

## TECHNICAL REPORT

This technical report was developed in support of a minor change application to move the transmission facility of KWYO on 1410 kHz, Sheridan, WY to the existing KROE 930 kHz site.

### **I. Proposed site and facilities:**

<b>Site</b>	<b>N44-47-54</b>	<b>W106-55-51</b>
<b>Day Power</b>	<b>5.0</b>	<b>kW nondirectional</b>
<b>Night power</b>	<b>0 .350</b>	<b>kW nondirectional</b>
<b>Radiator Height</b>	<b>74 meters overall – 73.16 meters radiator/ 123.9 degrees</b>	
<b>Efficiency</b>	<b>327.36 mV/m at 1 kw at one km (see E-10D)</b>	

A site plat is provided as E10A, a topographic map as E10B, an aerial photograph as E10C with the 1000 mV/m contour marked and E10C1 showing the 25 mV/m and 1000 mV/m contours demonstrating compliance with 73.24(g) based on a population of 21 in the 1000 mV/m contour. A vertical sketch is provided as E10E.

A diplexer will be utilized to feed both the existing KROE 5 kW 930 kHz facility and the KWYO 1410 5 kW facility into the existing KROE unipole fed tower.

### **II. Daytime allocation analysis:**

The following exhibits are provided:

- E11A Day 5 mV/m demonstrating full community coverage
- E14A M-3 allocation for co-channel and adjacent channels
- E14B Proposed 5, 2, and .5 mV/m service contours
- E14C Tabulation of day allocation factors

These exhibits demonstrate that there is not any prohibited overlap from the proposed facility and that the proposed 5 mV/m daytime encompasses the entire city of Sheridan, WY.

**III. Night Allocation Analysis:**

A night operating power of .350 kW nondirectional using the KROE tower is proposed. Exhibits provided are:

- E15A Night interference free calculation
- E15B Map showing nighttime NIF coverage of Sheridan
- E15C1 Nighttime interference limits study
- E15C2 RSS contribution to Bozman, MT 1410 application
- E15C3 RSS contribution to KIIIX on 1410
- E15C4 RSS contribution to KHIL on 1410

The KWYO nighttime interference free contour is 5.4mV/m (see E15A). Exhibit E15C demonstrates that the KWYO 5.4mV/M interference free contour encompasses the city of Sheridan, WY.

The proposed nighttime operating power of .350 kW will result in a 13.48% reduction in the KWYO RSS contribution to the Bozman, MT 1410 kHz application's 50% RSS (from 6.686 mV/m to 5.785 mV/m – see E15C2) and a 13.09% reduction in the KWYO contribution to the KIIIX 50% RSS (from 4.713 mV/m to 4.096 mV/m – see E15C3). This power level also reduces the KWYO contribution to the KHOL 25% RSS to 3.724 mV/m which is 12.1% less than the existing level of 4.235 mV/m. These levels comply with the requirements of Section 73.182(q), footnote 1 that mandates a 10% reduction in contributions to the 50% RSS for a minor change in a Class B station and equal or less contribution if the proposal enters another station's 25% RSS but not the 50%. Exhibits 15B1-2-3-4 demonstrate these reductions, and that the proposed nighttime facility complies with all other interference restrictions.

**IV. Environmental and RF analysis:**

KWYO will be located on an existing KROE(AM) tower (Registration#1009401). To the applicant's knowledge, no adverse impact will result to any applicable 1.1307 category as a result of the construction. Consequently, no environmental statement is provided. The RF contributions for KROE and KWYO were determined using Figures 2 and 3 from Supplement A to OET Bulletin 65. The KROE values are based on the 90 degree figure and the KWYO values for a 123.9 degree antenna were interpolated between values obtained at 2 meters from Figure 1 for a 90 degree tower with 1 kw and Figure 3 for a 180 degree tower with 1 kw. All values were adjusted by the square root of 5 for the 5 kw operations. The calculations were made at 2 meters to reflect the RF exposure at the antenna tuning units. The KROE fence is actually 15 feet from the tower base.

Station	Power		Radiation at 2 meters	% of Maximum
KROE	930 kHz	5 kw	80.5 V/m	13.1
			0.87 A/m magnetic	53.5
KWYO	1410 kHz	5 kw	197.67 V/m	32.19
			.62 A/m magnetic	37.98
Worst case total				91.48%

A total radiation level of 91.48% of the maximum radiation for general population and occupational-controlled exposure is clearly within Commission guidelines.

**V. Conclusion:**

It is concluded that the proposed minor modification of KWYO is in full compliance with Commission rules and policies.



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Charles M. Anderson 3-21-2005

