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Engineering Statement
Minor Modification Application
For KBTC-DT Ch. 27 Tacoma, WA
October 2006

This Engineering Statement has been prepared on behalf of Bates Technical College ("BTC"), licensee of digital TV station KBTC-DT at Tacoma, Washington. This material has been prepared in connection with a minor modification application and concurrently-filed STA request for KBTC-DT.

Structural concerns necessitate modification of the locations of the antennas on the tower. Furthermore, BTC has elected to implement its permanent DTV operation on its assigned digital Channel 27. In order to maximize the station's DTV service, BTC proposes relocate the KBTC digital antenna to the top of the tower in the space currently occupied by the analog antenna. In a separate application, BTC is proposing to install a new analog antenna at a lower position on the tower.

The instant application does not violate the conditions of the August 3, 2004 freeze. As depicted on the attached map exhibit, the proposed 41 dBu service area is completely contained within the combined area resulting from the station's parameters as defined in a) the current Commission license, and b) the DTV Table of Allotments.

This application also reflects a correction to the coordinates of the existing tower.

I. Allocation Study

A detailed Longley-Rice interference study has been conducted to demonstrate that the proposed operation will not cause interference to any other facilities. 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 KBTC-DT facility is predicted to cause zero additional interference to other stations.

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.

$$S(\mu W/cm^2) = \frac{[(0.4)\,VERP + AERP] \times 1.64 \times 2.56 \times 100 \times F^2}{4 \times B \times (Distance)^2}$$

Where: VERP = total peak visual ERP in Watts
AERP = aural ERP in Watts
F = relative field factor in the downward direction
Distance = 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.

Calculations of the power density produced by the proposed KBTC-TV antenna system have been performed using the manufacturer's vertical plane pattern for the Dielectric TLP-8B antenna proposed for use. Power density levels were calculated for an elevation of 2 meters above ground level (147 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 0.25 at these angles. This relative field value yields a worst-case effective radiated power of 2.813 kW at depression angles between 40 and 90 degrees below the horizontal. Assuming this power level and the shortest distance between the antenna radiation center and 2 meters above ground (i.e. straight down), the highest calculated ground level 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 4.3 $\mu W/cm^2$, which is 1.2% of 367 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Channel 27 visual carrier 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 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.

Public access to the site is restricted. 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.

October 23, 2006

Erik C. Swanson

Summary Study

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 04-19-2006 Time: 12:27:55

Record Selected for Analysis

KBTC-TV USERRECORD-01 TACOMA WA US
Channel 27 ERP 45. kW HAAT 234. m RCAMSL 00274 m
Latitude 047-16-44 Longitude 0122-30-42
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 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	41.0 dBu F(50,90) (km)
0.0	45.000	223.1	68.3
45.0	45.000	274.0	71.8
90.0	45.000	231.5	68.9
135.0	45.000	188.1	65.8
180.0	45.000	192.1	66.1
225.0	45.000	271.1	71.6
270.0	45.000	252.7	70.3
315.0	45.000	243.3	69.7

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KBTC-TV 27 TACOMA WA USERRECORD01

and station

SHORT TO: KTBW-TV 20 TACOMA WA BLCT 19840409KG
047-32-50 0122-47-39
Req. separation => 24.1 <= 96.6 Actual separation 36.7 Short 59.9(12.6) km

SHORT TO: KOPB-TV 27 PORTLAND OR BMPEDT 20050712ACT

045-31-21 0122-44-45
Req. separation 223.7 Actual separation 196.1 Short 27.6 km

SHORT TO: KOPB-DT 27 PORTLAND OR DTVPLN DTVP0686
 45-31-22   122-45-07
Req. separation 223.7 Actual separation 196.1 Short 27.6 km

SHORT TO: KBTC-TV 27 TACOMA WA BLEDT 20030425ABJ
047-16-41 0122-30-42
Req. separation 196.3 Actual separation 0.1 Short 196.2 km

SHORT TO: KBTC-DT 27 TACOMA WA DTVPLN DTVP0696
 47-16-41   122-30-42
Req. separation 223.7 Actual separation 0.1 Short 223.6 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 Mountian

Proposed facility is within the Canadian coordination distance
Distance to border = 123.9km

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 Call	City/State	ARN
27	KBTC-TV	TACOMA WA	USERRECORD01

