

***APPLICATION FOR MODIFICATION
OF CONSTRUCTION PERMIT***

**FM TRANSLATOR STATION K227CR
POCATELLO, IDAHO
FACILITY ID: 145392
93.5 MHz / 0.099 kW ERP / ND**

TAUNA M. BARBIERI

DECEMBER, 2014

APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Tauna M. Barbieri** ("Barbieri"), permittee of FM translator station K227CR at Pocatello, Idaho, and are in support of her application for modification of construction permit.¹ This application seeks to modify the existing construction permit for that facility under FCC File No. BNPFT-20131022ALW.

It is proposed under this application to change the channel of operation, the site location, the primary station, and the type of antenna. The sum of the changes to the facility would equal a minor change to the facility. Exhibit E-1 illustrates the original 2003, currently authorized, and proposed 60 dBu service contours.

The proposed facility would operate with a maximum effective radiated power of 13 Watts at a center of radiation of 1784 meters above mean sea level. The proposed center of radiation is 13 meters above ground level, with the site elevation being 1771 meters above mean sea level. The center of radiation is 438.6 meters above average terrain along the 330-degree true radial. As a result, the translator ERP is limited to 13 Watts, as it would function as a non-fill-in translator.

Currently the proposed facility is authorized to operate on FM channel 227. It is proposed under this application to increase the channel by one to channel 228. The channel proposed under the original short-form engineering proposal was 226, thus the change proposed under this application is a minor change to both the extant construction permit, and the original proposal.

¹ The Facility ID for K227CR at Pocatello, Idaho is 145392.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

The proposed facility would translate FM station KZDX at Burley, Idaho.² KZDX is licensed to Lee Family Broadcasting, Inc., and operates as a commercial station. The licensee of that facility has provided Barbieri with permission to retransmit their facility. No connection exists between Barbieri and the licensee of KZDX that would be in contravention of Section 74.1232 of the Commission's Rules. Exhibit E-2 illustrates the licensed 60 dBu service contour of KZDX along with the proposed translator 60 dBu service contour. Barbieri would receive KZDX program material off-air.

Exhibit E-3 is a tabular allocation study for the proposed facility. This tabulation indicates contour overlap is present with KZBQ at Pocatello, Idaho, K231BY at Lava Hot Springs, Idaho, and the construction permit for KEZQ at Iona, Idaho. The contour overlap with K231BY and KEZQ will be addressed through the application of Section 74.1204(d) of the Commission's Rules. The indicated first adjacent overlap with KZBQ at Pocatello will become moot when that facility commences operation on channel 230C0 with the facilities authorized under BPH-20131121ATZ. As a result, the remainder of the interference studies, including the graphical map in Exhibit E-4 will exclude consideration of KZBQ on channel 229.

Although normally prohibited contour overlap would exist between the proposed facility and the KZBQ and KEZQ construction permits, and K231BY license, no interference would occur to any populated areas. The KZBQ construction permit is second adjacent to the proposed facility. As such, interference to that facility would be predicted to occur whenever the translator field strength is at least 40 dB greater than the KZBQ field strength. The KZBQ facility is located 0.90

² The Facility ID for KZDX(FM) at Burley, Idaho is 42885.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

kilometers from the proposed translator site with an ERP of 100 kW, which is 38.9 dB greater than the translator ERP. It can be logically inferred from this that it is not possible at any location for the translator field strength to exceed that of KZBQ by any margin, let alone a margin sufficient to cause interference to that facility.

In the case of K231BY and KEZQ, a U/D ratio study will be utilized. Exhibit E-5 illustrates the proposed translator site along with the 61.8 dBu contour of KEZQ and the 77.0 dBu contour of K231BY. These two contours intersect the proposed site, with KEZQ second adjacent to the translator, and K231BY third adjacent. In both cases, interference to either would potentially occur when the field strength of the Barbieri translator is at least 40 dB greater than the other facility in question. Specifically interference to the KEZQ CP facilities may occur in regions where the translator field strength is at least 101.8 dBu, and to K231BY in regions where the field strength is at least 117 dBu. The former is the more stringent requirement, thus it will be utilized in this analysis.