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**EXHIBIT E-10A**

**EXISTING KROE  
(930 KHZ)  
GROUND SYSTEM**

**120 EQUALLY  
SPACED, BURIED  
COPPER GROUND  
RADIALS  
AVERAGING  
73.15 METERS**

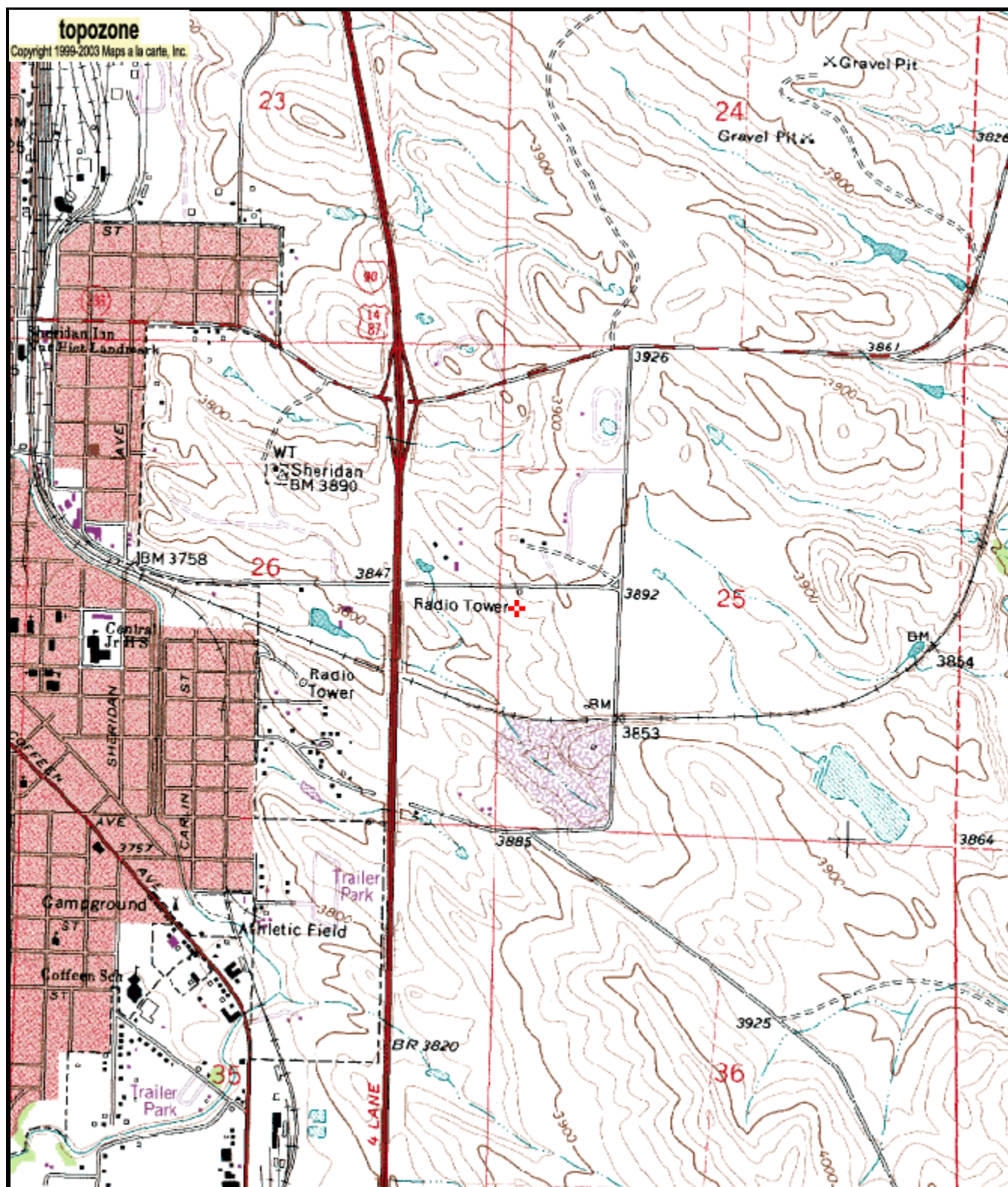
**KWYO WILL BE  
DIPLEXED INTO  
THE EXISTING  
KROE FOLDED  
UNIPOLE.**

**THE SITE EXTENDS  
TO OR SLIGHTLY  
BEYOND GROUND  
SYSTEM IN ALL  
DIRECTIONS.**

**KROE LANE**

**KWYO/KROE**

**APPROXIMATE PROPERTY  
BOUNDARY**

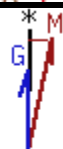


0 0.3 0.6 0.9 1.2 1.5 km

0 0.2 0.4 0.6 0.8 1 mi

Map center is 44° 47' 54"N, 106° 55' 51"W (NAD27)

**Sheridan** quadrangle - Elevation 3,862.8 ft / 1,177.3 m (USGS NED)



M=11.787  
G=-1.362

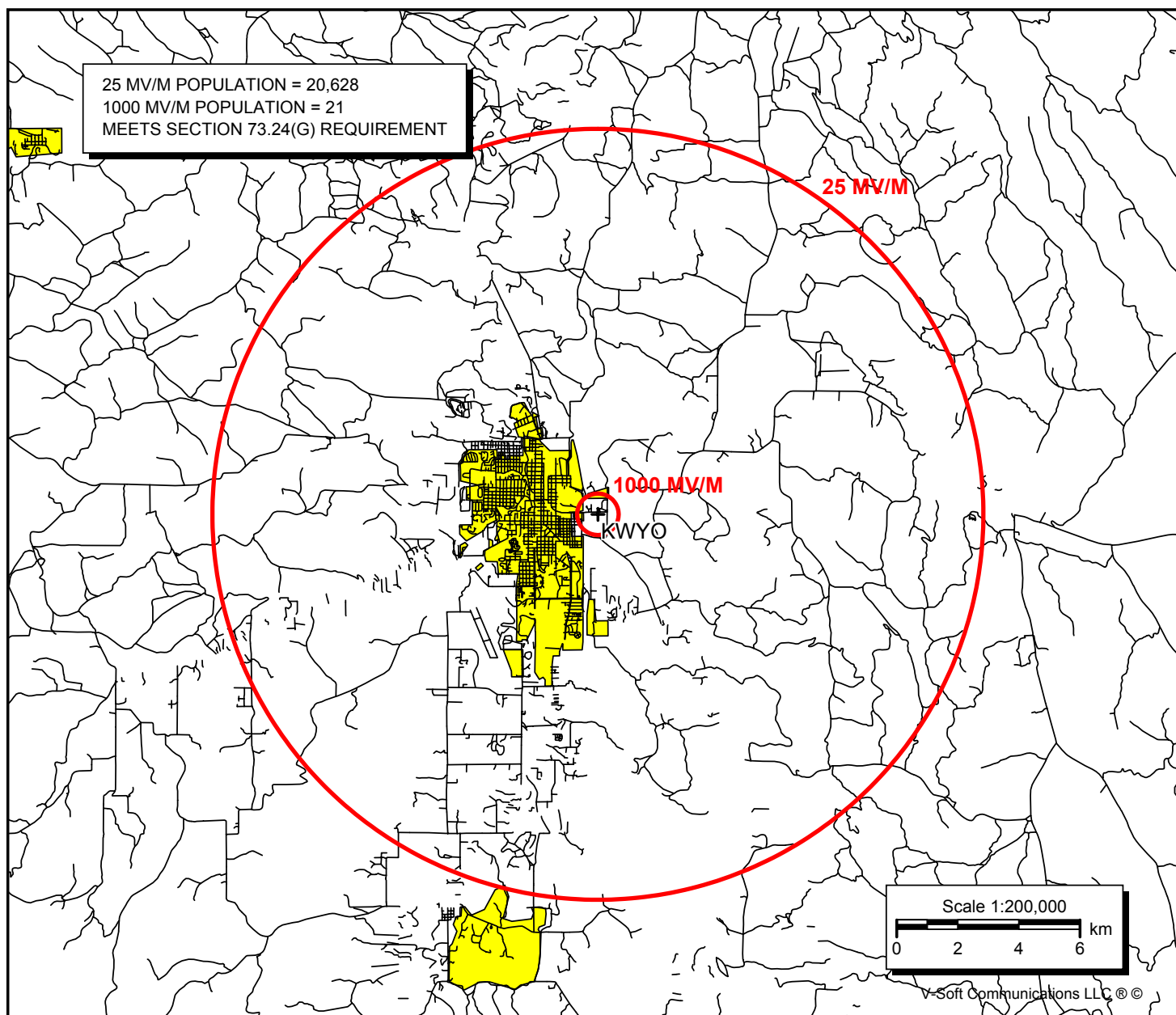


0 0.3 0.6 0.9 1.2 1.5 km  
0 0.2 0.4 0.6 0.8 1 mi

Map center is 44° 47' 55"N, 106° 55' 52"W (NAD27)  
**Sheridan** quadrangle - Elevation 3,862.8 ft / 1,177.3 m (USGS NED)  
Projection is UTM Zone 13 NAD83 Datum

\* M  
G  
M=11.787  
G=-1.362

E-10C1 KWYO  
SERVICE CONTOURS  
Freq: 1410 kHz  
Class: D  
Latitude: 44-47-54 N  
Longitude: 106-55-51 W  
Power: 5 kW  
RMS: 327.36 V/m @1km  
# Towers: 1  
# Augs: 0



Program **FIGURE 8** calculates the Inverse Distance Field for AM broadcast stations with frequencies between **530** and **1700 kHz**. The program is a computer version of Figure 8 of Section 73.190 of the FCC Rules.

The Inverse Distance Fields calculated here are in units of **mV/m at 1 KILOMETER**.

