

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

4. Does the application propose to correct previous site coordinates? ☐ Yes ☒ No  
If Yes, list old coordinates: \_\_\_\_\_

Latitude 0 Longitude 0

5. 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 March 7, 1997 Office where filed Kansas City

6. 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>Ottumwa Hospital</u>	<u>7.7</u>	<u>346.9</u>
(b) _____	_____	_____

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

(1) of site above mean sea level;	<u>237</u> meters
(2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and	<u>146</u> meters
(3) of the top of supporting structure above mean sea level $[(a)(1) + (a)(2)]$	<u>383</u> meters

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

(1) above ground	<u>114</u> meters (H)
_____	<u>114</u> meters (V)
(2) above mean sea level $[(a)(1) + (b)(1)]$	<u>351</u> meters (H)
_____	<u>351</u> meters (V)
(3) above average terrain	<u>122</u> meters (H)
_____	<u>122</u> meters (V)

8. Attach as an Exhibit sketch(es) of the supporting structure, labeling all elevations required in Question 7 above, except item 7(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

9. Effective Radiated Power:  
(a) ERP in the horizontal plane 138 kw (H) .38 kw (V)

(b) 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 elevational plot of radiated field. Exhibit No. N/A  
\_\_\_\_\_ kw (H) \_\_\_\_\_ kw (V)

\*Polarization

SECTION V-8 -- FM BROADCAST ENGINEERING DATA (Page 3)

10. 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

11. Will the main studio be located within the 70 dBu or 3.16 mV/m contour? ☐ Yes ☒ No

If No, attach as an Exhibit justification pursuant to 47 C.F.R. Section 73.1125. Exhibit No. E3

12. 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 proposed 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 to radio receivers in use prior to grant of this application. *(See 47 C.F.R. Sections 73.315(b), 73.318(d) and 73.318.)* Exhibit No. E4

13. 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. E5

14. 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. E6

- (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 be served.

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

Area 790 sq. km. Population 33,245

16. Attach as an Exhibit a map *(Sectional Aeronautical charts where obtainable)* showing the present and proposed 1 mV/m (60 dbu) contours. Exhibit No. N/A

\* New Station  
Enter the following from Exhibit above: Gain Area          sq. mi.  
Loss Area          sq. mi.

Percent change (gain area plus loss area as percentage of present area) 100 %.  
If 50% or more this constitutes a major change. Indicate in question 2(c), Section I, accordingly.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 05-11-2010 BY 60322 UCBAW

- Exhibit No.  
N/A

18. Terrain and coverage data *to be calculated in accordance with 47 C.F.R. Section 73.3131.*

☐ Other briefly summarize the steps to create binary, before as to numbered index as in steps 1-7.

Radial bearing (degrees True)	Height of radiation center above to base average elevation of radiation from 3 to 16 km (meters)	Predicted Distances to the 1 mV/m contour (kilometers)
0	*	*
45	*See Ex. #1, page #4	*
90	*	*
135	*	*
180	*	*
225	*	*
270	*	*
315	*	*

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

- ☐ Yes ☒ No

Exhibit No. N/A

SECTION V-8 - FM BROADCAST ENGINEERING DATA (Page 5)

20. 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 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. ☐ Yes ☒ No

21. If the proposed operation is 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:

- The normally protected interference-free and the interfering contours for the proposed operation along all azimuths.
- Complete normally protected interference-free contours of all other proposals and existing stations to which objectionable interference would be caused.
- Interfering contours over pertinent arcs of all other proposals and existing stations from which objectionable interference would be received.
- Normally protected and interfering contours over pertinent arcs of all other proposals and existing stations, which require study to show the absence of objectionable interference.
- Plot of the transmitter location of each station or proposal requiring investigation, with identifying call letters, file numbers and operating or proposed facilities.
- When necessary to show more detail, an additional allocation study will be attached utilizing a map with a larger scale to clearly show interference or absence thereof.
- A scale of 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.
- The name of the map(s) used in the Exhibit(s).

22. 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.

\* No pertinent I.F. relationship

23(a) Is the proposed operation on Channel 218, 219, or 220?

(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

(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.

(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.

1/ A showing that the proposed operation meets the minimum distance separation requirements. 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 6)

- (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°), 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 assignments, 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.
- (5) The official title(s) of the map(s) used in the exhibit(s).

24. 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?

