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**ENGINEERING EXHIBIT EE-1:**

**FM TRANSLATOR  
MINOR CHANGE APPLICATION  
DR. MIKE ISENHART**

**250-MILE FM TRANSLATOR  
MODIFICATION WINDOW FOR AM  
CLASS C AND CLASS D STATIONS**

**FM TRANSLATOR STATION K241CJ  
REQUESTS FM CHANNEL 247D  
BONNERS FERRY, IDAHO**

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

**FCC FACILITY NUMBER: 155798  
JANUARY 2016**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
MINOR MODIFICATION OF CONSTRUCTION PERMIT  
APPLICATION FOR AUTHORITY TO  
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**NARRATIVE STATEMENT**

**I. GENERAL:**

The engineering exhibit, of which this narrative is part, was prepared in support of a MINOR CHANGE application concerning FM Translator Station, K241CJ (Construction Permit) Manson, Washington, FCC Facility ID: 155798.

The applicant proposes to make changes to the facility location, the facility antenna system, the final output frequency, the community of license, and the primary station to be rebroadcast.

This application is being filed during the 250-mile FM Translator Modification Window for Class C and Class D AM broadcast stations. The primary station KBFI, Bonners Ferry, Idaho is a Class C AM broadcast station. The application is deemed to be a minor change application during this special filing window.

**Minor Change 250-mile Radius Compliance.**

K241CJ, Manson, Washington, holds a construction permit (BNPFT-20150521AAA) for operation at the following geographical coordinates and

proposes operation at the location listed in the table below, a proposed site move within the 250-mile allowable minor change radius.

	N. Latitude (DD-MM-SS)	W. Longitude (DDD-MM-SS)	Distance (current to proposed)
CURRENT CP	47-51-52	120-02-20	
PROPOSED CP	48-41-20	116-20-04	180.1 miles

Distance per Sections 73.208 (FM)

(Valid out to a maximum distance of 475 km / 295 miles per Section 73.208© )

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 247D (97.3 MHZ) with an effective radiated power (ERP) of 0.250 kilowatts (250 watts) and an antenna height above mean sea level of 663 meters (AMSL) and above ground level of 128.1 meters (AGL). The applicant proposes to use a non-directional, 1-bay 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 FCC ASR registration number for the structure is 1052697. (See Figure 1.)

This is the existing antenna structure of the primary station to be rebroadcast KBFI (AM) Bonners Ferry, Idaho.

**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 well within the 2mV/m groundwave contour of the primary station as well as the 25-mile radius limit from the AM site.

**CHANNEL 247D 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.

The predicted 34 dBu (F50,10) contour does pass the border between the U.S. and Canada, thus coordination with Canada will be required. 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 C95.1-1992.)
- Based upon a worst case downward field value of 1.0 for all angles below the horizon, and a power of 0.250-kilowatts (H & V) and an antenna height of 128 meters above ground. The power density level 2-meters above ground is predicted to be 0.0011 mW/cm<sup>2</sup> or less. The computed power density is 0.11% of the Commission's guideline for a controlled area and 0.55% 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. The minimum safe distance for a controlled area is 4.1 meters, the antenna is located at 128 meters above ground, therefore 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.

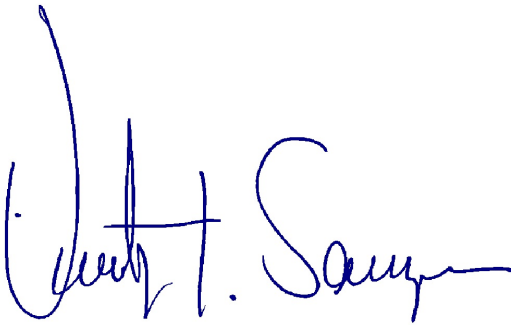
**II SUMMARY:**

The proposed FM translator (modification of K241CJ) will operate as a FM “fill-in” translator for commercial AM Broadcast Station KBFI, Sandpoint, Idaho with a maximum ERP 0.250-kilowatts, utilizing a NON-DIRECTIONAL / OMNI 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 28, 2016



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Timothy Z. Sawyer, Consulting Engineer  
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**FCC TOWER REGISTRATION  
FAA NOTIFICATION NOT REQUIRED  
THIS IS AN EXISTING TOWER - NO CHANGE IN OVERALL HEIGHT IS PROPOSED**

