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**DUPLICATE**  
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**MAR 14 2000**

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March 14, 2000

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**BY HAND DELIVERY**

Magalie Roman Salas  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
12th Street Lobby, TW-A325  
Washington, D.C. 20554

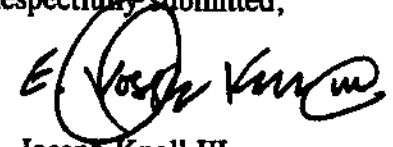
Re: **Minnesota Public Radio**  
**Amendment to Pending Application for New Noncommercial FM Station**  
**Grand Marais, Minnesota (Facility ID No. 92306)**  
**(FCC File No. BPED-19981208MI)**

Dear Ms. Salas:

Submitted herewith in triplicate, on behalf of Minnesota Public Radio, is an amendment to the above-referenced application for a new noncommercial educational FM station on Channel 204C3 at Grand Marais, Minnesota (the "Application"). This amendment is being supplied to amend the site coordinates and the antenna height values set forth in the Application.

If there are any questions regarding this amendment, please contact the undersigned.

Respectfully submitted,



E. Joseph Knoll III

cc: James Crutchfield, FCC (by hand)  
Mitzi T Gramling

# FCC 340

## APPLICATION FOR CONSTRUCTION PERMIT FOR NONCOMMERCIAL EDUCATIONAL BROADCAST STATION

(Carefully read instructions before filing form) Return only form to FCC

### Section I - GENERAL INFORMATION

**FOR COMMISSION USE ONLY**

FILE NO.

1. Name of Applicant  Minnesota Public Radio		
Street Address or P.O. Box 45 East Seventh Street		
City Saint Paul	State MN	ZIP Code 55101
Telephone Number (include Area Code) 651-290-1500		

Send notices and communications to the following person at the address below:		
Name Mitzi T Gramling		
Street Address or P.O. Box 45 East Seventh Street		
City Saint Paul	State MN	ZIP Code 55101
Telephone Number (include Area Code) 651-290-1259		

2. This application is for:

AM

FM

TV

(a) Channel No. or Frequency  204
---

(b) Principal Community	City	State
	Grand Marais	MN

(c) Check one of the following boxes:

- Application for NEW station
- MAJOR change in licensed facilities; call sign: \_\_\_\_\_
- MINOR change in licensed facilities; call sign: \_\_\_\_\_
- MAJOR modification of construction permit; call sign: \_\_\_\_\_  
File No. of construction permit; call sign: \_\_\_\_\_
- MINOR modification of construction permit; call sign: \_\_\_\_\_  
File No. of construction permit; call sign: \_\_\_\_\_
- AMENDMENT to pending application: Application File Number: \_\_\_\_\_ BPED19981208MI

NOTE: It is not necessary to use this form to amend a previously filed application. Should you do so, however, please submit only Section I and those other portions of the form that contain the amended information.

3. Is this application mutually exclusive with a renewal application?

Yes  No

If Yes, state:

Call letters	Community of License	
	City	State

**SECTION V-B - FM BROADCAST ENGINEERING DATA**

**FOR COMMISSION USE ONLY**

File No. \_\_\_\_\_  
 SSB Referral Date \_\_\_\_\_  
 Referred By \_\_\_\_\_

Name of Applicant **Minnesota Public Radio**

Call Letters (if issued)  
**TBA**

Is this application being filed in response to an application filing window?  Yes  No  
 If Yes, specify closing date: \_\_\_\_\_

Purpose of Application: (check appropriate boxes)

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> Construct a new (main) facility<br>See Ex #E1, Engineering Statement | Amend application <input type="checkbox"/> | <input type="checkbox"/> Construct a new auxiliary backup facility                         |
| <input type="checkbox"/> Modify existing construction permit for main facility                           |  | <input type="checkbox"/> Modify existing construction permit for auxiliary backup facility |
| <input type="checkbox"/> Modify licensed main facility   |  | <input type="checkbox"/> Modify licensed auxiliary backup facility                         |

If purpose is to modify, indicate below the nature of change(s) and specify the file number(s) of the authorizations affected.

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Antenna supporting structure height           | <input type="checkbox"/> Effective radiated power  |
| <input checked="" type="checkbox"/> Antenna height above average terrain          | <input type="checkbox"/> Frequency                 |
| <input checked="" type="checkbox"/> Antenna location                              | <input type="checkbox"/> Class                     |
| <input type="checkbox"/> Main Studio location per 47 C.F.R. Section 73.1125(b)(2) | <input type="checkbox"/> One-Step processing       |
| <input type="checkbox"/> Directional Antenna                                      | <input type="checkbox"/> Other (summarize briefly) |

File Number(s) BPED19981208MI

**1. Allocation:**

Channel No.	Principal community to be served:		
	County	City or Town	State
204	Cook	Grand Marais	MN

- Class (check only one box below)
- |                             |                             |                            |  |
|-----------------------------|-----------------------------|----------------------------|--|
| <input type="checkbox"/> A  | <input type="checkbox"/> B1 | <input type="checkbox"/> B | <input checked="" type="checkbox"/> C3 |
| <input type="checkbox"/> C2 | <input type="checkbox"/> C1 | <input type="checkbox"/> C |  |

**2. Exact location of antenna.**

(a) Specify address, city, county and state. If no address, specify distance and bearing relative to the nearest town or landmark.

Sawtooth Bluff, .33 mi NW Gunflint Hwy Trl  
 Grand Marais, Cook County, Minnesota

(b) Geographical coordinates (to nearest second). If mounted on element of an AM array, specify coordinates of center of array. Otherwise, specify tower location. Specify South Latitude and East Longitude where applicable; otherwise, North Latitude or West Longitude will be presumed. (The Commission requires coordinates based on NAD 27.)

Latitude	47 °	46 ' 04 "	Longitude	90 °	20 ' 47 "
----------	------	-----------	-----------	------	-----------

Section V-B - FM BROADCAST ENGINEERING DATA (Page 2)

3. Will the antenna be mounted on an antenna structure which has been registered with the Commission?  Yes  No

If Yes, provide the seven digit registration number and proceed to item 8.

1061466

4. Has the owner of the antenna structure filed an application for registration with the Commission?  Yes  No

If yes, provide the date FCC Form 854 was filed and proceed to item 8.

5. Applicant certifies that antenna structure meets 6.10 meter (20 feet) exception rule and therefore does not require registration. In other words, the overall height of the entire structure is not more than 6.10 meters (20 feet) above the ground or the antenna does not extend more than 6.10 meters (20 feet) above a man-made structure (structure built for a purpose other than mounting an antenna, i.e., building, water tank, silo, fire tower, etc.).  Yes  No

If yes, skip items 6 and 7.

6. Antenna structure will be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town or settlement where it is evident beyond all reasonable doubt that the structure is so shielded that it will not adversely affect safety in air navigation.  Yes  No

If yes, submit as an Exhibit a detailed explanation and/or diagram to support your claim and skip to item 8.

Exhibit No.

7. Antenna structure does not meet FAA notification criteria as defined under 47 C.F.R. Section 17.7 and therefore does not require registration.  Yes  No

8. Is the supporting structure the same as that of another station(s) or proposed in another pending application(s)?  Yes  No

If Yes, give call letter(s) or file number(s) or both. MPR Channel 209

If proposal involves a change in height of an existing structure, specify existing height above ground level including antenna, all other appurtenances, and lighting, if any.