XX 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.  
E8

25. 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

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

Would a Commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact?

☐ Yes ☒ No

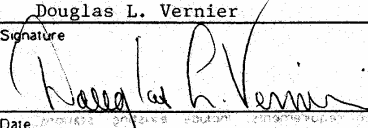
If you answer Yes, submit as an Exhibit an Environmental Assessment required by Section 1.1311.

Exhibit No.  
N/A

If No, explain briefly why not. Existing authorized tower - see Exhibit #E9 for R.F. 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 the foregoing and found it to be accurate and true to the best of my knowledge and belief.

Name (Typed or Printed)	Relationship to Applicant (e.g., Consulting Engineer)
Douglas L. Vernier	Director, Broadcasting Services
Signature	Address (Include ZIP Code)
	324 Communication Arts Center University of Northern Iowa Cedar Falls, IA 50614-0359
Date	Telephone No. (Include Area Code)
March 7, 1997	(319) 273-6400, ext. 446

*Public Radio*

**KUNI**  
90.9 fm

**KHKE**  
89.5 fm

**KUNY**  
91.5 fm

**KRNI**  
1010 am

Communication Arts Center  
University of Northern Iowa  
Cedar Falls, Iowa 50614-0359

Telephone: (319) 273-6400  
FAX: (319) 273-2682

E-mail: KUNI@UNLEDU

**EXHIBIT #E1**  
**ENGINEERING STATEMENT**

Concerning the Application of  
The University of Northern Iowa  
to Construct a New Educational FM station  
to Serve Ottumwa, Iowa

March 1997

Channel 202

.38 kW H & V

This engineering statement supports the application filed by the University of Northern Iowa, Cedar Falls, Iowa to construct a new non-commercial educational FM radio station to serve Ottumwa, Iowa

Under the instant proposal, a type approved transmitter, generates an output power of kilowatts on 88.3 MHz. The 50 ohm, Andrew HJ5-50A 7/8" copper Heliac transmission line, has an efficiency for its 123 meter length of 72.4 percent. Therefore, the proposed four-bay circularly polarized antenna, has at its input .191 kW of power. The antenna has a vertical power gain of 2.0 resulting in an effective radiated power of .38 kW.

Page # 4 of this exhibit is a tabular listing of the terrain and contour data for the proposed facility. Page # 5 of this exhibit is a certification of the qualifications of the preparer, Douglas Vernier.

**Exhibit #E2** is a vertical sketch showing use of an existing authorized tower. This tower was approved by the F.A.A. under aeronautical study 76-CE-166-OE.

**Exhibit #E3** contains information relevant to Section 73.1120 (a), 4 of the Commission's Rules and the University's request to locate the main studio outside of the city of license.

*KUNI is also heard at 96.1 FM in  
Des Moines, 98.7 FM in  
Dubuque, 102.7 FM in Eldridge  
and 94.5 FM in the Quad Cities.*

*KHKE, also known as H-89.5, is  
heard in Mason City/Clear Lake  
at 90.7 FM.*

**Exhibit #E4** is a statement in consideration of blanketing and receiver induced intermodulation.

**Exhibit #E5** is a 1:24,000 topographic site map (Agency Quadrangle) showing the exact location of the proposed facility.

A total of 36 evenly spaced radials were used to determine the antenna height above average terrain used in the instant proposal. The N.G.D.C. TGP0050 30 arc second database was employed to determine the elevations at intervals along the radials of .1 kilometers. This database was corrected and converted to metric in the mid-eighties by the NGDC, therefore it is known to be better than the 30 arc second database used by the FCC, which we understand has not been updated. The terrain elevations were derived from the digital database using the required four-point interpolation and averaged along each radial. All 36 elevations were then averaged to determine the station's average elevation and consequent antenna height above average terrain. The Commission's own TVFMINT FORTRAN computer algorithm was employed to determine the distances to the pertinent contours based upon the input of the radial HAAT, operating power and signal level to be predicted. (See Page #4.)

**Exhibit #E6** is a map of the proposed 1 mV/m F(50-50) contour which shows the eight cardinal radials and a city radial through Ottumwa. This map was computer generated using U.S. Geological Survey digital line Graph data which was originally digitized from 1:2,000,000 scale maps. A total of 360 evenly spaced radials were used to plot the 60 dBu contour. The political boundaries of Ottumwa, Iowa, the city of licensee, are shown to be fully encompassed by the proposed 60 dBu service contour.

