

# **ENGINEERING REPORT**

## **FM Translator Minor Construction Permit Application**

for

**W221CH – Newton, NH  
Pending License Application File Number  
BLFT-20090127ABA**

**Site Change, Increase in Power  
& Change in City of License**

January, 2009

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

## **Discussion**

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This firm has been retained to prepare the required engineering report in support of a minor construction permit application for FM translator W221CH, Newton, NH, Pending License File No. BLFT-20090127ABA. W221CH is licensed to operate on 92.1 MHz with 150 watts of non-directional horizontal only power with an antenna COR of 91 meters AMSL. A site change and power increase to 250 watts ERP (H)&(V) at a COR of 180 meters AMSL is requested. A directional antenna will be employed. In addition, the new community of Lawrence, MA is also requested. The facility will continue to rebroadcast primary station WXRV(FM), Andover, MA as a "Fill-In" Translator.

The proposed site is the existing tower bearing Antenna Structure Registration No. 1005780. A copy of ASR 1005780 has been included in **Exhibit 12.1**. This proposal will not increase the overall tower height, therefore the FAA need not be notified. A copy of the vertical antenna system has been included in **Exhibit 12.2**.

It has been determined the translator may be used in the area without interference to any existing FM broadcast station or facility with the exception of second adjacent channel primary station WXRV(FM), Andover, MA. Interference to second adjacent channel primary station WXRV(FM) is allowable under §74.1204(e) as the interference area will not occur over the primary city of license of Andover, MA as noted in **Exhibit 12.4**. Complete allocation details are found in **Exhibit 12.5**. There are two facilities close enough to merit contour protection showings. FM Commander™ maps and tabulations of the protections toward WUML(FM), Lowell, MA and WPRO-FM, Providence, RI have been included in **Exhibit 12.6**. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

The translator site lies inside of the primary contour of WXRV(FM), and the primary contour of the proposed fill-in translator does not extend beyond the WXRV(FM) station service contour. A map of the proposed service area in relation to the primary station service contour has been included in **Exhibit 12.4**.

Regarding protection of Canadian concerns, the present facility is and will remain within 320 km of the common border between the United States and Canada. No Canadian allotment nor Canadian facility has been noted in the proposed allocation. In addition, the proposed 34 dBu f(50:10) contour will not enter Canadian soil. The proposed 34 dBu f(50:10) contour has been supplied in **Exhibit 12.4**.

The proposed operating parameters have been changed from the present values, however the proposed service contour serves a portion of the present service area as seen in **Exhibit 12.3**.

The translator will employ two Nicom BKY3-1L directional antenna elements. One bay will be mounted in the horizontal plane and one bay will be mounted in the vertical plane. The elements will be placed one wavelength apart. The center of radiation for both elements has been averaged and represented on this Form 349 as 180 meters AMSL, (119 meters AGL). As stated before, the antenna will be mounted on an existing tower.

## Discussion (continued)

The proposed facility meets the requirements of the Rules for operation without a licensed operator in attendance. The transmitter site may be reached promptly at all hours and in all seasons. The transmitter will be equipped with proper control and interface circuits which will place the translator in a non-radiating condition in the event the proper incoming signal is absent. The transmitter and controls will be placed in a locked area to prevent unauthorized tampering with the equipment. A person or persons will be assigned to observe the signals of the station each day, and to take corrective action if required. The equipment proposed for operation is listed in the type-approved list of the Commission.

**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 16.1*** provides the details of the study that was made to demonstrate compliance. The facility will be properly marked with signs, and entry will be restricted by means of fencing with locked doors and/or gates if required. Any other means as may be required to protect employees and the general public will also 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 §73.313(d) and §73.333 Figure 1.

N. Lat. = 424026 W. Lng. = 711126 HAAT and Distance to Contour V-Soft 3-16 km, 131 pts Method - NGDC 30 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	41.8	138.2	0.0121	-19.17	0.220	7.14
030	19.5	160.5	0.0210	-16.77	0.290	8.90
060	32.4	147.6	0.0702	-11.54	0.530	11.44
090	47.1	132.9	0.1640	-7.85	0.810	13.30
120	47.9	132.1	0.2352	-6.29	0.970	14.53
150	27.3	152.7	0.2450	-6.11	0.990	15.98
180	31.0	149.0	0.1936	-7.13	0.880	14.77
210	42.1	137.9	0.0992	-10.03	0.630	11.99
240	44.3	135.7	0.0324	-14.89	0.360	9.06
270	41.2	138.8	0.0121	-19.17	0.220	7.15
300	50.0	130.0	0.0132	-18.79	0.230	7.09
330	48.5	131.5	0.0132	-18.79	0.230	7.12
Ave El= 39.43 M HAAT= 140.57 M AMSL= 180 M						