9. Does the application propose to correct previous site coordinates?  Yes  No  
If Yes, list old coordinates.

Latitude	o	.	-	Longitude	o	.	-
----------	---	---	---	-----------	---	---	---

10. Has the FAA been notified of the proposed construction?  Yes  No

If Yes, give date and office where notice was filed and attach as an Exhibit a copy of FAA determination, if available.

Exhibit No.  
N/A

Date \_\_\_\_\_ Office where filed \_\_\_\_\_

11. List all landing areas within 8 km of antenna site. Specify distance and bearing from structure to nearest point of the nearest runway.

	Landing Area	Distance (km)	Bearing (degrees True)
(a)	<u>Grand Marais/Cook County</u>	<u>6.1</u>	<u>332.8</u>
(b)	_____	_____	_____

12. (a) Elevation: (to the nearest meter)

- (1) Of the site above mean sea level; 455 meters
- (2) Of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and 98 meters
- (3) Of the top of supporting structure above mean sea level [(a)(1) + (a)(2)]. 553 meters

(b) Height of radiation center: (to the nearest meter) H = Horizontal; V = Vertical

- (1) Above ground; 82 meters (H)
- 82 meters (V)
- (2) Above mean sea level [(a)(1) + (b)(1)]; and 537 meters (H)
- 537 meters (V)
- (3) Above average terrain. 194 meters (H)
- 194 meters (V)

13. Attach as an Exhibit sketch(es) of the supporting structure, labeling all elevations required in Question 12 above, except item 12(b)(3). If mounted on an AM directional array element, specify heights and orientations of all array towers, as well as location of FM radiator.

Exhibit No.  
E2

14. Effective Radiated Power:

(a) ERP in the horizontal plane 6.0 kw (H\*) 6.0 kw (V\*)

Is beam tilt proposed?

Yes  No

If Yes, specify maximum ERP in the plane of the tilted beam, and attach as an Exhibit a vertical elevation plot of radiated field.

Exhibit No.  
N/A

kw (H\*) kw (V\*)

\*Polarization

15. Is a directional antenna proposed?

Yes  No

If Yes, attach as an Exhibit a statement with all data specified in 47 C.F.R. Section 73.316, including plot(s), and tabulations of horizontally and vertically polarized radiated components in terms of relative field.

Exhibit No.  
N/A

16. Will the main studio be located within the 70 dBu or 3.16 mV/m contour?

Yes  No

If No, attach as justification an Exhibit pursuant to 47 C.F.R. Section 73.1125.

Exhibit No.  
\*

\* On file, no change. See BPED19931208MI.

17. Are there: (a) within 60 meters of the proposed antenna, any proposed or authorized FM or TV transmitters, or any nonbroadcast (*except citizens band or amateur*) radio stations; or (b) within the blanketing contour, any established commercial or government receiving stations, cable head-end facilities, or populated areas; or (c) within ten (10) kilometers of the proposed antenna, any protected or authorized FM or TV transmitters which may produce receiver-induced intermodulation interference?  Yes  No

If Yes, attach as an Exhibit a description of any expected, undesired effects of operations and remedial steps to be pursued if necessary, and a statement accepting full responsibility for the elimination of any objectionable interference (including that caused by receiver-induced or other types of modulation) to facilities in existence or authorized or to radio receivers in use prior to grant of this application. (See 47 C.F.R. Section 73.315(b), 73.316(d) and 73.318.)

Exhibit No.  
E3

18. Attach as an Exhibit a 7.5 minute series U.S. Geological Survey topographic quadrangle map that shows clearly, legibly, and accurately, the location of the proposed transmitting antenna. This map must comply with the requirements set forth in Instruction D for Section V. Further, the map must clearly and legibly display the original printed contour lines and data as well as latitude and longitude markings, and must bear a scale of distance in kilometers.

Exhibit No.  
E4

19. Attach as an Exhibit (name the source) a map which shows clearly, legibly, and accurately, and with the original printed latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.  
E5

- (a) The proposed transmitter location, and the radials along with profile graphs have been prepared;
- (b) The 1 mV/m predicted contour and, for noncommercial educational applicants applying on a commercial channel, the 3.16 mv/m contour; and
- (c) The legal boundaries of the principal community to which the station is or will be licensed.

20. Specify area in square kilometers (1 sq. mi. = 2.59 sq. km.) and population (latest census) within the predicted 1 mv/m contour.

Area 652\* sq. km.      Population 2,445  
\*Land Area

21. Attach as an Exhibit a map (*Sectional Aeronautical charts where obtainable*) showing the present and proposed 1 mv/m (60 dbu) contours.

Enter the following from Exhibit above:

Gain Area	<u>N/A</u>	sq. km.
Loss Area	<u>          </u>	sq. km.
Present Area	<u>          </u>	sq. km.

Percent change (gain area plus loss area as divided by present area times 100%) N/A

If 50% or more, this constitutes a major change. Indicate in question 2(c), Section 1, accordingly. See 47 C.F.R. Section 73.3573(a)(1).

Section V-B - FM BROADCAST ENGINEERING DATA (Page 5)

22. For an application involving an auxiliary backup facility only, attach as an Exhibit a map (*Sectional Aeronautical Chart or equivalent*) which shows clearly, legibly, and accurately, and with latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.  
N/A

- (a) the proposed auxiliary 1 mv/m contour; and
- (b) the 1 mv/m contour of the licensed main facility for which the applied-for facility will be auxiliary. Also specify the file number of the license. See 47 C.F.R. Section 73.1675.

File No. \_\_\_\_\_

23. Terrain and coverage data (*to be calculated in accordance with 47 C.F.R. Section 73.313*)

Source of terrain data: (*check only one box below*)

- Linearly interpolated 30-second database
- 7.5 minute topographic map

(Source: \_\_\_\_\_)

- Linearly interpolated 3-second database
- Other (summarize)

USGS V-Soft Communications ROM  
Are more than eight radials being used to calculate HAAT?

Yes  No

If Yes, specify how many radials are being used. Please note the radials must be evenly spaced and start with the 0 degree radial.

36 \_\_\_\_\_

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 3 to 16 km (meters)	Predicted Distances to the 1 mV/m contour (kilometers)	If operating on Commercial Channel 3.16 mv/m contour (kilometers)
0	*	*	*
45	*See Ex #E1, Pg #3	*	*
90	*	*	*
135			
180			
225			
270			
315			

Allocation Studies  
(See Subpart C of 47 C.F.R. Part 73)

24. Is the proposed antenna location within 320 kilometers (199 miles) of the common border between the United States and Mexico?

Yes  No

If Yes, attach as an Exhibit 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.

Exhibit No.  
N/A

Section V-B - FM BROADCAST ENGINEERING DATA (Page 6)

25. Is the proposed antenna location within 320 kilometers of the common border between the United States and Canada?  Yes  No

If Yes, attach as an Exhibit 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.

