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**Engineering Statement
Digital Flash Cut Application for K31AE
Channel 31 at Sutherlin, OR
March 2010**

This Engineering Statement has been prepared on behalf of Newport Television License LLC, licensee of TV translator station K31AE at Sutherlin, Oregon. This material has been prepared in connection with an application for digital flash cut.

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 **1.0 km cell size and a 0.1 km profile spacing increment**. 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. The only potential interference conflict is due to interference predicted to be received from an application for a new digital LPTV station on Channel 30 at Roseburg, Oregon (see BNPDTL-20090825BHI). The Roseburg Ch30 proposal is predicted to increase the interference received by the K31AE digital facility to 19.9%. However, this is not believed to represent an impediment to grant of the instant application because the Roseburg application was filed first. Once (and assuming that) the Roseburg application is granted, there would be no evaluation of interference received from that facility, and therefore there would be no MX situation. Neither would there be any interference conflict if the Roseburg application were to

be dismissed. At worst, the instant application should be held in a queue behind the Roseburg application.

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

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 03-09-2010 Time: 13:09:17

Record Selected for Analysis

K31AE USERRECORD-01 SUTHERLIN OR US
 Channel 31 ERP 4.6 kW HAAT 817. m RCAMSL 01307 m STRINGENT MASK
 Latitude 043-22-19 Longitude 0123-03-48
 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 0.10 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	0.142	857.4	42.2
45.0	0.046	390.3	26.6
90.0	0.032	648.5	29.8
135.0	0.054	784.4	35.2
180.0	0.292	888.3	47.2
225.0	3.839	1013.6	66.1
270.0	4.091	936.0	65.2
315.0	0.529	1014.1	53.0

Contour Overlap to Proposed Station

Station
 K32FI 32 YONCALLA OR BLTTL20030124AGC

Station inside contour of Digital LPTV station
 K31AE 31 SUTHERLIN OR USERRECORD01

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 quiet 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	Proposed Station Call	City/State	ARN
31	K31AE	SUTHERLIN OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
30	K30JS-D	YREKA CA	199.2	CP MOD	BMPD TT	-20080528ABH
30	K30BN	COOS BAY OR	86.2	CP	BDFCD TT	-20091102ACY
30	K30BN	COOS BAY OR	86.2	LIC	BLTT	-20030725ADE
30	KBLN	GRANTS PASS OR	111.3	CP	BPCDT	-20080318AMT
30	K30JT-D	LA PINE OR	135.3	LIC	BLD TT	-20100106ABC
31	NEW	CHICO CA	396.7	APP	BNP DT L	-20090825BPI
31	KEUV-LP	EUREKA CA	303.5	LIC	BLTT L	-20050729AMX
31	NEW	REDDING CA	305.4	APP	BNP DT L	-20090825BPH
31	NEW	REDDING CA	312.0	APP	BNP DT L	-20090825ATG
31	K31IE	SUSANVILLE, ETC. CA	394.7	LIC	BLTT	-20080724ABN
31	NEW	CHICO CT	401.9	APP	BNP DT L	-20090825APB
31	K31GP	BROOKINGS, ETC. OR	177.2	LIC	BLTT	-20051214ACA
31	KL SR-TV	EUGENE OR	70.0	LIC	BLCD T	-20070104ADQ
31	K31JS-D	GOLD HILL OR	105.0	CP	BDCCD TT	-20061030AMT
31	K05KI	LAKEVIEW OR	257.5	CP	BDISD TT	-20090824AKG
31	K31CR-D	PRINEVILLE, ETC. OR	190.9	LIC	BLD TT	-20081016AEI
31	K31HK	RAINIER OR	310.7	LIC	BLTT	-20070502ABR
31	K31HK	RAINIER OR	310.7	CP	BDFCD TT	-20090821ACO
31	K31HZ-D	THE DALLES, ETC. OR	302.4	LIC	BLD TT	-20091125AAT
31	K59BX	GRAYS RIVER WA	345.5	CP	BDIST T	-20060328AGL
31	K59BX	GRAYS RIVER WA	345.5	CP	BDFCD TT	-20090213AAK
32	NEW	: EUGENE OR	74.9	APP	BNP DT L	-20090825BHV
32	K32ET	CANYONVILLE OR	55.3	LIC	BLTT A	-20011130ABA
32	K32HF-D	FLORENCE OR	104.1	LIC	BLD TT	-20100119ADV
32	NEW	GRANTS PASS OR	90.0	APP	BNP DT L	-20090825BGO
32	K32DY	MEDFORD OR	122.0	LIC	BLTT A	-20070412ABL
32	K32DY	MEDFORD OR	122.0	CP	BDFCD TA	-20090313AAD
32	K32CC	MONTGOMERY RANCH, ETC OR	137.4	LIC	BLTT	-19881013IC
32	K32JL-D	POWERS OR	96.6	CP	BNP DT T	-20090825BMY
32	K32FI	YONCALLA OR	36.4	LIC	BLTT L	-20030124AGC
32	K32FI	YONCALLA OR	36.4	CP	BDFCD TT	-20091102ADE
33	K33AG	BEND OR	159.8	LIC	BLTT L	-19871223ID
33	K33CP	GOLD BEACH OR	151.8	LIC	BLTT	-19900329JJ
33	K33GJ	MERLIN OR	89.3	LIC	BLTT L	-20040916AA Y
33	K33FE	ROSEBURG OR	32.1	LIC	BLTT	-20020503AAS
34	K34KJ	CRESCENT CITY, ETC. CA	180.9	LIC	BLTT L	-20090126ABG
34	K34IC	GLIDE OR	0.2	LIC	BLTT L	-20061113AAJ
34	K49JE-D	MURPHY, ETC. OR	108.2	APP	BSTA	-20060707AFC
34	K34DJ	PHOENIX, ETC. OR	122.0	LIC	BLTT	-19920408IC
34	K65AE	TERREBONNE OR	184.6	CP	BDIST T	-20061212ABJ
38	K38CZ	LINCOLN CITY/NEWPORT OR	172.8	LIC	BLTT	-19940131JG
38	K38DT	NORTH LAPINE OR	137.4	LIC	BLTT	-19930401JG
39	K39EO	CRESCENT CITY, ETC. CA	191.1	LIC	BLTT L	-19971105IF
39	K39EF	ASHLAND OR	122.4	LIC	BLTT L	-20041228ABH
39	KFXO-LP	BEND OR	159.8	LIC	BLTT A	-20090123ACN
39	K39DP	KLAMATH FALLS OR	163.1	LIC	BLTT L	-19960531JA
39	K39CL	YONCALLA OR	36.4	LIC	BLTT L	-19920302II
30	NEW	ROSEBURG OR	31.7	APP	USERRECORD-02	