The power density at the interfering field strength is determined by the following equation:

$$S = \frac{E^2}{Z_0}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, and Z_0 is the characteristic impedance of free space of 377 ohms.

The power density is also given by:

$$S = \frac{P}{4\pi R^2}$$

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

Where S is the same units, P is the power in Watts, and R is the distance from the antenna at which this field strength occurs.³ Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$R^2 = \frac{P}{4\pi S}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-6, including the related variables from the above equations. The relative field values utilized in this tabulation were obtained from data published by the antenna manufacturer. As this exhibit demonstrates, the maximum horizontal distance from the antenna for the potential interference region is 201 meters. The following satellite image illustrates the tower along with a 201 meter radius.

³ It should be noted that this distance is the distance from the antenna, which will not necessarily be equivalent to the distance from the supporting structure.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com



This image demonstrates that there are no four lane roads or populated areas within the interference region. The only structures within the region are associated with the several towers comprising the Howard Mountain communications site. As a result, zero resident population would be affected by the potential interference region.

As was previously discussed, KZBQ currently is licensed on channel 229, first adjacent to the proposed translator, and authorized to change to channel 230. This channel change by KZBQ is part of a multi-facility rulemaking process. As a result of this, Barbieri is cognizant of the fact that a grant of this construction permit application may be held in abeyance until such time as KZBQ commences program tests on channel 230. Alternately, Barbieri recognizes that a condition may be placed on her construction permit advising that program tests of K227CR facilities may not commence until such time as program test for KZBQ commence on channel 230.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

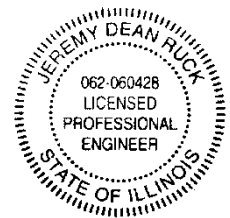
Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

12.24.2014

The proposed facility would not create a significant environmental impact, and is exempt from environmental processing. The facility would utilize an existing tower that is registered with the Commission. In addition, the facility would not constitute an RF exposure hazard to the general public.

Under a worst case scenario whereby uniform radiation is assumed, the predicted power density from the proposed facility would be $6.03 \mu\text{W}/\text{cm}^2$. Barbieri certifies that coordination will occur with all other users of the site to ensure that workers and other personnel having access to the site are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2015

Jeremy D. Ruck, PE
December 24, 2014

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

12.24.2014

K227CR.2003

Latitude: 42-52-26 N
Longitude: 112-30-47 W
ERP: 0.045 kW
Channel: 226
Frequency: 93.1 MHz
AMSL Height: 1787.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

K227CR.C

BNPFT20131022ALW
Latitude: 42-50-02 N
Longitude: 112-23-38 W
ERP: 0.099 kW
Channel: 227
Frequency: 93.3 MHz
AMSL Height: 1443.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

