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**Engineering Statement
Digital Companion Channel Application for KUMN-LP
For Operation on Channel 46
October 2006**

This Engineering Statement has been prepared on behalf of Spokane Television, Inc. ("Spokane TV"), licensee of LPTV station KUMN-LP at Moses Lake, Washington. This material has been prepared in connection with a digital companion channel application for operation on Channel 46.

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 unacceptable interference to other stations.

Summary Study

1990 Census data selected
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 10-21-2006 Time: 03:26:20

Record Selected for Analysis

MOSES46D USERRECORD-04 MOSES LAKE WA US
Channel 46 ERP 1.3 kW HAAT 524. m RCAMSL 00841 m STRINGENT MASK
Latitude 046-48-23 Longitude 0119-33-25
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT04 Beam tilt N Ref Azimuth 31.
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	0.826	561.8	48.3
45.0	1.185	581.2	50.9
90.0	0.176	481.5	36.7
135.0	0.000	586.5	4.8
180.0	0.000	661.4	8.5
225.0	0.000	590.0	7.2
270.0	0.001	178.1	7.5
315.0	0.030	552.1	28.1

Contour Overlap to Proposed Station

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 within the Canadian coordination distance
Distance to border = 243.8km

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
46	MOSES46D	MOSES LAKE	WA	USERRECORD04