Exhibit No.  
E6

26. If the proposed operation is for a full service or Class D facility for a channel in the range from Channel 201 through 220 (88.1 through 91.9 MHz), 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 an Exhibit a complete allocation study to establish the lack of prohibited overlap of contours with other U.S. stations. The allocation study should include the following:

Exhibit No.  
E6

- (a) The normally protected interference-free and the interfering contours for the proposed operation along all azimuths;
- (b) Complete normally protected interference-free contours of all other proposals and existing stations to which objectionable interference would be caused;
- (c) Interfering contours over pertinent arcs of all other proposals and existing stations from which objectionable interference would be received;
- (d) 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;
- (e) Plot of the transmitter location of each station or proposal requiring investigation, with identifying call letters, file numbers and operating or proposed facilities;
- (f) 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;
- (g) A scale of kilometers 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; and
- (h) The name of the map(s) used in the Exhibit(s).

27. With regard to any stations separated by 53 or 54 channels (10.6 or 10.8 MHz), attach as an Exhibit information required in 1/ (separation requirements involving intermediate frequency (i.f.) interference).

Exhibit No.  
E6

28. (a) Is the proposed operation on Channel 218, 219 or 220?  Yes  No
- (b) If the answer to (a) is Yes, does the proposed operation satisfy the requirements of 47 C.F.R. Section 73.207?  Yes  No N/.

(c) If the answer to (b) is Yes, attach as an Exhibit information required in 1/ regarding separation requirements with respect to stations on Channels 221, 222 and 223.

Exhibit No.  
N/A

(d) If the answer to (b) is No, attach as an Exhibit a statement describing the short spacing(s) and how it or they arose.

Exhibit No.  
N/A

1/ A showing that the proposed operation meets the minimum distance separation requirements of 47 C.F.R. Section 73.507. Include existing stations, proposed stations, and cities which appear in the Table of Allotments; the location and geographic coordinates of each antenna, proposed antenna or reference point, as appropriate; and distance to each from proposed antenna



(e) If authorization pursuant to 47 C.F.R. Section 73.215 is requested, attach as an Exhibit a complete engineering study to establish the lack of prohibited overlap of contours involving affected stations. The engineering study must include the following:

Exhibit No.  
N/A

- (1) Protected and interfering contours, in all directions (360 degrees), for the proposed operation;
- (2) Protected and interfering contours, over pertinent arcs, of all short-spaced assignments, applications and allotments, including a plot showing each transmitter location, with identifying call letters or file numbers, and indication of whether facility is operating or proposed. For vacant allotments, use the reference coordinates as transmitter location;
- (3) When necessary to show more detail, an additional allocation study utilizing a map with a larger scale to clearly show prohibited overlap will not occur;
- (4) A scale of kilometers 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.); and
- (5) The official title(s) of the map(s) used in the Exhibit(s).

29. Is the proposed station for a channel in the range from Channel 201 to 220 (88.1 through 91.9 MHz) and the proposed antenna location within the distance to an affected TV Channel 6 station(s) as defined in 47 C.F.R. Section 73.525?

Yes  No

If Yes, attach as an Exhibit either a TV Channel 6 agreement letter dated and signed by both parties or a map and an engineering statement with calculations demonstrating compliance with 47 C.F.R. Section 73.525 for each affected TV Channel 6 station.

Exhibit No.  
E7

30. Is the proposed station for a channel in the range from Channel 221 to 300 (92.1 through 107.9 MHz)?

Yes  No

If Yes, attach as an Exhibit information required in 1/. (Except for Class D (secondary) proposals.)

Exhibit No.  
N/A

31. Environmental Statement. (See 47 C.F.R. Section 1.1301 et seq.)

(a) Would a Commission grant of this application come within 47 C.F.R. Section 1.1307, such that it may have a significant environmental impact?

Yes  No

If you answer Yes, submit as an Exhibit an Environmental Assessment required by 47 C.F.R. Section 1.1311.

Exhibit No.  
N/A

(b) If No, explain briefly why not.

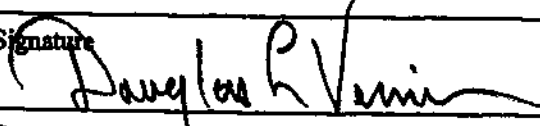
Existing authorized tower.

(c) Pursuant to OST/OET Bulletin No. 65, the applicant must explain in an Exhibit what steps will be taken to limit the RF radiation exposure to the public and to persons authorized access to the tower site. In addition, where there are multiple contributors to radiofrequency radiation, you must certify that the established RF radiation exposure procedures will be coordinated with all stations.

See Ex #E8, for RF hazard statement.

**CERTIFICATION**

I certify that I have prepared this Section of this application on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name (Typed or Printed) Douglas L. Vernier	Relationship to Applicant (e.g., Consulting Engineer) Technical Consultant
Signature 	Address (include ZIP Code) 1600 Picturesque Drive Cedar Falls, IA 50613
Date March 10, 2000	Telephone No. (include Area Code) 319 266-8402

**EXHIBIT #E1  
ENGINEERING STATEMENT**

**Concerning the Application of  
Minnesota Public Radio  
To Amend the Pending Application  
To Construct a New Non-Commercial FM Station  
To Serve Grand Marais, Minnesota**

**BPED19981208MI**

**March, 2000**

**Channel 204C3**

**6.0 kW H & V**

This engineering statement supports the application filed by Minnesota Public Radio to amend the pending application BPED19981208MI to build a new non-commercial educational FM radio station to serve Grand Marais, Minnesota and the surrounding area.

Minnesota Public Radio proposes to change the antenna location, increase the antenna supporting structure height and increase the antenna height above average terrain. No other changes are being proposed.

**Tower Vertical Sketch:**

Exhibit #E2 is a vertical sketch of the existing authorized tower showing the proposed side mounted 4-bay circularly polarized antenna.

**Inter-modulation and blanketing:**

Exhibit #E3 is an exhibit describing the possible effects of inter-modulation and blanketing.

**Site Map:**

Exhibit #E4 is full scale section of a 1:24,000 scale U.S. Geological Survey topographic quadrangle map (Grand Marais Quadrangle) showing the exact transmitter location.

**Coverage Map**

Exhibit #E5 is a map of the proposed 1 mV/m (60 dBu) signal contour. Grand Marais, Minnesota, the city of licensee, is shown to be fully encompassed by the proposed 60

dBu city service contour. The coverage map was computer generated using U.S. Geological Survey Digital Line Graph data, which was originally digitized from 1:2,000,000 scale maps. Three hundred and sixty evenly spaced radials were used to plot the 60 dBu contour. The land area within the proposed one mV/m contour amounts to 652 square kilometers. This figure was determined using a compensating polar planimeter. The population within the 60 dBu service contour was determined to be 2,445 people through the use of a computer program which extracts a population count based on population centroids defined by U.S. Census 1990 (PL-94-171) digital census data. This program draws data from the following summary level: State-County-Voting District/Remainder-County Subdivision, Place/Remainder-Census Tract/Block Numbering Area-Block Group.

Thirty-six evenly spaced radials were used to determine the antenna height above average terrain. The N.G.D.C. 03 arc-second terrain database was used to determine the radial elevations at .1 kilometer increments from 3 to 16 kilometers. The elevation points were averaged using the required four-point interpolation method and then the average was employed to project antenna heights above average terrain and the consequent distances to signal contours along the pertinent radials. (See a tabular listing of these contour distances on page #3 of this exhibit.)

#### **Allocation Study:**

Exhibit #E6, is a single channel, contour to contour, allocation study showing that interference is neither caused nor received by an FM radio station, application for facilities or construction permit. There are no I.F. relationships. The proposal is within 320 kilometers of the U.S. border with Canada, however all Working Agreement minimum separation spacings are met or exceeded.