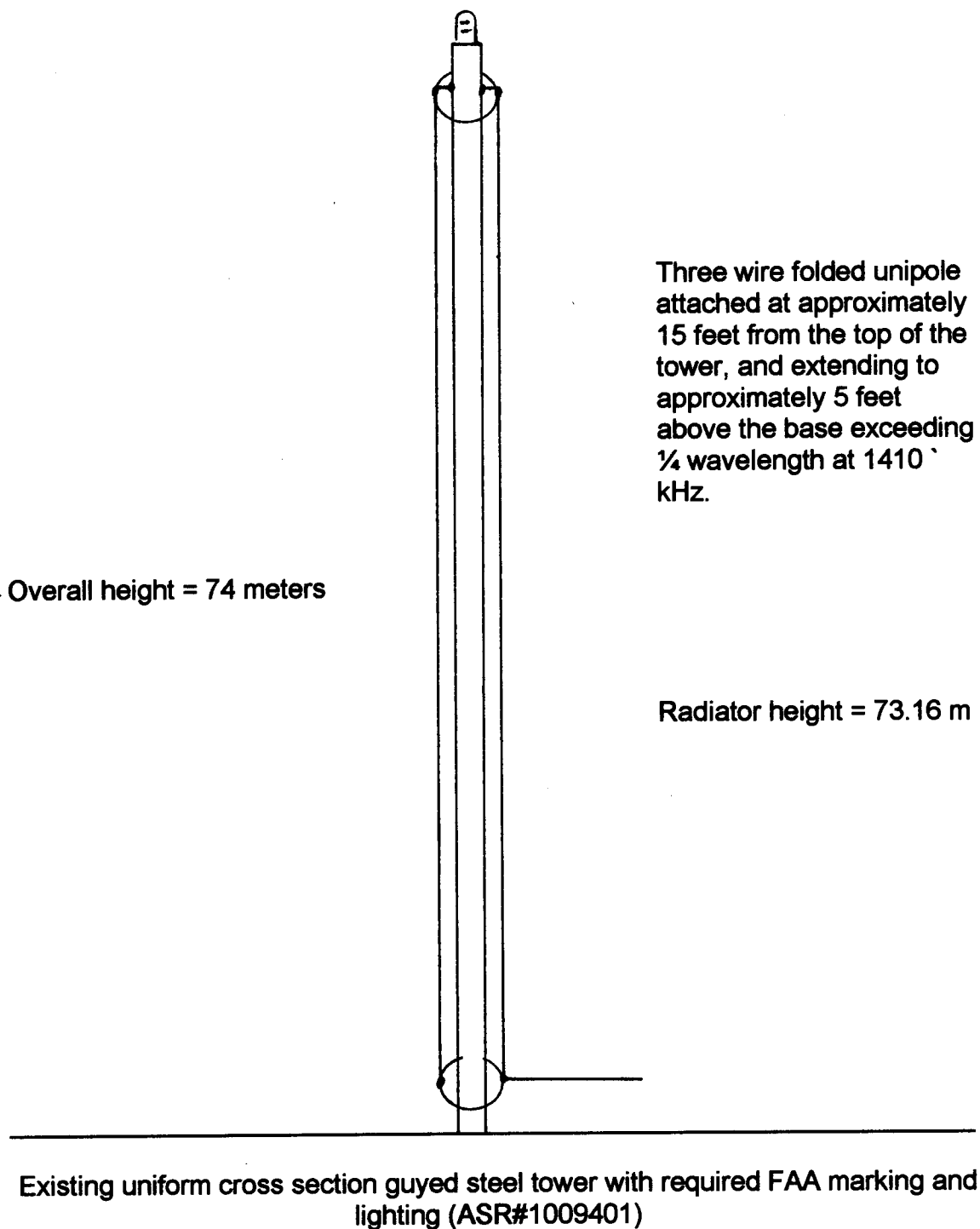
Frequency:	1410.00 kHz
Number of Radials:	120 radials
Correction for number of radials:	0.0000 mV/m @ 1 KILOMETER
Average Length of Ground Radials:	73.160 meters 240.026 feet 0.344 wavelengths 123.872 degrees
Correction factor for length:	0.0000 mV/m @ 1 Kilometer
Wavelength:	212.619 meters 697.568 feet
Tower Height:	73.160 meters 240.026 feet 0.344 wavelengths 123.872 degrees

### Predicted Field Strength from Figure 8, Section 73.190:

(Metric units)

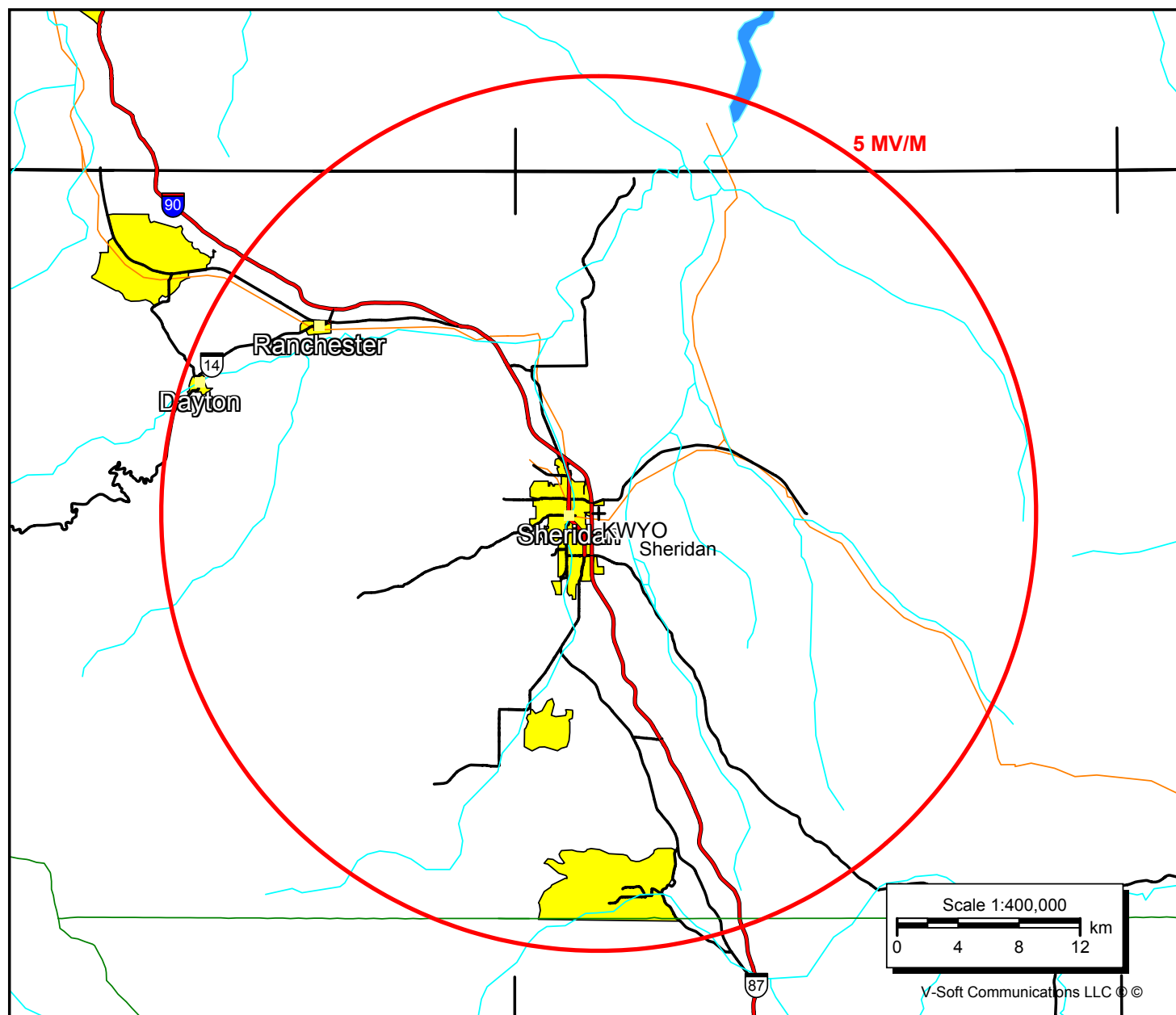
	Theoretical Field	Corrected Field	
At <b>1.00</b> <b>kW</b> :	<b>327.355</b>	<b>327.355</b>	mV/m @ 1 KILOMETER
At <b>5.00</b> <b>kW</b> :	<b>731.988</b>	<b>731.988</b>	mV/m @ 1 KILOMETER

## E10E VERTICAL SKETCH



NOT TO SCALE

E-11A KWYO  
SERVICE CONTOURS  
Freq: 1410 kHz  
Class: D  
Latitude: 44-47-54 N  
Longitude: 106-55-51 W  
Power: 5 kW  
RMS: 327.36 mV/m @1km  
# Towers: 1  
# Aucs: 0



