

[Exhibit 12]

## **Non-Interference Compliance**

Regarding FCC File Number: BNPFT-20030317JZK

Channel: 277

### **Description of Exhibit 12 Contents**

This exhibit demonstrates that the proposed facility complies with contour overlap and interference protection provisions in all the applicable rule sections and that this application for a construction permit is in full compliance with 47 CFR 74.1204.

Page 2 of this exhibit is an explanation of the tabulated data, which is included as evidence on page 5 of this exhibit.

Pages 3 and 4 of this exhibit contain an explanation of the method used to demonstrate compliance with contour overlap and interference protection provisions based on 47 CFR 74.1204(d), which states:

*"an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable."*

In addition, page 4 includes a tabulation of the second and third adjacent stations which this application is required to protect and the field strengths of those stations in the vicinity of the proposed translator. The field strengths given were based on contours predicted using FCC contour algorithms and 3 arc second terrain data.

**Let it be noted that should any actual real world interference occur, the applicant certifies that it will promptly suspend operation of this translator in accordance with 47 CFR 74.1203.**

Page 5 of this exhibit is the tabulated data from the interference analysis, which shows all stations that this application had to consider for contour protection. These tabulated values were generated using high resolution 3 arc second terrain data for the best possible accuracy.

Page 6 of this exhibit is a portion of a USGS 1:24,000 scale 7.5 min quadrangle at full scale with the calculated area of interference overlaid. The sheet includes the quadrangle name and measurement scale at the bottom-left corner (note: "Mt" refers to meters). The area of interference was calculated using a free-space calculation (see FCC 98-117, Appendix A, pg. 41 for reference to the equation used).

## Explanation of Frequency Finder Results

The interference analysis for this application was performed using the "Frequency Finder" module in RadioSoft's Comstudy, version 2.2.

Frequency Finder analyzes data taken directly from the FCC's FM database and looks for prohibited overlap with contours of adjacent stations and prohibited proximity to stations 53 or 54 channels from the proposed station (IF) using 3 arc second terrain data and the FCC's contour algorithms. The results tabulated are the stations returned from that analysis. (Note: Because Comstudy was looking at the FCC's FM database, it took into account the proposed translator when doing the analysis and returned it in the tabulated results. For the sake of simplicity, that record has been deleted from all tabulated results.)

The first several columns of the table are self-explanatory. They give various data on the stations in question. The column labeled "Clr" gives the proposed translator's "clearance" with respect to the tabulated station, either in dB or km. The values listed with no units are given in km and are for stations located on an IF to the proposed site's channel.

**A negative value in the "Clr" column does NOT necessarily represent prohibited contour overlap, as explained below.**

A negative value listed in the "Clr" column would indicate either overlap of interference and protected contours or prohibited proximity to an IF station except in the following situations:

-Since the proposed station's Effective Radiated Power (ERP) is 4 watts, a negative value in km (no units listed in the table) does not represent a violation of the CFR, according to 47 CFR 1204(g), which states that "FM translator stations and booster stations operating with less than 100 watts ERP will be treated as class D stations and will not be subject to intermediate frequency separation requirements."

- A second or third adjacent LP100 station cannot represent a violation of the CFR, as 47 CFR 74.1204(a)(4) requires protection of only co-channel and first adjacent LP100 stations.

- 47 CFR 74.1204(a) requires only the protection of "AUTHORIZED commercial or noncommercial educational FM broadcast stations, FM translators, ..." Any entry with a status listed as "RSV," "USE" or "APP" does not represent an authorized station and therefore is not protected under 47 CFR 74.1204. The one exception is the case of LP100 applications. The note to 47 CFR 74.1204(a)(4) states that "LPFM applications and permits that have not yet been licensed must be considered as operating with the maximum permitted facilities." Therefore, any first adjacent or co-channel LP100 station, no matter the status, is protected.

-Entries highlighted in red are those stations where there is overlap of predicted contours and lack of population has been demonstrated within the area of interference.

## Compliance with 47 CFR 74.1204(d)

The proposed translator's Maximum Effective Radiated Power (ERP) is 0.004kW at 41 meters above ground level. According to 47 CFR, 74.1204(a), the desired to undesired ratio between 2nd/3rd adjacent stations is 40dB, making the proposed translator's interfering contour 101.3dBu F(50,10). (See the next page for more discussion on the determination of the signal strength of the proposed translator's area of interference.)

