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ENGINEERING EXHIBIT EE-1:

FM TRANSLATOR MINOR CHANGE APPLICATION

**APPLICATION FOR AUTHORITY TO CONSTRUCT OR MAKE
CHANGES IN AN FM TRANSLATOR OR FM BOOSTER STATION**

K247CI

BONNERS FERRY, IDAHO

FCC FACILITY NUMBER: 155798

JANUARY 2018

**ENGINEERING EXHIBIT IN SUPPORT OF MINOR MODIFICATION
OF CONSTRUCTION PERMIT APPLICATION CONCERNING
AN FM TRANSLATOR OR FM BOOSTER STATION**

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NARRATIVE STATEMENT

OVERVIEW

The engineering exhibit, of which this narrative is part, was prepared in support of a MINOR CHANGE application concerning FM Translator Station, K247CI (Construction Permit BMPFT-20160129AUP) Bonners Ferry, Idaho, FCC Facility ID: 155798.

The applicant proposes to make changes technical changes to the facility location, the antenna system, and the final output frequency and radiated power. The primary station to be rebroadcast remains as designated.

The station will provide FM "fill-in translator" service for commercial AM Station KBFI, Bonners Ferry, Idaho, FCC Facility ID: 54500

The proposed FM Translator station will operate on channel 246D (97.1 MHZ) with an effective radiated power (ERP) of 0.250 kilowatts (250 watts) and an antenna height above mean sea level of 881 meters (AMSL) and above ground level of 18 meters (AGL). The applicant proposes to use a RVR ACP-2 1-Bay directional FM antenna utilizing circular polarization (H & V).

TRANSMITTER LOCATION - FIGURE 1:

The transmitting facility will consist of a 1-bay FM antenna side-mounted on an existing permanent structure with no change in overall height. The communications tower does

not require an FCC ASR number or registration as the overall height is less than 61 meters, and the structure pass the FCC/FAA tower to airport slope test. (See Figure 1.)

VERTICAL SKETCH OF SUPPORTING STRUCTURE - FIGURE 2:

A vertical tower sketch showing the proposed antenna and the existing supporting structure is included as Figure 2. No change in the overall height of the existing structure is proposed. As a result of no change in height of the structure the FAA has not been notified.

COVERAGE CONTOURS - FIGURE 3:

The predicted coverage contours were calculated in accordance with the provisions of 47 CFR 73.313 (FM Contours) and 47 CFR 73.183 (AM Groundwave Signals).

Figure 3 contains a map in which the predicted coverage contours of the translator and the primary station to be rebroadcast has been drawn, the proposed 60 dBu contour is within either the 2mV/m groundwave contour of the primary station or the 25-mile radius limit from the AM site whichever is greater.

CHANNEL 246D ALLOCATION STUDY - FIGURE 3:

The proposed site fully protects all other stations of concern as detailed in Figure 3. No prohibitive overlap with any other facility of concern is predicted to occur.

WAIVER REQUEST OF MAXIMUM DISTANCE

34 DBU CONTOUR OUTSIDE OF CANADA PORTION

The predicted 34 dBu (F50,10) contour does cross the border between the U.S. and Canada, thus coordination with Canada will be required. While the 34 dBu contour extends into Canada the distance to the contour over the relative arc towards Canada does not exceed 60 kilometers as required by the rules in directions (arc) towards Canada.

To the extent that the contour does EXCEED 60-kilometers in the United States it is respectfully requested that the 60-kilometer 34-dBu contour maximum distance rule be waived.

A grant of this waiver request is in the public interest in that it does not cause any harm, and is in compliance with the Canadian agreement with regards to the pertinent directions towards Canada.

No impact on existing Canadian facilities or proposals will occur as a result of a grant of this proposal.