#### **Channel-Six Television Protection:**

Exhibit #E7 is a map of the 47 dBu, Grade B, protected signal contours of KBRJ, Superior, Wisconsin. The map also contains a plot of the proposed facility's 56.3 dBu F(50-10) interference signal, as defined by Section 73.525 of the Commission's rules. This contour was produced using a mixed polarization study power of 6.15 kW (6 + 6/40). Although the 6 dB receiving antenna directivity credit was applicable, it was not used in this "worst case" scenario. Pages #2-3 are tabular printouts of the predicted distances to the relevant contours used in the study.

#### **R.F. Hazard compliance:**

Exhibit #E8 shows compliance with the Commission's R.F. emission's standards.

Page #4 of this exhibit (Ex. # E1) is a declaration made by the preparer, Doug Vernier, attesting to his qualifications.

Doug Vernier Telecommunications Consultants  
Minnesota Public Radio, Grand Marais, Channel 204

ERP = 6 kW  
Channel = 204

Azimuth Deg.T.	Ave. Elev. 3 to 16 km Meters AMSL	Effective Antenna Height Meters AAT	ERP (dBk)	F(50-50) Distance to 60 dBu Contour km
0	541.9	-4.9	7.782	15.75
10	532.1	4.9	7.782	15.75
20	515.6	21.4	7.782	15.75
30	507.7	29.3	7.782	15.75
40	494.6	42.4	7.782	18.86
50	475.1	61.9	7.782	22.75
60	422.4	114.6	7.782	30.12
70	329.6	207.4	7.782	39.40
80	228.1	308.9	7.782	46.02
90	195.5	341.5	7.782	48.05
100	185.1	351.9	7.782	48.70
110	183.2	353.8	7.782	48.82
120	183.0	354.0	7.782	48.83
130	183.0	354.0	7.782	48.83
140	183.0	354.0	7.782	48.83
150	183.0	354.0	7.782	48.83
160	183.0	354.0	7.782	48.83
170	183.0	354.0	7.782	48.83
180	183.0	354.0	7.782	48.83
190	183.0	354.0	7.782	48.83
200	183.0	354.0	7.782	48.83
210	183.2	353.8	7.782	48.82
220	184.5	352.5	7.782	48.74
230	190.2	346.8	7.782	48.39
240	211.5	325.5	7.782	47.05
250	320.0	217.0	7.782	40.11
260	425.1	111.9	7.782	29.80
270	466.3	70.7	7.782	24.09
280	478.9	58.1	7.782	22.14
290	487.1	49.9	7.782	20.56
300	505.0	32.0	7.782	16.26
310	518.5	18.5	7.782	15.75
320	524.5	12.5	7.782	15.75
330	527.4	9.6	7.782	15.75
340	534.6	2.4	7.782	15.75
350	540.3	-3.3	7.782	15.75
Ave. =	343.2 M	193.8 M		

Antenna Radiation Center AMSL =537 M  
NGDC 03 Arc Sec.

## Geographic Coordinates:

N. Lat. 47 46 04  
W. Lng. 90 20 47

**Declaration:**

I, Doug Vernier, declare that I have received training as an engineer from the University of Michigan School of Engineering. That, I have received degrees from the University in the field of Broadcast Telecommunications. That, I have been active in broadcast consulting for over 25 years;

That, I have held a Federal Communications Commission First Class Radiotelephone License continually since 1964. In 1985, this license was reissued by the Commission as a lifetime General Radiotelephone license no. PG-16-16464;

That, I am certified as a Professional Broadcast Engineer (#50258) by the Society of Broadcast Engineers, Indianapolis, Indiana. (Re-certified 11/95.)

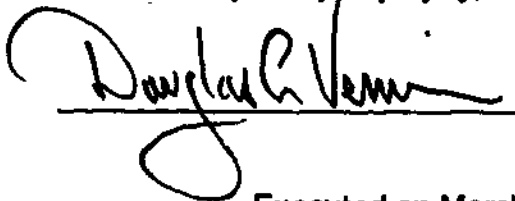
That, my qualifications are a matter of record with the Federal Communications Commission;

That, I have been retained by Minnesota Public Radio, St. Paul, Minnesota, and as such have prepared the engineering showings appended hereto;

That, a portion of the exhibits contained herein were prepared under my supervision by Kate Michler, Associate;

That, I have prepared these engineering showings, the technical information contained in same and the facts stated within are true of my knowledge;

That, under penalty of perjury, I declare that the foregoing is correct.

