

TECHNICAL EXHIBIT  
APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
BNPH-20041228AAF  
NEW STATION  
BOX ELDER, SOUTH DAKOTA  
CH 274C2 50 KW (DA-MAX) 137 M

Technical Narrative

The technical exhibit of which this narrative is part was prepared in support of an application for modification of the construction permit for a new FM station at Box Elder, South Dakota. Operation is currently authorized on channel 274C2 (102.7 MHz) with a directional antenna maximum effective radiated power (ERP) of 50 kilowatts (kW) and an antenna height above average terrain (HAAT) of 64 meters (BNPH-20041228AAF, Facility ID 164109). The purpose of this instant modification application is to change transmitter site and directional antenna system and operate on channel 274C2 with a directional antenna maximum ERP of 50 kW and an HAAT of 137 meters. No other changes are proposed. Therefore, the instant application is considered a "minor" change in facilities in accordance with Section 73.3573(a)(1). Processing under Section 73.215 is requested with respect to a short-spacing with KZSD on channel 273C1 at Martin, South Dakota as detailed below.

Response to Paragraph 5 - Antenna Structure Registration

The proposed antenna will be mounted at the 80-meter level on an existing 163-meter tower. The tower registration number is 1048502.

Response to Paragraph 14 - Community Coverage

Figure 1 is a map that demonstrates the proposal complies with the provisions of Section 73.315 and provides the entire community of license, Box Elder, South Dakota, with a 70-dBu signal.

Response to Paragraph 16 - Interference

Figure 2 is a separation study from the proposed transmitter site coordinates. As shown, the proposed

transmitter site complies with the minimum distance separation requirements of Section 73.207 for Class C2 operation on channel 274 towards all existing, authorized and proposed stations and allotments, with the exception of the licensed operation of KZSD on channel 273C1 at Martin, South Dakota (BLED-19910715KA). Therefore, it is proposed to utilize the contour protection provisions of Section 73.215 with respect to the short-spacing with KZSD.

Figure 3 demonstrates that the proposed Box Elder channel 274C2 operation complies with the contour protection provisions of Section 73.215 with respect to KZSD's licensed operation. Maximum facilities have been presumed for KZSD and actual facilities have been presumed for the proposed Box Elder facility, as specified in Section 73.215<sup>1</sup>.

#### Environmental Considerations

The proposed Box Elder channel 274C2 facilities were evaluated in terms of potential radiofrequency radiation exposure at 2 meters above ground level in accordance with the OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation". This Bulletin provides assistance in determining whether FCC-regulated transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency (RF) electromagnetic fields.

The proposed antenna will be mounted at the 80-meter level on the existing tower structure. The calculated power density at 2 meters above ground level at the base of the tower was calculated using the appropriate equation contained in the Bulletin. Figure 4 is a vertical plane relative field pattern for the proposed Shively 4-bay,  $1-\lambda$  spaced directional antenna. As shown on Figure 4, the maximum vertical relative field value towards the tower base ( $-60^\circ$  to  $-90^\circ$  elevation) is less than 0.38. Therefore, using a "worst-case" vertical relative field value of 0.38 for the proposed directional antenna, the total ERP of 100 kW (H+V) and an antenna center of radiation height above ground level of 80 meters, the calculated power density at

---

<sup>1</sup> The distance between the proposed transmitter site and KGLM's licensed operation (154.75 km) complies with the minimum distance separation requirement of Section 73.215(e) (144 km).

two meters above ground level at the base of the tower is 0.0793 milliwatts per square centimeter (mW/cm<sup>2</sup>), or 39.7% of the Commission's recommended limit applicable to uncontrolled exposure areas (0.2 mW/cm<sup>2</sup> for FM channel 274). However, as this is a multiple-user site, measurements will be made to substantiate compliance.

Access to the tower site will be restricted. Furthermore, the site will be appropriately marked with RFR warning signs. In addition, as this is a multi-user site, procedures will be in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such procedures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the station is at reduced power or shut down.

Finally, it is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already has been provided to the FCC by the tower owner as part of the tower registration process.

