Doug Vernier
1600 Picturesque Drive
Cedar Falls, Iowa 50613
Telecommunication Consultants

EXHIBIT #E1
ENGINEERING STATEMENT

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

November 1998

Channel 209 A **6.0 kW H & V**

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

Under this proposal, a type approved, FM transmitter generates an output power of 3.49 kilowatts. The power is fed through a T-combiner assembly having an approximate efficiency of 97.2 percent. The Andrew HJ7-50A, 50-ohm air Heliax transmission line, has an efficiency for its 83 meter length of 88.4 percent. Therefore, the proposed 4-bay, circularly polarized 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 authorized 91.4 meter tower and the proposed side mounted 4-bay circularly polarized antenna.

Studio Exhibit:

Exhibit #E3 is a studio exhibit which requests waiver of the main studio rule, (Sec 73.1125.)

Inter-modulation and blanketing:

Exhibit #E4 is an exhibit describing the possible effects of inter-modulation and blanketing.

Phone: (319) 266-8402 E-mail: dvernier@v-soft.com Fax: (319) 266-9212

Site Map:

Exhibit #E5 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 #E6 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 area within the proposed one mV/m contour amount 4,206 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 π to determine the area within the contour: The population within the 60 dBu service contour was determined to be 2,632 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 #E7, 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 have be met or exceeded.

Channel-Six Television Protection:

Exhibit #E8 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, worst case, Section 73.599, Figure #1, 73.3 dBu F(50-10) interference signal contour (6 dB receiving

antenna directivity credit used) using the mixed polarization study power of 6.15 kW (6.0 + 40/6.0). There is no overlap of this interference signal contour with the 47 dBu, Grade B signal contour of KBJRTV Pages #3 - 4 are tabular printouts of the predicted distances to the relevant contours used in the study. Consequently, this proposal complies with the Commission's runes in Section 73.525 with regard to protection of channel-six TV stations from interference.

R.F. Hazard compliance:

Exhibit #E9 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.

Doug Vernier, Telecommunications Consultants
Minnesota Public Radio - CH 209 - Grand Marais, MN
ERP = 6 kW
Channel = 209

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	543.1	-3.6	7.782	15.75
10	541.5	-2.0	7.782	15.75
20	517.7	21.8	7.782	15.75
30	511.8	27.7	7.782	15.75
40	499.7	39.8	7.782	18.23
50	485.6	53.9	7.782	21.37
60	458.4	81.1	7.782	25.64
70	379.5	160.0	7.782	35.20
80	259.9	279.6	7.782	44.20
90	209.6	329.9	7.782	47.32
100	193.3	346.2	7.782	48.35
110	185.5	354.0	7.782	48.83
120	183.3	356.2	7.782	48.97
130	183.0	356.5	7.782	48.99
140	183.0	356.5	7.782	48.99
150	183.0	356.5	7.782	48.99
160	183.0	356.5	7.782	48.99
170	183.0	356.5	7.782	48.99
180	183.1	356.4	7.782	48.98
190	183.2	356.3	7.782	48.97
200	183.8	355.7	7.782	48.94
210	185.3	354.2	7.782	48.85
220	190.1	349.4	7.782	48.55
230	200.6	338.9	7.782	47.89
240	250.4	289.1	7.782	44.79
250	366.9	172.6	7.782	36.51
260	440.2	99.3	7.782	28.20
270	469.3	70.2	7.782	24.01
280	482.0	57.5	7.782	22.04
290	493.5	46.0	7.782	19.70
300	508.2	31.3	7.782	16.08
310	522.0	17.5	7.782	15.75
320	527.5	12.0	7.782	15.75
330	531.5	8.0	7.782	15.75
340	539.8	-.3	7.782	15.75
350	542.2	-2.7	7.782	15.75
Ave. =	352.3 M	187.2 M		

Antenna Radiation Center AMSL =539.5 M
NGDC 03 Arc Sec.

Geographic Coordinates:

N. Lat. 47 46 13
W. Lng. 90 21 06

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 of Saint 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.

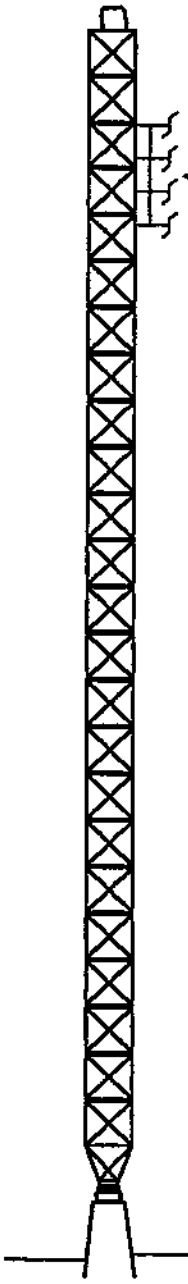
Douglas L. Vernier

Executed on November 23, 1998

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

Notary Public in and for the State of Iowa

My Commission Expires August 10, 2001



Tower height = 91.4M AG, 548.6M AMSL

<---- 82.3M AG, 539.5M AMSL, 187.18M HAAT (Proposed COR)