K227CR.X

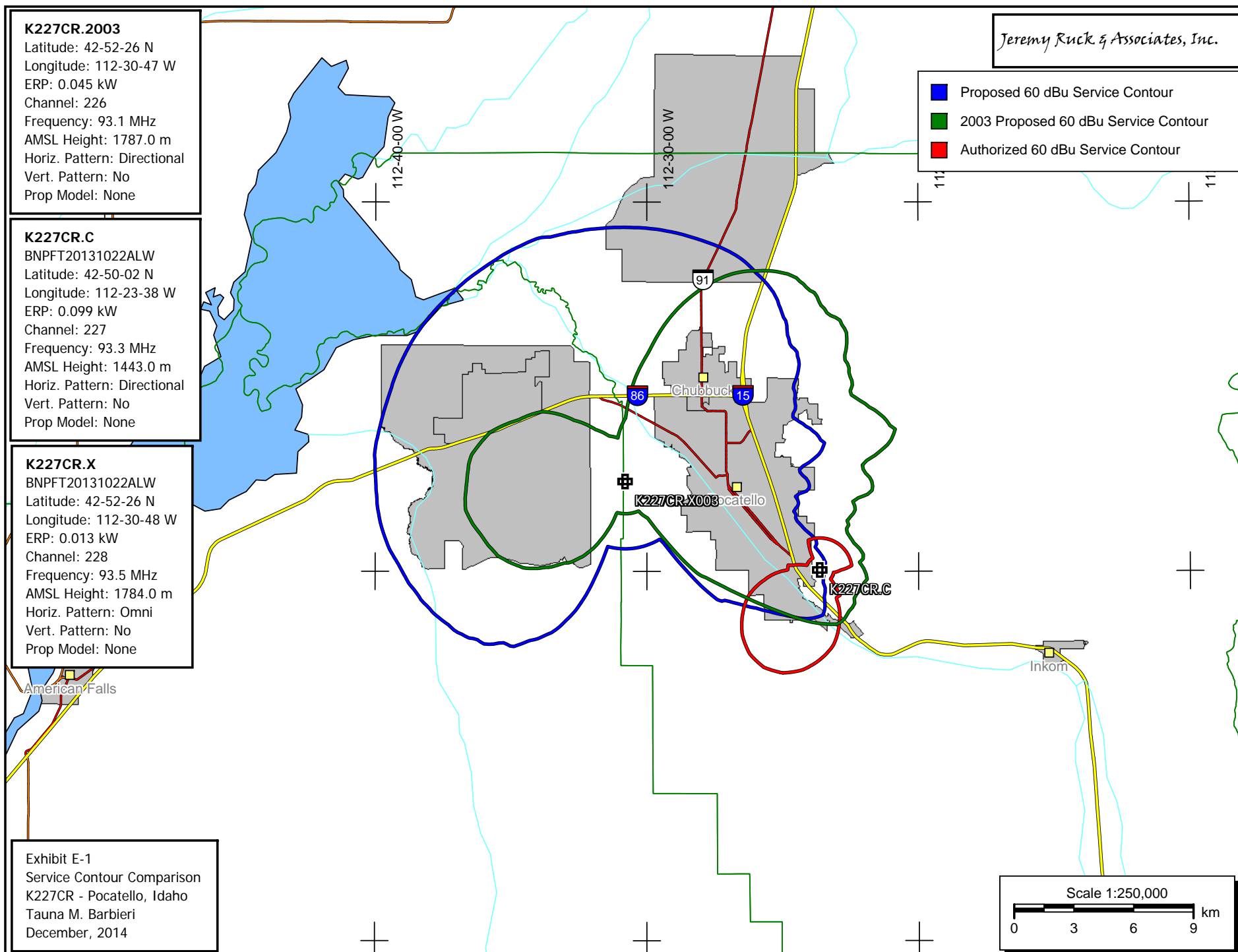
BNPFT20131022ALW
Latitude: 42-52-26 N
Longitude: 112-30-48 W
ERP: 0.013 kW
Channel: 228
Frequency: 93.5 MHz
AMSL Height: 1784.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

American Falls

Exhibit E-1
Service Contour Comparison
K227CR - Pocatello, Idaho
Tauna M. Barbieri
December, 2014

Jeremy Ruck & Associates, Inc.

- Proposed 60 dBu Service Contour
- 2003 Proposed 60 dBu Service Contour
- Authorized 60 dBu Service Contour



K227CR.X

BNPFT20131022ALW
Latitude: 42-52-26 N
Longitude: 112-30-48 W
ERP: 0.013 kW
Channel: 228
Frequency: 93.5 MHz
AMSL Height: 1784.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

KZDX

BLH20040817AAG
Latitude: 42-20-06 N
Longitude: 113-36-15 W
ERP: 27.00 kW
Channel: 260
Frequency: 99.9 MHz
AMSL Height: 2536.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