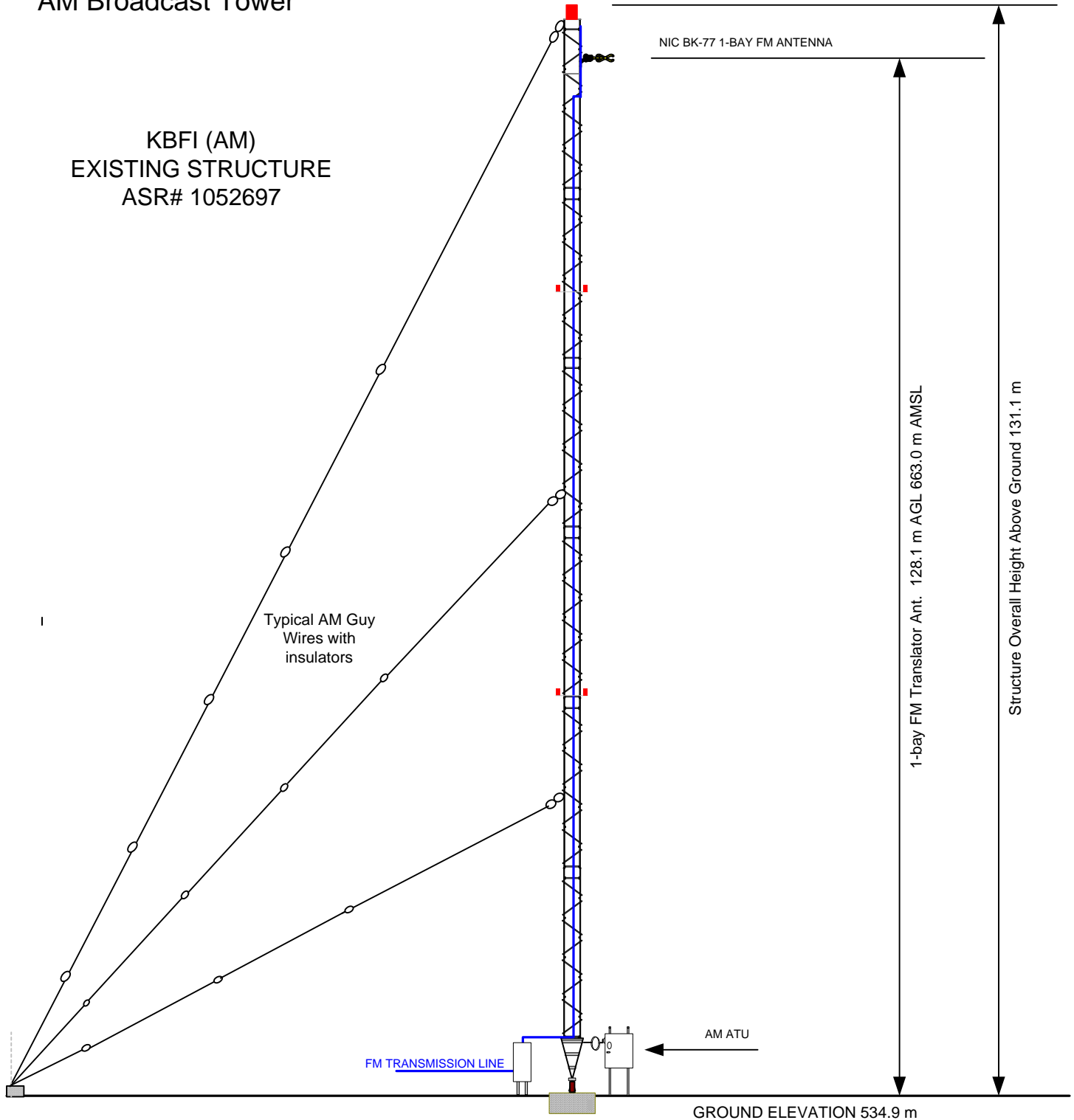
Registration Detail			
Reg Number	1052697	Status	Constructed
File Number	A0062031	Constructed	01/01/1976
EMI	No	Dismantled	
NEPA	No		
Antenna Structure			
Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
<b>Location</b> (in NAD83 Coordinates - <a href="#">Convert to NAD27</a> )			
Lat/Long	48-41-20.0 N 116-20-08.0 W	Address	0.5 KM EAST OF COUNTY ROAD 18A
City, State	BONNERS FERRY , ID		
Zip	83805	County	BOUNDARY
Center of AM Array		Position of Tower in Array	
Heights (meters)			
Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)		
534.9	131.1		
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances		
666.0	130.1		
Painting and Lighting Specifications			
FCC Paragraphs 1, 3, 12, 21			
FAA Notification			
FAA Study	76-NW-112-OE	FAA Issue Date	06/29/1976

<b>T.Z. SAWYER TECHNICAL CONSULTANTS</b> Tel.: (703) 848-2130 www.tzsawyer.com	<b>FCC TOWER REGISTRATION NUMBER 1052697</b>			
	FM TRANSLATOR MODIFICATION PRIMARY STATION KBFI (AM) BONNERS FERRY, IDAHO			<b>FIGURE 1</b>
FALL CHURCH, VIRGINIA 22043	SIZE A	FSCM NO N/A	DWG NO 20160128KBFI-1	REV NONE
(c) 2016, ALL RIGHTS RESERVED	SCALE N/A	JANUARY 2016		SHEET