GROUND ELEVATION = 457.2M

VERTICAL SKETCH

N. Lat. 47 46 13
W. Lng. 90 21 06

(Not to Scale)

EXHIBIT #E2

CH209 6kW HAAT 187.18M
Minnesota Public Radio
Grand Marais

Nov '98

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

Exhibit #E3, Page 1
Main Studio Exhibit for Grand Marais, Minnesota

Minnesota Public Radio

Minnesota Public Radio ("MPR") proposes to construct and operate a new noncommercial educational FM station to serve Grand Marais, MN and the surrounding area. Its studios will be co-located with those of KNOW (FM) for which MPR is the licensee. That studio is located at 45 East Seventh Street, Saint Paul, MN 55101.

MPR is a nonprofit corporation formed for the purpose of providing noncommercial educational radio service to listeners in Minnesota and surrounding states. MPR's current 29 FM and one AM operating facilities provide 24 hours-per-day quality programming accessible to 98% of Minnesota's citizens, as well as to substantial numbers of listeners in North and South Dakota, Iowa, Wisconsin, Michigan, Idaho and southern Ontario. MPR provides programming to its network of stations from its primary Minneapolis/Saint Paul stations – KSJN (FM), Minneapolis, Minnesota, and KNOW (FM), Saint Paul, Minnesota, and from many of its network stations throughout the region. KNOW (FM) is an all news/information station and KSJN(FM) is a classical music station. The proposed station will be operated as a "news/information service" station in that it will primarily broadcast KNOW (FM).

MPR therefore requests a waiver of Section 73.1125 of the Commission's Rules to permit MPR to operate its proposed noncommercial educational FM station on Channel 209 at Grand Marais, MN, as a satellite station without a main studio in the community of license. As demonstrated below, grant of the instant waiver request would be in the public interest.

The Commission has issued decisions stating that the "main studio must, at a minimum, maintain full-time managerial and full-time staff personnel." Jones Eastern of the Outer Banks, Inc., FCC 91-175, released June 19, 1991, at ¶ 9; see also Salem Broadcasting, Inc., DA 91-804, released July 2, 1991.

Grant of this requested waiver is necessary to permit MPR to operate the proposed Grand Marais station as a "satellite" because the Grand Marais area could not otherwise support another wholly independent non-commercial educational FM station. The population of Grand Marais is only about 2,500. Because of this area's limited economic base, it is highly unlikely that a station with separate staff and studio could provide the same high quality public radio service that MPR proposes. Therefore, waiver of Section 73.1125 is necessary in this case to ensure that the residents of Grand Marais area receive the diverse and important programming MPR will provide.

The Commission has recognized the advantages accruing to noncommercial broadcasters from consolidated operations:

> In the past, we have recognized the benefits of centralized operations for noncommercial educational stations, given the limited funding available to these stations, and we have granted waivers to state and regional public television and radio networks to operate "satellite" stations that do not necessarily meet the

requirements of a main studio.

Main Studio Program Origination Rules, 3 FCC Rcd. 5024, 5027 (1988) (citing Nebraska Educational Television Commission, 4 R.R.2d 771 (1965). Indeed, the Commission has previously determined that waiver of the main studio rule for other stations in the MPR network serves the public interest. See Letter from Linda Blair, Chief, Audio Services Division to Todd M. Stansbury, dated May 31, 1996 (attached hereto); see also Letter from Dennis Williams, Assistant Chief, Audio Services Division to Todd M. Stansbury, dated November 6, 1995, File No. BPED-9508101A.

Upon grant of this request, MPR will satisfy the public needs and interests of residents of Grand Marais by the following means:

- MPR maintains a toll-free telephone line by which the residents of the Grand Marais area can reach MPR management to express concerns about the station operations. This toll-free telephone number goes into MPR's Member Listener Services (MLS) Department. MPR currently has 6 live phone lines and 7 full-time employees who answer the phones and emails. In the past year, MLS has handled about 60,000 incoming calls on every subject you can think of related to MPR, including comments and questions about programming on both services. In addition, MLS has handled about 9,000 email messages in the past year. While the number of phone lines and employees may change with time, MPR's commitment to maintain easy access is strong.

- MPR currently has one person in Saint Paul who is responsible for the final decisions on all programming on MPR stations. MPR has a news director and a classical music director who report to this person. Listener comments from MLS go to this person, who then distributes comments about the music service to the music programming people, and comments about news programming to the news programming director. Summaries of comments about both services are widely distributed throughout the company and to the Board. The current organizational structure may change with time, but the commitment to maintain control of programming and circulate listener opinions will not change.