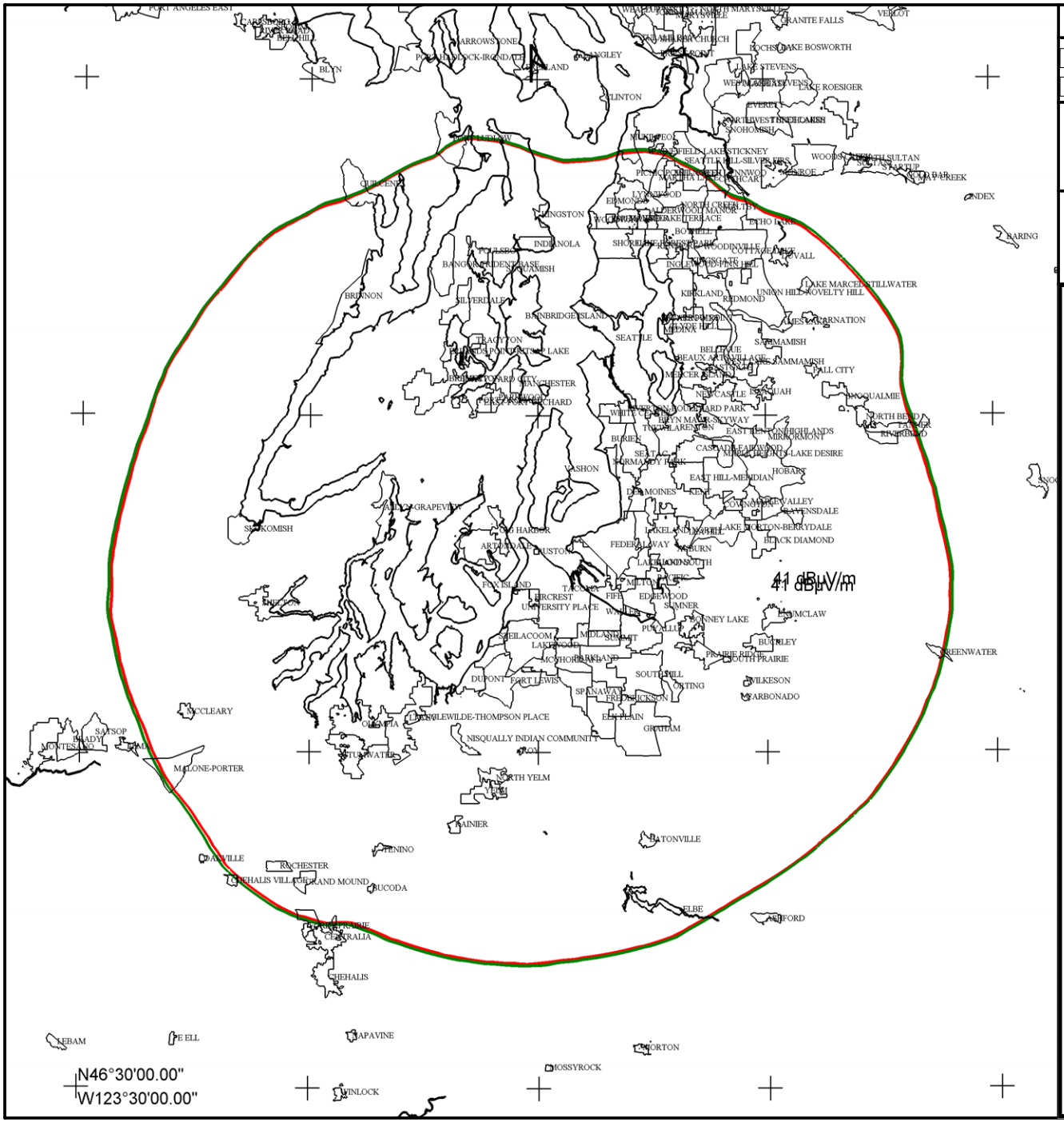
Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
20	KTBW-TV	TACOMA WA	36.6	LIC	BLCT	-19840409KG
27	KOPB-TV	PORTLAND OR	196.0	CP MOD	BMPEDT	-20050712ACT
27	KOPB-DT	PORTLAND OR	196.1	PLN	DTVPLN	-DTVP0686
28	KBTC-TV	TACOMA WA	0.1	LIC	BLET	-19870224KI

%%%

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

NONE.



SIGNAL™: KBTC-TV Tacoma

DTV Table 41 dBu F(50,90)

Proposed 41 dBu F(50,90)

KILOMETERS

-25 0 25

KBTC-DT Tacoma Contour Map

Hatfield & Dawson

Exhibit Oct 2006

This map exhibit demonstrates that the proposed service area is completely encompassed by the service area authorized by the DTV Table of Allotments.

DeLORME

XMap® 4.5

Transmitter Site Map
KBTC-TV/DT Tacoma, WA 10/2006

Gig Harbor, WA Quadrangle
7.5 Minute Series
Contour Interval 20 Feet

TN
MN (17.6°E)

Scale 1 : 24,000
1" = 609.6 m

Data Zoom 13-1