The area within the proposed 60 dBu, 1 mV/m contour, amounts to 790 square kilometers. This figure was determined by averaging the distance to the contour along 360 evenly spaced radials. The resulting average was used in the following formula to determine the area within the contour:  $\text{Area} = \pi R^2$ . The population within the 60 dBu service contour was determined to be 33,245 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.

**Exhibit #E7** is an FM channel allocation study reflecting full compliance by the applicant to the requirements of Sec. 73.509 of the Commission's Rules and Regulations. There are no pertinent I.F. relationships. The proposed facility is not within 320 kilometers of the US border with Canada or Mexico. Page #2 of this exhibit is a narrative which explains the techniques and conventions used in the study. Page #3 of this exhibit is an allocations map showing the signal relationships with AP201, Fairfield. Page #4 of this exhibit is an FCC FMOVER tabular study showing the incoming interference signal of the proposed facility at the 60 dBu protected contour of the proposed Fairfield station. Page #5 of this exhibit is an allocation map showing the relationships between the proposed facility and KCCK, Cedar Rapids, Iowa, while page #6 of this map is an FMOVER tabular study of the same relationship.

**Exhibit #E8** is a channel-six television interference exhibit using the provisions of Section 73.525 of the Commission's rules and regulations.

**Exhibit #E9** is an RF hazard statement. The applicant will be in compliance with the Commission's R.F. radiation standards. The transmitter and antenna installation proposed will meet the A.N.S.I. standards for non-ionization radiation.

This exhibit (Exhibit #E1) was prepared by Doug Vernier.



TERRAIN AND CONTOUR DATA  
CH 202 - Ottumwa, Iowa  
University of Northern Iowa

ERP = .38 kW  
FM - 2-6 Tables 30 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	232.4	118.9	-4.202	15.7
10	230.0	121.3	-4.202	15.8
20	234.5	116.8	-4.202	15.5
30	237.2	114.1	-4.202	15.3
40	237.1	114.2	-4.202	15.3
50	237.1	114.2	-4.202	15.3
60	232.6	118.7	-4.202	15.7
70	235.6	115.7	-4.202	15.4
80	236.9	114.4	-4.202	15.3
90	230.7	120.6	-4.202	15.8
100	220.6	130.7	-4.202	16.5
110	195.5	155.8	-4.202	18.2
120	197.1	154.2	-4.202	18.1
130	220.8	130.5	-4.202	16.5
140	222.6	128.7	-4.202	16.4
150	223.3	128.0	-4.202	16.3
160	225.2	126.1	-4.202	16.2
170	229.8	121.5	-4.202	15.9
180	236.8	114.5	-4.202	15.4
190	238.5	112.8	-4.202	15.2
200	235.5	115.8	-4.202	15.4
210	234.8	116.5	-4.202	15.5
220	229.0	122.3	-4.202	15.9
230	237.0	114.3	-4.202	15.3
240	238.5	112.8	-4.202	15.2
250	242.1	109.2	-4.202	15.0
260	240.1	111.2	-4.202	15.1
270	246.4	104.9	-4.202	14.6
280	246.8	104.5	-4.202	14.6
290	242.5	108.8	-4.202	14.9
300	223.7	127.6	-4.202	16.3
310	220.9	130.4	-4.202	16.5
320	198.6	152.7	-4.202	18.0
330	212.5	138.8	-4.202	17.1
340	236.2	115.1	-4.202	15.4
350	233.5	117.8	-4.202	15.6

Ave. = 229.8 M 121.5 M

Antenna Radiation Center AMSL = 351.3 M

Geographic Coordinates:

North latitude: 40 57 40  
West longitude: 92 22 11

**Declaration:**

I, Doug Vernier, declare that I have studied engineering at the University of Michigan and have received degrees from the University in the field of Broadcast Telecommunications. That, I have been active in broadcast consulting for over 23 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;

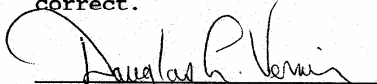
That, I am certified as a Professional Broadcast Engineer (#50258) by the Society of Broadcast Engineers, Indianapolis, Indiana. (Recertified 11/95.)

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

That, I am retained by the University of Northern Iowa of Cedar Falls, IA.