Using a free-space calculation (equation referenced in FCC 98-117, Appendix A, pg. 41), the proposed translator's F(50,10) interference contour was calculated and the maximum horizontal plane was plotted on the pertinent portion of a USGS quadrangle (page 6 of this exhibit). However, the field strength of the proposed translator's antenna varies with angle of depression from horizontal. The antenna relative fields are tabulated below at 5 degree increments, starting at 5 degrees below horizontal. Antenna relative field strength data was provided and certified by the manufacturer of the proposed antenna. Using a free space calculation that neglects any loss due to reflection (equation referenced in FCC 98-117, Appendix A, pg. 41), the vertical ground clearance of the proposed application's F(50,10) interference contour at each angle has been tabulated. As shown below, the area of interference clears the ground by 3.4 meters at the lowest point. The applicant has taken into account USGS quadrangles and relevant aerial photography in stating that no structures, except possibly tower support structures, puncture the proposed area of interference. Hence, in accordance with 47 CFR 74.1204(d) and the clarification provided by the FCC in the decision Re: Living Way Ministries (FCC 02-244), there is a lack of population within the proposed area of interference and therefore this application is in full compliance with 47 CFR 74.1204.

**Antenna Manufacturer:** SWR

**Maximum ERP:** 4 watts

**Antenna Model Number:** 2FM1-0.5

**CORAGL:** 41 m

**F(50,10) Contour:** 101.3 dBu

Depression Angle (from COR)	Antenna Relative Field	ERP (watts)	Distance to F(50,10) Interfering Contour from Antenna (m)	Horizontal Distance of F(50,10) Interfering Contour from Tower (m)	Vert. Clearance of F(50,10) Interfering Contour above TGL (m)
5	0.987	3.90	119.2	118.8	30.6
10	0.95	3.61	114.8	113.0	21.1
15	0.89	3.17	107.5	103.8	13.2
20	0.812	2.64	98.1	92.2	7.5
25	0.721	2.08	87.1	78.9	4.2
30	0.622	1.55	75.1	65.1	3.4
35	0.52	1.08	62.8	51.5	5.0
40	0.42	0.71	50.7	38.9	8.4
45	0.327	0.43	39.5	27.9	13.1
50	0.244	0.24	29.5	18.9	18.4
55	0.173	0.12	20.9	12.0	23.9
60	0.115	0.05	13.9	6.9	29.0
65	0.07	0.02	8.5	3.6	33.3
70	0.039	0.01	4.7	1.6	36.6
75	0.018	0.00	2.2	0.6	38.9
80	0.006	0.00	0.7	0.1	40.3
85	0.001	0.00	0.1	0.0	40.9
90	0.001	0.00	0.1	0.0	40.9

Minimum F(50,10) Clearance above TGL **3.4 m**

The F(50,50) signal strength of all relevant second and third adjacent stations have been examined, and are tabulated below. Column three shows the station's signal level at the proposed translator's tower site, and column four gives the minimum value within the entire proposed translator's standard F(50,10) contour (100 dBu for most classes, 94 dBu for class B's, 97 dBu for class B1's). For signal levels too great to determine, 999 was entered. The minimum F(50,50) contour within the proposed translator's standard F(50,10) contour was used to calculate the proposed translator's interference contour, thereby assuring a minimum undesired-to-desired ratio of 40dB for all relevant adjacent stations, as required in 47 CFR, 74.1204(a).

FCC File Number	Call Sign	F(50,50) Contour at Tower	Min. F(50,50) Contour
BLH19851018KD	KARS-FM	67.3dBu	66.8dBu
BMPH20020926ABK	KARS-FM	61.8dBu	61.3dBu
Minimum F(50,50) Protected Contour of Adjacent Station Within Proposed Translator's standard F(50,10) Contour:			<b>61.3dBu</b>