OTHER CONSIDERATIONS:

The applicant recognizes its responsibility to remedy complaints of blanketing interference as required by 47 CFR 73.318, and to protect existing or proposed facilities in accordance with the Commission's applicable rules. An intermodulation study has been conducted and no adverse impact on existing facilities or pending applications is anticipated. The applicant clearly recognizes its responsibility to remedy interference complaints to existing stations resulting from its proposed operation. There are no known translator input frequencies within the area in which this proposal's output frequency would cause interference.

ENVIRONMENTAL CONSIDERATIONS:

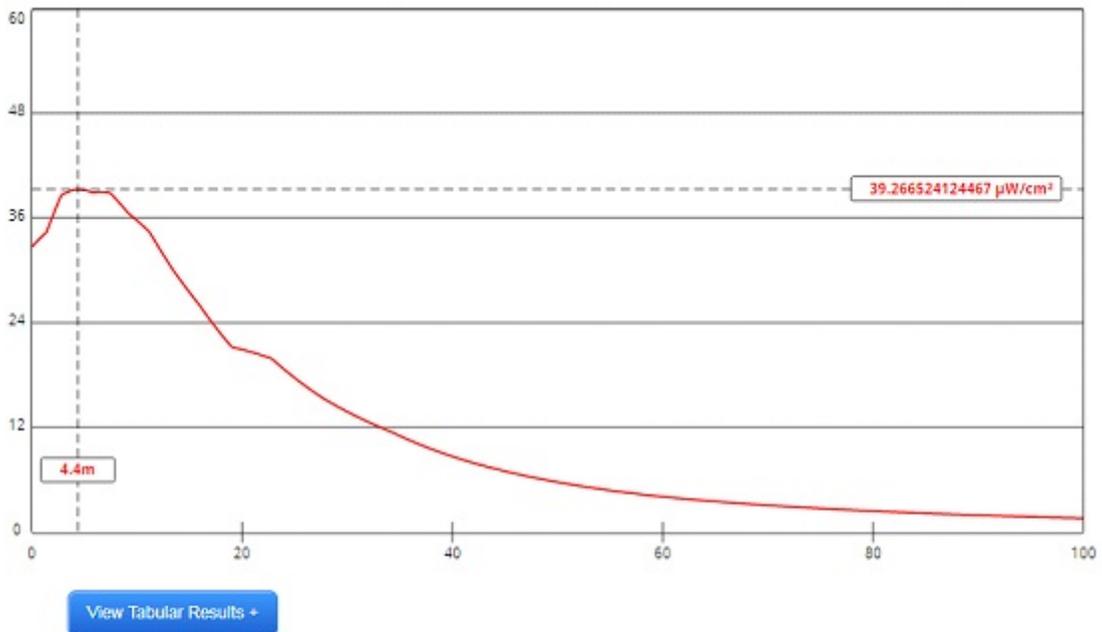
The applicant believes its proposal will not significantly affect the environment for the following reasons:

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights.

The site and this proposal are exempt from NHPA Section 106 review as no construction will occur that would trigger a review under NHPA Section 106.

Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.11992.)

Based on the results present below from the FCC FM Model program the power density level 2-meters above ground is predicted to be 0.039 mW/cm² or less.



Channel Selection	Channel 246 (97.1 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	18	Distance (m)	100
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	Element Spacing (λ)	1

The computed power density is 3.9% of the Commission's guideline for a controlled area and 19.5% for an uncontrolled area. This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields and no further study is required. No exposure in excess of the guidelines can occur at ground level.

The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

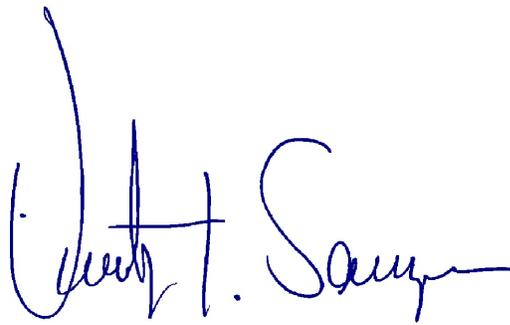
SUMMARY:

The proposed FM translator (modification of K247CI) will operate as a FM "fill-in" translator for commercial AM Broadcast Station KBFI, Sandpoint, Idaho with a maximum ERP 0.250-kilowatts (H & V), utilizing a DIRECTIONAL circularly polarized antenna system.