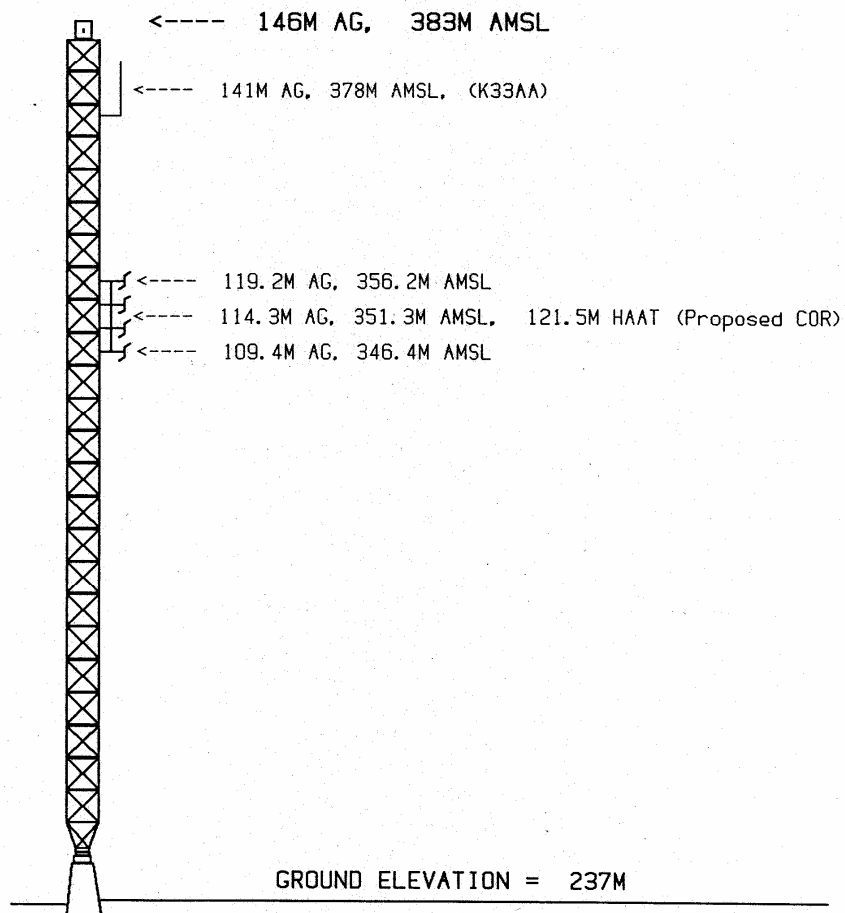
That, having personally prepared these engineering showings, the technical information contained in same and the facts stated within are true of my knowledge;

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



Douglas L. Vernier

Executed on March 7, 1997



## VERTICAL SKETCH

N. Lat. 40 57 40  
W. Lng. 92 22 11

Existing Authorized Tower

(Not to Scale)

## FIGURE #E2

CH 202A - Ottumwa, IA  
.38 kW - HAAT = 121.5M  
-----

Mar. '97

DOUG VERNIER  
COMMUNICATIONS ARTS CENTER  
UNIVERSITY OF NORTHERN IOWA  
Cedar Falls, IA 50614  
(319) 276-6400

**Exhibit #E3**

**SECTION V-B NO. 11**

We propose to operate this station as a satellite of the University's station KHKE, Cedar Falls, Iowa. Consequently, we request waiver of the requirement of Section 73.1125 of the rules that the main studio be located within the principal community contour. Section 73.1125 (a) (4) of the rules provides for location of the main studio outside of the principal community contour when good cause exists and to do so would be consistent with the operation of the station in the public interest.

This station will serve a total of 33,245 people within the 1 M v/m contour. Because of its relatively small size, it is most unlikely that Ottumwa could economically sustain a local full service Public Radio International member station.

Exhibit #2 to this application sets forth the method by which the University will assure that the issues facing the Ottumwa area are ascertained and that the station's program service will address those issues. The licensee will use its extensive resources to develop advisory input from Ottumwa residents and will originate some programming from the Ottumwa area using remote origination equipment. Ottumwa residents will have toll-free WATS telephone access to the station in compliance with Section 73.1125 (c) of the rules. Also, in compliance with Section 73.1125 (d) of the rules, the station's local public inspection file will be located at an accessible place in Ottumwa.