- MPR has established a site on the World Wide Web (http://www.mpr.org) that enables local residents to receive extensive information regarding MPR's programming and provides a link for local residents to email concerns about the station operations to MPR management. The site contains descriptions of special reports, schedules for news and classical music programming, and on-line audio sources for MPR programming, including its radio series ***A Prairie Home Companion®***. In addition, MPR has established home pages on the MPR Web Site for its network stations. When the proposed station is constructed, MPR will add the proposed station to the Web Site list.

- MPR operates the largest news organization of any radio service in the Midwest. With this extensive news resource, MPR is able to produce news programming from throughout MPR's

service area and distribute it to all stations in the network. MPR's reporters located in nearby Duluth, MN and the newsroom staff in Saint Paul already subscribe to the local and area publications and maintain ongoing relationships with community residents and leaders, who are periodically contacted regarding local events and developments. MPR's reporters use information provided by these contacts to investigate events and to file news stories for broadcast by MPR either regionally or throughout the MPR multi-state network.

- MPR operates a traveling ***Mainstreet Radio®*** crew of four persons, which gathers and produces programming material from rural and small city locations such as the Grand Marais area throughout MPR's service area for broadcast through the network.

  All four Mainstreet reporters live and work outside of the Twin Cities of Minneapolis and Saint Paul, giving their stories a perspective that reflects their rural and small-town lifestyles - a perspective that is consciously not "metrocentric." ***Mainstreet Radio®*** has four goals:

  - To provide listeners throughout Minnesota with compelling stories, insights and perspectives from rural people and places,
  - To link the state in common understanding of rural issues and foster a sense of the shared destiny of all Minnesota
  - To provide a local and regional context for issues that are global and universal
  - To create a body of work that will help rural communities deal effectively with their issues

- MPR has received a grant from the Corporation for Public Broadcasting that has been used to test a pilot program called "Local Link" ™ . The purpose of Local Link is to enhance local news coverage in rural and small communities. This program, which is unique in public broadcasting, is currently in the implementation and testing stages and has recently been installed at several of MPR's stations. Local Link is enabling MPR to improve news programming in its small city markets, including Grand Marais. For example, one of the goals of Local Link is to allow reporters located at stations in the areas of the state outside of Minneapolis and Saint Paul to spend less time on-air reading the news and more time getting out in the region they cover working with their contacts and covering local and regional news.

For the foregoing reasons, MPR submits that it will be able to ascertain and satisfy the interests and need of residents of the Grand Marais area and, therefore, respectfully requests that the Commission grant this waiver of the main studio rule for the proposed station.

Prepared 12/02/98
Mitzi T Gramling

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C. 20554

96

IN REPLY REFER TO
180083-ALM

Todd M. Stansbury, Esq.
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D. C. 20006

Re: New FM Service in Appleton, Minnesota. File No. BPED-941108MB

Dear Mr. Stansbury:

The staff has under consideration the application of Minnesota Public Radio ("MPR") to construct a new noncommercial educational ("NCE") FM station in Appleton, Minnesota (File No. BPED-941108MB). MPR requests waiver of the Commission's main studio requirement, see 47 C.F.R. § 73.1125,[1] in order to operate the Appleton station as a satellite of its NCE station KNOW(FM), St. Paul, Minnesota. For the reasons set forth below, we will waive 47 C.F.R § 73.1125 and grant MPR's application for a construction permit.

Section 73.1125(a) requires each broadcast station to maintain a main studio within the station's principal community contour to ensure that the station will serve the needs and interests of the residents of its community of license. Amendment of Sections 73.1125 and 73.1130, 3 FCC Rcd 5024, 5027 (1988). However, under Section 73.1125(a)(4), the Commission will waive this requirement where "good cause" exists to do so and where the proposed studio location "would be consistent with the operation of the station in the public interest." Each waiver request by an NCE station seeking to operate as the satellite of another NCE station is considered on a case-by-case basis. The Commission has recognized the benefits of centralized operations for NCE stations, given their limited funding, and thus found "good cause" exists to waive the main studio location requirement where satellite operations are proposed. Id. A satellite station must, however, demonstrate that it will meet its local service obligation to satisfy the Section 73.1125 "public interest" standard. Id.