E-14A KWYO

Freq: 1410 kHz

Class: D

Latitude: 44-47-54 N

Longitude: 106-55-51 W

Power: 5 kW

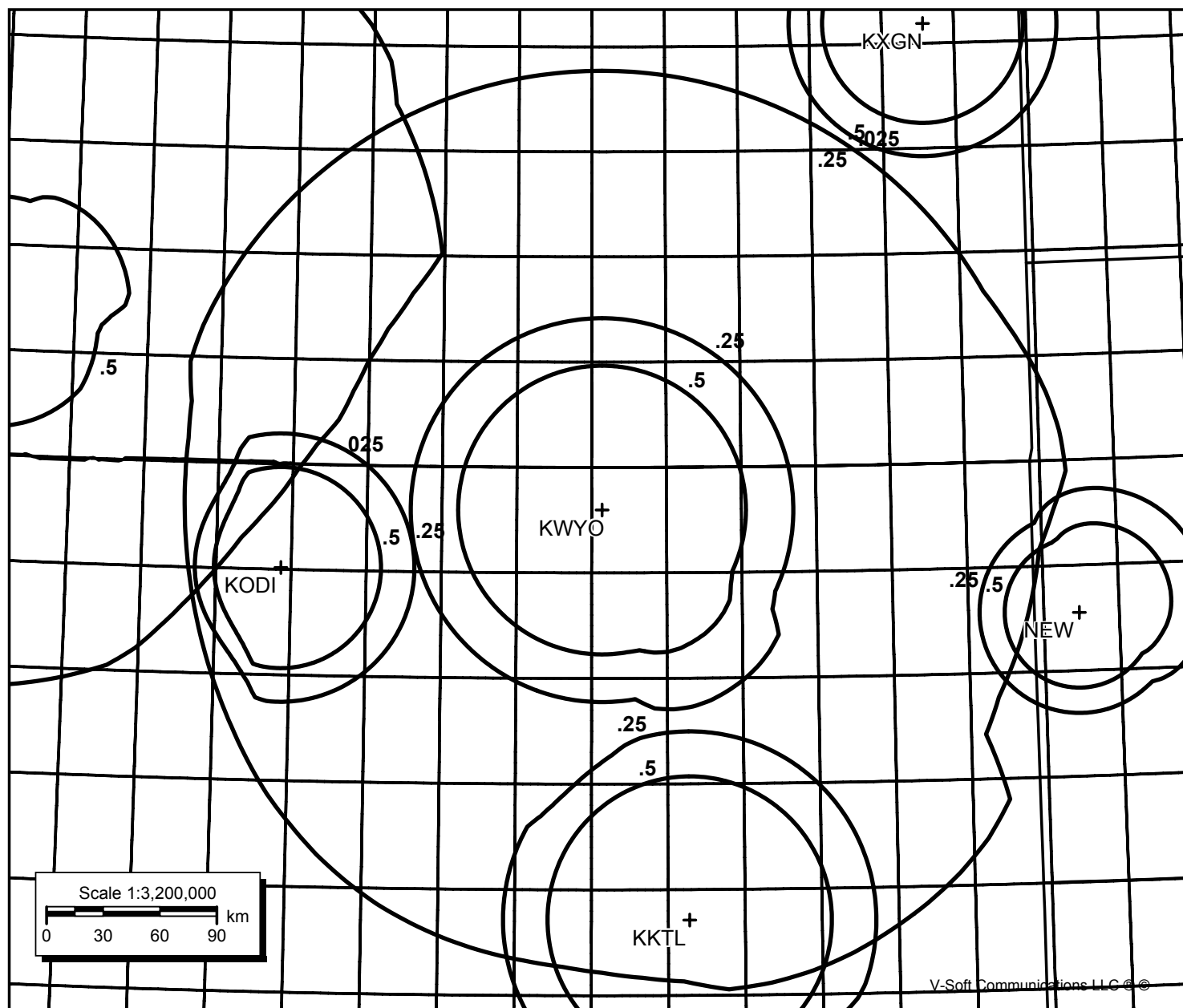
RMS: 327.36 mV/m @1km

# Towers: 1

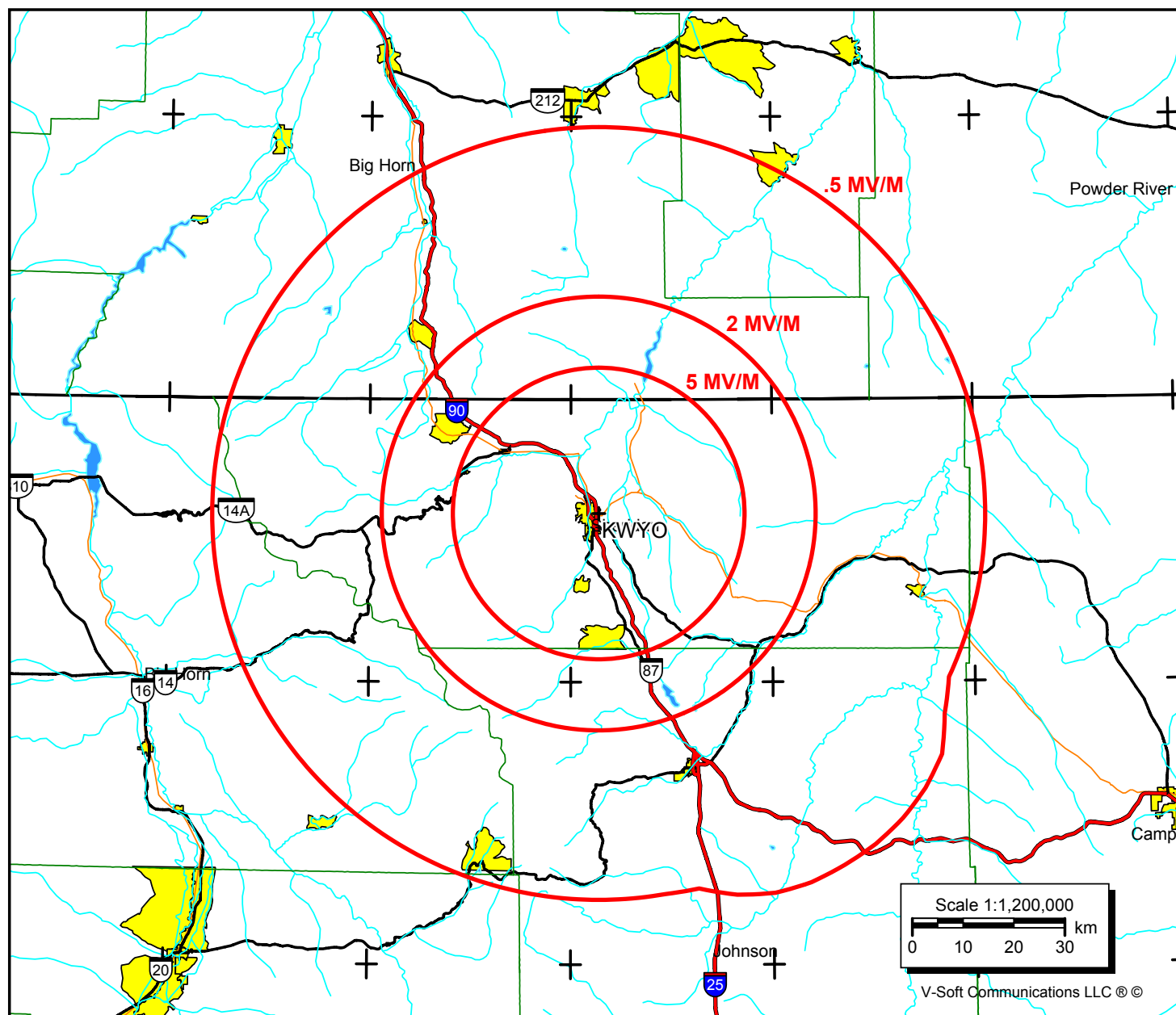
# Augs: 0

— Causes  
— Receives  
— No Ix

Scale 1:3,200,000  
0 30 60 90 km



E-15B KWYO  
SERVICE CONTOURS  
Freq: 1410 kHz  
Class: D  
Latitude: 44-47-54 N  
Longitude: 106-55-51 W  
Power: 5 kW  
RMS: 327.36 mV/m @1km  
# Towers: 1  
# Augs: 0



