

## Schedule of Program Sources

### National Public Radio

The following programs are produced and distributed by NPR in Washington, DC

Morning Edition and All Things Considered with regional segments from Minnesota Public Radio's News and Information Station staff.

Talk of the Nation, Weekend Edition, Weekend All Things Considered,

The following programs are distributed by National Public Radio and produced by the stations listed

Fresh Air and Fresh Air Weekend from WHYY, Philadelphia

Car Talk from WBUR, Boston

Only a Game from WBUR, Boston

Selected Shorts from WNYC, New York

### Public Radio International

The following programs are distributed by Public Radio International and produced by the stations listed

Marketplace from KUSC, Los Angeles

The World from WGBH, Boston and the British Broadcasting Corporation, London

As it Happens from the Canadian Broadcasting Corporation, Toronto, Ontario

The BBC World Service from the British Broadcasting Corporation, London

The Savvy Traveler from KUSC, Los Angeles

On Your Health from WHA/Wisconsin Public Radio, Madison, WI

This American Life from WBEZ, Chicago

Whad'Ya Know from WHA/Wisconsin Public Radio, Madison, WI

This Morning from the Canadian Broadcasting Corporation, Toronto, Ontario

The following programs are produced by Minnesota Public Radio and distributed by Public Radio International

Sound Money from MPR

The Splendid Table from MPR and Tom Voegeli Productions

A Prairie Home Companion from MPR

Future Tense from MPR

The following programs are produced by Minnesota Public Radio and only carried on the stations of MPR

Midmorning from MPR

Midday from MPR

# News & Information Schedule )))

KNOW 91.1fm Minneapolis/St. Paul

KNCM 88.5fm Appleton • KNBJ 91.3fm Bemidji/Grand Rapids • KLNI 88.7fm Decorah, IA • WSCN 100.5fm Duluth/Superior  
 KCCD 90.3fm Fargo/Moorhead • KXLC 91.1fm La Crescent/La Crosse • KZSE 90.7fm Rochester • KNSR 88.9fm St. Cloud/Collegeville  
 KNGA 91.5fm St. Peter/Mankato • KNTN 102.7fm Thief River Falls • WIRN 92.5fm Virginia/Hibbing  
 KNSW 91.7fm Worthington/Marshall

	Weekdays	Saturday	Sunday	
5 AM				5 AM
6 AM	Morning Edition* with Bob Potter in St. Paul and Bob Edwards in Washington, D.C.	BBC World Service	BBC World Service	6 AM
7 AM				7 AM
8 AM		Weekend Edition* with Maryann Sullivan in St. Paul and Scott Simon in Washington, D.C.	Weekend Edition* with Maryann Sullivan in St. Paul and Liane Hansen in Washington, D.C.	8 AM
9 AM				9 AM
10 AM	Midmorning with John Rabe			10 AM
11 AM		Sound Money* with Bob Potter	Fresh Air Weekend with Terry Gross	11 AM
NOON	Midday with Gary Eichten Noon Speeches, Features, Call-ins	Car Talk with Tom and Ray Magliozzi	Car Talk with Tom and Ray Magliozzi	NOON
1 PM		The Savvy Traveler with Rudy Maxa	A Prairie Home Companion* with Garrison Keillor	1 PM
2 PM	Talk of the Nation with Ray Suarez	On Your Health with Zorba Paster		2 PM
3 PM		The Splendid Table with Lynne Rossetto Kasper	Whad'Ya Know with Michael Feldman	3 PM
4 PM	All Things Considered* with Lorna Benson in St. Paul, and Linda Wertheimer, Noah Adams and Robert Siegel in Washington, D.C.	Only a Game with Bill Littlefield		4 PM
5 PM		All Things Considered	All Things Considered*	5 PM
6 PM		A Prairie Home Companion* with Garrison Keillor	Sound Money* with Bob Potter	6 PM
7 PM	Marketplace with David Brancaccio		The Savvy Traveler with Rudy Maxa	7 PM
8 PM	The World	This American Life with Ira Glass	The Splendid Table with Lynne Rossetto Kasper	8 PM
9 PM	Fresh Air with Terry Gross	Fresh Air Weekend with Terry Gross	This Morning with Michael Enright and Avril Benoit	9 PM
10 PM	Midday	Selected Shorts		10 PM
11 PM	As It Happens with Mary Lou Finlay and Barbara Budd			11 PM
12 AM	BBC Outlook			12 AM
1 AM				1 AM
2 AM	BBC World Service	BBC World Service	BBC World Service	2 AM
3 AM				3 AM
4 AM				4 AM
5 AM				5 AM