It would serve the public interest if the University were permitted to establish a station that would serve Ottumwa, which would operate as a satellite of Station KHKE. The station the University proposes will broadcast programming of direct interest to Ottumwa residents and provide them with the opportunity for local input.

**Exhibit # E4**

University of Northern Iowa  
Ottumwa, Iowa  
Co-location Exhibit

March 1997

The instant proposal co-locates the proposed antenna on a tower owned by Iowa Public Broadcasting. This tower also holds the antenna of K33AA, Ottumwa. Iowa State University has proposed an FM station that will also be mounted on the tower.

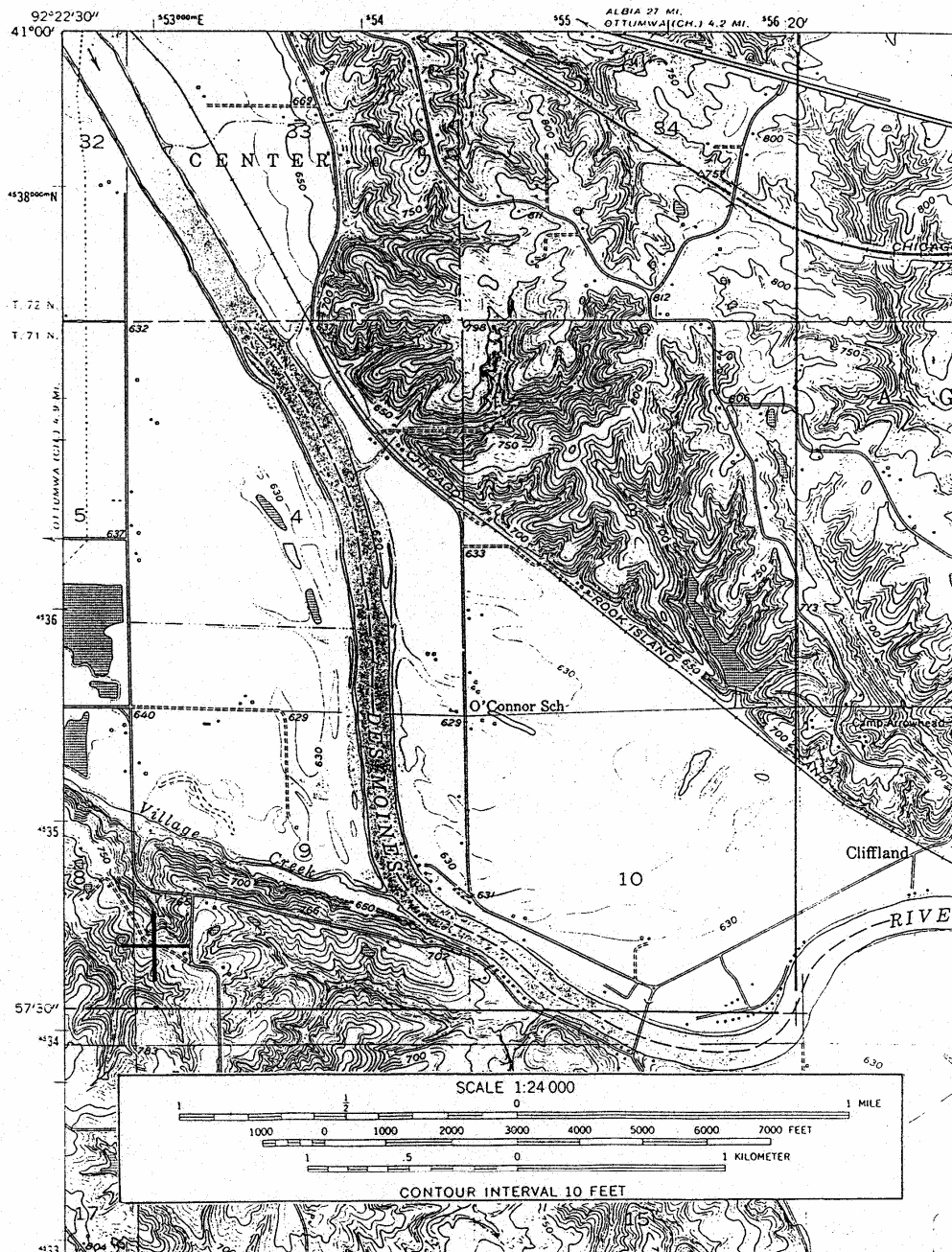
There are other broadcast stations within ten kilometers:

There is an application on file at the Commission for a new NCE FM station on channel 216 with a power of 1.9 kW proposed.