MPR's request is based on the economies of scale which would be realized by grant of its waiver. We agree and conclude that there is "good cause" to waive 47 C.F.R. § 73.1125(a)(4) in these circumstances. MPR proposes to operate the Appleton station as a satellite of KNOW(FM), St. Paul, Minnesota, approximately 110 miles from Appleton. Where there is a great distance between parent and satellite stations, as here, we are particularly concerned that the licensee take adequate measures to maintain its awareness of the satellite community's needs and interests. To that end, MPR has pledged to: (1) continue its policy that residents of each service area participate on a regional advisory council which

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[1] In relevant part, Section 73.1125 requires each broadcast station to maintain a main studio within its station's principal community contour.

provides input to management on programming issues of interest to the residents throughout MPR's service area, including Appleton; (2) continue its existing relationship with the community of Appleton which has been established by means of its existing station KRSU(FM), Appleton, Minnesota; (3) solicit comments from MPR members in Appleton concerning programming and station operation; (4) base a "beat" reporter in Appleton who will subscribe to local and area publications and maintain ongoing relationships with community residents and leaders, who will be periodically contacted regarding local events and developments; (5) maintain a toll-free telephone number for residents of Appleton to contact MPR management in accordance with 47 C.F.R. § 73.1125(c); and (6) operate a site on the World Wide Web which enables local residents to receive extensive information and comment on MPR's programming. We also remind MPR that it must maintain a public file for the new station in Appleton, as required by 47 C.F.R. § 73.3527(d). In these circumstances, we are persuaded that MPR will meet its local service obligations and thus, that grant of the requested waiver is consistent with the public interest.

Accordingly, the application of Minnesota Public Radio for a new noncommercial educational FM station in Appleton, Minnesota (File No. BPED-941108MB) and its request for waiver of 47 C.F.R. § 73.1125 ARE GRANTED. The authorization will be forwarded under separate cover.

Sincerely,

Risa Scanlan

for

Linda Blair, Chief
Audio Services Division
Mass Media Bureau

EXHIBIT #E4
Inter-modulation Interference
November 1998

Concerning the Application of
Minnesota Public Radio
Grand Marais, Minnesota

89.7 MHz

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

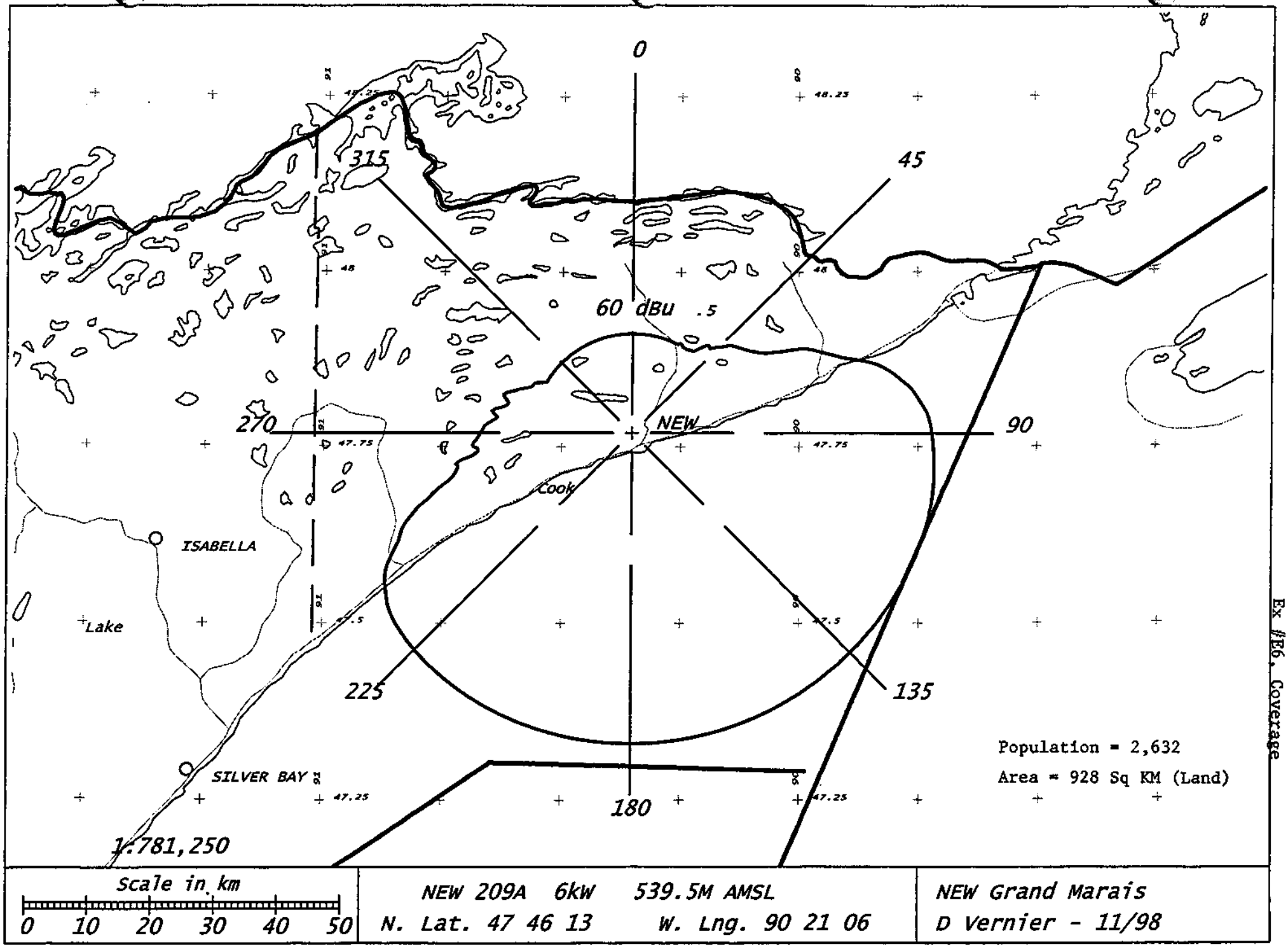
There is an FM station, two FM translators and four LPTV translators within ten kilometers of the proposed facility. Based on the Commission's records, the FM station is within the proposed blanketing contour of the local FM station and three of the LPTV stations are co-located on the applicant's proposed tower. In another application the applicant proposes to place an additional signal on the proposed tower at 88.7 MHz. Page #2 of this exhibit lists pertinent information as to the existing facilities and locations.

