

**TOTAL COST OF LEGAL AND ENGINEERING FEES ASSOCIATED  
WITH THE READING, OHIO APPLICATION**

Douglas Vernier (8-15-85) Contour studies - Reading	\$ 700.00
Douglas Vernier (10-28-86) Preparation of Engineering for FCC	\$ 3,000.00
Douglas Vernier (4-2-87) Engineering data for F.C.C.	\$ 400.00
Louis A. Williams, Jr. & Associates (7-11-88)	\$ 3,671.64
Louis A. Williams, Jr. & Associates (12-23-88) Preparation of Engineering for F.C.C.	\$ 3,000.00
Louis A. Williams, Jr. & Associates (6-10-91) Frequency Search	\$ 800.00
Louis A. Williams Jr. & Associates (7-19-91) Evaluation of Reading Application	\$ 256.42
Legal Fees - Cohn & Marks	<u>\$10,041.36</u>
Total	\$21,869.42

STATEMENT OF STANLEY S. NEUSTADT

I am a partner in the law firm of Cohn and Marks which has represented the President and Board of Trustees of The Miami University (Miami University) for many years. I have been appointed a special Assistant to the Attorney General of the State of Ohio in order to conduct this representation, and my work on behalf of Miami University has been performed in that capacity. I am familiar with all aspects of that representation, and have been familiar with the representation since long before the inception of this proceeding. This statement is submitted in accordance with Section 73.3525 of the Commission's rules in support of the settlement agreement between Miami University and Southwestern Ohio Seniors' Services, Inc. (SOSSI). That agreement provides that Miami University, in connection with the dismissal of its application, will be reimbursed by SOSSI for its documented reasonable and prudent expenses in an amount not to exceed \$25,000.

Attached to this Statement is a list of the legal fees and disbursements incurred by Miami University in connection with the preparation, filing and prosecution of its application between October 27, 1986 and August 1, 1992. That list sets forth the amount of legal fees and disbursements incurred by Miami University solely in connection with the application. It should be noted that the actual bills for the dates set forth included other services rendered for Miami University, but the amount set forth in the list do not include any activity not directly related to the application.

The services rendered on behalf of Miami University include: advice and counsel about the structure of the application itself, including all non-engineering portions, applicability of Commission rules and policies concerning the transmitter site; review and filing of the application and instructions for publication; advice and counsel concerning the Commission's cut-off procedure and tracking filing of applications which might affect the Miami application; after filing of the SOSI application, advice and counsel about the prospects of success and detailed discussion of hearing procedures; meetings with opposing counsel concerning possible mutually satisfactory resolution of proceeding without going through hearing; attendance at pre-hearing conference; meetings and other consultation with Miami personnel concerning possibilities of settlement and their implications; supervision of extensive negotiations between applicant and SOSI looking toward various courses which might result in settlement; meetings with opposing counsel on the same subject; and participation of opposing counsel in negotiation of ultimate settlement agreement.

*Stanley S. Neustadt*  
Stanley S. Neustadt

Date: August 18, 1992

LIST OF LEGAL FEES AND DISBURSEMENTS  
FOR MIAMI UNIVERSITY - READING, OHIO APPLICATION

<u>Date of Bill</u>	<u>Legal Fees</u>	<u>Disbursements</u>	<u>Total</u>
10/27/86	\$ 583.75	\$103.44	\$ 687.19
1/30/87	341.25	32.60	373.85
2/25/87	97.50	9.68	107.18
6/1/87	178.75	16.30	195.05
7/27/87	32.50	1.38	33.88
6/20/89	187.50	11.81	199.31
7/17/89	18.75	.32	19.07
1/22/90	151.25	4.95	156.20
2/22/90	62.50	3.03	65.53
4/11/90	75.00	12.50	87.50
5/31/90	71.25	6.03	77.28
8/20/90	96.25	16.37	112.62
10/25/90	71.25	2.95	74.20
11/26/90	190.62	4.67	195.29
1/14/91	71.25	3.42	74.67
2/22/91	23.75	5.85	29.60
3/14/91	118.75	5.10	123.85
4/8/91	95.00	4.62	99.62
5/16/91	208.75	14.57	223.32
6/17/91	522.50	42.11	564.61
8/19/91	237.50	96.09	333.59
9/14/91	356.25	17.65	373.90
10/22/91	332.50	11.63	344.13
11/14/91	403.75	15.15	418.90

<u>Date of Bill</u>	<u>Legal Fees</u>	<u>Disbursements</u>	<u>Total</u>
12/16/91	\$ 522.50	\$ 31.70	\$ 554.20
1/30/92	71.25	5.95	77.20
4/27/92	142.50	0.66	143.16
6/9/92	1,401.25	131.68	1,532.93
8/10/92	<u>2,553.75</u>	<u>209.78</u>	<u>2,763.53</u>
	\$9,219.37	\$821.99	\$10,041.36

