223	13249.6
lost to NTSC IX	0	0.0
lost to additional IX by ATV	0	0.0
lost to ATV IX only	0	0.0
lost to all IX	0	0.0

Potential Interfering Stations Included in above Scenario 1

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## II. NIER 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 7197 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 17.6  $\mu\text{W}/\text{cm}^2$ , which is 4% 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.

June 28, 2010

Erik C. Swanson