Since there is a local FM station within 400 meters of the proposed tower and since applicant proposes to add another FM signal in diplex with the proposed FM signal, it is possible for a signal mix of 1.0 MHz to exist. Without proper filtering, this signal mix 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.

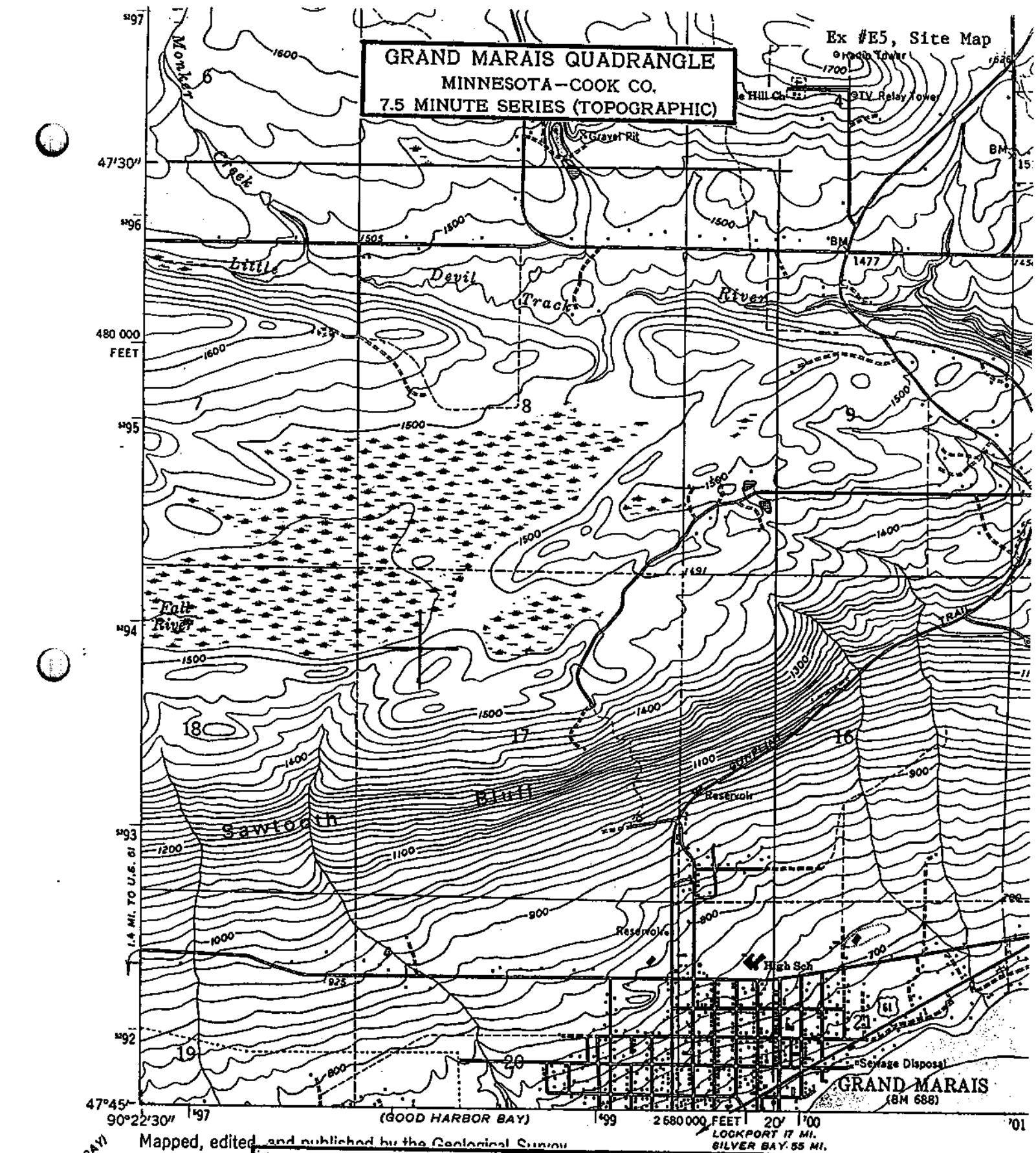
ID Stations Study at 47 46 13 N, 90 21 06 W, Search Distance = 10 km