**CERTIFICATE OF SERVICE**

I, Stephanie A. Thompson, a secretary in the law offices of Haley, Bader & Potts, hereby certify that I have on this date, August 24, 1992, sent copies of the foregoing "JOINT PETITION FOR APPROVAL OF SETTLEMENT AND DISMISSAL OF APPLICATION" by first-class, United States mail, postage prepaid, to the following:

\*Honorable John M. Frysiak  
Administrative Law Judge  
Federal Communications Commission  
2000 L Street, N.W., Room 223  
Washington, DC 20554

\*Robert A. Zauner, Esq.  
Hearing Branch  
Mass Media Bureau  
2025 M Street, N.W., Room 7212  
Washington, DC 20554

Stanley S. Neustadt, Esq.  
Cohn & Marks  
1333 New Hampshire Ave., N.W.  
Suite 600  
Washington, DC 20036  
(Counsel for Miami University)

\*Hand Delivered

  
Stephanie A. Thompson

RECEIVED

SEP - 4 1992

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In re Applications of	)	MM Docket No. 92-98
	)	
THE PRESIDENT AND BOARD	)	File No. BPED-890530MA
OF TRUSTEES OF	)	
THE MIAMI UNIVERSITY	)	
	)	
SOUTHWESTERN OHIO SENIORS'	)	File No. BPED-910412MC
SERVICES, INC.	)	
	)	
For Construction Permit for a New	)	
Non-Commercial FM Station on	)	
Channel 207A at Reading, Ohio	)	

To: The Honorable John M. Frysiak  
Administrative Law Judge

**PETITION FOR LEAVE TO AMEND**

Southwestern Ohio Seniors' Services, Inc. ("SOSSI"), by its attorneys, and pursuant to Section 73.3522(b) of the Commission's Rules, hereby petitions for leave to amend its above-captioned application. In support thereof the following is stated:

1. The accompanying amendment seeks to substitute the engineering proposal previously submitted by The President and Board of Trustees of The Miami University ("University") for the proposal by SOSSI. Pursuant to a settlement agreement between the parties, submitted concurrently herewith, SOSSI agreed to amend its application to include University's engineering proposal in return for granting University an option and right of first refusal.

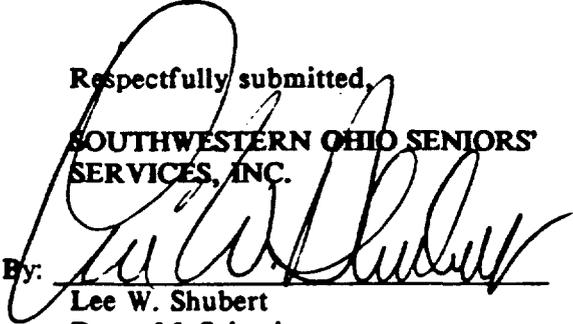
2. The proposed amendment meets the test of *Erwin O'Connor Broadcasting Co.*, 22 FCC 2d 140 (Rev.Bd. 1970). The amendment will eliminate the need for a hearing on the mutually exclusive applications of the parties and allow settlement of the proceeding. As the amendment is submitted as part of a proposed settlement no party

will be prejudiced or gain a competitive advantage by acceptance of the amendment. In addition, the resources of the parties and the Commission will be conserved by approval of the amendment and the settlement agreement. Finally, acceptance of the amendment, thereby allowing approval of the proposed settlement, will allow SOSSI to promptly initiate service to Reading and the surrounding community.

3. Precedent supports the use of amendments to eliminate mutual exclusivity and allow a settlement of the comparative proceeding. *See The Cedarville College*, MM Docket No. 90-654, FCC 91M-1861, released June 12, 1991.

WHEREFORE, the premises considered, Southwestern Ohio Seniors' Services, Inc. respectfully requests that the Presiding Judge grant its Petition for Leave to Amend and that he accept the accompanying amendment.

HALEY, BADER & POTTS  
Suite 600  
2000 M Street, N.W.  
Washington, DC 20036-3374  
202/331-0606

Respectfully submitted,  
SOUTHWESTERN OHIO SENIORS'  
SERVICES, INC.  
By:   
Lee W. Shubert  
Dawn M. Sciarrino  
Its Attorneys

August 24, 1992

RECEIVED

SEP - 4 1992

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**AMENDMENT**

Please amend the pending application (FCC Form 340) of Southwestern Ohio Seniors' Services, Inc., (File No. BPED-910412MC) for authority to construct a new non-commercial educational FM broadcasting station on FM Channel 207 at Reading, Ohio, in the following respects:

Section V-B and related Engineering Exhibits: Delete the previously submitted Section V-B and related engineering exhibits and substitute in lieu thereof the Amended Section V-B and related engineering exhibits that are transmitted herewith.