Although, it is not anticipated, it is possible that a mix of the FM station signals could cause some intermodulation products. The propagation of said products can be minimized by the use of special tuning techniques and filters.

The 115 dBu blanketing contour extends 243 meters. If blanketing interference results it be corrected through traditional means, such as traps and antenna re-orientation. Considering the low ERP and relative high antenna height proposed, little or no blanketing interference is anticipated.

The University of Northern Iowa is aware of its responsibility to correct legitimate blanketing and intermodulation interference it may cause during its first year of operation, at its own expense, to receivers within the blanketing contour distance.



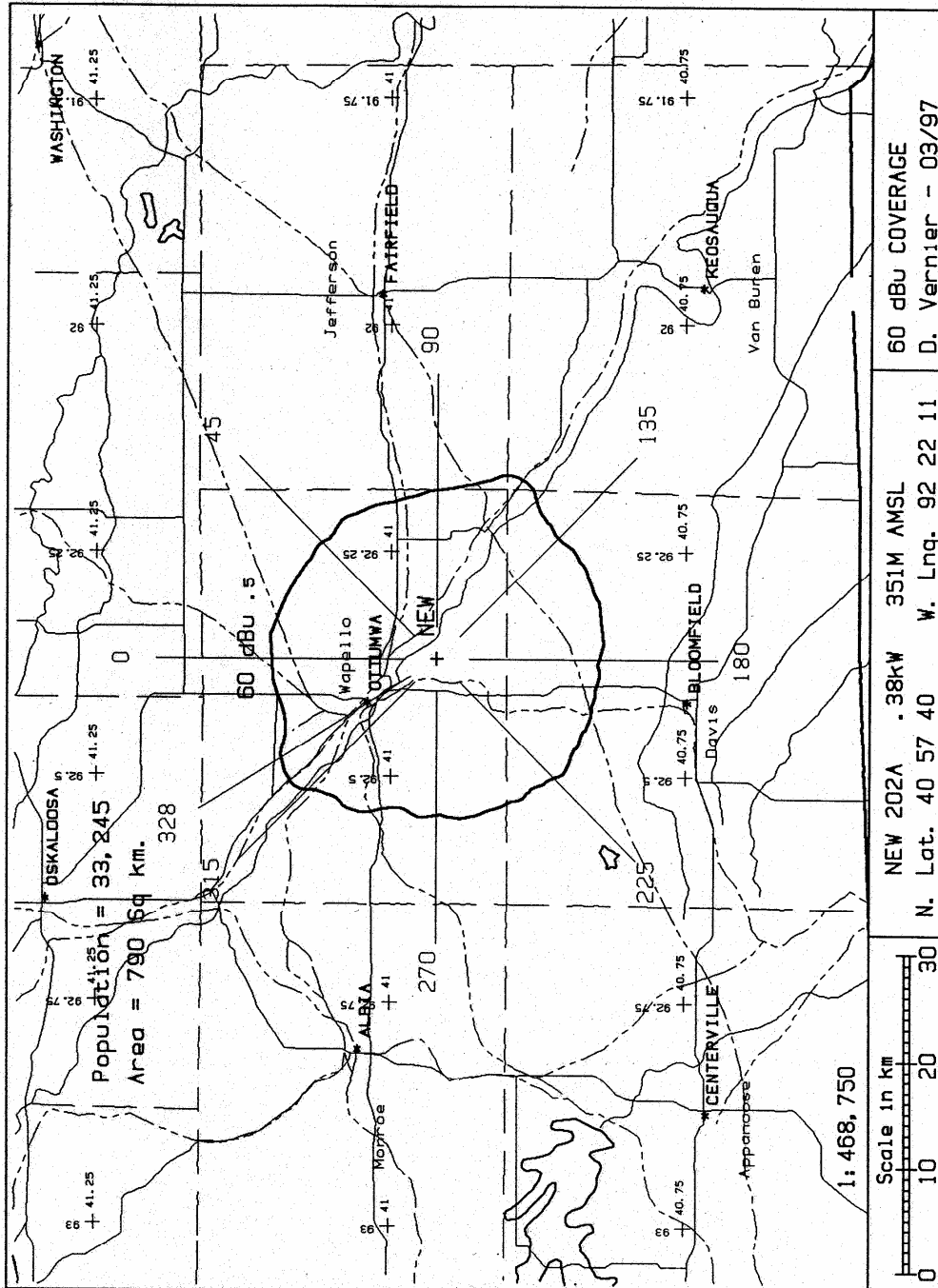


Exhibit #E7  
Allocation Exhibit

03-06-1997

DOUG VERNIER - TELECOMMUNICATION CONSULTANTS

319 266-8402

CH# 202A - 88.3 MHz

University of Northern Iowa

INTERFERENCE CHECKS WITH AP202, OTTUMWA, IA at N. LAT. 40 57 40 W. LNG. 92 22 11

PWR = .38 kW H.A.A.T. = 122 M C.O.R. = 351 M AMSL

Protected F(50-50) 60 dBu = 15.93 km

F(50-10) 40 dBu = 52.66 54 dBu = 24.2 80 dBu = 5.01 100 dBu = 1.38

CH#	CALL	TYPE	* IN *	* OUT *	BEARING	DISTANCE	LAT.	PWR(kW)	INT(km)	PRO(km)
CITY	STATE	LICENSEE			<---		LNG.	HAAT(M)	COR(M)	FILE #
201A	KDPS	LI HN	72.4	77.3	303.5	127.00 km	41 35 01	5.20	38.64	25.49
Des Moines	IA	Des Moines Independent Com			123.5	78.91 Mi	93 38 28	87.0	350	BLED261
201A	AP201 *	AP CN	4.7	0.6	83.5	33.00 km	40 59 38	0.25	12.86	9.20