Call	City	State	Chan.	Power	Coordinates
Dist-km	Azimuth	File Number			
AM ------- None Found ----------					
FM ----------					
WTIP	Grand Marais	MN	214C2	0025.000kW	474609N 902049W
000.4	109.4	BLED980615KD		FM	
K220BI	Grand Marais	MN	220D	0000.051kW	474535N 902036W
001.3	152.0	BLFT860910TC		FM	
K288BF	Grand Marais	MN	288D	0000.122kW	474535N 902036W
001.3	152.0	BLFT248		FM	
TV ----------					
K63BI	GRAND MARAIS	MN	63C	0000.818kW	474613N 902106W
000.0	000.0	BLTT790620IB		TV	
K65BJ	GRAND MARAIS	MN	27C	0000.818kW	474613N 902106W
000.0	000.0	BPTTLJG0601RS		TV	
K67CT	GRAND MARAIS	MN	67C	0000.819kW	474613N 902106W
000.0	000.0	BLTT830725IA		TV	
K65BJ	GRAND MARAIS	MN	65C	0000.818kW	474613N 902106W
000.0	000.0	BLTT781129IB		TV	
W61AF	GRAND MARAIS	MN	11C	0001.000kW	474609N 902049W
000.4	109.4	BPTVLJG0601ZZ		TV	
W61AF	GRAND MARAIS	MN	61C	0000.818kW	474609N 902049W
000.4	109.4	BLTT2143		TV	



Ex #B6, Coverage

Ex #E5, Site Map



Mapped, edited, and published by the Geological Survey

Control by USGS a

Topography from a
Aerial photograph

Selected hydrogra
Survey Chart 97 (
navigational purpose

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

DEPTH CURVES AND SOUNDINGS IN FE

Polyconic projection. 1927 North American Datum

UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES

11-21-1998 DOUG VERNIER TELECOMM CONSULTANTS 319 266-8402

CH# 209A A I - 89.7 MHz

Minnesota Public Radio

INTERFERENCE CHECKS WITH NEW, GRAND MARAIS, MN at N. LAT. 47 46 13 W. LNG. 90 21 06

PWR = 6 kW H.A.A.T. = 187 M C.O.R. = 540 M AMSL

Protected F(50-50) 60 dBu = 37.79 km

F(50-10) 40 dBu = 99.14 54 dBu = 55.98 80 dBu = 12.44 100 dBu = 3.55

CH# CALL	TYPE	* IN *	* OUT *	BEARING	DISTANCE	LAT.	PWR(kW)	INT(km)	PRO(km)
CITY	STATE	LICENSEE		<---		LNG.	HAAT(M)	COR(M)	FILE #
207B CBON20	OP CN	78.0 R	42.7 M	43.5	120.68 km	48 33 02	27.50	17.48	62.06
Thunder Bay	ON			223.5	74.99 Mi	89 13 25	173.0	0	
207A WNCB	LI CN	125.9	132.8	231.2	172.45 km	46 47 14	2.40	8.71	27.21
Duluth	MN	North-Central Christian Br		51.2	107.16 Mi	92 06 53	145.0	449	BLED930712KA
FCC Comment > Proposed to Canada as B1 on 911011-Accepted by Canada 911107									
207A WNCB.C	CP CN	125.9	132.8	231.2	172.45 km	46 47 14	2.40	8.71	27.21
Duluth	MN	North-Central Christian Br		51.2	107.16 Mi	92 06 53	145.0	450	BPED980304ID
FCC Comment > Proposed to Canada as B1 on 911011-Accepted by Canada 911107									
208D K208CR	LI CN	70.9	54.4	277.3	114.19 km	47 53 24	0.02	5.54	3.85
Ely	MN	Minnesota Public Radio		97.3	70.95 Mi	91 51 59	0.0	507	BLFT971112TC
FCC Comment > Translator for WIRR, Virginia-Hibbing, MN.									
208D W208AL	LI DCN	99.0	83.8	173.3	146.90 km	46 27 28	0.02	10.07	7.11
Ironwood-Bessemer	MI	Northwestern College		353.3	91.28 Mi	90 07 42	104.0	542	BLFT950926TF
FCC Comment > Translator For KDNW, Duluth, MN									
210C2 WHSA	LI CN	57.1	63.8	212.8	171.75 km	46 27 59	38.00	76.86	51.97
Brule	WI	State of Wisconsin Educati		32.8	106.72 Mi	91 33 56	168.0	525	BLED1040
211A CBLAFM	OP CN	51.0 R	94.5 M	320.6	145.46 km	48 46 23	2.90	6.74	29.69
Atikokan	ON			140.6	90.38 Mi	91 36 38	81.0	0	
212B AL212	AL	69.0 R	139.4 M	47.4	208.37 km	49 01 00	50.00	5.95	64.92
Nipigon	ON			227.4	129.48 Mi	88 15 00	150.0	0	
212C2 WHBMFM	LI CN	159.9	149.8	178.3	202.97 km	45 56 43	17.50	5.29	49.60
Park Falls	WI	State of Wisconsin Ed. Com		358.3	126.12 Mi	90 16 28	222.0	694	BLED881108KA

