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**Engineering Statement  
Application for Minor Change for KIRO-DT  
Post-Transition Channel 39 at Seattle, WA  
May 2008**

This Engineering Statement has been prepared on behalf of KIRO-TV, Inc. ("KIRO"), licensee of television station KIRO-TV at Seattle, Washington. KIRO-TV presently operates on analog Channel 7, with paired digital Channel 39. KIRO-TV will be continuing permanent digital operation on its present digital channel. This material has been prepared in connection with an application for minor change of the KIRO-TV digital facility, for post-transition facilities on digital Channel 39. This application reflects relocation of the current KIRO-TV digital antenna to the top section of the tower, after the analog antenna has been removed.

The following table lists the KIRO-DT post-transition facilities approved in Appendix B of the DTV Seventh Report and Order MO&O<sup>1</sup>, as well as KIRO's requested facilities as proposed herein:

	<b>DTV Table Appendix B</b>	<b>Proposed Form 301</b>
<b>Channel</b>	39	39
<b>ERP</b>	1000 kW	1000 kW
<b>HAAT</b>	230 meters	257 meters
<b>Antenna</b>	Dielectric TFU-32DSC C164 directional	Dielectric TFU-32DSC C164 directional
<b>Coordinates</b>	47-38-01 122-21-20	47-38-01 122-21-20
<b>DTV Population (thousand)</b>	3,534	3,560 (101%)

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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, 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. 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 2 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

Study has been performed using the post-transition database. The results of these studies indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on this allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

## Post-Transition Analysis

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### Summary Study

#### TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 05-30-2008 Time: 17:36:02

#### Record Selected for Analysis

KIRO-TV USERRECORD-01 SEATTLE WA US  
Channel 39 ERP 1000. kW HAAT 257. m RCAMSL 00298 m  
Latitude 047-38-01 Longitude 0122-21-20  
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	840.889	196.1	81.9
45.0	956.484	240.4	87.3
90.0	896.809	255.5	88.9
135.0	956.484	264.0	91.1
180.0	840.889	235.5	85.5
225.0	137.641	293.9	79.8
270.0	92.416	277.0	75.9
315.0	141.752	292.6	79.8

#### Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

#### Class A Evaluation Complete

#### SPACING VIOLATION FOUND BETWEEN STATION

KIRO-TV 39 SEATTLE WA USERRECORD01

and station

SHORT TO: KIRO-TV 39 SEATTLE WA BDTV 1711  
47 -38-01 122 -21-20  
Req. separation 223.7 Actual separation 0.0 Short 223.7 km

#### LANDMOBILE SPACING VIOLATIONS FOUND

NONE

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance  
Distance to border = 97.7km

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	Call	City/State	ARN
39	KIRO-TV	SEATTLE WA	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
38	KOMO-TV	SEATTLE WA	0.3	LIC	BDTV	-1710

%%%

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

NONE.

Furthermore, it has been verified that the proposed facility will not reduce the population served by the KIRO-TV digital facility by more than 5%, compared to the DTV population listed in Appendix B.

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# Analysis of Interference to Affected Station 2

## Analysis of current record

Channel	Call	City/State	Application Ref. No.
39	KIRO-TV	SEATTLE WA	USERRECORD-01

## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
38	KOMO-TV	SEATTLE WA	0.3	LIC	BDTV -1710

Total scenarios = 1

Result key: 2  
Scenario 1 Affected station 2  
Before Analysis

Results for: 39A WA SEATTLE USERRECORD01 APP  
HAAT 257.0 m, ATV ERP 1000.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	3585950	21985.1
not affected by terrain losses	3560301	20397.3
lost to NTSC IX	0	0.0
lost to additional IX by ATV	5304	104.3
lost to ATV IX only	5304	104.3
lost to all IX	5304	104.3

Potential Interfering Stations Included in above Scenario 1

38A WA SEATTLE	BDTV	1710	LIC
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## II. NIER Study

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed KIRO-TV digital operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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.

Power density levels produced by the proposed KIRO-TV digital facility were calculated for an elevation of 2 meters above ground (174 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 0.08 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Dielectric TFU-32DSC C164 antenna proposed in this application. This relative field value yields a worst-case adjusted effective radiated power of 6400 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  $7.1 \mu\text{W}/\text{cm}^2$ , which is 1.7% of  $415 \mu\text{W}/\text{cm}^2$  (the FCC maximum for uncontrolled environments at the Channel 39 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed KIRO-TV digital operation alone is less than 5% of the applicable FCC exposure limit at all 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.

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.

May 30, 2008

Erik C. Swanson