**CERTIFICATION**

I, Jerry D. Smart, hereby certify that the statements contained in this amendment are true, complete and correct, to the best of my knowledge and belief, and are made in good faith.

Signed and dated this 20<sup>th</sup> day of August, 1992.

**SOUTHWESTERN OHIO SENIORS'  
SERVICES, INC.**

By   
Jerry D. Smart, President

Name of Applicant: The President and Board of Trustees of The Miami University

Purpose of authorization applied for:

- Construct a new station
- Install Auxiliary system

- Change:
- Effective radiated power
  - Antenna height above average terrain
  - Studio location outside community of license
  - Other (Summarize briefly the nature of the changes proposed.)
  - Frequency
  - Transmitter location

2. Community of license: State Ohio City or Town Reading

3. Facilities requested: Frequency 89.3 MHz Channel No. 207 Class (Check one below)

A  B  B1  D  
 C  C1  C2

4. Geographic coordinates of antenna (to nearest second)

North Latitude 39° 13' 23" West Longitude 84° 25' 57"

5. Effective radiated power:

<u>Polarization</u>	<u>Horizontal Plane</u>	<u>Maximum (Beam tilt only)</u>
Horizontal	<u>1.50</u> kW	<u>No beam tilt</u> kW
Vertical	<u>1.50</u> kW	<u>No beam tilt</u> kW

6. Height in meters of antenna radiation center:

	<u>Above Average terrain (HAAT)</u>	<u>Above Mean Sea Level</u>	<u>Above Ground</u>
Horizontal	<u>72</u> meters	<u>287.9</u> meters	<u>57.77</u> meters
Vertical	<u>72</u> meters	<u>287.9</u> meters	<u>57.77</u> meters

Is a directional antenna being proposed?  YES  NO

as attach as Exhibit No. ENG an engineering statement with all data specified in Section 73.316(d) of the Commission's Rules.

8. Transmitter location: State Ohio County Hamilton  
 City or Town \_\_\_\_\_ Street Address (or other identification) \_\_\_\_\_  
Reading 601 Columbia Avenue

9. Overall height of complete structure above ground, including all appurtenances and lighting (if any, see Part 17). 60.06 meters

10. Attach as Exhibit No. ENG map(s) (Sectional Aeronautical charts or equivalent) of the area proposed to be served and shown there:

- (a) Proposed transmitter location and the radials along which the profile graphs have been prepared;
- (b) The 1mV/m predicted contour;
- (c) Area (sq. mi.) and population (latest census) within 1 mV/m contour;
- (d) Scale of miles or kilometers (kilometers if available).

11. Attach as Exhibit No. ENG map (Sectional Aeronautical charts where obtainable) showing the present and proposed 1 mV/m (60 db) contours.

Enter the following from Exhibit above:

Gain Area 175.2 sq. mi.  
 Loss Area 0.0 sq. mi.

Percent change (gain area plus loss area as percentage of present area) DNA %.

If 50% or more this constitutes a major change. Indicate in question 2(e), Section I, accordingly.

12. If the main studio will not be within the boundaries of the principal community to be served, attach as Exhibit No. ENG a justification pursuant to Section 73.1125(f) of the Commission's Rules.

Proposed station will simultaneously broadcast the programming of WMUB, Oxford, Ohio

13. Attach as Exhibit No. ENG map(s) (7.5 minute U.S. Geographic Survey topographic quadrangles if available) of the proposed antenna location showing the following information:

- (a) Proposed transmitter location accurately plotted with the latitude, the longitude lines clearly marked and showing a scale of statute kilometers.
- (b) Transmitter location and call letters of all AM broadcast stations within 2 miles of the proposed antenna location.  
 No AM broadcast within 2 miles.

14. If there are any FM or TV stations within 200 feet of proposed antenna or non-broadcast radio stations (except amateur and citizens band), or established commercial and government receiving stations in the general vicinity which may be adversely affected by the proposed operation, attach as Exhibit No. ENG the expected effect, a description of remedial steps that may be pursued if necessary, and a statement from the applicant accepting full responsibility for the elimination of any objectionable effect on existing stations.

No FM, TV, or non-broadcast radio stations within 200 feet.

Tabulation of Terrain Data. (Calculated in accordance with the procedure prescribed in Section 73.313 of the Commission's Rules utilizing 7.5 minute topographic maps, if available.)