WCCO 91.1fm (Worthington, MN) broadcasts a mix of programs selected from both the classical music and news schedules. Broadcasts are heard one to three hours later than scheduled. Call NPR's Member/Listener Services (1-800-228-7123) for a copy of WCCO's schedule.

**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  Yes  No  
 filing window?  
 If Yes, specify closing date: \_\_\_\_\_

Purpose of Application: (check appropriate boxes)

- |                                                                                                      |                                                                                            |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Construct a new (main) facility See Ex #E1 Engineering Statement | <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 type="checkbox"/> Antenna supporting structure height                      | <input type="checkbox"/> Effective radiated power  |
| <input type="checkbox"/> Antenna height above average terrain                     | <input type="checkbox"/> Frequency                 |
| <input 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) \_\_\_\_\_

**1. Allocation:**

Channel No.	Principal community to be served:		
	County	City or Town	State
211	Freeborn	Austin	MN

- Class (check only one box below)
- A  B1  B  C3  
 C2  C1  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.

5.1 miles north of Myrtle and 9.12 miles southwest of Austin, MN

(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	43 °	38 '	27 "	Longitude	93 °	08 '	51 "
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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.

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.

3/23/98

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. KNBG837, KNDH318

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	.	'	"
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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.

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)	None		
(b)			

**Section V-B - FM BROADCAST ENGINEERING DATA (Page 3)**

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

- (1) Of the site above mean sea level; \_\_\_\_\_ 393 \_\_\_\_\_ meters
- (2) Of the top of supporting structure above ground *(including antenna, all other appurtenances, and lighting, if any)*; and \_\_\_\_\_ 127 \_\_\_\_\_ meters
- (3) Of the top of supporting structure above mean sea level [(a)(1) + (a)(2)]. \_\_\_\_\_ 520 \_\_\_\_\_ meters

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

- (1) Above ground; \_\_\_\_\_ 82 \_\_\_\_\_ meters (H)
- (2) Above mean sea level [(a)(1) + (b)(1)]; and \_\_\_\_\_ 82 \_\_\_\_\_ meters (V)
  - \* from vertical sketch to avoid rounding error \_\_\_\_\_ \*476 \_\_\_\_\_ meters (H)
  - \_\_\_\_\_ \*476 \_\_\_\_\_ meters (V)
- (3) Above average terrain. \_\_\_\_\_ 97 \_\_\_\_\_ meters (H)
- \_\_\_\_\_ 97 \_\_\_\_\_ 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.  
E3

\_\_\_\_\_ 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.  
E3

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.  
E4

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.  
E5

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.  
E6

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.  
E7

- (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 2,093 sq. km. Population 59,779

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%) 100%

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)

Exhibit No.  
N/A

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:

- (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 U.S.G.S.  Other (summarize)

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 #4	*	
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.  
N/A

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.  
E8

- (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.  
E8

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/A

(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 location.

Section V-B - FM BROADCAST ENGINEERING DATA (Page 7)

(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.  
E9

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.

(b) If No, explain briefly why not.