Operation as proposed herein would not cause/increase any normally prohibited contour overlap, and would not have any significant impact on the environment.

The proposed operation is fully in compliance with all other areas of the Commission's rules and applicable international agreements.

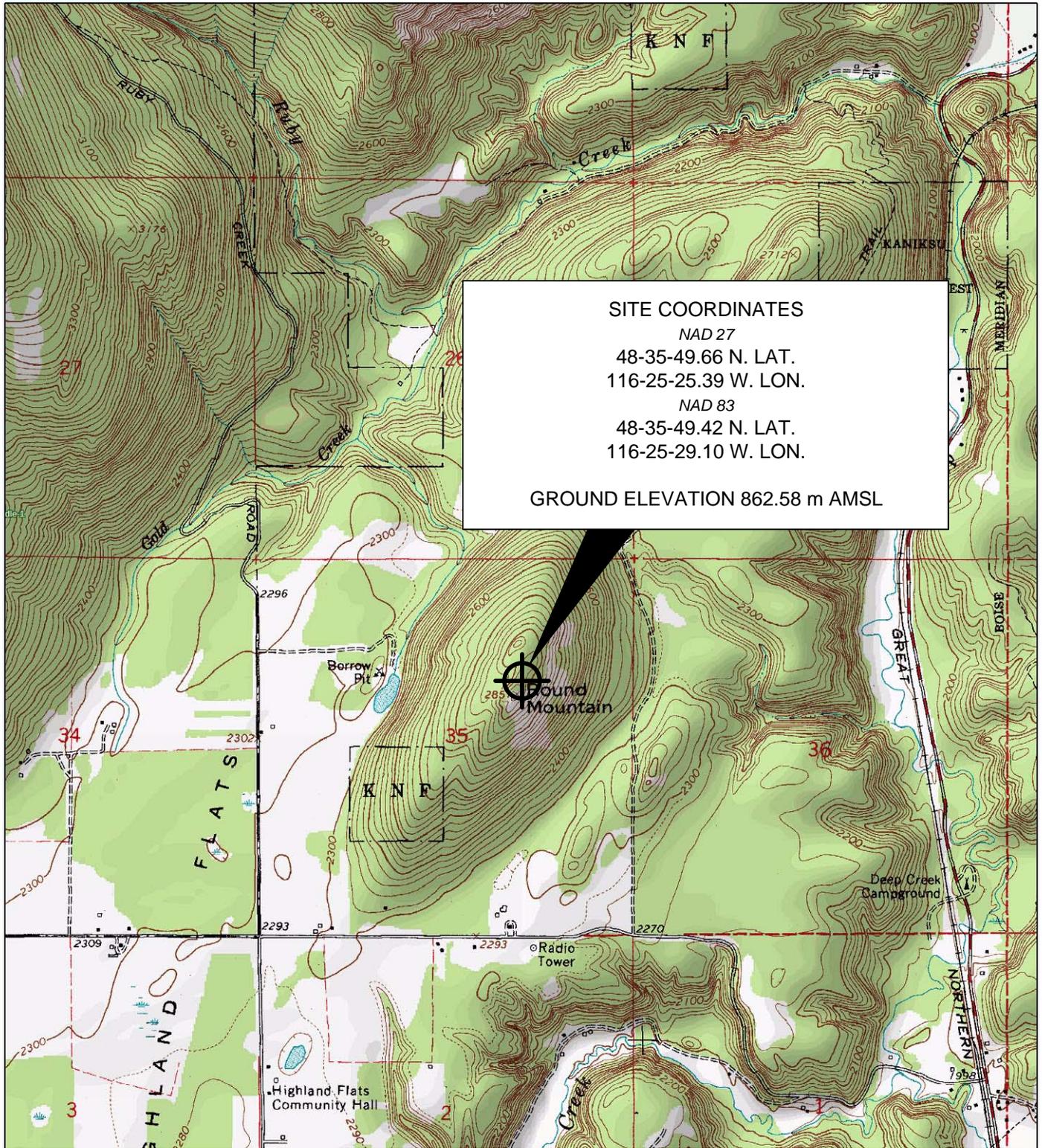
January 17, 2018



Timothy Z. Sawyer, Consulting Engineer

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2130 HUTCHISON GROVE COURT, SUITE 100
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SITE COORDINATES
 NAD 27
 48-35-49.66 N. LAT.
 116-25-25.39 W. LON.
 NAD 83