Radial bearing (degrees true)	Height of antenna, radiation center above average elevation of radial (3-16 kilometers) Meters	Predicted Distance
		To the 1 mV/m contour  Kilometers
0°	90.9	9.01
45°	30.5	6.22
90°	68.2	12.62
135°	62.4	13.32
180°	102.6	15.49
225°	113.5	12.71
270°	43.4	11.57
315°	64.8	8.79
AVG.	72.0	

#### Allocation Studies

(See Subpart C of Part 73 of the Commission's Rules and Regulations)

16. Is the proposed antenna location within 320 kilometers (199 miles) of the common border between the United States and Mexico?  
 Proposed site is 1863 km from the US/Mexican border.  Yes  No  
 If Yes, attach as Exhibit No. DNA a showing of compliance with all provisions of the Agreement between the United States of America and the United Mexican States concerning Frequency Modulation Broadcasting in the 88 to 108 MHz band.
17. With regard to stations within 320 kilometers (199 miles) of the common border between the United States and Mexico, attach as Exhibit No. DNA information required in 1/.
18. If the proposed operation is for a channel in the range from channel 201 through 220 (88.1 through 91.9 MHz), then with regard to stations more than 320 kilometers (199 miles) from the common border between the United States and Mexico or if this proposed operation is for a class D station in the range from Channel 221 through 300 (92.1 through 107.9 MHz), attach as Exhibit No. ENG a complete allocation study to establish the lack of prohibited overlap of contours involving these stations. The allocation study should include the following:
- The normally protected interference-free and the interfering contours for the proposed operation along all azimuths.
  - Complete normally protected interference-free contours of all other proposals and existing stations to which objectionable interference would be caused.
  - Interfering contours over pertinent arcs of all other proposals and existing stations from which objectionable interference would be received.
  - Normally protected and interfering contours over pertinent arcs, of all other proposals and existing stations, which require study to show the absence of objectionable interference.
  - Plot of the transmitter location of each station or proposal requiring investigation, with identifying call letters, file numbers and operating or proposed facilities.
  - When necessary to show more detail, an additional allocation study will be attached utilizing a map with a larger scale to clearly show interference or absence thereof.
  - A scale of miles and properly labeled longitude and latitude lines, shown across the entire (Exhibit(s)). Sufficient lines should be shown so that the location of the sites may be verified.
  - The name of the map(s) used in the exhibit(s).

1/ A showing that the proposed operation meets the minimum distance separation requirements. If any separations are proposed that are less than the applicable minimum separation requirements plus 15 kilometers, include these stations. Also include existing stations, proposed stations, and cities which appear in the Table of Assignments; the location and geographic coordinates of each antenna, proposed antenna or reference point, as appropriate; and distance to each from proposed antenna location.

19. Is the proposed antenna location within 320 kilometers of the common border between the United States and Canada?  Yes  No  
 If Yes, attach as Exhibit No. ENG a showing of compliance with all provisions of the Working Agreement for Allocation of FM Broadcasting Stations on Channels 201-300 under The Canada-United States FM Agreement of 1947.  
Proposed site is 310 km from the US/Canadian border. No Canadian-US channel relationships.

20. With regard to station separated by 53 or 54 channels (10.6 or 10.8 MHz) attach as Exhibit No. ENG information required in 1/(separation requirements involving intermediate frequency [i.f.] interference).

21. Is the proposed operation on Channel 218, 219 or 220?  Yes  No  
 If Yes, attach as Exhibit No. DNA information required in 1/ regarding separation requirements with respect to stations on Channels 221, 222, and 223.

22. Is the proposed station for a channel in the range from Channel 201 to 221 (88.1-91.9 MHz) and the proposed antenna location with the Grade B contour of a channel 6 television station or sufficiently near the Grade B contour that a question of interference to channel 6 may be raised?  Yes  No  
 If Yes, attach as Exhibit No. ENG a map showing the Grade B contour of the television station and the proposed antenna location. Also include discussion of the possibility of interference to the Channel 6 station and the steps proposed to remedy any interference which may occur.  
See Exhibit ENG. No interference created by proposed station.

23. Is the proposed station for a channel in the range from Channel 221 to 300 (92.1-107.9 MHz)?  Yes  No  
 If Yes, attach as Exhibit No. DNA information required in 1/ (Except for class D [secondary] proposals.)

24. If the proposed antenna location is in or near a populated area, attach Exhibit No. ENG a discussion of blanketing and the steps proposed to remedy any interference which may occur.