Exsiting 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 #E10 for RF Emissions 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 <i>Douglas L. Vernier</i>	Address (include ZIP Code) 1600 Picturesque Dr, Cedar Falls, IA 50613
Date <i>March 23, 1998</i>	Telephone No. (include Area Code) (319)266-8402

**FCC Form 340**

**Application for Authority to Construct a  
Noncommercial Educational FM Station  
for Austin, MN**

**Minnesota Public Radio**

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**CERTIFICATION OF SITE AVAILABILITY**

1. The applicant certified that it has reasonable assurance in good faith that the site or structure proposed in Section V-B, Item 2, FCC Form 340, as the location of its transmitting antenna, will be available to the applicant for applicant's intended purpose. Applicant will be leasing the site.

Yes

No

Thomas J Kigin  
Applicant's Signature

05/15/98  
Date

**EXHIBIT #E1  
ENGINEERING STATEMENT**

Concerning the Application of  
Minnesota Public Radio  
To Construct a New Non-Commercial Educational Radio Station  
To Serve Austin, Minnesota

March 1998

**Channel 211 A**

**6.0 kW**

This engineering statement supports the application filed Minnesota Public Radio to build a new non-commercial educational FM radio station to serve Austin, Minnesota and the surrounding area.

Under this proposal, a type approved, FM transmitter generates an output power of 3.44 kilowatts. The 1 1/4" Andrew HJ7-50, 50-ohm air Heliac transmission line, has an efficiency for its 91.44 meter length of 87.3 percent. Therefore, the proposed 3-bay, circularly polarized, directional antenna has at its input 3.0 kilowatts of power. The proposed antenna has a maximum power gain of 2.0 resulting in a maximum effective radiated power of 6.0 kW.

**Tower Vertical Sketch:**

Exhibit #E2 is a vertical sketch of the existing authorized tower showing the proposed 126.5 meter tower and the proposed side mounted 3-bay circularly polarized antenna. The applicant has notified the FAA of its intent to locate on the tower.

**Directional Antenna:**

Exhibit #E3 contains information regarding the directional antenna pattern proposed by the applicant.

**Studio Exhibit:**

Exhibit #E4 is a studio exhibit which requests waiver of the main studio rule, (Sec 73.1125.)

**Inter-modulation and blanketing:**

Exhibit #E5 is an exhibit describing the possible effects of inter-modulation and blanketing.

**Site Map:**

Exhibit #E6 is full scale section of a 1:24,000 scale U.S. Geological Survey topographic quadrangle map (Hayward Quadrangle) showing the exact transmitter location.

**Coverage Map**

Exhibit #E7 is a map of the proposed one mV/m (60 dBu) signal contour. Austin, 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 area within the proposed one mV/m contour amount 2,093 square kilometers. This figure was determined using numerical calculus. The distance to the one mV/m signal contour along each of 360 evenly spaced radial azimuths was squared and then the average of the sum of these distances was calculated. The resulting average radius squared was then multiplied by  $\pi$  to determine the area within the contour. The population within the 60 dBu service contour was determined to be 59,779 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 #4 of this exhibit.)

**Allocation Study:**

Exhibit #E8, is a single channel, contour to contour, allocation study showing that interference is neither caused nor received by an FM radio station or construction permit. Page # 2 of this exhibit is a narrative explaining the procedures and conventions used in the study. Page # 3, 4 and 5 compose an allocation study map and an FMOVER tabulation showing the relationship between the applicant's proposal and station WOIFM Ames, Iowa.

**Channel-Six Television Protection:**

Exhibit #E9 contains a calculation using the 1990 US Census, of the population within the

predicted interference area. Page #2 is channel-six interference map study (American Indian Areas, Counties, County Subdivisions and Places) which plots the interference area predicted to be caused KAALTV, Austin under the provisions of Section 73.525 of the Commission's rules. There are no other full-service channel-six television stations within the cutoff distance. Page #3 - 4 is a tabular printout of the predicted distances to the relevant contours used in the study. The population within the predicted interference contour does not exceed 3,000 people.

**R.F. Hazard compliance:**

Exhibit #E10 shows compliance with the Commission's R.F. emission's standards.

Page #5 of this exhibit (Ex. # E1.) is a declaration made by the preparer, Doug Vernier, attesting to his qualifications.

