

# **ENGINEERING REPORT**

## **LPFM (Low Power FM) Construction Permit Modification Application**

**WROJ-LP(FM) – Saint Cloud, MN  
CH241L1 (96.1 MHz)  
BNPL-20131112BLM  
(Facility ID No. 194306)**

**“Site Change Application”**

December, 2014

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# **Table of Contents**

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Discussion of Report

## **Tech Box Requirements**

Exhibit 11.1 - Copy of Existing Antenna Structure Registration

Exhibit 11.2 - Vertical Plan of Existing Tower Structure

Exhibit 11.3 - Proposed Service Contour Study

## **Interference Protection Requirements**

Exhibit 11.4 - Proposed LPFM Spacings Study

**Interference to Input Signal Requirements** (See Discussion)

**TV Channel 6 Protection Requirements** (See Discussion)

## **RF Radiation Study Requirement**

Exhibit 14.1 - RF Compliance Study

(Exhibit numbering is in response to FCC Online Form 349, Section III-A)

## Discussion

This firm has been retained to prepare the required engineering report in support of a Construction Permit Modification Application for WROJ-LP(FM).C – St. Cloud, MN (FAC ID: 194306), Construction Permit File Number BNPL-20131112BLM. WROJ-LP(FM).C is presently authorized to operate on CH241L1 (96.1 MHz) with 0.0714 kW at 359 meters AMSL. Continued operation on Channel CH241L1 (96.1 MHz) is requested with a power of 0.100 kW ERP at 348 meters AMSL (26 meters HAAT) from an alternate site location. A circularly polarized non-directional antenna will be utilized. The LPFM facility will continue to serve the community of St. Cloud, MN.

*Pursuant to §73.870(a), a minor change for an LPFM station authorized under this subpart is limited to a transmitter site relocation of 5.6 kilometers or less. When accounting for the Commission's stance on rounding to the nearest whole kilometer; 5.6 kilometers rounds up to 6 kilometers. The actual physical distance of this relocation is 6.44 kilometers which rounds down to 6 kilometers; thus complying with §73.870(a) when accounting for rounding to the nearest kilometer. The applicant would further like note this site relocation will not remove WROJ-LP(FM) from its current community of St. Cloud, MN. Rather WROJ-LP(FM) will continue to serve its present community of license from a site south of town as opposed to north of town.*

The facility will be relocated to the existing tower bearing Antenna Structure Registration Number 1025393. A copy of the existing ASR has been included in **Exhibit 11.1**. The vertical antenna system has been plotted in **Exhibit 11.2**. This proposal will not increase the overall tower height therefore the FAA need not be notified.

It has been determined the proposed LPFM facility meets all §73.807(a) spacing requirements toward all other existing or proposed concerns. General allocation details are found in **Exhibit 11.4**. It is believed sufficient clearance exists precluding the need for additional allocation showings.

The proposed LPFM facility will remain in compliance with §73.827(a). There are four (4) existing or proposed FM Translator or FM Booster facilities located within the worst case 10 km radius of the proposed LPFM site. However, there is no co- or adjacent channel relationship between the proposed LPFM transmit frequency (CH241L1) and the input signal of the Translator/Booster facilities. Therefore full compliance will be maintained with §73.827(a). A listing of the affected concerns and Primary Broadcast Stations is as follows:

ID Stations Study at 45 32 21 N, 94 10 05 W, Search Distance = 10.1 km									
Call	City	ST	Chan.	Power	Coordinates		Dist-km	Azimuth	File Number
K277BS	St. Cloud	MN	277D	0.250kW	453221N	941005W	000.0	000.0	BLFT20111214ABF
Primary Station is KNSI(AM) - St. Cloud, MN (FAC ID: 37002) on 1450 kHz									
Delivery Method Via "Other"									
K208DV	St. Cloud	MN	208D	0.062kW	453100N	941352W	005.5	243.0	BLFT20001115ABE
Primary Station is KLRD(FM) - Yucaipa, CA (FAC ID: 60144) on CH211B (90.1 MHz)									
Delivery Method Via "Satellite"									
W293CS	Hinckley	MN	293D	0.250kW	453548N	940925W	006.4	007.7	BPFT20141110AAM
Primary Station is WHMH-FM - Sauk Rapids, MN (FAC ID: 67694) on CH269C2 (101.7 MHz)									
Delivery Method Via "Other"									
W297BO	Hinckley	MN	297D	0.250kW	453548N	940925W	006.4	007.7	BPFT20141110AGV
Primary Station is WHMH-FM - Sauk Rapids, MN (FAC ID: 67694) on CH269C2 (101.7 MHz)									
Delivery Method Via "Other"									

## Discussion (continued)

The proposed LFPM facility will be located more than 320 km from the common border between the United States and Canada and/or Mexico. Therefore, full protection is believed afforded all international concerns. Additional International compliance showings will be supplied upon request.

The applicant would like to note the use of the NED 03 second terrain database for all allocation, contour and HAAT calculations contained here-in.

The proposed 60 dB $\mu$  F(50:50) Service Contour has been noted in **Exhibit 11.3**.

**RADIATION PROTECTION:** The Commission requires an engineering study regarding compliance with the guidelines for human protection from radiofrequency radiation. This report section is in response to that provision of the Rules. The current Federal Communications Commission guidelines for RF radiation protection are set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01).

The FM Broadcast facility proposed in this application will not produce human exposure to radiofrequency radiation in excess of the applicable safety standards specified in §1.1307(b)(3) of the Commission's rules concerning RF contributors of less than 5%. **Exhibit 14.1** provides the details of the study that was made to demonstrate compliance. The facility is properly marked with signs, and entry is restricted by means of fencing with locked doors and/or gates. Any other means as may be required to protect employees and the general public will be employed.

***In the event work would be required in proximity to the antenna such that the person or persons working in the area would be potentially exposed to fields in excess of the guidelines set forth in OET Bulletin No. 65 (Edition 97-01), the transmitter power will be reduced or the station will cease operation during the critical period.***

**DISTANCES TO CONTOURS:** The following tabulation of the distances to the proposed service contours results from calculations performed in accordance with §73.813 & §73.313(d) and §73.333 Figure 1 utilizing the NED 03 second terrain database.

N. Lat. = 453221.0    W. Lng. = 941005.0						
HAAT and Distance to Contour,						
FCC, FM 2-10 Mi, 51 pts Method - NED 03 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	325.4	22.6	0.1000	-10.00	1.000	5.64
045	322.1	25.9	0.1000	-10.00	1.000	5.64
090	311.7	36.3	0.1000	-10.00	1.000	6.15
135	305.4	42.6	0.1000	-10.00	1.000	6.66
180	315.9	32.1	0.1000	-10.00	1.000	5.81
225	337.6	10.4	0.1000	-10.00	1.000	5.64
270	333.9	14.1	0.1000	-10.00	1.000	5.64
315	323.5	24.5	0.1000	-10.00	1.000	5.64
Ave El= 321.95 M    HAAT= 26.05 M    AMSL= 348						