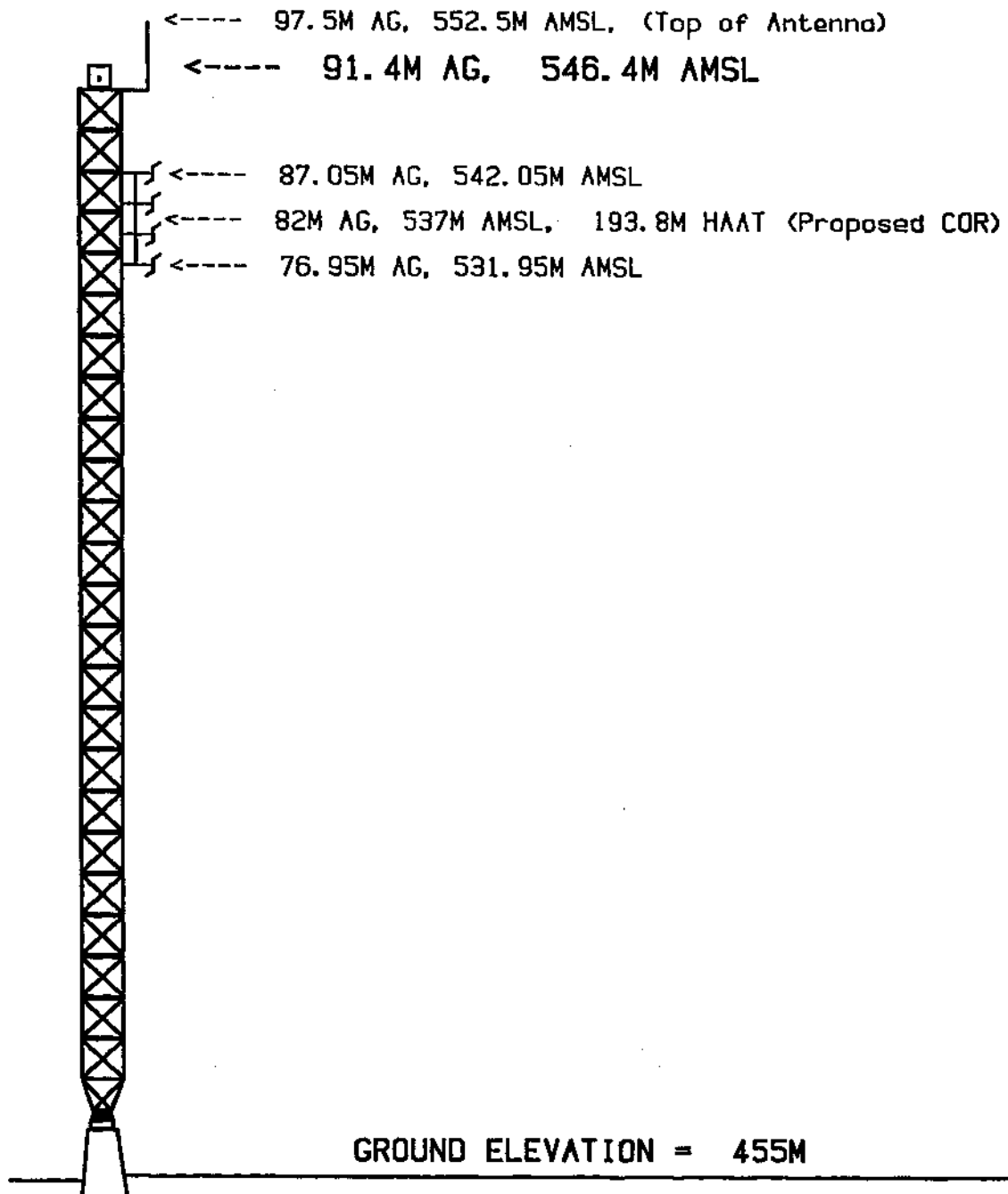
  
\_\_\_\_\_  
Douglas L. Vernier

Executed on March 10, 2000

Subscribed and sworn before me this 10th day of March, 2000.

  
\_\_\_\_\_  
Notary Public in and for the State of Iowa

My Commission Expires August 10, 2001



**VERTICAL SKETCH**

N. Lat. 47 46 04  
 W. Lng. 90 20 47

Tower Reg #1061466

(Not to Scale)

**FIGURE #E2**

CH 204C3 6kW HAAT 193.8M  
 Minnesota Public Radio  
 Grand Marais, MN

-----  
 Mar 2000

DOUG VERNIER  
 BROADCAST CONSULTANTS  
 1600 PICTURESQUE DRIVE  
 CEDAR FALLS, IA 50613  
 319 266-8402

**EXHIBIT #E3  
Inter-modulation Interference  
March, 2000**

**Concerning the Application of  
Minnesota Public Radio  
Grand Marais, Minnesota**

**88.7 MHz**

The 115 dBu blanketing contour of the proposed facility travels 965 meters from the proposed 6.0 kW ERP antenna. There is no permanent population within this area.

There is an FM station, two FM translators, one TV translator construction permit and four LPTV translators within ten kilometers of the proposed facility. In another application, Minnesota Public Radio proposes to install an additional antenna on this tower using 89.7 MHz. Page #2 of this exhibit lists pertinent information as to the existing facilities and locations.

Since there is an existing FM station with 200 meters of the proposed tower and since applicant proposes to add another FM signal in duplex with the proposed FM signal, it is possible for a signal mix to occur. Without proper filtering, this combination could be introduced to the IPA's of the either of the two transmitters resulting in a mix of the original transmitter frequencies plus or minus the mix frequency. The applicant is aware of such a possibility and will use proper filtering to assure that inter-modulation will be effectively limited.

Minnesota Public Radio is aware of its responsibility under the rules relating to inter-modulation and objectionable blanketing interference. It will correct any such interference, at its own expense, within a period of one year from commencement of broadcasting at the proposed transmitter site. Corrections shall employ traditional means such as filters, traps and tuning adjustments.