 48-35-49.42 N. LAT.
 116-25-29.10 W. LON.
GROUND ELEVATION 862.58 m AMSL

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TOPOGRAPHIC SITE MAP

FM TRANSLATOR SITE **FIGURE**
BONNERS FERRY, IDAHO **1**

FALL CHURCH, VIRGINIA 22043-2555

SIZE A CAGE NO N/A

DWG NO 20180117K247CIMOD

REV NONE

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SCALE 1:24000

JANUARY 201

SHEET 1 OF 2

Existing Communications Tower - Pass FCC/FAA Tower to Airport Slope Test

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	48-35-49.4 north
Longitude	116-25-29.1 west

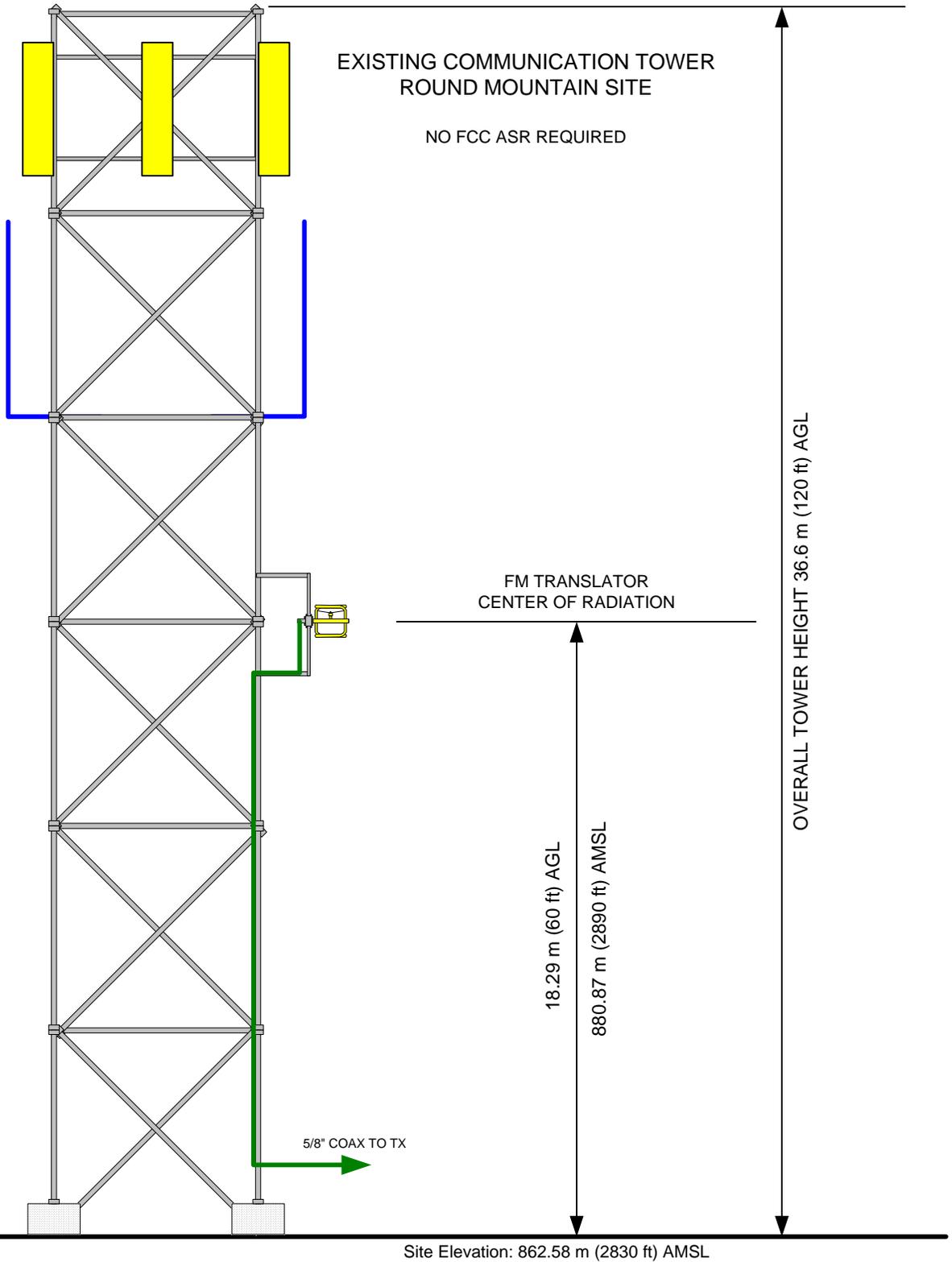
Measurements (Meters)