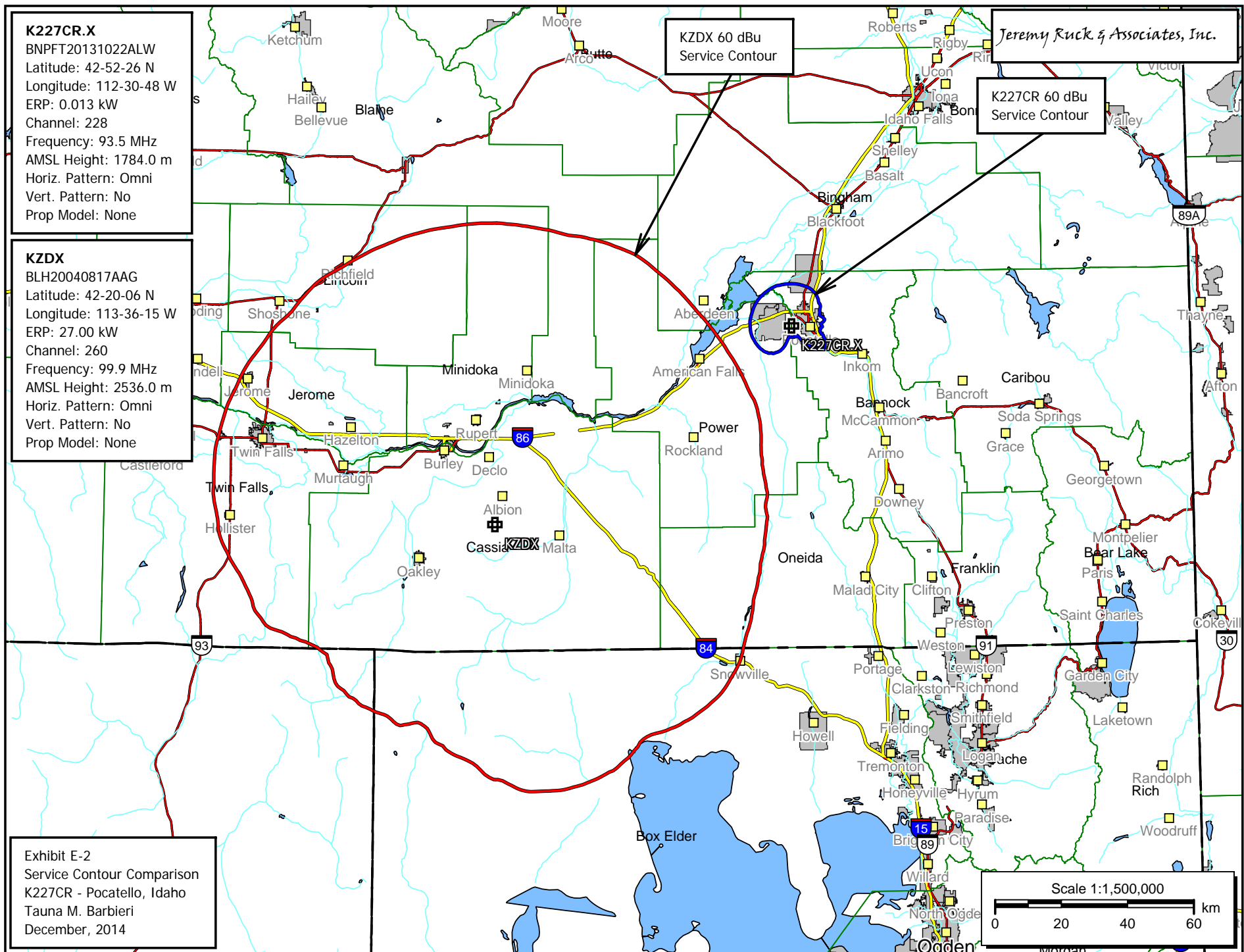
Exhibit E-2

Service Contour Comparison
K227CR - Pocatello, Idaho
Tauna M. Barbieri
December, 2014

KZDX 60 dBu
Service Contour

Jeremy Ruck & Associates, Inc.

K227CR 60 dBu
Service Contour



Jeremy Ruck & Associates, Inc.
Consulting Engineers - Canton, Illinois

Exhibit E-3 - Tabular Interference Study
K227CR - Pocatello, Idaho
CH# 228D - 93.5 MHz, Pwr= 0.013 kW, HAAT= 280.4 M, COR= 1784 M
Average Protected F(50-50)= 10.47 km
Omni-directional

REFERENCE
42 52 26.0 N.
112 30 48.0 W.