## E14C DAYTIME ALLOCATION FACTORS

Reference Station: KWYO, 1410 kHz

Location: 44-47-54 N, 106-55-51 W

## \*\*\* 1400 kHz (-1) \*\*\*

166.2 km	NEW	A	45-43-14 N	108-35-51 W	1.0 kW	DA2 - 309.6 mV/m@1km
103.3 mi			Azi: 307.5 Class: C Sched: U File #: BNP20040130BET			
			Location: BILLINGS, MT, US			
171.5 km	KODI	A	44-30-46 N	109-03-20 W	1.0 kW	ND2 - 307.4 mV/m@1km
106.6 mi			Azi: 258.6 Class: C Sched: U File #: BP20050314AJN			
			Location: CODY, WY, US			
172.6 km	KODI	L	44-30-30 N	109-04-05 W	1.0 kW	ND1 - 307.4 mV/m@1km
107.2 mi			Azi: 258.5 Class: C Sched: U File #: BL			
			Location: CODY, WY, US			
220.6 km	KKTL	L	42-51-22 N	106-21-41 W	1.0 kW	ND1 - 305.6 mV/m@1km
137.1 mi			Azi: 168.2 Class: C Sched: U File #: BL19990701DD			
			Location: CASPER, WY, US			
258.3 km	NEW	A	44-16-29.50 N	103-45-52.70 W	0.25 kW	ND2 - 305.8 mV/m@1km
160.5 mi			Azi: 104.1 Class: C Sched: U File #: BNP20040130BMJ			
			Location: LEAD, SD, US			
307.7 km	KXGN	L	47-05-40 N	104-42-50 W	1.0 kW	ND1 - 304.2 mV/m@1km
191.2 mi			Azi: 34.8 Class: C Sched: U File #: BL			
			Location: GLENDIVE, MT, US			
330.0 km	NEW	A	45-40-38.60 N	110-56-42.60 W	0.25 kW	ND2 - 305.8 mV/m@1km
205.0 mi			Azi: 285.8 Class: C Sched: U File #: BNP20040130BMM			
			Location: BOZEMAN, MT, US			
337.1 km	NEW	A	45-40-54 N	111-02-18 W	1.0 kW	ND2 - 305.7 mV/m@1km
209.5 mi			Azi: 285.5 Class: C Sched: U File #: BNP20040130BOY			
			Location: BOZMAN, MT, US			
387.6 km	KIGO	L	43-58-23 N	111-39-28 W	1.0 kW	ND1 - 307.4 mV/m@1km
240.9 mi			Azi: 254.7 Class: C Sched: U File #: BL11389			
			Location: ST. ANTHONY, ID, US			
391.1 km	KBJM	L	45-55-05 N	102-11-55 W	1.0 kW	ND1 - 305.8 mV/m@1km
243.0 mi			Azi: 73.1 Class: C Sched: H File #: BL			
			Location: LEMMON, SD, US			
413.0 km	NEW	A	41-31-42.30 N	109-20-49.10 W	0.25 kW	ND2 - 305.8 mV/m@1km
256.6 mi			Azi: 207.6 Class: C Sched: U File #: BNP20040130BMV			
			Location: GREEN RIVER, WY, US			
443.2 km	KCOW	L	42-06-26 N	102-53-15 W	1.0 kW	ND1 - 309.0 mV/m@1km
275.4 mi			Azi: 133.8 Class: C Sched: U File #: BL			
			Location: ALLIANCE, NE, US			
450.5 km	KXGF	L	47-27-56 N	111-19-22 W	0.68 kW	ND1 - 347.5 mV/m@1km
279.9 mi			Azi: 309.5 Class: C Sched: U File #: BL20000912ABZ			
			Location: GREAT FALLS, MT, US			
485.5 km	KBCK	L	46-24-26 N	112-43-08 W	1.0 kW	ND1 - 305.8 mV/m@1km
301.7 mi			Azi: 289.5 Class: C Sched: U File #: BL			
			Location: DEER LODGE, MT, US			
486.0 km	KBCK	C	46-24-52.50 N	112-43-16.50 W	1.0 kW	ND2 - 305.8 mV/m@1km
302.0 mi			Azi: 289.6 Class: C Sched: U File #: BP20040112AAQ			
			Location: DEER LODGE, MT, US			

## \*\*\* 1410 kHz (CO) \*\*\*

3.1 km	KWYO	L	44-46-15 N	106-55-37 W	5.0 kW	ND2 - 313.8 mV/m@1km
1.9 mi			Azi: 174.3 Class: B Sched: U File #: BL			
			Location: SHERIDAN, WY, US			
337.1 km	NEW	A	45-40-54 N	111-02-18 W	10.0 kW	ND2 - 305.7 mV/m@1km
209.5 mi			Azi: 285.5 Class: B Sched: U File #: BNP20040130BQI			
			Location: BOZMAN, MT, US			
486.2 km	KHOL	L	47-17-15 N	101-45-46 W	1.0 kW	ND1 - 347.6 mV/m@1km

302.1 mi            Azi: 57.2    Class: B    Sched: U    File #: BL  
                     Location: BEULAH, ND, US  
 490.5 km    KIIIX    L    40-35-34 N    105-06-18 W    1.0 kW    DAN - 313.8 mV/m@1km  
 304.8 mi            Azi: 162.9    Class: B    Sched: U    File #: BL  
                     Location: FORT COLLINS, CO, US  
 622.1 km    NEW    A    39-11-51 N    106-50-21 W    2.0 kW    DAN - 295.3 mV/m@1km  
 386.6 mi            Azi: 179.3    Class: B    Sched: U    File #: BNP20040130BJZ  
                     Location: ASPEN, CO, US  
 644.6 km    KOOQ    L    41-10-30 N    100-45-07 W    5.0 kW    DAN - 313.8 mV/m@1km  
 400.6 mi            Azi: 130.7    Class: B    Sched: U    File #: BL  
                     Location: NORTH PLATTE, NE, US  
 893.2 km    KLEM    L    42-49-04 N    096-09-47 W    1.0 kW    ND2 - 313.8 mV/m@1km  
 555.0 mi            Azi: 107.9    Class: D    Sched: U    File #: BL20001011ABV  
                     Location: LE MARS, IA, US  
 964.7 km    KRWB    L    48-50-40 N    095-43-41 W    1.0 kW    DAN - 307.4 mV/m@1km  
 599.4 mi            Azi: 66.4    Class: B    Sched: U    File #: BL  
                     Location: ROSEAU, MN, US  
 976.3 km    KLFD    L    45-07-02 N    094-33-13 W    0.5 kW    ND1 - 383.0 mV/m@1km  
 606.7 mi            Azi: 92.3    Class: D    Sched: U    File #: BL  
                     Location: LITCHFIELD, MN, US  
 1120.9 km    KMYR    L    37-44-05 N    097-21-06 W    5.0 kW    DA2 - 709.7 mV/m@1km  
 696.5 mi            Azi: 137.4    Class: B    Sched: U    File #: BL  
                     Location: WICHITA, KS, US

\*\*\* 1420 kHz (+1) \*\*\*

388.3 km    KIGO    C    43-58-23 N    111-39-58 W    50.0 kW    ND2 - 309.2 mV/m@1km  
 241.3 mi            Azi: 254.7    Class: D    Sched: U    File #: BP20021115ACX  
                     Location: ST. ANTHONY, ID, US  
 413.9 km    KIGO    C    43-40-03 N    111-52-07 W    32.0 kW    ND2 - 364.3 mV/m@1km  
 257.2 mi            Azi: 250.6    Class: D    Sched: U    File #: BMP20040303AAF  
                     Location: ST. ANTHONY, ID, US

Station Information:

Call: KWYO  
Freq: 1410 kHz  
SHERIDAN, WY, US  
Lat: 44-47-54 N  
Lng: 106-55-51 W  
Power: 0.35 kW  
Theo RMS: 328.51 mV/m @ 1km

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Contributors:

Call	Freq (kHz)	City	St	Ct	Limit (mV/m)	(%)	RSS Limit (mV/m)
WIZM	1410	LA CROSSE	WI	US	3.515	100.0	3.515
KIIX	1410	FORT COLLINS	CO	US	2.972	84.5	4.603
KHOL	1410	BEULAH	ND	US	2.828	61.4	5.402

Non-Contributors:

