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**Engineering Statement
Digital Companion Channel Application for K48DC
Channel 20 at Baker City, Oregon
September 2006**

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting, licensee of TV translator station K48DC at Baker City, Oregon. This material has been prepared in connection with a digital companion channel application.

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 interference to any facilities with which contour overlap exists. 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.

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

Summary Study

1990 Census data selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 05-09-2006 Time: 13:58:25

Record Selected for Analysis

BAK20 USERRECORD-01 BAKER CITY OR US
Channel 20 ERP 0.5 kW HAAT 558. m RCAMSL 01962 m SIMPLE MASK
Latitude 044-35-57 Longitude 0117-46-58
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

Not full service station

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	0.461	722.0	47.3
45.0	0.056	646.7	33.2
90.0	0.001	342.8	8.8
135.0	0.000	553.6	3.0
180.0	0.005	681.7	20.4
225.0	0.000	513.1	6.3
270.0	0.001	348.8	10.2
315.0	0.192	652.4	40.8

Contour Overlap to Proposed Station

Station
KITL-LP 20 BOISE ID BLTTL20060303ABS causes

Contour overlap to Digital LPTV station

BAK20 20 BAKER CITY OR USERRECORD01
Required D/U ratio: 2.0

Contour Overlap Evaluation to Proposed Station Complete

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 beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Call	City/State	ARN
20	BAK20	BAKER CITY OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
16	951207KH	LA GRANDE OR	79.1	APP	BPCT	-19951207KH
16	KPOU	LA GRANDE OR	79.1	LIC	BLCT	-20011221AAN
17	K17ED	PAYETTE ID	91.8	LIC	BLTTL	-19980713JE
19	K19BY	GRANGEVILLE, ETC. ID	193.1	LIC	BLTT	-19890705IH
19	KMBA-LP	ONTARIO OR	91.7	LIC	BLTTL	-19950403ID
19	KEPR-TV	PASCO WA	199.6	LIC	BLCT	-2582
20	KITL-LP	BOISE ID	162.3	LIC	BLTTL	-20060303ABS
20	KITL-LP	BOISE ID	162.3	APP	BDFCDTL	-20060330ACS
20	KSVT-LP	KETCHUM ID	290.3	LIC	BLTTL	-19960911JE
20	K20HW	MCCALL ID	137.7	CP	BNPTTL	-20000823AAZ
20	K20EH	HOOD RIVER OR	323.7	LIC	BLTTL	-19940114JR
20	K20EH	HOOD RIVER OR	396.6	APP	BDFCDTL	-20060331BCC
20	K20ES	PENDLETON, ETC. OR	137.2	LIC	BLTTL	-19960301JC
20	K63GK	PORTLAND OR	378.8	APP	BPTTL	-20020627AAR
20	KOXI-CA	CAMAS WA	378.8	LIC	BLTTA	-20040610AAZ
20	KOXI-CA	CAMAS WA	402.9	CP	BPTTA	-20040614AAQ
20	KREM-TV	SPOKANE WA	335.0	LIC	BLCDT	-20050623ABG
21	KAID	BOISE ID	163.8	LIC	BLEDT	-20030131AHY
21	KAID	BOISE ID	163.8	CP	BPEDT	-20040618AAS
21	K21EK	WALLA WALLA WA	157.5	LIC	BLTTL	-20020604AAX
22	K59BO	PENDLETON OR	126.5	APP	BDISTT	-20060315AET
23	K23DB	LA GRANDE OR	79.1	LIC	BLTTL	-19920123JH
24	K24DX	PENDLETON, ETC OR	137.2	LIC	BLTTL	-19960301JB
27	K27DX	MCCALL ID	126.6	LIC	BLTT	-19940131JH
28	K61BF	ENTERPRISE OR	94.2	CP	BPTT	-20050510ABH
28	K28GD	HEPPNER, ETC. OR	137.2	LIC	BLTT	-20020419ABE

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

NONE.

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.

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

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.

The worst case power density levels occur at depression angles between 30 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.100 at these angles, based on the manufacturer's vertical plane pattern for the 4-level Kathrein K723147 antenna. This relative field value yields a worst-case adjusted average effective radiated power of 5 Watts at depression angles between 40 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 3.4 $\mu\text{W}/\text{cm}^2$, which is 1.0% of 339 $\mu\text{W}/\text{cm}^2$ (the FCC maximum at the Channel 20 frequency for uncontrolled environments).

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 transmitter 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.

September 8, 2006

Erik C. Swanson

Hatfield & Dawson Consulting Engineers