# Uniform Cross-Section Guyed Steel AM Broadcast Tower

KBFI (AM)  
EXISTING STRUCTURE  
ASR# 1052697



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## VERTICAL SKETCH OF SUPPORTING STRUCTURE

FM TRANSLATOR ANTENNA  
KBFI (AM) PRIMARY STATION  
BONNERS FERRY, IDAHO

**FIGURE  
2**

FALL CHURCH, VIRGINIA 22043

SIZE  
A

FSCM NO  
N/A

DWG NO  
20160128KBFI-FMX2

REV  
NONE

(c) 2016, ALL RIGHTS RESERVED

SCALE DO NOT SCALE

JANUARY 2016

SHEET

**MOD K241CJ**

MOVE TO KBFI (AM) BONNERS FERRY, ID

Latitude: 48-41-20 N

Longitude: 116-20-04 W

ERP: 0.25 kW

Channel: 247 Frequency: 97.3 MHz

Antenna HAAT Height: -220.94 m

Antenna AMSL Height: 663.0 m

Antenna AGL Height: 128.1 m

Ground Elevation: 534.9 m

Horiz. Pattern: Omni

**PRIMARY STATION AND FM TRANSLATOR**

PREDICTED COVERAGE CONTOURS

PRIMARY STATION KBFI (AM)

PROPOSED TRANSLATOR (MOD OF K241CJ)

AM/FM TRANSLATOR MODIFICATION WINDOW - JANUARY 2016

FIGURE 3

FCC 60 DBU

FCC 54 DBU

FCC 25 Mile Radius

KBFI (AM)



KBFI 2.0 MV/M GW  
CONTOUR

MOD K241CJ

Bonners Ferry

Moyle Springs

Troy

	> 60.0 dBuV/m
	54.0 - 60.0

**Predicted Population**

60 dBu Interference Free: 10,053

54 dBu Interference Free: 10,656

Scale 1:375,000

 km

FIGURE 3

MOD OF K241CJ TO KBFI(AM)  
 FM TRANSLATOR - AM MODIFICATION WINDOW  
 REFERENCE CH# 247D - 97.3 MHz, Pwr= 0.25 kW, HAAT= -210.5 M, COR= 663 M  
 48 41 20.0 N. Average Protected F(50-50)= 7.1 km  
 116 20 04.0 W. Omni-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*
249A Creston	AL2326	AL	BC	343.8 163.7	47.62	49 06 00.0 116 31 00.0	6.000 100	4.4 1062	38.0	36.1	6.5
246C Kalispell	KALS	LIC	CX MT	116.6 298.0	164.15 BMLED20150130AKN	48 00 48.0 114 21 55.0	26.500 758	125.6 2065	84.9 Hi-line Radio Fellowship I	30.0	67.9
249D Creston	NEW	PRO	HN BC	355.8 175.8	44.74	49 05 25.0 116 22 45.0	0.020 333	0.3 1396	5.3	37.3	34.0
248A Trail	AL0075	AL	BC	292.9 111.8	117.64	49 05 26.0 117 49 08.0	6.000 100	75.7 1215	38.0	35.4	65.4
244D Creston	NEW	USE	VN BC	341.9 161.7	50.13 20081003CA3	49 07 02.0 116 32 54.0	0.032 -58	0.4 558	6.0	42.7	42.5
245A Salmo	AL8315	AL	BC	309.5 128.8	89.64	49 11 50.0 117 17 04.0	6.000 100	1.6 1366	38.0	81.0	48.4
247C3 Davenport	KKRS	LIC	C WA	223.9 42.7	168.58 BMLED20101210ACW	47 35 14.0 117 53 26.0	5.100 220	99.0 969	38.0 Penfold Communications, In	62.5	106.5
247A Slocan	AL5110	AL	BC	325.6 144.7	139.88	49 43 14.0 117 26 00.0	6.000 100	68.3 1428	38.0	64.5	66.3

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)  
 Reference station has protected zone issue: Canada- AM tower

#### ALLOCATION STUDY NOTES:

\*\*\* Station should coordinate with Canada. Distance to border = 34.6 km.  
 \*\*\* The translator's 34 dBu F(50-10) contour touches Canada.

Closest AM Facility is KBFI, BONNERS FERRY, ID, L, ND1 at 0.0° at a distance of 0.0 km (CO-LOCATED)  
 Facility is okay with respect to FCC monitoring stations.

TRANSLATOR IS A FILL-IN TRANSLATOR FOR AM STATION KBFI, BONNERS FERRY, IDAHO