Call	Freq (kHz)	City	St	Ct	Limit (mV/m)
NEW	1410	BOZMAN	MT	US	4.733

E15B

KWYO

Freq: 1410 kHz

Class: B

Latitude: 44-47-54 N

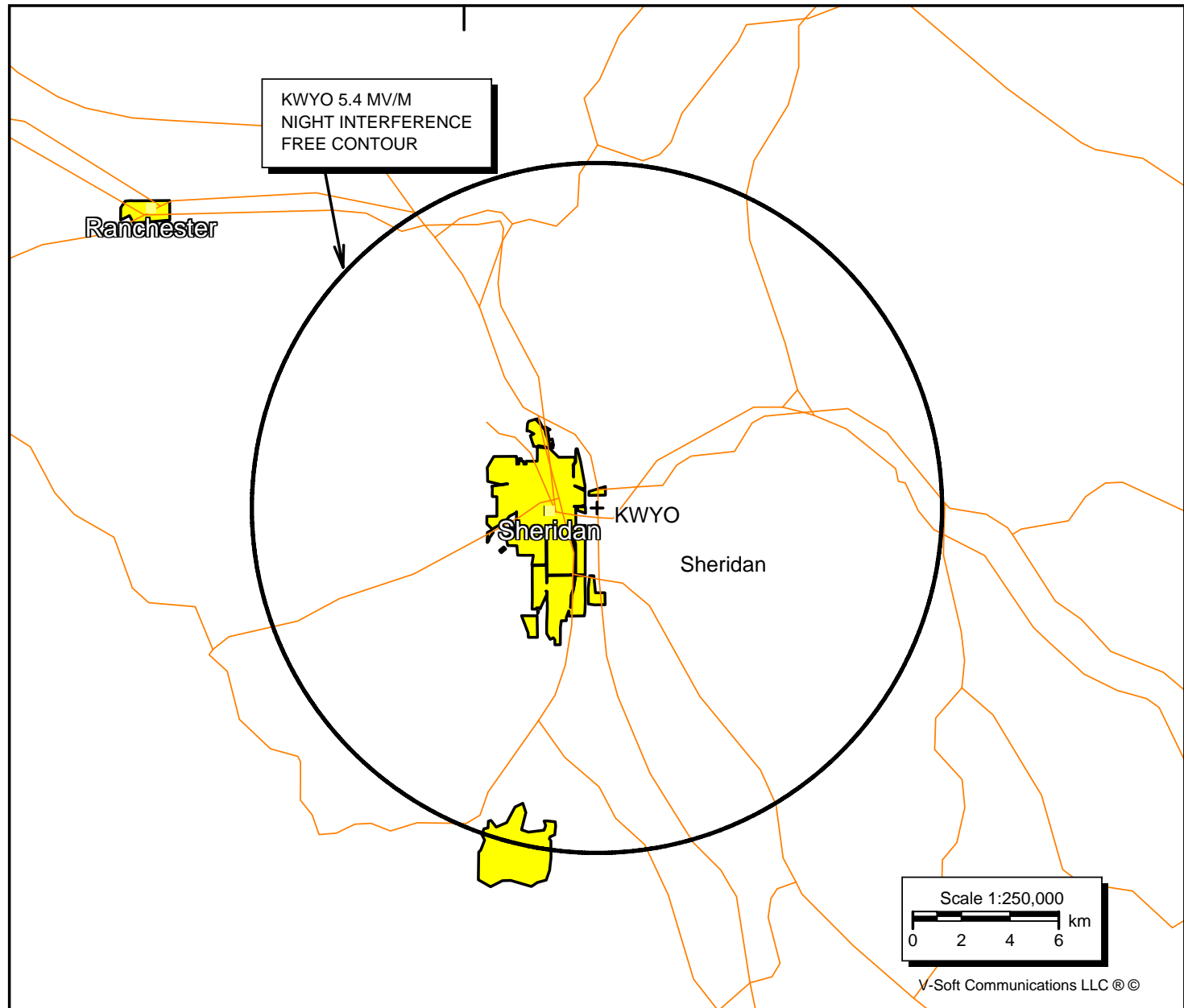
Longitude: 106-55-51 W

Power: 0.35 kW

RMS: 328.507 mV/m @1km

# Towers: 1

# Augs: 0



E15C1 Night Allocation Protection Report

Call: KWYO  
 Freq: 1410 kHz  
 SHERIDAN, WY, US  
 Lat: 44-47-54 N  
 Lng: 106-55-51 W  
 Power: 0.35 kW  
 Theo RMS: 328.51 mV/m @ 1km

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	123.9	0	0	123.9	0.0	0.0	0.0

Call Letters	Ct	St	City	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
NEW	US	MT	BOZMAN	173.27	2.04	58.91	166.93	-108.01(E15C2)
50% = 7.581, 25% = 8.166; KWYO=6.69 KIIIX=3.57 CFUN/ =2.18 WIZM=2.11								
KIIIX	US	CO	FORT COLLINS	113.05	2.50	110.76	181.16	-70.4 (E15C3)
50% = 8.3, 25% = 10.018; KOOQ=4.87 WIZM=4.79 KWYO=4.71 KRIL=4.05 WING=2.90 KKLO=2.57								
KHOL	US	ND	BEULAH	102.98	2.67	129.50	180.83	-51.33(E15C4)
50% = 9.241, 25% = 10.669; WIZM=5.69 KRWB=5.30 KIIIX=4.98 KWYO=4.24 KOOQ=3.24								

CFUN/ (0)	CA BC Vancouver	11.99	0.50	217.02E	194.23	22.79
CFUN/ (5)	CA BC Vancouver	13.46	0.50	216.93E	194.16	22.78
CFUN/ (10)	CA BC Vancouver	15.30	0.50	216.83E	194.06	22.77
CFUN/ (15)	CA BC Vancouver	17.71	0.50	216.70E	193.95	22.75
CFUN/ (20)	CA BC Vancouver	20.95	0.50	216.51E	193.78	22.73
CFUN/ (25)	CA BC Vancouver	25.02	0.50	216.24E	193.54	22.70
CFUN/ (30)	CA BC Vancouver	29.66	0.50	215.93E	193.26	22.67
CFUN/ (35)	CA BC Vancouver	35.23	0.50	215.50E	192.87	22.63
CFUN/ (40)	CA BC Vancouver	41.66	0.50	214.93E	192.36	22.57
CFUN/ (45)	CA BC Vancouver	48.62	0.50	214.20E	191.71	22.49
CFUN/ (50)	CA BC Vancouver	56.29	0.50	213.36E	190.96	22.40
CFUN/ (55)	CA BC Vancouver	63.21	0.50	212.42E	190.12	22.30
CFUN/ (60)	CA BC Vancouver	68.94	0.50	211.62E	189.40	22.22
CFUN/ (65)	CA BC Vancouver	71.74	0.50	211.14E	188.97	22.17
CFUN/ (70)	CA BC Vancouver	69.24	0.50	211.62E	189.40	22.22
CFUN/ (75)	CA BC Vancouver	41.57	0.50	214.93E	192.36	22.57
CFUN/ (80)	CA BC Vancouver	41.63	0.50	214.93E	192.36	22.57
CFUN/ (85)	CA BC Vancouver	41.78	0.50	214.93E	192.36	22.57
CFUN/ (90)	CA BC Vancouver	41.49	0.50	214.93E	192.36	22.57
CFUN/ (95)	CA BC Vancouver	41.08	0.50	214.93E	192.36	22.57
CFUN/ (100)	CA BC Vancouver	40.70	0.50	215.01E	192.43	22.57
CFUN/ (105)	CA BC Vancouver	40.50	0.50	215.01E	192.43	22.57
CFUN/ (110)	CA BC Vancouver	40.54	0.52	215.01E	192.43	22.57
CFUN/ (115)	CA BC Vancouver	40.01	1.09	215.08E	192.50	22.58
CFUN/ (120)	CA BC Vancouver	39.64	2.09	263.26g	192.50	70.76
CFUN/ (125)	CA BC Vancouver	39.37	3.65	463.00g	192.50	270.50