DISPLAY DATES
DATA 12-24-14
SEARCH 12-24-14

CH CITY	CALL	TYPE ANT STATE	AZI <--	DI ST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
229C Pocatello	KZBQ	LIC_C_ ID	177.1 357.1	0.89 BMLH20000616AAS	42 51 57.0 112 30 46.0	100.000 300	124.9 1821	84.0 Idaho Wireless Corporation	-127.4*	-87.9*
230C Pocatello	AL2457	RSV-A ID	177.1 357.1	0.89 RM11365	42 51 57.0 112 30 46.0	100.000 600	15.8 2117	97.8	-18.3*	-97.1*
230C0 Pocatello	KZBQ	CP_CX ID	174.2 354.2	0.90 BPH20131121ATZ	42 51 57.0 112 30 44.0	100.000 308	12.2 1821	84.0 Idaho Wireless Corporation	-14.7*	-83.4*
228C1 Jackson	KJAX	LIC NCX WY	64.8 246.0	156.99 BLH20121219AAP	43 27 40.0 110 45 09.0	90.000 315	186.5 2479	84.7 Rp Broadcasting Ls, LLC	-40.0*	36.4
231D Lava Hot Springs	K231BY	LIC DC_ ID	163.0 343.0	7.58 BLFT20140529AIY	42 48 31.0 112 29 10.0	0.175 587	0.7 2206	27.5 Ri verbend Communi cations,	1.9	-20.2*
227D Pocatello	K227CR	CP DH_ ID	114.5 294.6	10.70 BNPFT20131022ALW	42 50 02.0 112 23 38.0	0.099 -214	1.4 1443	0.7 Tauna M. Barbi eri	-1.7	-8.8*
226C1 Iona	KEZQ	CP_CX ID	350.2 170.1	70.73 BPH20130304ABO	43 30 03.0 112 39 43.0	37.000 440	9.2 2009	75.4 Chaparral Broadcasting, In	48.7	-4.9*
227D Lava Hot Springs	K227CL	CP DC_ ID	124.6 305.0	50.87 BNPFT20130826ABK	42 36 46.0 112 00 06.0	0.250 60	12.0 1912	7.5 Idaho Wireless Corporation	27.8	21.3
225C1 Logan	KBLQ-FM	LIC_CX UT	152.3 332.8	125.56 BLH20040129AJH	41 52 18.0 111 48 31.0	100.000 63	11.3 1746	78.0 Sun Valley Radi o, Incorpor	103.9	47.3

