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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 | 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 | BMPDTT | -20080528ABH |
| 30 | K30BN | COOS BAY OR | 86.2 | CP | BDFCDTL | -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 | BLDTL | -20100106ABC |
| 31 | NEW | CHICO CA | 396.7 | APP | BNPDTL | -20090825BPI |
| 31 | KEUV-LP | EUREKA CA | 303.5 | LIC | BLTTL | -20050729AMX |
| 31 | NEW | REDDING CA | 305.4 | APP | BNPDTL | -20090825BPH |
| 31 | NEW | REDDING CA | 312.0 | APP | BNPDTL | -20090825ATG |
| 31 | K31IE | SUSANVILLE, ETC. CA | 394.7 | LIC | BLTT | -20080724ABN |
| 31 | NEW | CHICO CT | 401.9 | APP | BNPDTL | -20090825APB |
| 31 | K31GP | BROOKINGS, ETC. OR | 177.2 | LIC | BLTT | -20051214ACA |
| 31 | KLRS-TV | EUGENE OR | 70.0 | LIC | BLCDT | -20070104ADQ |
| 31 | K31JS-D | GOLD HILL OR | 105.0 | CP | BDCCDTT | -20061030AMT |
| 31 | K05KI | LAKEVIEW OR | 257.5 | CP | BDISDTL | -20090824AKG |
| 31 | K31CR-D | PRINEVILLE, ETC. OR | 190.9 | LIC | BLDTT | -20081016AEI |
| 31 | K31HK | RAINIER OR | 310.7 | LIC | BLTT | -20070502ABR |
| 31 | K31HK | RAINIER OR | 310.7 | CP | BDFCDTT | -20090821ACO |
| 31 | K31HZ-D | THE DALLES, ETC. OR | 302.4 | LIC | BLDTT | -20091125AAT |
| 31 | K59BX | GRAYS RIVER WA | 345.5 | CP | BDISTT | -20060328AGL |
| 31 | K59BX | GRAYS RIVER WA | 345.5 | CP | BDFCDTT | -20090213AAK |
| 32 | NEW | : EUGENE OR | 74.9 | APP | BNPDTL | -20090825BHV |
| 32 | K32ET | CANYONVILLE OR | 55.3 | LIC | BLTTA | -20011130ABA |
| 32 | K32HF-D | FLORENCE OR | 104.1 | LIC | BLDTT | -20100119ADV |
| 32 | NEW | GRANTS PASS OR | 90.0 | APP | BNPDTL | -20090825BGO |
| 32 | K32DY | MEDFORD OR | 122.0 | LIC | BLTTA | -20070412ABL |
| 32 | K32DY | MEDFORD OR | 122.0 | CP | BDFCDTA | -20090313AAD |
| 32 | K32CC | MONTGOMERY RANCH, ETC OR | 137.4 | LIC | BLTT | -19881013IC |
| 32 | K32JL-D | POWERS OR | 96.6 | CP | BNPDTT | -20090825BMY |
| 32 | K32FI | YONCALLA OR | 36.4 | LIC | BLTTL | -20030124AGC |
| 32 | K32FI | YONCALLA OR | 36.4 | CP | BDFCDTL | -20091102ADE |
| 33 | K33AG | BEND OR | 159.8 | LIC | BLTTL | -19871223ID |
| 33 | K33CP | GOLD BEACH OR | 151.8 | LIC | BLTT | -19900329JJ |
| 33 | K33GJ | MERLIN OR | 89.3 | LIC | BLTTL | -20040916AAV |
| 33 | K33FE | ROSEBURG OR | 32.1 | LIC | BLTT | -20020503AAS |
| 34 | K34KJ | CRESCENT CITY, ETC. CA | 180.9 | LIC | BLTTL | -20090126ABG |
| 34 | K34IC | GLIDE OR | 0.2 | LIC | BLTTL | -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 | BDISTT | -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 | BLTTL | -19971105IF |
| 39 | K39EF | ASHLAND OR | 122.4 | LIC | BLTTL | -20041228ABH |
| 39 | KFXO-LP | BEND OR | 159.8 | LIC | BLTTA | -20090123ACN |
| 39 | K39DP | KLAMATH FALLS OR | 163.1 | LIC | BLTTL | -19960531JA |
| 39 | K39CL | YONCALLA OR | 36.4 | LIC | BLTTL | -19920302II |
| 30 | NEW | ROSEBURG OR | 31.7 | APP | USERRECORD-02 | |

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

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 |
| digital CP | 2.0 kW avg SCA 4DR-4S | 0.257 | 7.6 m | 140.7 $\mu\text{W}/\text{cm}^2$ | | 38.8% |
| 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 |
| digital CP | 2.0 kW avg SCA 4DR-8S | 0.215 | 22 m | 7.7 $\mu\text{W}/\text{cm}^2$ | | 1.9% |

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.