TERRAIN AND CONTOUR DATA  
CH 211 - Austin, MN

ERP = 6 kW  
FM - 2-6 Tables 03 Sec

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	380.9	94.6	7.782	27.6
10	382.5	93.0	7.782	27.3
20	386.4	89.1	7.782	26.8
30	386.9	88.6	7.782	26.7
40	385.3	90.2	7.782	26.9
50	383.1	92.4	7.782	27.3
60	380.2	95.3	7.782	27.7
70	372.7	102.8	7.782	28.7
80	370.6	104.9	7.782	28.9
90	369.7	105.8	7.782	29.0
100	366.4	109.1	7.782	29.5
110	364.0	111.5	7.445	29.2
120	365.5	110.0	6.277	27.4
130	371.4	104.1	5.250	25.3
140	372.1	103.4	3.973	23.6
150	375.6	99.9	2.899	21.9
160	379.9	95.6	2.365	20.8
170	381.2	94.3	1.761	20.0
180	381.2	94.3	1.761	20.0
190	384.1	91.4	1.761	19.6
200	385.3	90.2	1.761	19.5
210	385.4	90.1	2.267	20.1
220	379.6	95.9	2.899	21.5
230	374.6	100.9	3.474	22.7
240	376.9	98.6	4.609	23.9
250	380.4	95.1	6.236	25.5
260	374.4	101.1	7.200	27.6
270	377.5	98.0	7.685	27.9
280	379.4	96.1	7.782	27.8
290	385.5	90.0	7.782	26.9
300	388.1	87.4	7.782	26.5
310	386.0	89.5	7.782	26.8
320	380.9	94.6	7.782	27.6
330	378.5	97.0	7.782	27.9
340	377.2	98.3	7.782	28.1
350	378.7	96.8	7.782	27.9

Ave. = 378.6 M                      96.9 M

Antenna Radiation Center AMSL = 475.5 M

Geographic Coordinates:

North latitude: 43 38 27

West longitude: 93 08 51



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 24 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;

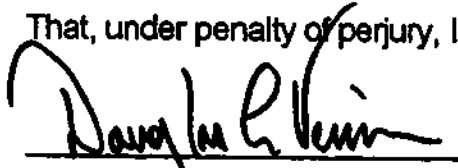
That, I am certified as a Professional Broadcast Engineer (#50258) by the Society of Broadcast Engineers, Indianapolis, Indiana. (Re-certified 11/95.)

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

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

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.