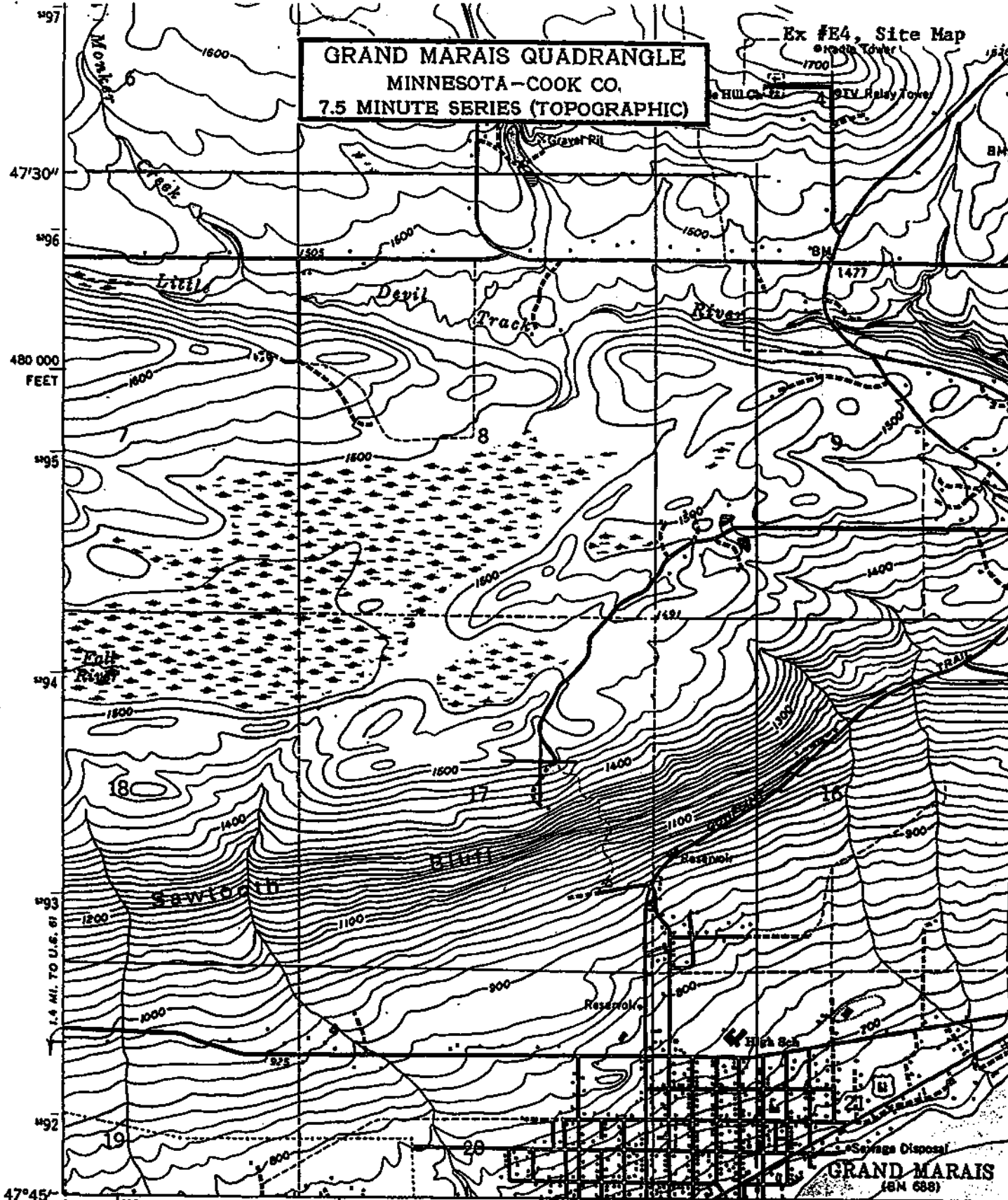


ID Stations Study at 47 46 04 N, 90 20 47 W, Search Distance = 16 km

Call	City	State	Chan.	Power	Coordinates
Dist-km	Azimuth	File Number			
AM	None Found				
FM	-----				
WTIP	Grand Marais	MN	214C2	0025.000kW	474609N 902049W
000.2	345.0	BLED980615KD		FM	
AP204	Grand Marais	MN	204C3	0006.000kW	474613N 902106W
000.5	305.2	BPED981208MI		FM	
AP209	Grand Marais	MN	209C3	0006.000kW	474613N 902106W
000.5	305.2	BPED981204MB		FM	
K220BI	Grand Marais	MN	220D	0000.051kW	474535N 902036W
000.9	165.7	BLFT860910TC		FM	
K288BF	Grand Marais	MN	288D	0000.122kW	474535N 902036W
000.9	165.7	BLFT248		FM	
TV	-----				
W61AF	GRAND MARAIS	MN	61C	0000.818kW	474609N 902049W
000.2	345.0	BLTT2143		TV	
K27FV CP	GRAND MARAIS	MN	27C	0000.818kW	474613N 902106W
000.5	305.2	BPTTLJG0601RS		TV	
K63BI	GRAND MARAIS	MN	63C	0000.818kW	474613N 902106W
000.5	305.2	BLTT790620IB		TV	
K65BJ	GRAND MARAIS	MN	65C	0000.818kW	474613N 902106W
000.5	305.2	BLTT781129IB		TV	
K67CT	GRAND MARAIS	MN	67C	0000.819kW	474613N 902106W
000.5	305.2	BLTT830725IA		TV	

**GRAND MARAIS QUADRANGLE**  
**MINNESOTA-COOK CO.**  
**7.5 MINUTE SERIES (TOPOGRAPHIC)**

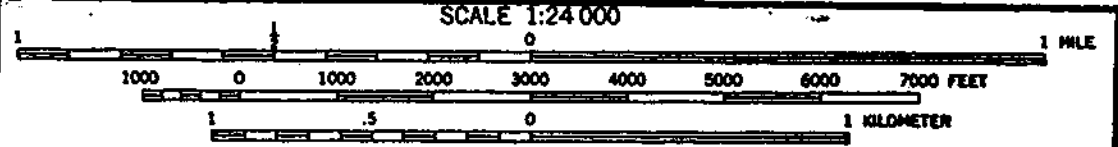
Ex #E4, Site Map



47°45' 90°22'30" 197 (GOOD HARBOR BAY) 199 2 680 000 FEET 20' 1'00 LOCKPORT 17 MI. SILVER BAY, 66 MI.

Mapped, edited, and published by the Geological Survey

Control by USGS  
 Topography from  
 Aerial photographs  
 Selected hydrographic  
 Survey Chart 97 (for  
 navigational purposes)



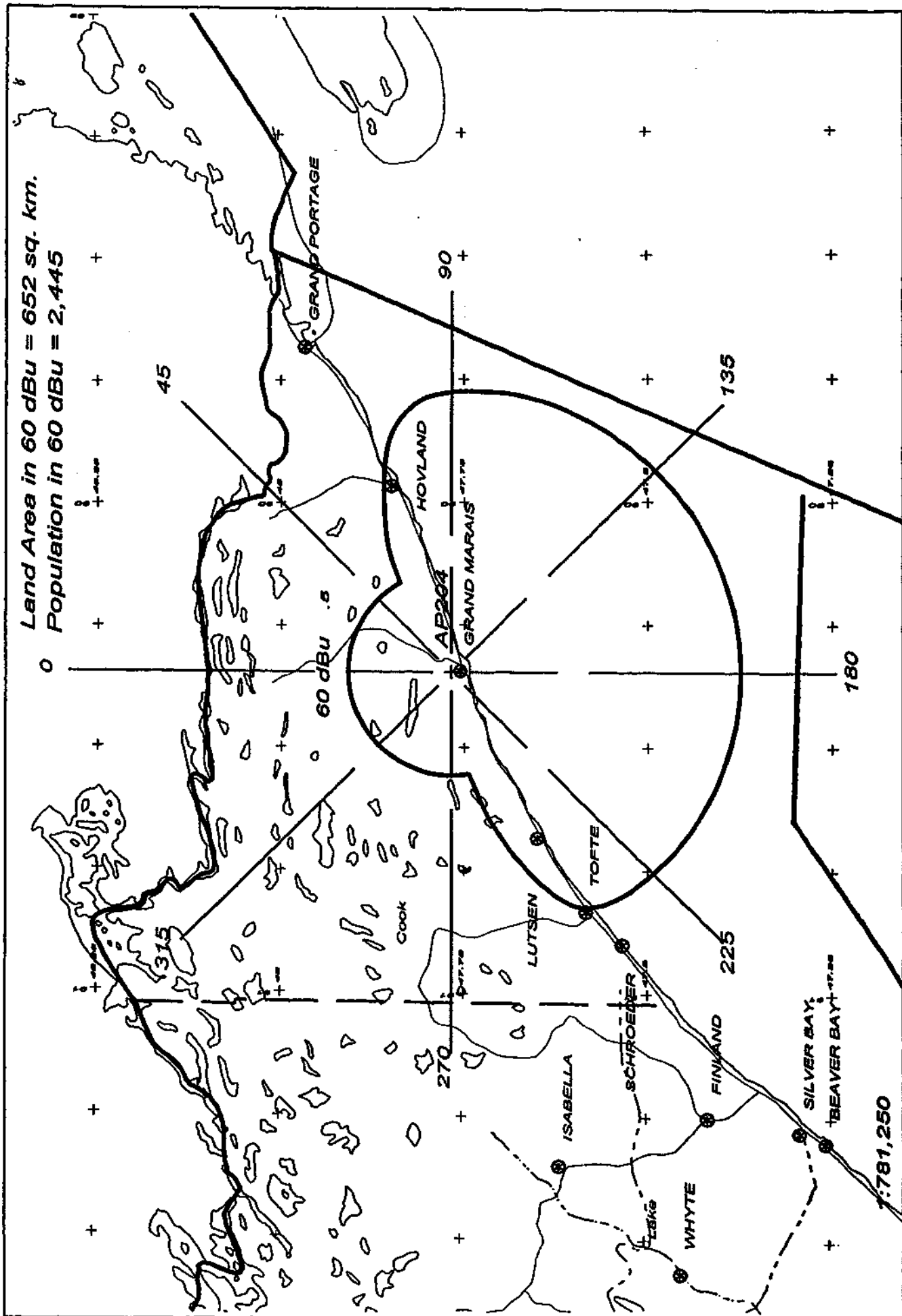
Depth curves in other lakes compiled from charts furnished by Minnesota Department of Conservation

DEPTH CURVES AND SOUNDINGS

UTM GRID AND 1985 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMES

(GOOD HARBOR BAY)  
 1973 IN HW



AP204 Grand Marais  
K Michler - 03/00

AP204 204C3 6kW 455M AMSL  
N. Lat. 47 46 04 W. Lng. 90 20 47

Scale in km  
0 10 20 30 40 50

Doug Vernier Telecommunications Consultants  
1600 Picturesque Dr. Cedar Falls IA 50613