25. Environmental Statement, See Part I, Subpart 1 of the Commission's Rules.

Would a Commission grant of this application be a major action as defined by Section 1.1305 of the Commission's Rules?  Yes  No

If Yes, attach as Exhibit No. DNA a narrative statement in accordance with Section 1.1311 of the Commission's Rules.  
See Exhibit ENG. Compliance with Guidelines for Human Exposure to Radiofrequency Radiation is included as part of Exhibit ENG.  
 If No, explain briefly.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

April 6, 1989  
 Date

Louis A. Williams, Jr.  
 Name  
Louis A. Williams Jr.  
 Signature (check appropriate box below)

2092 Arrowood Place  
 Address (include ZIP Code)

Cincinnati, OH 45231

513-851-4964  
 Telephone No. (include Area Code)

- Technical Director
- Registered Professional Engineer
- Chief Operator
- Technical Consultant
- Other (Specify)

Name of Applicant **The President and Board of Trustees of The Miami University** Call Sign Station Location **Reading, Ohio**

Purpose of Application (Put "X" in appropriate box)  
 New antenna construction  
 Alteration of existing antenna structure  
 Change in location

Facilities Requested  
 Channel 207 1.50 kW Horiz., 1.50 kW Vert. (Directional)  
 On 173' self-supporting tower with 24' pole (total height 197')

1. Location of Antenna:  
 State **Ohio** County **Hamilton** City or Town **Reading**

Exact antenna location (street address). If outside city limits, give name of nearest town and distance and direction of antenna from town.  
**601 Columbia Avenue**

Geographical coordinates (to nearest second). For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude **39° 13' 23"** West Longitude **84° 25' 57"**

2. Is the proposed site the same transmitter-antenna site of other stations authorized by the Commission or specified in another application pending before the Commission?  YES  NO

If Yes, give call sign:

3. Has the FAA been notified of proposed construction?  YES  NO  
 If Yes, give date and office where notice was filed.  
**Notification to Great Lakes Regional Office concurrent with this application.**

4. List all landing areas within 5 miles of antenna site. Give distance and direction to the nearest boundary of each landing area from the antenna site.

Landing Area	Distance	Direction
(a) <u>Cincinnati-Blue Ash</u>	<u>4.05 km (2.52 mi.)</u>	<u>N55.3°E</u>
(b) <u>Keeler (Heliport)</u>	<u>6.42 km (3.99 mi.)</u>	<u>1.5</u>
(c) <u>Valley Asphalt (Heliport)</u>	<u>6.97 km (4.33 mi.)</u>	<u>1.6</u>
(d) <u>Mays (Heliport)</u>	<u>7.16 km (4.45 mi.)</u>	<u>95.7</u>
(e) <u>Arma-Byrnes (Heliport)</u>	<u>7.96 km (4.95 mi.)</u>	<u>44.4</u>

5. Attach as Exhibit No. ENG a description of the antenna system, including whether tower(s) are self-supporting or guyed. If a directional antenna, give spacing and orientation of towers. **Tapered, self-supported steel tower 52.74 m (173') in height with 7.32 m (24') pole on top.**

Tower	#1	XX	XX	XX	XX	XX
Overall height above ground (include obstruction lighting)	meters	60.06				
	feet	197				
Overall height above mean sea level (include obstruction lighting)	meters	290.2				
	feet	952				

6. Attach as Exhibit No. ENG a vertical plan sketch for the proposed total structure (including supporting building, if any) giving heights above ground in feet and meters for all significant features. Clearly indicate existing portions, noting lighting, and distinguish between the skeletal or other main supporting structure and the antenna elements.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Louis A. Williams, Jr.

Name

Louis A. Williams, Jr.

Signature (Check appropriate box below)

2092 Arrowood Place

Address (include ZIP Code)

Cincinnati, OH 45231

513-851-4964

Telephone No. (include Area Code)

Technical Director

Registered Professional Engineer

Other (specify)

Technical Consultant

Chief Operator

ENGINEERING EXHIBIT SUPPORTING THE APPLICATION  
OF THE PRESIDENT AND BOARD OF TRUSTEES OF  
THE MIAMI UNIVERSITY, OXFORD, OHIO  
FOR A NEW NONCOMMERCIAL FM BROADCAST  
IN READING, OHIO

MARCH 1989

CHANNEL 207

1.50 KW ERP

72 METERS HAAT

Table of Contents

I.	General.....	1
II.	Location and Structure.....	2
	A. Transmitter.....	2
	B. Main Studio.....	3
III.	Antenna Input Power.....	4
IV.	Directional Antenna Characteristics.....	5
V.	Terrain Data.....	6
VI.	Height Above Average Terrain.....	7
VII.	Proposed Contour.....	7
VIII.	Population and Area Data.....	8
IX.	Blanketing Interference.....	8
X.	Potential Interference to Other Stations.....	8
XI.	Allocation Study Including I.F. Interference.....	9
XII.	TV Channel 6 Predicted Interference.....	16
XIII.	Environmental Impact.....	18
	A. RFR Compliance.....	18
XIV.	Certification.....	19
	Figures	
	Tables	