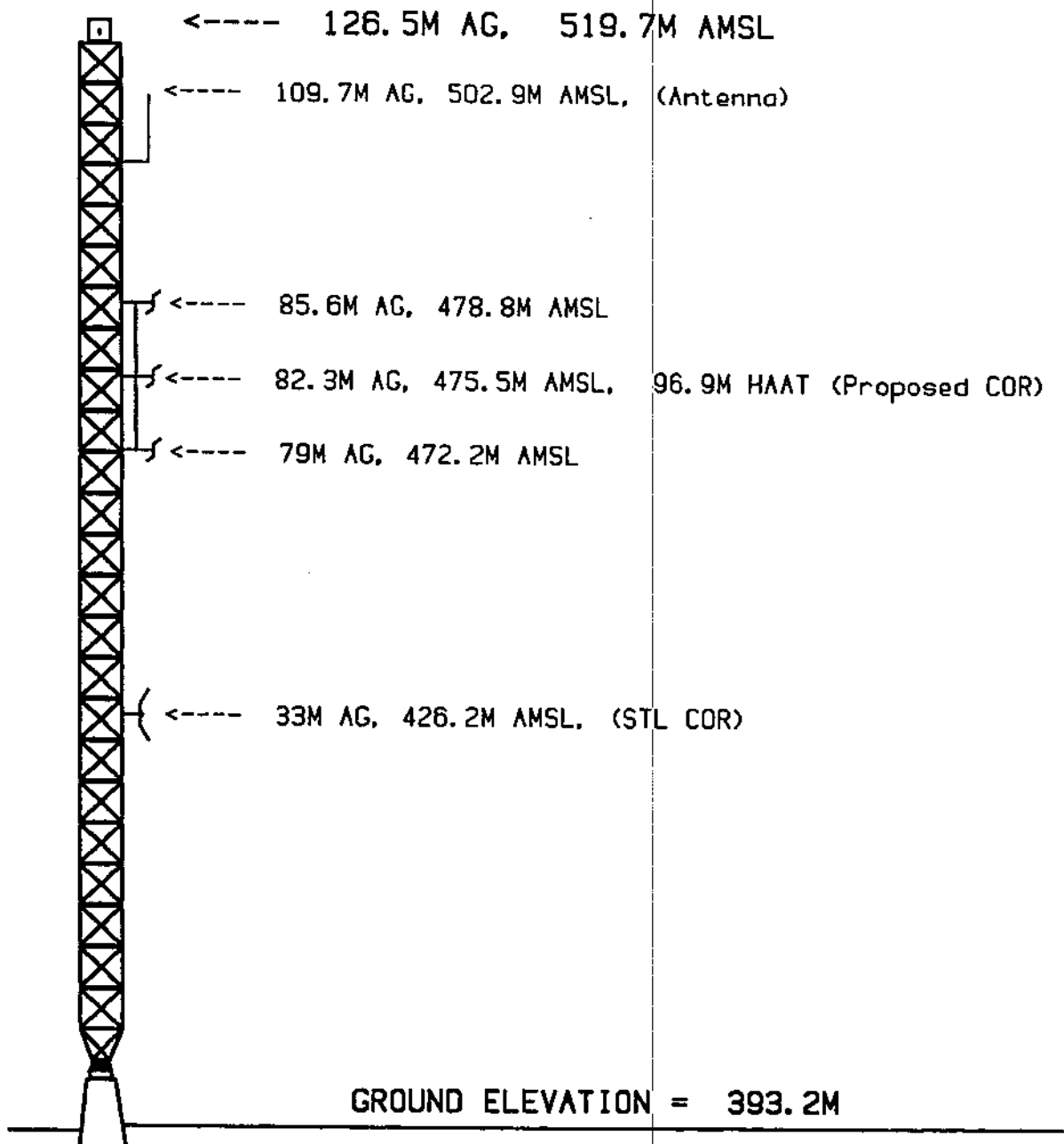
  
\_\_\_\_\_  
Douglas L. Vernier

  
Executed on March 23, 1998

Subscribed and sworn before me this 23rd day of March, 1998

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

My Commission Expires 8-10-98



**VERTICAL SKETCH**

N. Lat. 43 38 27  
 W. Lng. 93 08 51

-----  
 Existing Authorized Tower

-----  
 (Not to Scale)