Grand Marais

Minnesota Public Radio

CH# 204C3 - 88.7 MHz, Pwr= 6 kW, HAAT=193.8 M, COR= 537 M

Average Protected F(50-50)= 38.34 km

Ave. F(50-10) 40 dBu= 100.0 54 dBu= 56.8 80 dBu= 12.6 100 dBu= 3.6

DISPLAY DATES  
DATA 02-06-00  
SEARCH 03-09-00

REFERENCE  
46 04 N  
20 47 W

CH CITY	CALL	TYPE STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	COR(M) INT(km)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
204C3 Grand Marais	AP204	AP MN	305.2 125.2	0.48 BPED981208MI	47 46 13 90 21 06	6.000 187	540 99.1	37.8 Minnesota Public Radio	-137.00	-137.29
205A Atikokan	AL205	AL ON	319.1 139.1	141.86	48 43 28 91 36 38	6.000 100	0 43.7	38.7	59.79	29.07
204B Schreiber	AL204	AL ON	62.2 242.2	256.82	48 48 00 87 15 00	50.000 150	0 137.7	65.1	80.77	64.89
207B Thunder Bay	CBON20	OP ON	43.3 223.3	120.61	48 33 02 89 13 25	27.500 173	0 5.5	62.0	76.82	53.07
204A Esko	AP204	AP MN	232.9 52.9	192.95 BPED970331MA	46 42 22 92 21 44	0.450 29	372 27.7	8.3 Lincoln High School	126.90	84.71
06+2C SUPERIOR	KBJR TV	LI WI	231.4 51.4	172.42 BLCT2419	46 47 21 92 06 51	100.000 308	610 0.0	104.2 KBJR LICENSE, INC.	To Grd B=	68.20

## HOW TO READ THE FM COMPUTER PRINT-OUT

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. The 60 dBu protected contour is predicted from the Commission's F(50-50) table, while the 40, 54, 80 and 100 dBu contours are interference contours derived from the Commission's F(50-10) table. Contour distances are in kilometers and are predicted using spline interpolation from data points identical to those published in Report No. RS 76-01 by Gary C. Kalagian. Critical contour distances are determined using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed **\*\* IN \*\*** is the sum of the reference station's 60 dBu protected contour and the data file station's interference contour subtracted from the distance between the stations. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, the column is a measure of incoming interference. Negative distances in this column indicate the presence of interference. Listed antenna heights are the average heights of eight standard radials as found in the Commission's records unless otherwise noted, in which case the specific antenna heights along the azimuths between the reference station and the database station are used and visa versa. The column labeled **\*\* OUT \*\*** shows the distance of kilometers of overlap or clearance between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing interference.

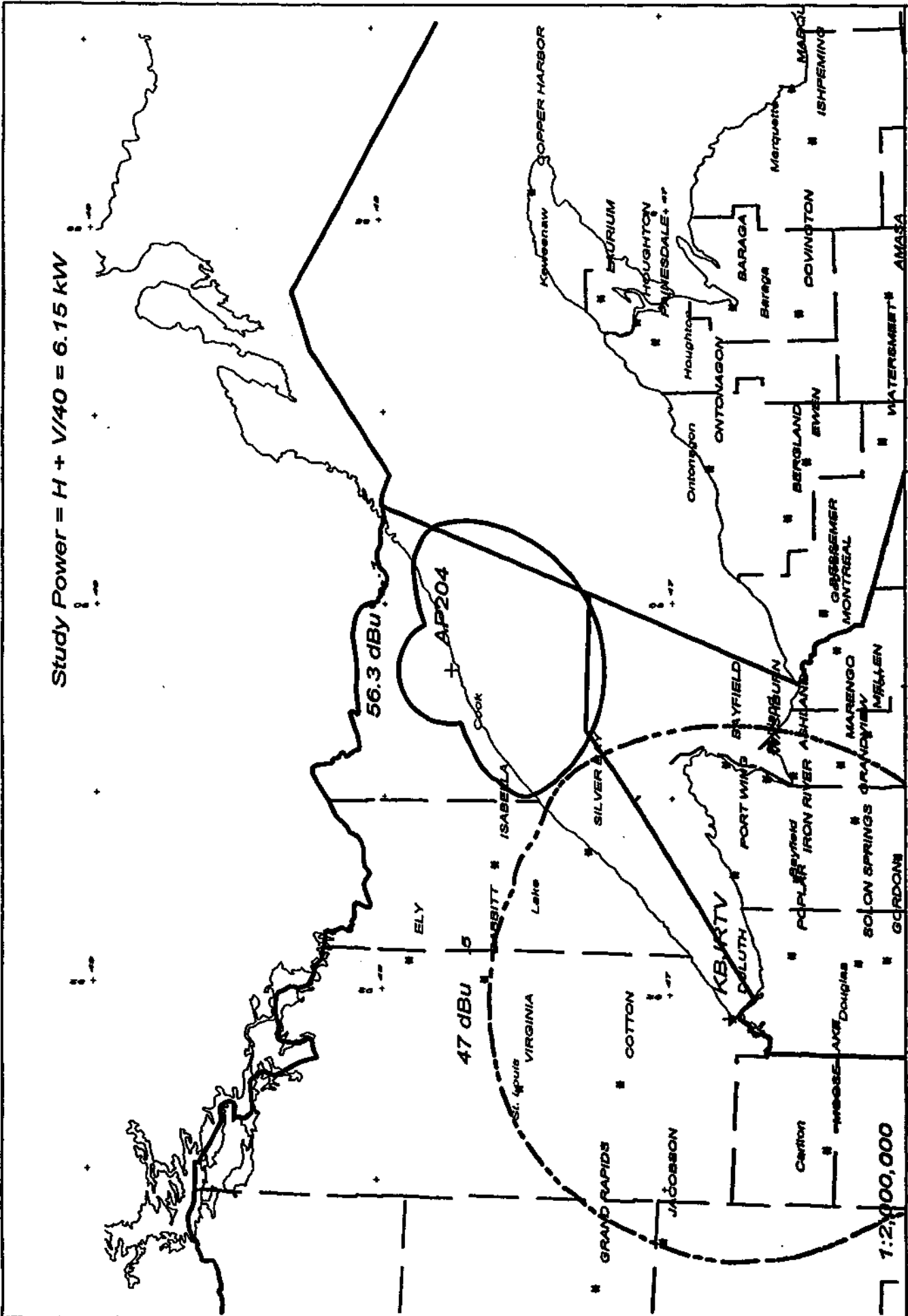
Under the **"AZIMUTH"** column, the first row of numbers indicate the bearings from true north of the data base stations in relationship with the reference station, while the numbers in the second row indicate the reverse bearings from the database station to the reference station.

The columns labeled **"INT"** and **"PRO"** hold the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships the **"IN"** and **"OUT"** columns change their significance. The letter **"R"** stands for the minimum required distance in kilometers, while the letter **"M"** in the next column follows the available clear space separation in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement.

The first three letters of the **"TYPE"** column identify the current FCC status of the stations. The fourth letter will be a **"D"** or **"Z"** (Sec. 73.215) if the facility is directional. The fifth letter will be an **E, H** or **V** depending on the type of antenna polarization. The sixth letter will be a **"Y"** if the antenna uses beam tilt.

