

# **ENGINEERING REPORT**

**Requesting a Minor Construction  
Permit Modification Application for  
FM Station**

**WUPJ(FM) – Escanaba, MI  
File Number BNPED-20071018AKU**

**Tower Height Increase Application**

**June, 2013**

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# **Table of Contents**

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Discussion of Report

## **Main Studio Location**

Exhibit 15.1 - Copy of FAA Determination for ASR Modification  
Exhibit 15.2 - Vertical Plan of Antenna System and Support Tower  
Exhibit 15.3 - Tabulation of Operating Conditions  
Exhibit 15.4 - Present and Proposed Contour Study

## **Interference Requirements**

### **Contour Overlap Requirements**

Exhibit 18.1 - Non-Commercial Allocation Contour Study  
Exhibit 18.2 - Contour Protection Study Towards WTCK(FM)  
Exhibit 18.3 - Contour Protection Study Towards WMVM(FM)  
Exhibit 18.4 - Directional Antenna Pattern Study

**Spacing Requirements** (none)

**Grandfathered Short-Spaced Requirements** (none)

**Contour Protection Requirements** (none)

**TV Channel 6 Protection Requirements** (none)

**RF Radiation Study Requirement** (See Discussion)

(Exhibit Numbering is in response to FCC Online Form 340, Section VII)

# **DISCUSSION OF REPORT**

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This firm was retained to prepare the required engineering report in support of this minor construction permit modification application for Non-Commercial FM station WUPJ(FM), Escanaba, MI, Facility ID #176202, File Number BNPED-20071018AKU. WUPJ(FM) presently is authorized on Channel 215C1, 90.9 MHz with 100 kW at 360 meters AMSL utilizing a directional antenna on ASR #1000534. The same directional antenna pattern employing 100 kW at a COR of 374 meters AMSL from ASR #1002512 is requested. The two towers are only 0.28 kilometers apart.

The proposed site for the Class C1 operation will continue to meet all contour protection requirements towards other stations in the allocation. An FMCommander™ allocation study as supplied by V-Soft® Communications has been included in **Exhibit 18.1**. There are two (2) existing facilities close enough to merit further study. Contour protection maps and tabulations have been supplied for these two facilities as noted in **Exhibit(s) 18.2 to 18.3**. It is believed there is sufficient clearance to preclude the need for further study with respect to the other protected stations shown in the allocation study

The transmitter site is located within 320 km of the common border between the United States and Canada. Full protection is afforded all international facilities as noted in **Exhibit(s) 18.1**.

The transmitter site proposed in this application is not located within the affected radius of any TV-6 facility as noted in the FCC CDBS database at the time of this filing, therefore no further TV-6 showings are believed required.

The proposed service contours have been calculated in accordance with the Rules, and the data obtained has been tabulated and plotted in this report. The plotted contours are found as **Exhibit 15.4** of this report. This exhibit shows the overall service that is provided by the 1.0 mV/m contour of the facility. The tabulation of the distances to the respective contours shown in this discussion is based on the use of the standard eight cardinal bearings, which were also used for the computation of the HAAT. However, the plotted contours shown in **Exhibit 15.4** are based on the use of a full 360 terrain radials and the NGDC 30 Second Terrain Database.

The antenna will be mounted on an existing tower which is being extended to a height of 300 feet AGL. The Antenna Structure Registration (ASR) #1002512 is pending modification. The applicant's tower owner has received an FAA Determination of No Hazard for the additional height. Local and National Environmental Notification is pending. A vertical antenna plan depicting the placement of the antenna on the tower has been included in **Exhibit 15.2**.

The original construction permit was granted on a 307(b) preference basis. However, the facilities proposed totally encompass the coverage of the outstanding construction permit facilities. Therefore, the condition on the outstanding construction permit is validated.

The remainder of the information in this report and exhibit numbering is responsive to the Rules of the Commission, and provides the data for FCC Form 340.

**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).

## DISCUSSION OF REPORT (continued)

The FM Broadcast facility proposed in this application is within the uncontrolled limits as noted in the supplied **Exhibit 24.1** study. The RF radiation will not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in §1.1310 of the Commission's rules. The facility will be properly marked with signs, and entry will be 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 table below shows the distances to the 1.0 mV/m contour from the proposed facility using an ERP of 100 kW at an HAAT of 80 meters. These distances have been calculated based on the FCC F(50-50) curves.

N. Lat. = 455305    W. Lng. = 872919						
HAAT and Distance to Contour,						
FCC, FM 2-10 Mi, 51 pts Method - NGDC 30 SEC						
WUPJ.C, West Central Michigan Media M, BNPED20071018AKU						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	312.6	61.4	100.0000	20.00	1.000	42.46
045	296.4	77.6	100.0000	20.00	1.000	46.22
090	277.5	96.5	100.0000	20.00	1.000	50.21
135	263.3	110.7	100.0000	20.00	1.000	52.78
180	277.5	96.5	31.2481	14.95	0.559	40.28
225	297.4	76.6	4.0401	6.06	0.201	22.83
270	313.3	60.7	3.1684	5.01	0.178	19.34
315	316.6	57.4	25.2506	14.02	0.502	30.52
Ave El= 294.30 M    HAAT= 79.70 M    AMSL= 374 M						