

ENGINEERING REPORT

FM Translator Minor Construction Permit Application

for

**W292DO.L - Middlebury, IN
(Facility ID: 145316)**

**"250 Mile Window Application"
Pursuant to FCC Public Notice
DA 1491 (issued 12/23/2015)**

for

**CH273D.P - Grand Rapids, MI
as an AM Fill-In Translator for
WPRR(AM) - Ada, MI**

July 2016

COPYRIGHT 2016

Table of Contents

Discussion of Report

FM Booster/Fill-in Translator Requirements (See Discussion)

Interference Requirements

Exhibit 13.1 - Copy of Existing Antenna Structure Registration

Exhibit 13.2 - Vertical Plan of Antenna System and Support Tower

Exhibit 13.3 - Proposed Service Contour Map

Exhibit 13.4 - Proposed vs Primary Contour & §74.1233(a)(1) Showing

Contour Overlap Requirements

Exhibit 13.5 - Tabulation of Proposed Allocation

Exhibit 13.6(a-c) - Contour Protection Studies Toward Select Station(s)

Exhibit 13.7 - §74.1204(d) 2nd and/or 3rd Adjacent Channel Given Interference Waiver Request

Exhibit 13.8 - Copy of Manufacturer's Vertical Radiation Pattern Data

TV Channel 6 Protection Requirements (See Discussion)

Unattended Operation Requirements (See Discussion)

Multiple Translator Requirements (See Discussion)

RF Radiation Study Requirement

Exhibit 17.1 - 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 Minor Construction Permit Application for FM Translator W292DO.L - Middlebury, IN (Facility ID: 145316). *This Form 349 Filing is being filed as a "250 Mile Window Application" in response to the Revitalization of the AM Radio Service, First Report and Order (MB Docket No. 13-249 (FCC 15-142), released October 23, 2015; subsequent Public Notice DA 15-1215, released October 26, 2015; and final Public Notice DA 1491, released December 23, 2015. This Form 349 is being filed under the "Modification Window" open to all Classes of AM Fill-In Translators.* This Translator proposal requests a new (less than 250 mile) site location and new operational frequency. Operation on CH273D (102.5 MHz) with 0.250 kW ERP (H&V) at 297 meters AMSL is proposed. The Fill-In Translator will rebroadcast Class B AM Primary Station WPRR(AM) - Ada, MI (1680 kHz); Facility ID No. 87106. The Translator will serve the community of Grand Rapids, MI.

The Translator will be mounted on the existing tower bearing Antenna Structure Registration Number 1063467. A copy of the existing ASR has been included in **Exhibit 13.1**. The vertical antenna system has been included in **Exhibit 13.2**. As this proposal will not increase the overall tower height, it is believed the FAA need not be notified.

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 WFUR-FM. General allocation details are found in **Exhibit 13.5**. The applicant would like to note the existence of a §74.1204(d) Second/Third Adjacent Channel Given Interference Waiver Request toward WFUR-FM - Grand Rapids, MI (CH275B) as noted in **Exhibit 13.7**. Protection has been based on the worst case calculated 132.2 dB μ F(50:10) Interference Contour, corresponding to the worst case 92.2 dB μ F(50:50) Protected Contour. Protection has been demonstrated through a downward vertical radiation study. Full protection will be afforded the facility as the interference area will not reach the ground nor a seven meter artificial plane representing a standard two story home when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications has also been included in **Exhibit 13.8**. There are three facilities, existing or proposed, close enough to merit further study. Therefore supplemental contour protection studies have been included for each as noted in **Exhibit(s) 13.6(a-c)**. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

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

The proposed 60 dB μ contour of the Fill-In Translator lies wholly inside of the AM primary daytime 2.0 mV/m contour and a 25 mile radius around the AM site. A map of the proposed service area in relation to the primary station service contour has been included in **Exhibit 13.4**. In addition, this exhibit also demonstrates the physical relocation of the Translator is less than 250 miles (402.3 km) in accordance with the Commission's Policy concerning this "250 Mile Window Application".

Regarding protection of international concerns, the facility is and will remain within 320 km of the common border between the United States and Canada. The applicant certifies the proposed Translator 34 dB μ F(50:10) interference contour does not enter Canadian territory. Documentation of the proposed 34 dB μ F(50:10) interference contour will be supplied upon request.

Discussion (continued)

The proposed operating parameters have been changed from the present values. A map of the proposed service contour has been included in **Exhibit 13.3**.

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 17.1** 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 §73.313(d) and §73.333 Figure 1.

N. Lat. = 430158.0 W. Lng. = 854147.0 HAAT and Distance to Contour, FCC, FM 2-10 Mi, 51 pts Method - USGS 03 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	238.3	58.7	0.2500	-6.02	1.000	10.08
030	230.4	66.6	0.2500	-6.02	1.000	10.65
060	219.0	78.0	0.2500	-6.02	1.000	11.44
090	227.8	69.2	0.2500	-6.02	1.000	10.84
120	229.2	67.8	0.2500	-6.02	1.000	10.74
150	216.7	80.3	0.2500	-6.02	1.000	11.59
180	196.6	100.4	0.2500	-6.02	1.000	12.89
210	213.1	83.9	0.2500	-6.02	1.000	11.83
240	218.1	78.9	0.2500	-6.02	1.000	11.50
270	217.3	79.7	0.0625	-12.04	0.500	8.14
300	236.3	60.7	0.0121	-19.17	0.220	4.77
330	259.1	37.9	0.0625	-12.04	0.500	5.60
Ave El= 225.17 M HAAT= 71.83 M AMSL= 297						