Study Power =  $H + V/40 = 6.15 \text{ kW}$

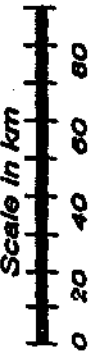


AP204 Channel Six

K Michler - 03/00

AP204 204C3 6.15kW 455M AMSL

N. Lat. 47 46 04 W. Lng. 90 20 47



1:2,000,000

Doug Vernier Telecommunications Consultants  
 Minnesota Public Radio, Channel Six Interference Contour, Ch. 204

ERP = 6 kW  
 Channel = 204

Azimuth Deg.T.	Ave. Elev. 3 to 16 km Meters AMSL	Effective Antenna Height Meters AAT	ERP (dBk)	F(50-10) Distance to 56.3 dBu Contour km
0	541.9	-4.9	7.782	20.42
10	532.1	4.9	7.782	20.42
20	515.6	21.4	7.782	20.42
30	507.7	29.3	7.782	20.42
40	494.6	42.4	7.782	24.26
50	475.1	61.9	7.782	29.40
60	422.4	114.6	7.782	40.82
70	329.6	207.4	7.782	52.41
80	228.1	308.9	7.782	61.97
90	195.5	341.5	7.782	65.08
100	185.1	351.9	7.782	66.06
110	183.2	353.8	7.782	66.24
120	183.0	354.0	7.782	66.25
130	183.0	354.0	7.782	66.25
140	183.0	354.0	7.782	66.25
150	183.0	354.0	7.782	66.25
160	183.0	354.0	7.782	66.25
170	183.0	354.0	7.782	66.25
180	183.0	354.0	7.782	66.25
190	183.0	354.0	7.782	66.25
200	183.0	354.0	7.782	66.25
210	183.2	353.8	7.782	66.24
220	184.5	352.5	7.782	66.12
230	190.2	346.8	7.782	65.58
240	211.5	325.5	7.782	63.54
250	320.0	217.0	7.782	53.47
260	425.1	111.9	7.782	40.38
270	466.3	70.7	7.782	31.49
280	478.9	58.1	7.782	28.52
290	487.1	49.9	7.782	26.40
300	505.0	32.0	7.782	21.06
310	518.5	18.5	7.782	20.42
320	524.5	12.5	7.782	20.42
330	527.4	9.6	7.782	20.42
340	534.6	2.4	7.782	20.42
350	540.3	-3.3	7.782	20.42
Ave. =	343.2 M	193.8 M		

Antenna Radiation Center AMSL = 537 M  
 NGDC 03 Arc Sec.

Geographic Coordinates:

N. Lat. 47 46 04  
 W. Lng. 90 20 47

Doug Vernier Telecommunications Consultants  
 KBJRTV, KBJR LICENSE, INC. , BLCT2419

ERP = 100 kW  
 Channel = 06+

Azimuth Deg.T.	Ave. Elev. 3 to 16 km Meters AMSL	Effective Antenna Height Meters AAT	ERP (dBk)	F(50-50) Distance to 47 dBu Contour km
0	420.7	189.3	20.000	93.01
10	411.8	198.2	20.000	93.91
20	389.6	220.4	20.000	96.09
30	373.2	236.8	20.000	97.68
40	322.3	287.7	20.000	102.50
50	237.4	372.6	20.000	109.02
60	185.7	424.3	20.000	113.54
70	183.0	427.0	20.000	113.78
80	183.0	427.0	20.000	113.78
90	183.0	427.0	20.000	113.78
100	183.0	427.0	20.000	113.78
110	183.0	427.0	20.000	113.78
120	183.0	427.0	20.000	113.78
130	183.0	427.0	20.000	113.78
140	183.3	426.7	20.000	113.75
150	186.7	423.3	20.000	113.45
160	192.9	417.1	20.000	112.89
170	195.8	414.2	20.000	112.63
180	196.6	413.4	20.000	112.56
190	197.8	412.2	20.000	112.45
200	189.8	420.2	20.000	113.17
210	190.1	419.9	20.000	113.14
220	230.5	379.5	20.000	109.59
230	353.4	256.6	20.000	99.61
240	385.1	224.9	20.000	96.53
250	391.9	218.1	20.000	95.87
260	397.2	212.8	20.000	95.36
270	403.0	207.0	20.000	94.79
280	414.9	195.1	20.000	93.60
290	429.6	180.4	20.000	92.09
300	432.6	177.4	20.000	91.77
310	436.0	174.0	20.000	91.41
320	428.0	182.0	20.000	92.26
330	424.2	185.8	20.000	92.65
340	423.6	186.4	20.000	92.72
350	427.1	182.9	20.000	92.35
Ave. =	298.1 M	311.9 M		

Antenna Radiation Center AMSL =610 M  
 NGDC 03 Arc Sec.

Geographic Coordinates:

N. Lat. 46 47 21  
 W. Lng. 92 06 51



**EXHIBIT # E8**

**R.F. RADIATION COMPLIANCE STATEMENT**

**Channel 204 – 6 kW H & V  
Grand Marais, Minnesota**

**March, 2000**

The applicant's proposed power is 6 kW, however another application is being filed to use the same antenna in diplex that will raise the total ERP to 12 kW. The proposed antenna will have a center of radiation of 82 meters above ground. Using the formulas expressed in the OET Bulletin, No. 65, August 1997, "Evaluating Compliance with F.C.C. Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", published by the Federal Communication Commission's Office of Science and Engineering, and then by applying a combination of the element and array pattern as defined in E.P.A. study PB85-245868 ("Engineering Assessment of the Potential Impact of the Federal Radiation Protection Guidance on the AM, FM and TV Broadcast Services") a total, head height, non-ionization radiation level of .626 microwatts per square centimeter was calculated. This calculation uses the Shively 6800 series element and array patterns in the same format as measured by the E.P.A. The calculated value amounts to only .3132 percent of the maximum for an uncontrolled area. (200 microwatts per centimeter maximum.)

Since the total power into the antenna produces less than one percent of the maximum for an uncontrolled area at head height additional analysis was deemed unnecessary. The applicant will protect workers on the tower by either reducing ERP or terminating transmission. An agreement is in effect with the other users of this tower at this location to reduce power or to terminate operations to protect workers from receiving in excess of the Commission's standard.

Consequently, it appears that the proposed FM station will be in full compliance with the Commission's rules and regulations with regard to human exposure to radiofrequency electromagnetic fields.

**SECTION VI - EQUAL EMPLOYMENT OPPORTUNITY PROGRAM**

Does the applicant propose to employ five or more full-time employees?

Yes  No

If Yes, the applicant must include an EEO program called for in the separate Broadcast Equal Employment Opportunity Program Report (FCC Form 396-A). (See also 47 C.F.R. Section 73.2080.)

**SECTION VII - CERTIFICATIONS**

1. Has or will the applicant comply with the public notice requirements of 47 C.F.R. Section 73.3580?

Yes  No  
 Not applicable (minor change)

2. By checking Yes, the applicant certifies that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

Yes  No

The APPLICANT hereby waives any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)

The APPLICANT acknowledges that all the statements made in this application and attached Exhibits are considered material representations, and that all Exhibits are a material part hereof and incorporated herein.

The APPLICANT represents that this application is not filed for the purpose of impeding, obstructing, or delaying determination on any other application with which it may be in conflict.

In accordance with 47 C.F.R. Section 1.65, the APPLICANT has a continuing obligation to advise the Commission, through amendments, of any substantial and significant changes in information furnished.

I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name Minnesota Public Radio	Signature <i>William Haddeland</i>
Title Senior Vice President	Date 3/13/00
Typed or Printed Name of Person Signing William Haddeland	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).