## FIGURES

- Figure 1: Proposed Reading Transmitter Location
- Figure 2: Vertical Plan Sketch of Antenna System
- Figure 3: Maximum Allowed ERP toward WLHS
- Figure 4: Maximum Allowed ERP toward WOBO
- Figure 5: Maximum Allowed ERP toward WNKU
- Figure 6: Maximum Allowed ERP toward WFPL
- Figure 7: Proposed Reading Azimuth Pattern
- Figure 8: Jampro JSCP-2 Elevation Pattern
- Figure 9: Composite Sectional Aeronautical Chart
- Figure 10: WOBO Antenna Pattern
- Figure 11: WNKU Antenna Pattern

## TABLES

- Table 1: Proposed Antenna Pattern Horizontal Polarization
- Table 2: Jampro JSCP-2 Elevation Pattern
- Table 3: Ground Elevation Data for Proposed Reading
- Table 4: Height Above Average Terrain for Proposed Reading
- Table 5: Proposed Reading Coverage Contour
- Table 6: Population Count (Corr. 1980 Census), Proposed Reading
- Table 7: Blanketing Interference Contour
- Table 8: Site Survey
- Table 9: FM Spacing Study, Proposed Reading
- Table 10: WOBO Effective Antenna Heights
- Table 11: EAH, Proposed Reading toward WOBO
- Table 12: WOBO/Proposed Reading Contours
- Table 13: WFPL Effective Antenna Heights
- Table 14: EAH, Proposed Reading toward WFPL
- Table 15: WFPL/Proposed Reading Contours
- Table 16: WNKU Effective Antenna Heights
- Table 17: EAH, Proposed Reading toward WNKU
- Table 18: WNKU/Proposed Reading Contours
- Table 19: WLHS Effective Antenna Heights
- Table 20: EAH, Proposed Reading toward WLHS

**TABLES (CONTINUED)**

- Table 21: WLHS/Proposed Reading Contours**
- Table 22: Remaining Bearing and Height Parameters**
- Table 23: WCNE Effective Antenna Heights**
- Table 24: WLMH Effective Antenna Heights**
- Table 25: WVXR/CP Effective Antenna Heights**
- Table 26: WFPL Effective Antenna Heights**
- Table 27: WHSS Effective Antenna Heights**
- Table 28: WDPS/WDPR Effective Antenna Heights**
- Table 29: WDPR/CP Effective Antenna Heights**
- Table 30: WVXM/CP Effective Antenna Heights**
- Table 31: WLHS Effective Antenna Heights**
- Table 32: Remaining Undesired Limits**
- Table 33: Remaining 1 mV/m Limits**
- Table 34: WSYX/APP Effective Antenna Heights**
- Table 35: EAH, Proposed Reading toward Channel 6 TV**
- Table 36: WSYX/APP /Proposed Reading Contours**
- Table 37: WRTV Effective Antenna Heights**
- Table 38: WRTV/Proposed Reading Contours**

ENGINEERING EXHIBIT SUPPORTING THE APPLICATION  
OF THE PRESIDENT AND BOARD OF TRUSTEES OF  
THE MIAMI UNIVERSITY, OXFORD, OHIO  
FOR A NEW NONCOMMERCIAL FM BROADCAST  
IN READING, OHIO

MARCH 1989

I. General

This engineering exhibit supports the application of the President and Board of Trustees of The Miami University, Oxford, Ohio for a new Noncommercial Educational FM Broadcast Station in Reading, Ohio on Channel 207 (89.3 MHz) with a height of 72 m above average terrain and an effective radiated power (ERP) of 1.50 kW directional. The proposed tower location is 39°13'23" North latitude, 84°25'57" West longitude.

This exhibit demonstrates that the proposed Reading station meets all the current requirements for antenna directionality, lack of interference to other stations, lack of interference to the proposed station, lack of interference to TV Channel 6, and lack of environmental impact. The proposed station complies with current guidelines for human exposure to radio frequency radiation.

The proposed station directional antenna pattern provides protection to WOBO in Batavia, Ohio, to WFPL in Louisville, Kentucky, to WNKU in Highland Heights, Kentucky, and to WLHS in West Chester, Ohio. By virtue of these protection limits, protection is also provided to WCNE in Batavia, Ohio, to WLMH in Morrow, Ohio, to WVXR in Richmond, Indiana, to WHSS in Hamilton, Ohio, to WDPR in Dayton, Ohio, to WDPS in Dayton, Ohio, to a construction permit for WDPR in Dayton, Ohio, and to a construction permit for WVXM in West Union, Ohio.