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
31	K31AK	ELLENSBURG, ETC. WA	60.5	LIC	BLTT	-19880615IE
31	K31AK	ELLENSBURG, ETC. WA	60.5	CP	BMJPTT	-20000831CMM
31	KTNW	RICHLAND WA	84.8	LIC	BLET	-20000628AET
32	K32FN	WENATCHEE WA	82.6	LIC	BLTT	-20030605AEC
38	K69BF	STEMILT, ETC. WA	82.6	CP	BPTT	-20041207AAT
39	K39ES	HEPPNER, ETC. OR	137.3	LIC	BLTT	-19980803JH
39	K39DM	ELLENSBURG WA	68.1	CP	BPTTL	-20060127ARI
39	K39DM	ELLENSBURG WA	68.1	LIC	BLTTL	-19930628IE
39	K39DL	MOSES LAKE WA	0.1	LIC	BLTTL	-19980107JB
39	K39FU	YAKIMA WA	77.8	LIC	BLTTL	-20040616AAS
42	K53DN	EAST WENATCHEE WA	77.2	APP	BPTT	-20060928AKJ
42	KVEV	KENNEWICK WA	84.7	LIC	BLCT	-19771207KJ
42	K53AH	MONITOR, ETC. WA	103.2	APP	BPTT	-20060928AKI
43	K43FH	HEPPNER, ETC. OR	137.3	LIC	BLTT	-19980803JJ
43	K57BA	BAKER FLATS AREA WA	95.7	APP	BPTT	-20060928AIG
43	K57AY	DRYDEN WA	113.7	APP	BPTT	-20060928AJG
43	KUMN-LP	MOSES LAKE, ETC. WA	0.0	LIC	BLTT	-20060428ACH
43	K43GY	YAKIMA, ETC. WA	77.8	LIC	BLTTL	-20040615ACA
44	K44CK	CHELAN WA	136.6	LIC	BLTT	-19940609JD
44	K44EN	METHOW WA	140.5	LIC	BLTT	-19960506KM
45	K45FZ	LEWISTON ID	195.7	LIC	BLTT	-20030605AEE
45	K36EW	COLLEGE PLACE WA	124.2	LIC	BLTTL	-19900813II
45	KHCV	SEATTLE WA	198.1	CP	BPCT	-20060126ARD
45	KHCV	SEATTLE WA	198.1	LIC	BLCT	-20000906AAM
45	K45AC	WENATCHEE WA	82.6	LIC	BLTT	-19940914JD
45	KDHW-LP	YAKIMA WA	75.0	CP	BPTTA	-20030306ABS
45	KDHW-LP	YAKIMA WA	75.0	LIC	BLTTA	-20010709ADB
45	KDHW-LP	YAKIMA WA	77.5	APP	BPTTA	-20040525ADF
46	K32HA	BONNERS FERRY, ETC. ID	318.0	APP	BSTA	-20051107AAC
46	K46HZ	BONNES FERRY ID	318.0	LIC	BLTT	-20060511ABX
46	NEW	COEUR D'ALENE ID	236.7	APP	BSFDTT	-20060630CJN
46	K59BA	GRANGEVILLE ID	250.6	CP	BPTT	-20030620AAP
46	K46AM	BAKER, ETC. OR	280.7	CP MOD	BMPTT	-19810121LB
46	K46CU	HEPPNER, ETC. OR	137.3	LIC	BLTT	-19980803JI
46	KGW	PORTLAND OR	283.9	LIC	BLCDT	-20000314ABB
46	KGW	PORTLAND OR	283.9	CP MOD	BMPCDT	-19990525KI
46	K46AK	PRINEVILLE, ETC. OR	284.7	LIC	BLTT	-19931105JI
46	K46HV	PULLMAN WA	200.9	CP	BNPTTL	-20000829AQR
46	NEW	SEATTLE WA	198.0	APP	BDCCDTL	-20061011ADL
46	K46FL	WALLA WALLA WA	147.1	LIC	BLTT	-20020211AAA
47	KQUP-LP	COEUR D'ALENE ID	189.9	LIC	BLTTL	-20051020AED
47	K47BW	LEWISTON, ETC. ID	195.6	LIC	BLTTL	-19880523IH
47	KWWO-LP	WALLA WALLA WA	144.5	LIC	BLTTL	-19961015JF
47	KWCC-LP	WENATCHEE, ETC. WA	80.5	LIC	BLTTL	-19960617JC
47	KYVE	YAKIMA WA	78.7	LIC	BMLET	-20041005ACC
47	KYVE	YAKIMA WA	78.7	CP	BPET	-20050531BJR
48	K48DZ	HERMISTON OR	94.0	LIC	BLTTL	-19980814JD
48	K48BY	QUINCY WA	60.0	LIC	BLTT	-19870929ID
49	K59BF	BAKER FLATS AREA WA	95.7	APP	BPTT	-20060928AIA
49	K52ER	DRYDEN WA	114.0	APP	BPTT	-20060928AIT
49	KWWA-CA	ELLENSBURG, ETC. WA	82.7	LIC	BLTTA	-20031009ACK
49	KRLB-LP	RICHLAND, ETC. WA	65.9	LIC	BLTTL	-19890920IK
49	K49GF	YAKIMA, ETC. WA	77.8	LIC	BLTTL	-20040616AAK
50	K50BO	QUINCY WA	60.0	LIC	BLTT	-19870929IC
53	K53CX	BREWSTER, ETC. WA	138.5	LIC	BLTT	-19900410IA
53	K53DN	EAST WENATCHEE WA	77.2	LIC	BLTT	-19891205IF

53	K53AH	MONITOR, ETC. WA	103.2	LIC	BLTT	-19780809IB
54	K54DX	ELLENSBURG-KITTITAS WA	67.9	LIC	BLTTL	-19940311IE
54	K54DU	RICHLAND WA	65.9	LIC	BLTTL	-19981021JD

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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.

$$S(\text{mW} / \text{cm}^2) = \frac{33.40981 \times \text{AdjERP}(\text{Watts})}{D^2}$$

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.

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.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground level using the manufacturer's vertical plane pattern for the Scala 4DR-8S antenna proposed in this application. The highest calculated power density from the proposed antenna alone occurs at 11 meters from the base of the antenna support structure. At this point the power density is calculated to be 10.9 $\mu\text{W}/\text{cm}^2$, which is 2.5% of 443 $\mu\text{W}/\text{cm}^2$ (the FCC standard for uncontrolled environments at the Channel 46 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 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.

October 23, 2006

Erik C. Swanson

Moses Lake DCC Ch46 - Scala 4DR-8S

ERP	1300 Watts H (avg)	
	0 Watts V (avg)	
AGL	12 less 2m is	10 meters
Maximum is	10.85 uW/cm ² at	11 meters

Power Density vs Distance