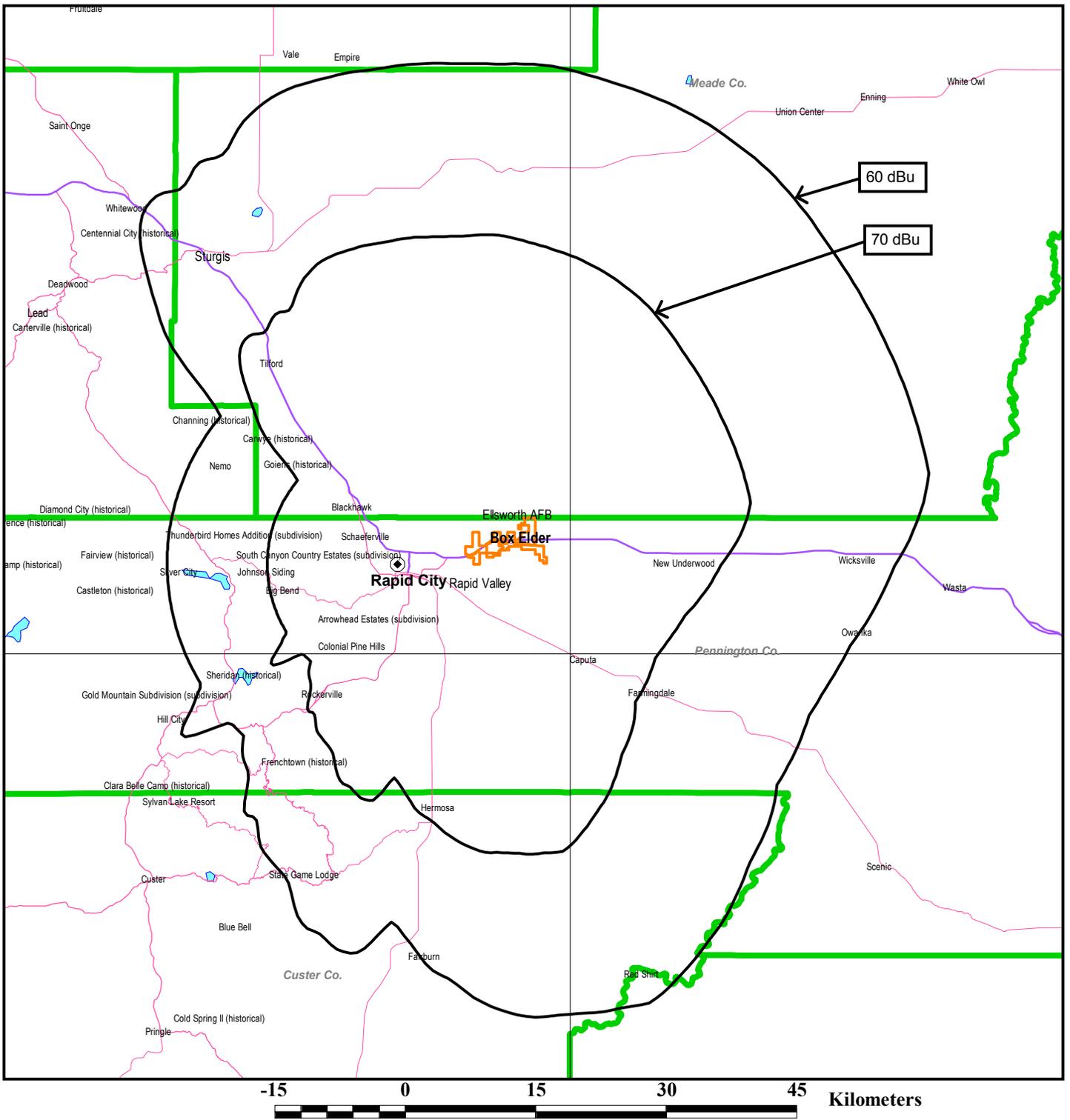


W. Jeffrey Reynolds

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Avenue  
Sarasota, FL 34237-6019  
(941) 329-6000  
JEFF@DLR.COM