I.F. RELATIONSHIPS: NONE FOUND

Nearest CH 6 Grade B =KBJRTV at 63.12 km, Distance= 172.28 Azimuth = 231.3 Deg. T.

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.

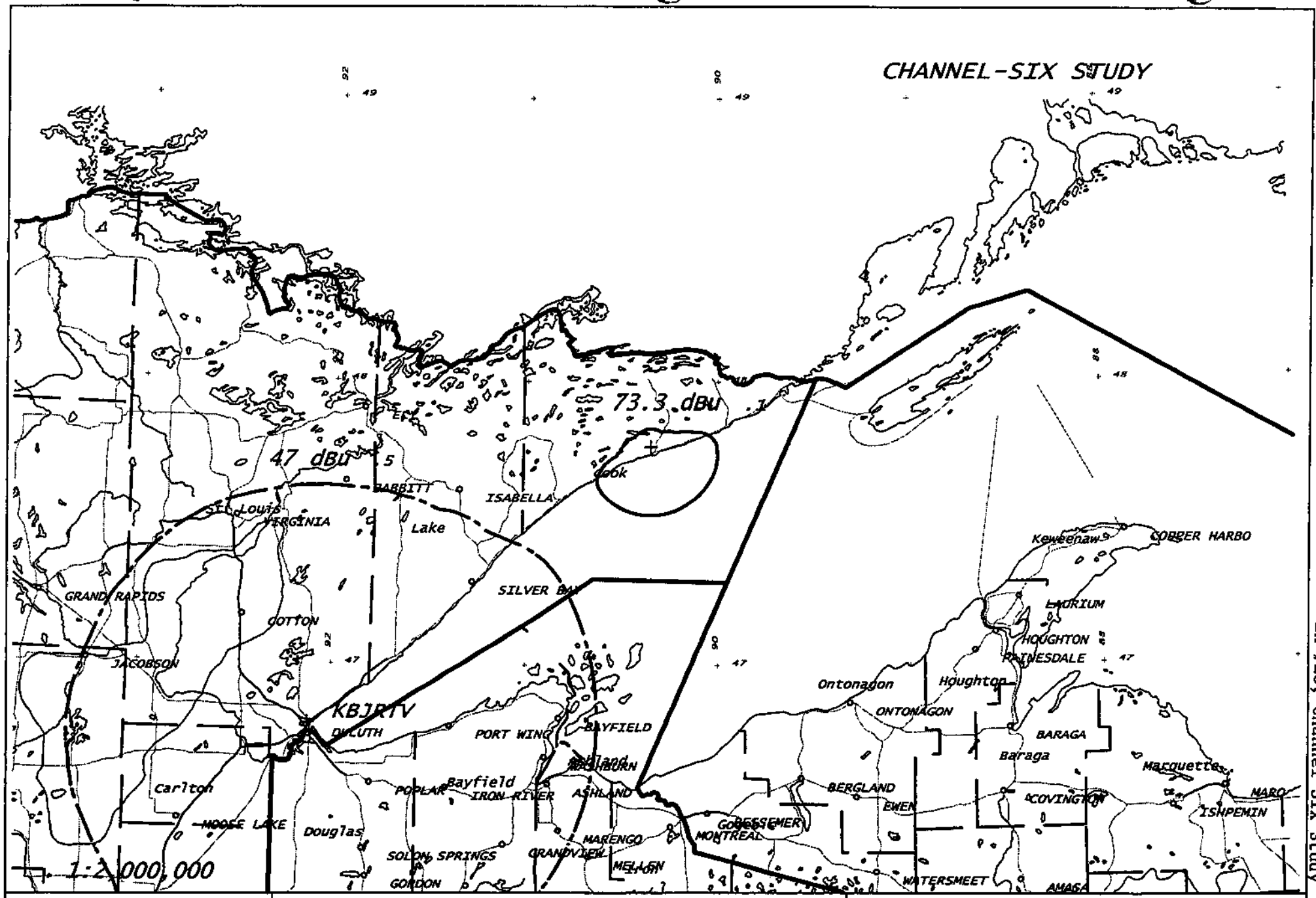
The column listed "* IN *" is the sum of the reference station's 60 dBu protected contour and the data file station's interference contour subtracted from the distance between the stations. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 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 "BEARING" 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 F.C.C. 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.