The protection limitations for the proposed Reading station are complex and this engineering exhibit devotes more than average attention to a thorough development of these limitations.

The complexity of the proposed protection limitations stems in part from the fact that two of the protected stations are also directional stations. Additional complexity is introduced because of the hilly terrain in the Cincinnati area. The lowest allowable power limit does not necessarily coincide with the bearing to a protected station, nor does the lowest allowable power limit necessarily coincide with the shortest distance to the relevant contour.

In order to minimize the likelihood of disagreement, all contours are computed using a common database (the NGDC 30-second database) and the FCC computer code TVFMFS is used to compute the contours. To obtain the maximum accuracy from the TVFMFS code while avoiding contour overlaps, the program is run iteratively in the field strength versus distance mode to arrive at distances to the nearest 0.01 kilometer where such resolution is appropriate.

## II. Location and Structure

### A. Transmitter

The proposed tower location is 39°13'23" North latitude, 84°25'57" West longitude, at 601 Columbia Avenue in Reading, Ohio. The tower will be owned by The Miami University and will be on land leased from the City of Reading. A 7.5 minute U.S. Geological Survey (USGS) topographic quadrangle is given in Figure 1 showing the proposed transmitter location.

The proposed tower is a self supporting, tapered steel structure with an height above ground of 52.74 m (173'). On top of the tower is a 7.32 m (24') mast 27.3 cm (10.75") in diameter. The overall height is 60.06 m (197') and no obstruction lighting is proposed. A vertical plan sketch for the proposed structure is shown in Figure 2.

The FAA Great Lakes Region Office is being notified concurrently of the proposed construction on FAA Form 7460-1. If painting and obstruction lighting should be required by the FAA it

will be in accordance with FAA regulations. The nearest edge of the nearest airport landing area is the Cincinnati - Blue Ash Airport at a distance of 4.05 km (2.52 miles) and a bearing of N55.3°E. Several heliports are also within 5 miles of the antenna site.

B. Main Studio

The Miami University requests permission to locate the main studio for the proposed Reading station outside the proposed station's principal community contour. The proposed station's principal community contour is taken as 1 mV/m in accordance with FCC §73.315(a) note and (c). The Miami University proposes to simultaneously broadcast the programming of its presently owned station, WMUB, Oxford, Ohio. The Miami University believes that the proposed Reading station's studio location of Oxford, Ohio will be consistent with operating the proposed station in the public interest. This request is in accordance with FCC §73.1125(a)(4).

By simultaneously broadcasting the same programming on both WMUB and the proposed Reading station, The Miami University will be able to provide 24 hour quality public interest, news, and music programming to the city of Reading. By including Reading area news in its local newscasts and public affairs programming, The Miami University can serve Reading on a broader scale than by attempting at this time to establish a separate studio within the city of Reading.

It is The Miami University's intent to maintain a close relationship with the City of Reading's administration. Contingent upon the proposed Reading construction permit being granted by the FCC, the City of Reading has agreed to enter into a long term lease of the proposed tower site, and further agreed to house the proposed transmitter in the adjacent fire station. Maintaining this relationship will require the university to serve the needs of the City of Reading.

It is also the intent of the university to ascertain the community problems and needs of Reading and to address these with appropriate programming. The Reading telephone directory and the combined Reading and WMUB monthly program guide will indicate a number to call collect to contact the studio at Oxford, Ohio.

The university will initially use its existing staff and resources to provide programming that addresses the above determined needs. As circumstances and funding permit, the university will consider adding staff and resources to make live broadcasts from Reading when events warrant. The WMUB Oxford, Ohio studios and the City of Reading are separated by not more than 45 minutes under normal automobile driving conditions, so facilities for program production for the proposed Reading station are also readily available.

### III. Antenna Input Power

Approximately 60 m (196.9') of 1-5/8 inch pressurized transmission line such as Andrew HJ7-50A Heliac is needed for the proposed facility. Andrew HJ7-50A has a loss at 89.3 MHz of 0.640 dB per 100 m, so the total transmission line loss is 0.384 dB and the transmission line efficiency is 91.5 percent.

For the purposes of these calculations a circularly polarized two bay antenna such as a Jampro JSCP-2R(DA) is used. While the final horizontal pattern gain cannot be determined until final antenna range measurements are made, an approximate pattern gain of 1.8 can be used for transmitter sizing purposes.