Overall Structure Height (AGL)	36.6
Support Structure Height (AGL)	36.6
Site Elevation (AMSL)	862.6

Structure Type

LTOWER - Lattice Tower

<p align="center">T Z SAWYER TECHNICAL CONSULTANTS Tel.: (703) 848-2130 www.tzsawyer.com</p>	<p>FCC TOWER REGISTRATION NOT REQUIRED FAA NOTIFICATION NOT REQUIRED - NO CHANGE IN EXISTING TOWER</p>			
	<p>FM TRANSLATOR BONNERS FERRY, IDAHO</p>			<p>FIGURE 1</p>
<p>FALL CHURCH, VIRGINIA 22043-2555</p>	<p>SIZE A</p>	<p>CAGE NO N/A</p>	<p>DWG NO 20180117K247CIMOD</p>	<p>REV NONE</p>
<p>(c) 2018, ALL RIGHTS RESERVED</p>	<p>SCALE N/A</p>	<p>JANUARY 2018</p>	<p>SHEET 2 OF 2</p>	



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VERTICAL SKETCH OF SUPPORTING STRUCTURE

FM TRANSLATOR
BONNERS FERRY, IDAHO

**FIGURE
2**

FALL CHURCH, VIRGINIA 22043-2555

SIZE
A

CAGE NO
N/A

DWG NO

20180117K241CIMOD

REV
NONE

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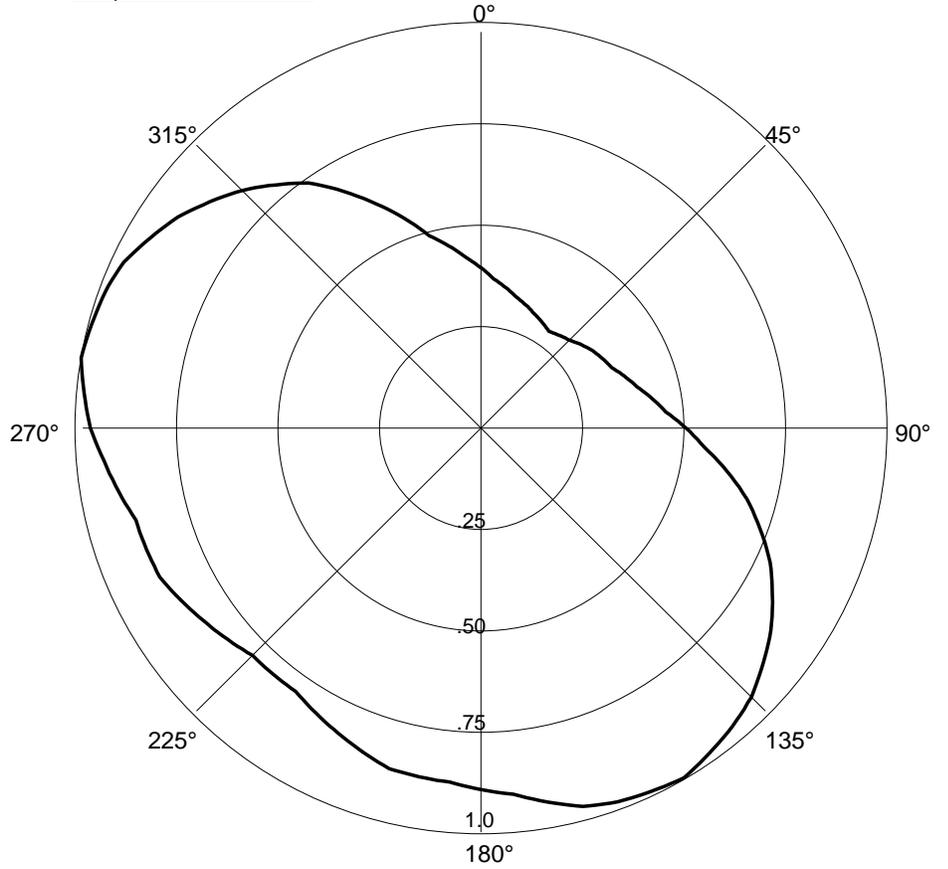
SCALE 1"=15ft

JANUARY 2018

SHEET

Graph is Relative Field

Azi	Field	dBk	kW
000	0.397	-14.045	0.039
010	0.353	-15.065	0.031
020	0.324	-15.810	0.026
030	0.302	-16.420	0.023
040	0.300	-16.478	0.023
050	0.322	-15.863	0.026
060	0.345	-15.264	0.030
070	0.376	-14.517	0.035
080	0.427	-13.412	0.046