**EXHIBIT #E2**

CH 211 - HAAT = 96.9M  
 Power = 6 kW DA  
 Austin, Minnesota

-----  
 March '98

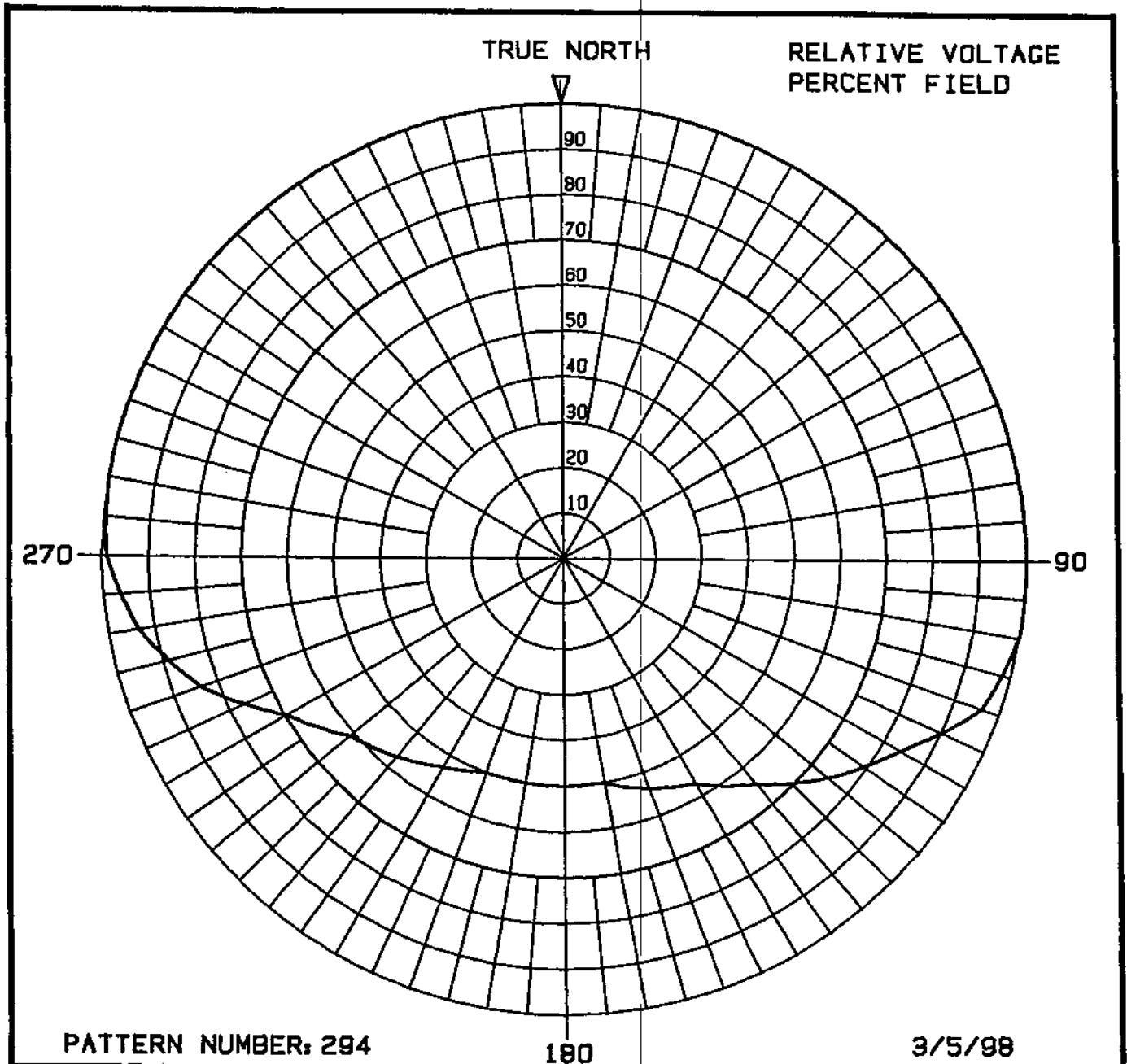
DOUG VERNIER  
 BROADCAST CONSULTANT  
 1600 PICTURESQUE DR.  
 CEDAR FALLS, IA 50613  
 319 266-8402

Exhibit # E3

**Directional Antenna**

The proposed custom directional antenna pattern meets the Commission's rules in that the radio frequency radiation does not change more than two dB for each ten degrees of azimuthal variation. Also, the maximum pattern attenuation in the deepest null is less than 15 dB. The pattern shown is a composite of the maximum field values in the horizontal and vertical planes.

The proposed antenna will be mounted on the sides of a tower that has been specified by the antenna manufacturer in accordance with the instructions provided by the manufacturer. The antenna will not be mounted on the top of a tower that includes a top mounted platform larger than the nominal cross-sectional area of the tower in the horizontal plane. No other antennas of any type will be mounted on the same tower level as the directional antenna nor within the horizontal or vertical distance specified by the manufacturer as being necessary to maintain proper directional operation. The antenna will be designed and tested by a major manufacturer of broadcast antennas known to the Commission. The pattern will be achieved through traditional methods including power splitting between panels and through phasing.