CFUN/	(130)	CA BC Vancouver	39.16	7.64	975.03g	192.56	782.46
CFUN/	(135)	CA BC Vancouver	38.98	14.12	1810.73g	192.56	1618.16
CFUN/	(140)	CA BC Vancouver	38.84	17.55	2259.36g	192.56	2066.80
CFUN/	(145)	CA BC Vancouver	38.71	18.09	2336.94g	192.56	2144.37
CFUN/	(150)	CA BC Vancouver	38.60	17.65	2285.68g	192.56	2093.12
CFUN/	(155)	CA BC Vancouver	38.50	16.24	2109.64g	192.56	1917.08
CFUN/	(160)	CA BC Vancouver	38.40	14.20	1849.22g	192.63	1656.60
CFUN/	(165)	CA BC Vancouver	38.31	12.34	1609.79g	192.63	1417.16
CFUN/	(170)	CA BC Vancouver	38.23	12.18	1592.64g	192.63	1400.01
CFUN/	(175)	CA BC Vancouver	38.14	14.88	1950.51g	192.63	1757.88
CFUN/	(180)	CA BC Vancouver	38.53	8.49	1101.69g	192.56	909.12
CFUN/	(185)	CA BC Vancouver	38.66	1.07	215.15E	192.56	22.59
CFUN/	(190)	CA BC Vancouver	38.20	2.07	270.66g	192.63	78.03
CFUN/	(195)	CA BC Vancouver	37.61	2.38	316.52g	192.69	123.83
CFUN/	(200)	CA BC Vancouver	36.95	3.01	407.85g	192.69	215.16
CFUN/	(205)	CA BC Vancouver	36.29	0.59	215.36E	192.75	22.61
CFUN/	(210)	CA BC Vancouver	35.64	0.55	215.43E	192.81	22.62
CFUN/	(215)	CA BC Vancouver	34.97	0.61	215.50E	192.87	22.63
CFUN/	(220)	CA BC Vancouver	34.27	0.50	215.56E	192.93	22.63
CFUN/	(225)	CA BC Vancouver	33.58	0.50	215.63E	192.99	22.64
CFUN/	(230)	CA BC Vancouver	32.87	0.50	215.63E	192.99	22.64
CFUN/	(235)	CA BC Vancouver	32.10	0.50	215.69E	193.04	22.65
CFUN/	(240)	CA BC Vancouver	31.26	0.50	215.81E	193.15	22.66
CFUN/	(245)	CA BC Vancouver	30.26	0.50	215.87E	193.20	22.66
CFUN/	(250)	CA BC Vancouver	29.24	0.50	215.93E	193.26	22.67
CFUN/	(255)	CA BC Vancouver	28.22	0.58	216.04E	193.35	22.68
CFUN/	(260)	CA BC Vancouver	27.12	0.68	216.09E	193.40	22.69
CFUN/	(265)	CA BC Vancouver	25.89	0.79	216.19E	193.49	22.70
CFUN/	(270)	CA BC Vancouver	24.52	0.90	216.29E	193.58	22.71
CFUN/	(275)	CA BC Vancouver	23.42	0.98	216.34E	193.62	22.71
CFUN/	(280)	CA BC Vancouver	22.15	1.05	237.87s	193.70	44.17
CFUN/	(285)	CA BC Vancouver	19.62	1.16	295.65s	193.85	101.80
CFUN/	(290)	CA BC Vancouver	17.71	1.19	336.31s	193.95	142.37
CFUN/	(295)	CA BC Vancouver	16.32	1.18	361.75s	194.01	167.74
CFUN/	(300)	CA BC Vancouver	16.14	1.17	363.70s	194.03	169.67
CFUN/	(305)	CA BC Vancouver	9.79	0.84	430.39s	194.32	236.07
CFUN/	(310)	CA BC Vancouver	8.55	0.70	411.29s	194.34	216.95
CFUN/	(315)	CA BC Vancouver	8.61	0.68	397.40s	194.34	203.06
CFUN/	(320)	CA BC Vancouver	9.52	0.75	392.00s	194.33	197.68
CFUN/	(325)	CA BC Vancouver	10.33	0.78	379.56s	194.30	185.26
CFUN/	(330)	CA BC Vancouver	7.73	0.50	323.52s	194.35	129.18
CFUN/	(335)	CA BC Vancouver	8.15	0.50	306.90s	194.35	112.55
CFUN/	(340)	CA BC Vancouver	8.62	0.50	289.87s	194.34	95.52
CFUN/	(345)	CA BC Vancouver	9.19	0.50	271.99s	194.33	77.66
CFUN/	(350)	CA BC Vancouver	9.90	0.50	252.62s	194.31	58.31
CFUN/	(355)	CA BC Vancouver	10.78	0.50	231.83s	194.28	37.55
KERN		US CA BAKERSFIELD	21.62	0.97	224.77	194.03	30.73

50% = 2.609, 25% = 3.888; KKJL=1.39 KUNX=1.29 KVBL=1.29 WIZM=1.25 CFUN/ =1.24  
WING=1.14 KESQ=1.11 KRIL=1.11 KSHP=1.03 XEBS/A=0.98 KMYR=0.98

KOOQ		US NE NORTH PLATTE	74.98	3.52	234.58	187.07	47.52
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50% = 10.846, 25% = 14.071; WIZM=9.00 KMYR=6.05 KKLO=4.92 KIIX=4.77 WING=4.32  
KRIL=3.85

WIZM	US WI LA CROSSE	21.12	1.05	249.46	193.54	55.92
50% = 3.546, 25% = 4.214; WOC=2.02 WING=1.73 WPOP=1.68 KTOE=1.63 KRIL=1.61						
WBIZ=1.21 KHOL=1.06						
NEW	US CO ASPEN	82.18	4.71	286.39	186.55	99.85
50% = 18.828, 25% = 18.828; KIIIX=18.83						
KRWB	US MN ROSEAU	30.60	2.54	414.97	192.01	222.96
50% = 9.706, 25% = 10.159; WIZM=9.71 CKSL/ =3.00						
KMYC	US CA MARYSVILLE	23.10	2.05	442.73	193.81	248.92
50% = 7.804, 25% = 8.183; KERN=7.80 CFUN/ =2.46						
NEW	US NM SOCORRO	30.89	3.03	490.07	193.31	296.76
50% = 11.446, 25% = 12.431; KRIL=7.68 KIIIX=6.04 KCAL=5.97 KMYR=3.79 WIZM=3.03						
KRIL	US TX ODESSA	21.18	2.52	594.84	194.09	400.76
50% = 6.973, 25% = 10.078; WLTV=4.73 WING=3.65 XEAS/A=3.59 WIZM=3.30						
KCAL=3.17 KNAL=2.99 XEBS/A=2.88 KMYR=2.83 KOOQ=2.60						
KRIL	US TX ODESSA	21.15	2.52	595.75	194.09	401.66
50% = 6.982, 25% = 10.081; WLTV=4.74 WING=3.65 XEAS/A=3.60 WIZM=3.30						
KCAL=3.16 KNAL=2.99 XEBS/A=2.88 KMYR=2.83 KOOQ=2.59						
WING	US OH DAYTON	9.26	1.23	662.32	194.35	467.98
50% = 3.094, 25% = 4.934; KQV=2.60 CKSL/ =1.67 WSRC=1.52 WIZM=1.46 WCYN=1.38						
WPAY=1.37 WLTV=1.36 WMAN=1.29 KRIL=1.23 KKLO=1.23						
WRMN	US IL KANE	14.65	1.97	672.96	194.13	478.83
50% = 7.196, 25% = 7.885; WIZM=5.98 WING=4.00 CKSL/ =2.32 WOC=2.23						
WRMN	US IL ELGIN	14.65	1.97	672.96	194.13	478.83
50% = 7.196, 25% = 7.885; WIZM=5.98 WING=4.00 CKSL/ =2.32 WOC=2.23						
KCAL	US CA REDLANDS	21.70	2.99	688.03	194.03	493.99
50% = 11.945, 25% = 11.945; KERN=11.94						
KMYR	US KS WICHITA	31.46	4.53	719.15	192.99	526.16
50% = 14.098, 25% = 18.102; WIZM=9.26 WING=7.69 KOOQ=7.34 KKLO=6.80 KRIL=5.79						
WSTN=5.07 KIIIX=4.83						
WLTV	US AL MOBILE	9.08	1.36	748.93	194.35	554.59
50% = 3.908, 25% = 5.438; WPOP=2.56 XEBS/A=2.19 WIQR=1.98 WRCG=1.74 WING=1.71						
WIZM=1.47 KRIL=1.47 XERFC/A=1.47 WDOV=1.37						
KUJ	US WA WALLA WALLA	40.86	0.66	807.37	191.47	615.90
50% = 1.885, 25% = 2.645; KITI=1.18 KRIZ=1.06 KULY=1.02 CFUN/ =0.93 KTOE=0.74						
KSTN=0.74 KLFB=0.74 KJCK=0.69 KHLF=0.66						
KUJ	US WA WALLA WALLA	40.86	0.66	807.41	191.47	615.94
50% = 1.885, 25% = 2.645; KITI=1.18 KRIZ=1.06 KULY=1.02 CFUN/ =0.93 KTOE=0.74						
KSTN=0.74 KLFB=0.74 KJCK=0.69 KHLF=0.66						
KUJ	US WA WALLA WALLA	40.28	0.65	811.62	191.55	620.07