Fairfield	IA	American Family Associatio			263.5	20.51 Mi	91 58 48	49.3*	274	BPED961010MC
> Reference HAAT at 83.5 degrees = 115.6 M, Pwr. = .38 kW, Pro. Dist. = 15.43 km, Int. Dist. = 23.22 km										
202C3	KCCFM*	LI CN	6.6	34.3	29.2	121.07 km	41 54 33	10.00	99.17	35.40
Cedar Rapids	IA	Kirkwood Community College			209.2	75.23 Mi	91 39 17	126.1*	366	BLED1408
> Reference HAAT at 29.2 degrees = 113.7 M, Pwr. = .38 kW, Pro. Dist. = 15.3 km, Int. Dist. = 51.42 km										
203A	KDIC	LI CN	66.6	61.3	341.7	92.17 km	41 44 53	0.13	9.66	6.71
Grinnell	IA	Grinnell College			161.7	57.27 Mi	92 43 10	38.0	332	BLED850115LR
203B	WGCAFM	LI CN	52.2	68.3	141.0	140.97 km	39 58 18	40.00	72.89	48.46
Quincy	IL	Great Commission B/Cting C			321.0	87.59 Mi	91 19 42	137.0	325	BLED870930KA
204A	AP204	AP CN	68.4	71.6	191.9	87.77 km	40 11 15	0.50	3.41	11.15
Kirkville	MO	Northeast Missouri State U			11.9	54.54 Mi	92 34 57	50.0	321	BPED960628ME
204A	KIGC	LI HN	26.7	32.6	329.2	45.23 km	41 18 37	0.23	2.56	7.66
Oskaloosa	IA	William Penn College			149.2	28.10 Mi	92 38 49	37.0	275	BLED910204KF

I.F. RELATIONSHIPS:

256C2	KSKB.A	AP CN	15.0 R	72.3 M	0.8	87.31 km	41 44 50	40.00	5.83	51.74
Brooklyn	IA	Florida Public Radio, Inc.			180.8	54.25 Mi	92 21 19	162.0	425	BPED9609111A
FCC Comment > Commercial channel operating educational										
256C2	KSKB	LI HN	15.0 R	68.6 M	354.6	83.55 km	41 42 36	50.00	3.78	36.60
Brooklyn	IA	Florida Public Radio, Inc.			174.6	51.92 Mi	92 27 54	62.0	339	BLED941209KB
FCC Comment > Commercial channel operating educational										

Nearest CH 6 Grade B =KWQCTV at 59.4 km, Distance= 171.51 Azimuth = 67 Deg. T.