090	0.505	-11.955	0.064
100	0.615	-10.243	0.095
110	0.732	-8.730	0.134
120	0.829	-7.650	0.172
130	0.907	-6.868	0.206
140	0.964	-6.339	0.232
150	1.000	-6.021	0.250 MAX
160	0.985	-6.152	0.243
170	0.940	-6.558	0.221
180	0.895	-6.984	0.200
190	0.877	-7.161	0.192
200	0.853	-7.402	0.182
210	0.814	-7.808	0.166
220	0.796	-8.002	0.158
230	0.814	-7.808	0.166
240	0.853	-7.402	0.182
250	0.877	-7.161	0.192
260	0.906	-6.878	0.205
270	0.962	-6.357	0.231
280	1.000	-6.021	0.250 MAX
290	0.985	-6.152	0.243
300	0.941	-6.549	0.221
310	0.872	-7.210	0.190
320	0.786	-8.112	0.154
330	0.677	-9.409	0.115
340	0.553	-11.166	0.076
350	0.458	-12.803	0.052



BONNER MOD OF CP
 BMPFT20160129AUP
 FCC Facility ID:155798
 NAD 27 Latitude: 48-35-49.66 N
 NAD 27 Longitude: 116-25-25.39 W
 ERP: 0.25 kW
 Channel: 246 Frequency: 97.1 MHz
 AMSL Height: 881.0 m
 Horiz. Pattern: Directional

MODIFICATION OF CONSTRUCTION PERMIT K247CI
 60 DBU FM TRANSLATOR SERVICE CONTOUR

WITH AM PRIMARY KBFI 25 MILE RADIUS
 AND 34 DBU CONTOUR AND 60 KM DISTANCE
 LIMITS TO CANADA

MINOR CHANGE ADJACENT CHANNEL APPLICATION
 CHANNEL 246 97.1 MHZ - BONNERS FERRY, IDAHO

FIGURE 3-2

60 KM RADIUS LIMIT TO CANADA

CANADA
 UNITED STATES

34 DBU (F50,10)
 TO CANADA

Boundary

KBFI (AM)