Based on this approximate pattern gain, a transmitter rated at one kilowatt output power should be adequate. In accordance with FCC §73.212(a) the power levels are specified as follows:

	<u>Nominal</u>	<u>Specified</u>
Transmitter Output Power	0.913 kW	0.91 kW
Transmission Line Efficiency	0.915	0.915
Antenna Input Power	0.836 kW	
Antenna Gain	1.8	
Effective Radiated Power	1.504 kW	1.50 kW

#### IV. Directional Antenna Characteristics

The proposed Reading antenna directional pattern will be adjusted to eliminate harmful interference to or from co- and adjacent channel stations. The final antenna pattern will be measured by the manufacturer; for example, the measurements can be made by duplicating a section of tower with one bay of the antenna full scale on a flat 7000 foot antenna range and profiling the antenna in the receive mode by rotating the antenna to produce the measured pattern.

A vertical or elevation pattern plot will be measured in order to show the absence of undesirable lobes at angles off the horizontal plane. The azimuth direction will be specified by the manufacturer and the antenna will be aligned in azimuth with respect to true north during installation using the services of a licensed surveyor. Final measured pattern data from the antenna range will be used to show compliance with FCC requirements.

As shown later in this exhibit, the critical bearings and powers are as follows:

<u>Bearing</u>	<u>ERP</u>	<u>Limitation</u>
308.3°-65.0°	Figure 3	WLHS 1 mV/m contour
85.0°-126.7°	Figure 4	WOBO 1 mV/m contour
173.2°-180.3°	Figure 5	WNKU 10 mV/m contour
200.3°-238.2°	Figure 6	WFPL 0.1 mV/m contour

The antenna will be circularly polarized and the vertically polarized component will not exceed the horizontally

polarized component in any direction. The maximum-to-minimum ratio will be less than 15 dB. The maximum rate of change in gain will be 2 dB or less per 10 degrees in azimuth.

The nominal peak horizontal pattern gain for the antenna is estimated at about 1.8, which gives an overall peak power gain of 1.8 for two bays. With a major lobe gain of 1.8, the nominal transmitter output for 1.504 kW maximum horizontally polarized ERP is 0.913 kW with a transmission line efficiency of 91.5 percent.

The proposed antenna is a Jampro type JSCP-2R(DA) two bay directional circularly polarized FM antenna. The antenna will be equipped with radomes. Directionality will be achieved using parasitic elements.

The maximum azimuth pattern provided by the above limits is shown in Figure 7. A representative vertical pattern plot for a JSCP-2 antenna is given in Figure 8. The horizontally polarized azimuth pattern is given in tabular form in Table 1. The representative vertical pattern plot is given in tabular form in Table 2. Table 1 also gives the free space field strength in mV/m at 1 mile and the effective radiated power in dBk. Additional tabular ERP data at critical bearings is given as part of Table 5. The maximum-to-minimum ratio for the pattern in Figure 7 is 13.32 dB.

#### V. Terrain Data

The 0 to 16 kilometer ground elevation data for eight equally spaced radials at the proposed Reading site is given in tabular form in Table 3 and is taken from the NGDC 30-second data base in accordance with FCC §73.312(d). The ground elevations used in the calculation of the proposed coverage contours are also taken from the NGDC 30-second data base. The same method is used to calculate the elevations for pertinent co- and adjacent channel stations.

Data taken from the NGDC 30-second data base may differ by a few feet on specific radials when compared with prior

computations of average elevation for specific stations and radials. One purpose in using the same data base for both the proposed Reading and the relevant co- and adjacent channel stations is to reduce the computational variations among the different elevation calculations.

#### VI. Height Above Average Terrain

The proposed Reading center of radiation above mean sea level (CRAMSL) and center of radiation height above average terrain (HAAT) are computed as follows:

Tower Base	230.1 m	(755')	AMSL
Antenna Mid-Point	57.77	(189.5)	AGL
CRAMSL	287.9	(944.6)	AMSL
Avg. Terrain Elev.	215.9	(708.3)	AMSL
HAAT	72.0	(236.2)	

The height of the proposed Reading antenna radiation center above the average elevation of eight uniform radials is given in Table 4. Also shown in the table are the heights for radials toward the critical co- and adjacent channels. In accordance with FCC Rules and Regulations §73.212(b) the proposed Reading antenna height above average terrain is specified as 72 m.

#### VII. Proposed Contour

Table 5 shows the 1 mV/m F(50,50) contour in tabular form for the proposed Reading station. This data is plotted in Figure 9. Figure 9 is a composite portion of the St. Louis and Cincinnati Sectional Aeronautical Charts showing the 1 mV/m F(50,50) contour for the proposed Reading station. The cardinal radials along which the profiles are measured are also shown in Figure 9.