Ex #E8, Channel Six Study

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	421.5	188.5	20.000	92.93
10	412.6	197.4	20.000	93.83
20	390.8	219.2	20.000	95.98
30	375.1	234.9	20.000	97.50
40	324.9	285.1	20.000	102.27
50	251.4	358.6	20.000	107.92
60	189.0	421.0	20.000	113.24
70	183.3	426.7	20.000	113.75
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	186.1	423.9	20.000	113.50
160	192.5	417.5	20.000	112.93
170	195.4	414.6	20.000	112.67
180	196.4	413.6	20.000	112.58
190	197.1	412.9	20.000	112.52
200	189.6	420.4	20.000	113.19
210	191.4	418.6	20.000	113.02
220	240.4	369.6	20.000	108.78
230	365.0	245.0	20.000	98.48
240	386.6	223.4	20.000	96.39
250	391.9	218.1	20.000	95.87
260	399.0	211.0	20.000	95.18
270	403.6	206.4	20.000	94.73
280	417.6	192.4	20.000	93.33
290	431.5	178.5	20.000	91.89
300	432.3	177.7	20.000	91.81
310	436.3	173.7	20.000	91.38
320	428.4	181.6	20.000	92.22
330	424.0	186.0	20.000	92.67
340	424.1	185.9	20.000	92.66
350	427.5	182.5	20.000	92.31
Ave. =	299.6 M	310.4 M		

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

Geographic Coordinates:

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

Doug Vernier, Telecommunications Consultants
Minnesota Public Radio - Ch 6 Interference Contours - CH 209
ERP = 6.15 kW
Channel = 209

Azimuth Deg.T.	Ave. Elev. 3 to 16 km Meters AMSL	Effective Antenna Height Meters AAT	ERP (dBk)	F(50-10) Distance to 73.3 dBu Contour km
0	543.1	-3.1	7.889	7.34
10	541.5	-1.5	7.889	7.34
20	517.7	22.3	7.889	7.34
30	511.8	28.2	7.889	7.34
40	499.7	40.3	7.889	8.52
50	485.6	54.4	7.889	10.05
60	458.4	81.6	7.889	12.07
70	379.5	160.5	7.889	17.78
80	259.9	280.1	7.889	23.86
90	209.6	330.4	7.889	25.83
100	193.3	346.7	7.889	26.48
110	185.5	354.5	7.889	26.79
120	183.3	356.7	7.889	26.88
130	183.0	357.0	7.889	26.89
140	183.0	357.0	7.889	26.89
150	183.0	357.0	7.889	26.89
160	183.0	357.0	7.889	26.89
170	183.0	357.0	7.889	26.89
180	183.1	356.9	7.889	26.89
190	183.2	356.8	7.889	26.88
200	183.8	356.2	7.889	26.86
210	185.3	354.7	7.889	26.80
220	190.1	349.9	7.889	26.61
230	200.6	339.4	7.889	26.19
240	250.4	289.6	7.889	24.24
250	366.9	173.1	7.889	18.64
260	440.2	99.8	7.889	13.30
270	469.3	70.7	7.889	11.31
280	482.0	58.0	7.889	10.37
290	493.5	46.5	7.889	9.23
300	508.2	31.8	7.889	7.53
310	522.0	18.0	7.889	7.34
320	527.5	12.5	7.889	7.34
330	531.5	8.5	7.889	7.34
340	539.8	.2	7.889	7.34
350	542.2	-2.2	7.889	7.34
Ave. =	352.3 M	187.7 M		

Antenna Radiation Center AMSL =540
NGDC 03 Arc Sec.

Geographic Coordinates:

N. Lat. 47 46 13
W. Lng. 90 21 06

EXHIBIT # E9

R.F. RADIATION COMPLIANCE STATEMENT

Channel 204 & 209 – 12 kW H & V
Grand Marais, Minnesota

November 1998

The proposed antenna will be energized such that it produces 12 kW effective radiated power, circularly polarized, from a center of radiation of 80.3 meters above ground. 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. 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 .622 mircowatts 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 .3109 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 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	Signature
Minnesota Public Radio	Thomas J Kigin
Title: Executive Vice President	Date: 98-12-03
Typed or Printed Name of Person Signing: Thomas J Kigin	

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).