CUSTOM COMPOSITE DIRECTIONAL ANTENNA PATTERN  
CH 211 - Austin, MN

-----  
Minnesota Public Radio  
-----

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

## Pattern #294

CUSTOM COMPOSITE DIRECTIONAL ANTENNA PATTERN  
CH 211 - Austin, MN-----  
Minnesota Public Radio-----  
Doug Vernier, Telecommunications Consultants  
1600 Picturesque Dr.  
Cedar Falls, IA 50613

Azimuth	Relative Voltage	dBK	ERP
0	1.000	7.8	6.00kw
5	1.000	7.8	6.00kw
10	1.000	7.8	6.00kw
15	1.000	7.8	6.00kw
20	1.000	7.8	6.00kw
25	1.000	7.8	6.00kw
30	1.000	7.8	6.00kw
35	1.000	7.8	6.00kw
40	1.000	7.8	6.00kw
45	1.000	7.8	6.00kw
50	1.000	7.8	6.00kw
55	1.000	7.8	6.00kw
60	1.000	7.8	6.00kw
65	1.000	7.8	6.00kw
70	1.000	7.8	6.00kw
75	1.000	7.8	6.00kw
80	1.000	7.8	6.00kw
85	1.000	7.8	6.00kw
90	1.000	7.8	6.00kw
95	1.000	7.8	6.00kw
100	1.000	7.8	6.00kw
105	0.981	7.6	5.77kw
110	0.962	7.4	5.55kw
115	0.902	6.9	4.88kw
120	0.841	6.3	4.24kw
125	0.794	5.8	3.78kw
130	0.747	5.2	3.35kw
135	0.696	4.6	2.91kw
140	0.645	4.0	2.50kw
145	0.608	3.5	2.21kw
150	0.570	2.9	1.95kw
155	0.553	2.6	1.83kw
160	0.536	2.4	1.72kw
165	0.518	2.1	1.61kw
170	0.500	1.8	1.50kw
175	0.500	1.8	1.50kw

## Pattern #294

CUSTOM COMPOSITE DIRECTIONAL ANTENNA PATTERN  
CH 211 - Austin, MN-----  
Minnesota Public Radio  
-----Doug Vernier, Telecommunications Consultants  
1600 Picturesque Dr.  
Cedar Falls, IA 50613

Azimuth	Relative Voltage	dBK	ERP
180	0.500	1.8	1.50kw
185	0.500	1.8	1.50kw
190	0.500	1.8	1.50kw
195	0.500	1.8	1.50kw
200	0.500	1.8	1.50kw
205	0.515	2.0	1.59kw
210	0.530	2.3	1.69kw
215	0.550	2.6	1.82kw
220	0.570	2.9	1.95kw
225	0.590	3.2	2.09kw
230	0.609	3.5	2.23kw
235	0.651	4.1	2.55kw
240	0.694	4.6	2.89kw
245	0.766	5.5	3.52kw
250	0.837	6.2	4.20kw
255	0.886	6.7	4.71kw
260	0.935	7.2	5.25kw
265	0.962	7.4	5.55kw
270	0.989	7.7	5.87kw
275	0.994	7.7	5.93kw
280	1.000	7.8	6.00kw
285	1.000	7.8	6.00kw
290	1.000	7.8	6.00kw
295	1.000	7.8	6.00kw
300	1.000	7.8	6.00kw
305	1.000	7.8	6.00kw
310	1.000	7.8	6.00kw
315	1.000	7.8	6.00kw
320	1.000	7.8	6.00kw
325	1.000	7.8	6.00kw
330	1.000	7.8	6.00kw
335	1.000	7.8	6.00kw
340	1.000	7.8	6.00kw
345	1.000	7.8	6.00kw
350	1.000	7.8	6.00kw
355	1.000	7.8	6.00kw

FIELD ELEVATION PATTERN  
1 WAVE LENGTH BAY SPACING