KBFI AM 25 MILE RADIUS

BONNER MOD OF CP

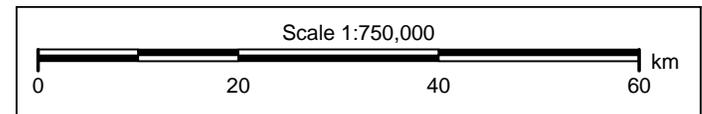
PROPOSED 60 DBU
 FM TRANSLATOR CONTOUR
 FILL-IN SERVICE

Pend Oreille

Lincoln

60 DBU F(50,50) CONTOUR PROPOSAL IS COMPLETELY
 CONTAINED WITHIN THE 25-MILE RADUS DISTANCE
 FROM THE AM PRIMARY STATION TRANSMITTER SITE

Bonner



MOD OF CP CONTOUR STUDY
 RADIO BONNERS FERRY, INC

FIGURE 3-3

REFERENCE CH# 246D - 97.1 MHz, Pwr= 0.25 kW DA, HAAT= -143.4 M, COR= 881 M
 48 35 49.7 N. Average Protected F(50-50)= 7.1 km
 116 25 25.4 W. Standard Directional

CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
246C Kalispell	KALS	LIC	CX MT	112.3 293.9	165.93 BMLE20150130AKN	48 00 48.0 114 21 55.0	26.500 758	178.1 2065	83.3 Hi-line Radio	-19.5*	61.5 Fellowship I
243C Cranbrook	AL0074	VAC	BC	30.9 211.5	112.00	49 27 30.0 115 37 45.0	100.000 600	8.8 1758	97.0	92.5	14.3
249A Creston	AL2326	VAC	BC	353.1 173.0	56.32	49 06 00.0 116 31 00.0	6.000 100	4.3 1016	38.0	45.2	17.3
245A Salmo	AL8315	VAC	BC	317.0 136.4	91.83	49 11 50.0 117 17 04.0	6.000 100	32.1 1332	38.0	55.4	40.9
249D Creston	NEW	PRO	HN BC	3.4 183.4	54.92	49 05 25.0 116 22 45.0	0.020 333	0.3 1396	5.3	46.7	48.7
244D Creston	NEW	USE	VN BC	351.1 171.0	58.54 20081003CA3	49 07 02.0 116 32 54.0	0.032 -58	0.4 558	6.0	51.5	50.4
245C2 Spokane	KEZE	LIC	DC WA	210.0 29.4	111.60 BLH20001120AAJ	47 43 33.0 117 10 06.0	8.200 365	32.2 1078	21.9 Queenb Radio, Inc.	61.9	56.9
248A Trail	AL0075	VAC	BC	298.8 117.7	116.15	49 05 26.0 117 49 08.0	6.000 100	4.2 1230	38.0	105.0	75.0

Terrain database is NGDC 30 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.
 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.
 Reference station has protected zone issue: Canada

STUDY NOTES - WAIVER IS REQUESTED CONCERNING DISTANCE TO 34 DBU CONTOUR

The translator's 34 dBu F(50-10) contour is greater than 60 kilometers WAIVER REQUESTED SEE NARRATIVE STATEMENT
 Station should coordinate with Canada. Distance to border = 44.8 km.
 The translator's 34 dBu F(50-10) contour touches Canada.

Facility is okay with respect to AM station towers.

Closest AM Facility is KBFI, BONNERS FERRY, ID, L, ND1 at 32.7° at a distance of 12.1 km

Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 452.3 km= Ferndale, WA

Facility is okay toward West Virginia Quiet Zone. Distance to center = 3195.7 km

Facility is okay toward Table Mountain. Distance to Center = 1295.7 km, Azimuth = 132.6 Degrees True