Frequency Finder

Callsign	State	City	Channel	ERP_w	Licensee	ARN	Class	Status	Distance_km	Clr	Facility_id
NEW	WY	CHEYENNE	280	100	GREENE VALLEY CHURCH, INC.	BNPL20000831ABC	LP100	APP	3.98	-10.82 dB	126459
	WY	CHEYENNE	280	0		RMspm94	C2	APP	4.6	-10.82 dB	0
	WY	CHEYENNE	280	0		RM9071	C2	APP	4.6	-10.82 dB	0
KARS-FM	WY	LARAMIE	275	100000	AGM-NEVADA LLC	BLH19851018KD	C	LIC	57.38	-7.65 dB	10334
KARS-FM	WY	LARAMIE	275	83000	AGM-NEVADA LLC	BMPH20020926ABK	C1	CP MOI	77.05	-1.80 dB	10334
NEW	WY	WARREN AFB	279	34	EDGEWATER BROADCASTING INC.	BNPFT20030317BVB	D	APP	14.77	1.68 dB	154329
NEW	WY	LARAMIE	277	10	RADIO ASSIST MINISTRY, INC.	BNPFT20030317JXP	D	APP	57.38	7.12 dB	149714
NEW	WY	CHEYENNE	224	250	POWELL MEREDITH COMMUNICATIONS	BNPFT20030317ASW	D	APP	8.69	8.7	143430
NEW	WY	CHEYENNE	224	170	COMMUNITY PUBLIC RADIO, INC.	BNPFT20030312AEW	D	APP	9.1	9.1	143016
NEW	WY	CHEYENNE	224	250	MITCHELL A. BERANEK	BNPFT20030317LJL	D	APP	11.92	11.9	157657
NEW	CO	FORT COLLINS	277	20	REGENT BROADCASTING OF FT. COLL	BNPFT20030317JQN	D	APP	73.68	19.57 dB	157029
KRFX	CO	DENVER	278	100000	JACOR BROADCASTING OF COLORADO	BPH20030424AAO	C	APP	155.71	22.00 dB	29731
NEW	WY	LARAMIE	278	10	EDGEWATER BROADCASTING INC.	BNPFT20030317MBH	D	APP	57.38	21.12 dB	155212
KRFX	CO	DENVER	278	100000	JACOR BROADCASTING OF COLORADO	BPH20030424AAO	C	APP	155.71	22.00 dB	29731
NEW	WY	MILLBROOK	277	10	CALVARY CHAPEL OF TWIN FALLS, INC	BNPFT20030310BJC	D	APP	91.76	22.48 dB	139721
	WY	CHEYENNE	280	0		RMspm94	C1	APP	22.43	22.57 dB	0
KRFX	CO	DENVER	278	100000	JACOR BROADCASTING OF COLORADO	BLH4823	C	LIC	155.96	24.89 dB	29731
K280BM	WY	LARAMIE	280	80	LARAMIE PLAINS ANTENNA TV ASSN.,	BLFT19840723MU	D	LIC	55.41	27.71 dB	36554
	NE	BRIDGEPORT	277	0		RMvm128	C	APP	117.26	28.79 dB	0
KAVD	CO	PARKER	276	100000	THE MEADOWLARK GROUP, INC.	BPH20011207AAM	C	APP	197.77	29.01 dB	79249
NEW	CO	FORT COLLINS	280	10	EDGEWATER BROADCASTING INC.	BNPFT20030317CYC	D	APP	68.93	30.71 dB	151251
NEW	CO	HOT SULPHUR SF	277	10	BOULDER COMMUNITY BROADCAST A	BNPFT20030312AOC	D	APP	156.21	31.40 dB	139777
NEW	CO	GREELEY	276	50	EDUCATIONAL COMMUNICATIONS OF	BNPFT20030312AXE	D	APP	79.45	32.72 dB	140298
	WY	LARAMIE	275	0		RMKS138	C1	APP	77.35	33.51 dB	0
NEW	CO	FT. COLLINS	280	10	EDUCATIONAL COMMUNICATIONS OF	BNPFT20030312ADT	D	APP	73.68	35.08 dB	140262
KAVD	CO	LIMON	276	100000	THE MEADOWLARK GROUP, INC.	BLH20001129AAZ	C1	LIC	207.45	36.49 dB	79249
	WY	CHEYENNE	280	0		RM10630	C1	APP	46.17	37.74 dB	0
KQLT	WY	CASPER	279	97000	MOUNT RUSHMORE BROADCASTING I	BLH19980114KB	C	LIC	219.97	39.56 dB	47878
	WY	HANNA	277	0		RM9670	A	APP	168.36	39.34 dB	0
KBIQ	CO	MANITOU SPRING	274	57000	BISON MEDIA, INC.	BMLH20030423AAT	C	LIC	261.5	39.14 dB	73073
NEW	CO	STEAMBOAT SPR	277	10	RADIO ASSIST MINISTRY, INC.	BNPFT20030317GDC	D	APP	176.51	39.03 dB	149340