October 23, 2007

Figure 1



**COMPLIANCE WITH SECTION 73.315**

**NEW FM STATION  
BOX ELDER, SOUTH DAKOTA  
CH 274C2 50 KW (MAX-DA) 137 M**

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

CDBS FM SEPARATION STUDY

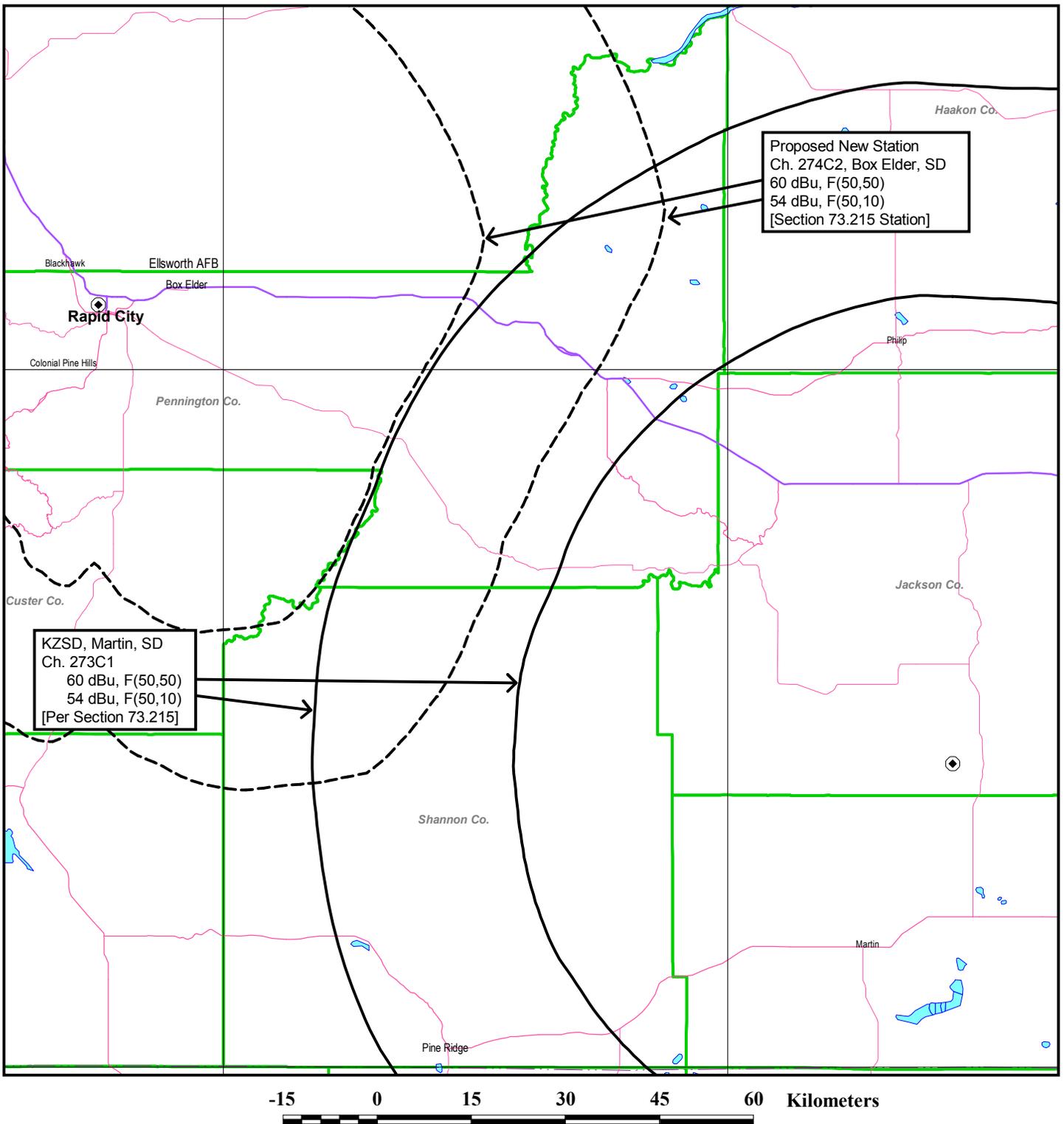
Channel: 274 Coordinates: 044-05-33 103-14-53 (NAD 27)  
 Class: C2 Buffer Distance: 50 km

Date: 10/23/2007  
 Page: 1 of 1

Callsign	Status	Chan.	Serv.	Freq.	City	State	Latitude	Dist. (km)	Sep. (km)	Spacing (km)
Fac. ID	ARN	Class	DA	Ant. ID	ERP (kW)	HAAT (m)	Longitude	Bear. (deg)	73.215	Comment
<b>KZSD-FM</b>	LIC	273	FM	102.5	MARTIN	SD	043-26-06	154.75	158	-3.25
59466	BLED	19910715KA	C1	N	100	230	101-33-14	117.66	<b>144 N</b>	<b>SHORT<sup>1</sup></b>
<b>NEW</b>	CP	274	FM	102.7	BOX ELDER	SD	044-01-35	7.35	190	
164109	BNPH	20041228AAF	C2	D	68556	64	103-15-05	182.08	<b>177 Y</b>	
<b>KYDT</b>	LIC	276	FM	103.1	SUNDANCE	WY	044-28-35	104.88	79	25.88
78241	BLH	19971223KE	C1	N	25	503	104-26-54	294.49	<b>73 N</b>	<b>CLEAR</b>

<sup>1</sup> Processing pursuant to Section 73.215 requested with respect to the short-spacing with KZSD. See Technical Narrative, Figure 3.

Figure 3



## COMPLIANCE WITH SECTION 73.215

NEW FM STATION  
BOX ELDER, SOUTH DAKOTA  
CH 274C2 50 KW (MAX-DA) 137 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 4