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K227CR.X

BNPFT20131022ALW

Latitude: 42-52-26 N

Longitude: 112-30-48 W

ERP: 0.013 kW

Channel: 228

Frequency: 93.5 MHz

AMSL Height: 1784.0 m

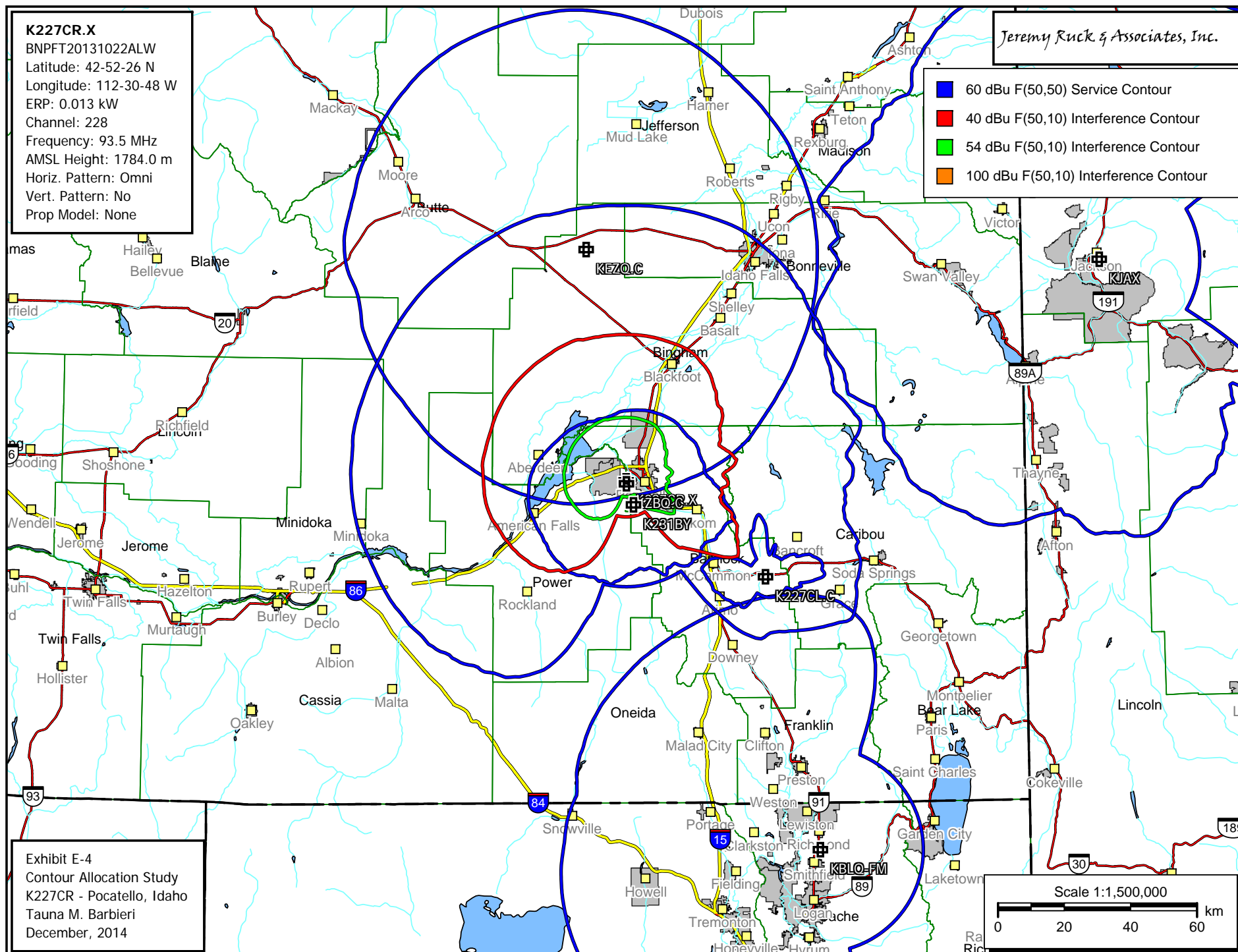
Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Jeremy Ruck & Associates, Inc.

- 60 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour
- 100 dBu F(50,10) Interference Contour

**Exhibit E-4**

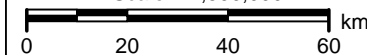
Contour Allocation Study

K227CR - Pocatello, Idaho

Tauna M. Barbieri

December, 2014

Scale 1:1,500,000



K231BY

BLFT20140529AIY
Latitude: 42-48-31 N
Longitude: 112-29-10 W
ERP: 0.175 kW
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 2206.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

KEZQ.C

BPHT20130304ABO
Latitude: 43-30-03 N
Longitude: 112-39-43 W
ERP: 37.00 kW
Channel: 226
Frequency: 93.1 MHz
AMSL Height: 2009.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

K227CR.X

BNPFT20131022ALW
Latitude: 42-52-26 N
Longitude: 112-30-48 W
ERP: 0.013 kW
Channel: 228
Frequency: 93.5 MHz
AMSL Height: 1784.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Exhibit E-5
Interference Study
K227CR - Pocatello, Idaho
Tauna M. Barbieri
December, 2014

Jeremy Ruck & Associates, Inc.

■ KEZQ 61.8 dBu Service Contour
■ K231BY 77.0 dBu Service Contour

Proposed K227CR
Transmitter Site

FCC F(50-50) 61.80 dBu (FCC HAAT)

FCC F(50-50) 77.00 dBu (FCC HAAT)

Scale 1:750,000