50% = 1.93, 25% = 2.671; KITI=1.26 KRIZ=1.06 KULY=1.01 CFUN/ =0.94 KLFB=0.74  
KTOE=0.74 KSTN=0.73 KJCK=0.68 KHLF=0.65

KKLO	US KS LEAVENWORTH	28.03	4.84	862.54	193.20	669.34
50% = 17.909, 25% = 19.343; WIZM=14.54 WING=10.46 KOOQ=5.23 WSTN=5.10						
NEW	US TN LEBANON	10.31	1.85	898.22	194.35	703.87
50% = 6.489, 25% = 7.411; WSTN=3.51 WING=3.27 WLAQ=3.24 WLTV=2.93 KQV=2.30 WPOP=1.97 WIQR=1.92						
NEW	US KY BOWLING GREEN	10.61	2.17	1021.77	194.35	827.43
50% = 7.498, 25% = 8.792; WING=7.50 WLTV=2.48 WLAQ=2.29 KQV=2.23 WVJS=2.17						
XENVA2/A	MX CH OJINAGA	17.14	3.76	1097.80	193.98	903.82
50% = 7.87, 25% = 9.112; WLTV=4.18 KRIL=4.00 XEBS/A=3.79 XEAS/A=3.76 KCAL=3.16 KMYR=2.40 KOOQ=2.31						
XECF/O	MX SI LOS MOCHIS	8.84	2.39	1352.20	194.34	1157.86
50% = 4.779, 25% = 6.575; XEBS/A=3.81 KCAL=2.88 XEAS/A=2.29 KRIL=2.27 KERN=2.06 WLTV=1.75 KIIX=1.65						
KNAL	US TX VICTORIA	12.94	3.76	1453.22	194.35	1258.87
50% = 12.873, 25% = 15.041; WLTV=11.12 XEAS/A=6.48 KMYR=6.35 XEBS/A=4.50						
WSTN	US TN SOMERVILLE	12.64	3.96	1564.35	194.34	1370.01
50% = 15.081, 25% = 15.822; WING=11.33 WLAQ=9.95 WIQR=4.79						
KQV	US PA PITTSBURGH	6.30	2.26	1793.67	194.35	1599.32
50% = 7.52, 25% = 9.047; WING=7.52 WDOE=3.21 CKSL/ =3.10 WELM=2.32						
NEW	US ID BOISE	58.73	2.42	2062.44	189.40	1873.04
50% = 9.689, 25% = 9.689; KUJ=9.69						
WIQR	US AL PRATTVILLE	8.89	4.13	2320.00	194.35	2125.66
50% = 15.006, 25% = 16.508; WLTV=15.01 WING=5.22 WSTN=4.48						
KGIM	US SD ABERDEEN	65.17	3.06	2344.80	187.69	2157.11
50% = 10.962, 25% = 12.226; KTOE=10.96 KHLF=5.41						
WDOE	US NY DUNKIRK	5.81	2.74	2355.61	194.35	2161.26
50% = 8.31, 25% = 11.19; WPOP=8.31 WDOV=3.95 CKSL/ =3.88 KQV=3.23 WING=2.74 WELM=2.74						
WLAQ	US GA ROME	8.76	4.15	2370.54	194.35	2176.19
50% = 14.26, 25% = 16.616; WING=12.48 WSTN=6.91 WLTV=6.41 WIQR=5.63						
WPOP	US CT HARTFORD	3.24	1.60	2467.10	194.35	2272.75
50% = 5.225, 25% = 6.44; WING=3.54 KQV=2.79 WELM=2.65 WMYR=2.56 WDOV=2.25 WLAQ=1.60						
KUJ	US WA FINLEY	36.59	1.81	2475.75	192.01	2283.74
50% = 7.056, 25% = 7.285; KUJ=7.06 KITI=1.81						
XEYD/O	MX CI FRANCISCO I.MAD	8.45	4.38	2595.32	194.34	2400.97

# E15C2 BOZMAN 1410 APPLICATION RSS DETERMINATION

Call: NEW

Freq: 1410 kHz

BOZMAN, MT, US

Lat: 45-40-54 N

Lng: 111-02-18 W

Power: 0.25 kW

Theo RMS: 305.70 mV/m @ 1km

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

## Contributors:

Call	Freq (kHz)	City	St	Ct	Limit		RSS
					(mV/m)	(%)	Limit (mV/m)
KWYO	1410	SHERIDAN	WY	US	6.686	100.0	6.686
KIIX	1410	FORT COLLINS	CO	US	3.573	53.4	7.581

## Non-Contributors:

Call	Freq (kHz)	City	St	Ct	Limit	
					(mV/m)	
KWYO	1410	SHERIDAN	WY	US	5.785	(Note 13.48% reduction).

E15C3 KIIIX FORT COLLINS, CO 50% RSS DETERMINATION

Station Information:

Call: KIIIX

Freq: 1410 kHz

Lat: 40-35-34 N

Lng: 105-06-18 W

Power: 1.0 kW

Theo RMS: 317.68 mV/m @ 1km

# of Augmentations: 11

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Contributors:

Call	Freq (kHz)	City	St	Ct	Limit (mV/m)	Limit (%)	RSS Limit (mV/m)
KOOQ	1410	NORTH PLATTE	NE	US	4.875	100.0	4.875
WIZM	1410	LA CROSSE	WI	US	4.787	98.2	6.832
KWYO	1410	SHERIDAN	WY	US	4.713	69.0	8.300

Non-Contributors:

Call	Freq (kHz)	City	St	Ct	Limit (mV/m)
KWYO-AP	1410	SHERIDAN	WY	US	4.096

Note that this is a 13.1% reduction from the licensed KWYO facility's contribution to the KIIIX 50% RSS limit.

# E15C4 KHOL 25% RSS DETERMINATION

## Station Information:

Call: KHOL  
 Freq: 1410 kHz  
 BEULAH, ND, US  
 Lat: 47-17-15 N  
 Lng: 101-45-46 W  
 Power: 0.189 kW  
 Theo RMS: 347.62 mV/m @ 1km

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

## Contributors:

Call	Freq (kHz)	City	St	Ct	Limit		RSS
					(mV/m)	(%)	Limit (mV/m)
WIZM	1410	LA CROSSE	WI	US	5.693	100.0	5.693
KRWB	1410	ROSEAU	MN	US	5.304	93.2	7.781
KIIX	1410	FORT COLLINS	CO	US	4.984	64.1	9.241
KWYO	1410	SHERIDAN	WY	US	4.235	45.8	10.165
KOOQ	1410	NORTH PLATTE	NE	US	3.240	31.9	10.669

## Non-Contributors:

Call	Freq (kHz)	City	St	Ct	Limit
					(mV/m)
KWYO-AP	1410	SHERIDAN	WY	US	3.724

Note that the KWYO application's contribution is less than the licensed KWYO contribution (-12%), and, therefore, complies with 73.182(q), footnote 1 which requires an equal or less contribution to the 25% RSS.