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

Proposed station is MX
31A OR SUTHERLIN USERRECORD01 APP

Proposal MX with group in scenario 3 of station 49

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.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (11 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 0.215 at these angles, based on the manufacturer's elevation pattern for the Scala 4DR-8-2HN Parapanel array. This relative field value yields a worst-case adjusted average effective radiated power of 212.6 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 58.7 $\mu\text{W}/\text{cm}^2$, which is 15.3% of 383 $\mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 31 frequency).

Calculations of the power density produced by K31AE and the other stations at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pub FCC Limit	% of Limit
K31AE-D	4.6 kW avg SCA 4DR-8-2HN array	0.215	13 m	58.7 $\mu\text{W}/\text{cm}^2$	383 $\mu\text{W}/\text{cm}^2$	15.3%

K24FH-D	1.1 kW avg KAT K723417 array	0.125	23 m	1.3 $\mu\text{W}/\text{cm}^2$	355 $\mu\text{W}/\text{cm}^2$	0.4%
K26HO analog lic	10.8 kW peak SCA 4DR-8-2HW ¹	0.215	7.6 m	265.9 $\mu\text{W}/\text{cm}^2$	363 $\mu\text{W}/\text{cm}^2$	73.3% or 38.8%
digital CP	2.0 kW avg SCA 4DR-4S	0.257	7.6 m	140.7 $\mu\text{W}/\text{cm}^2$		
K34IC analog lic	4.0 kW peak SCA 4DR-8S	0.215	22 m ²	7.7 $\mu\text{W}/\text{cm}^2$	395 $\mu\text{W}/\text{cm}^2$	1.9% or 1.9%
digital CP	2.0 kW avg SCA 4DR-8S	0.215	22 m	7.7 $\mu\text{W}/\text{cm}^2$		

Nearby FM translators K205DM and K207AB each operate with an ERP of less than 100 Watts and are therefore excluded from this study.

These calculations show that the worst-case maximum calculated power density produced at two meters above ground level by the proposed operation of K31AE and the operations of the other stations at this site (were their maxima to coincide, which they do not) is 90.9% of the FCC standard for uncontrolled environments.

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.

March 10, 2010

Erik C. Swanson, P.E.

¹ While the FCC database indicates that the K26HO analog operation utilizes a Scala CL-1469 antenna, documents included in the license application BLTT-20070614ABC make clear that the facility was constructed using a Scala 4DR-8-2HW antenna.

² The FCC database record for the K34IC analog license incorrectly indicates an antenna height of 1304 meters above ground.