\* Uses actual antenna radial HAAT and power toward reference



HOW TO READ THE FM COMPUTER PRINT-OUT

The computer print-out 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.

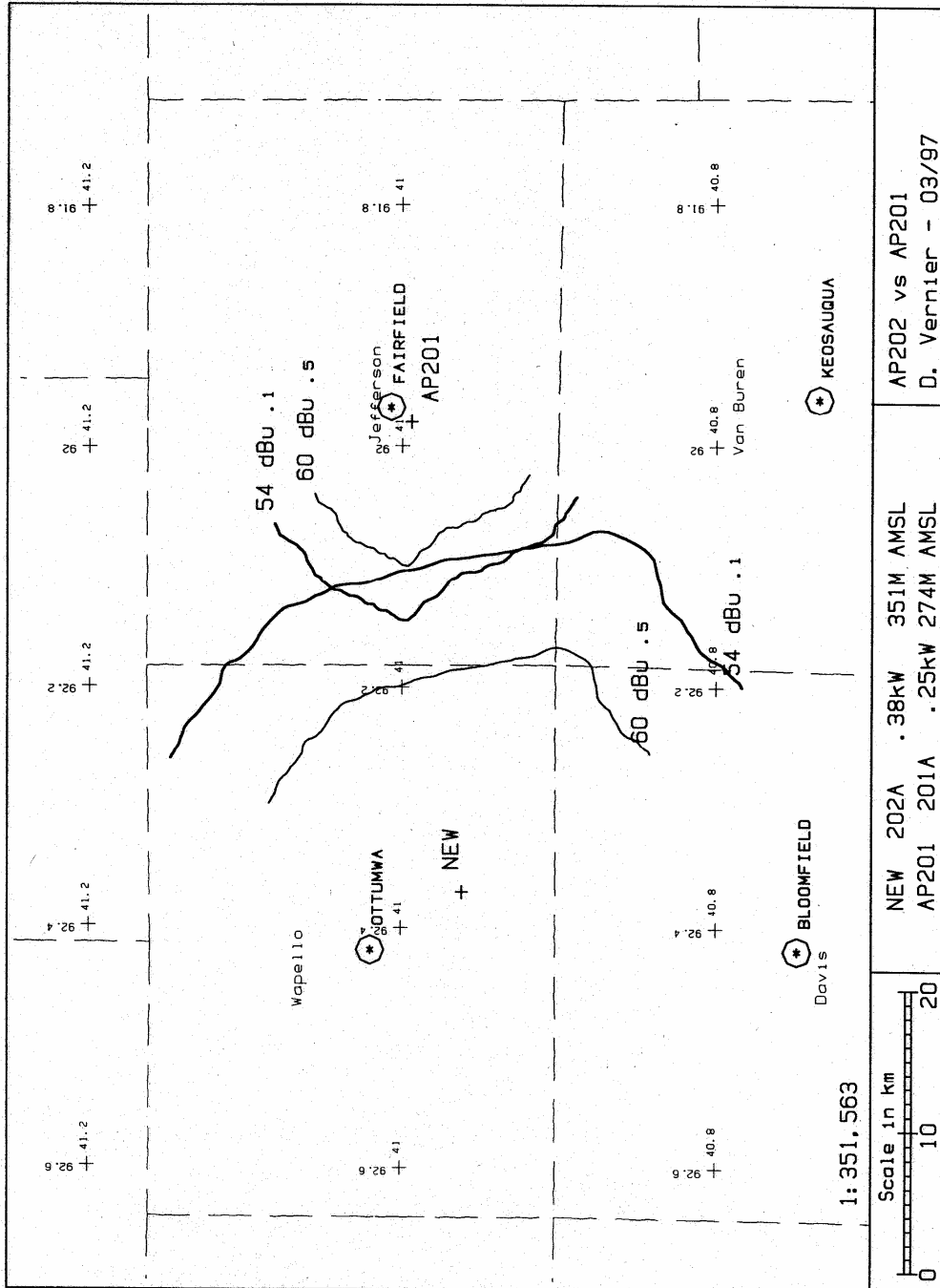
The column listed "\* IN \*" is the sum of the reference station's 60 dBu protected contour and the data file station's interference contour subtracted from the distance between the stations. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket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



Doug Vernier - Telecommunications Consultants  
03-04-1997 30 Sec. Terrain Data

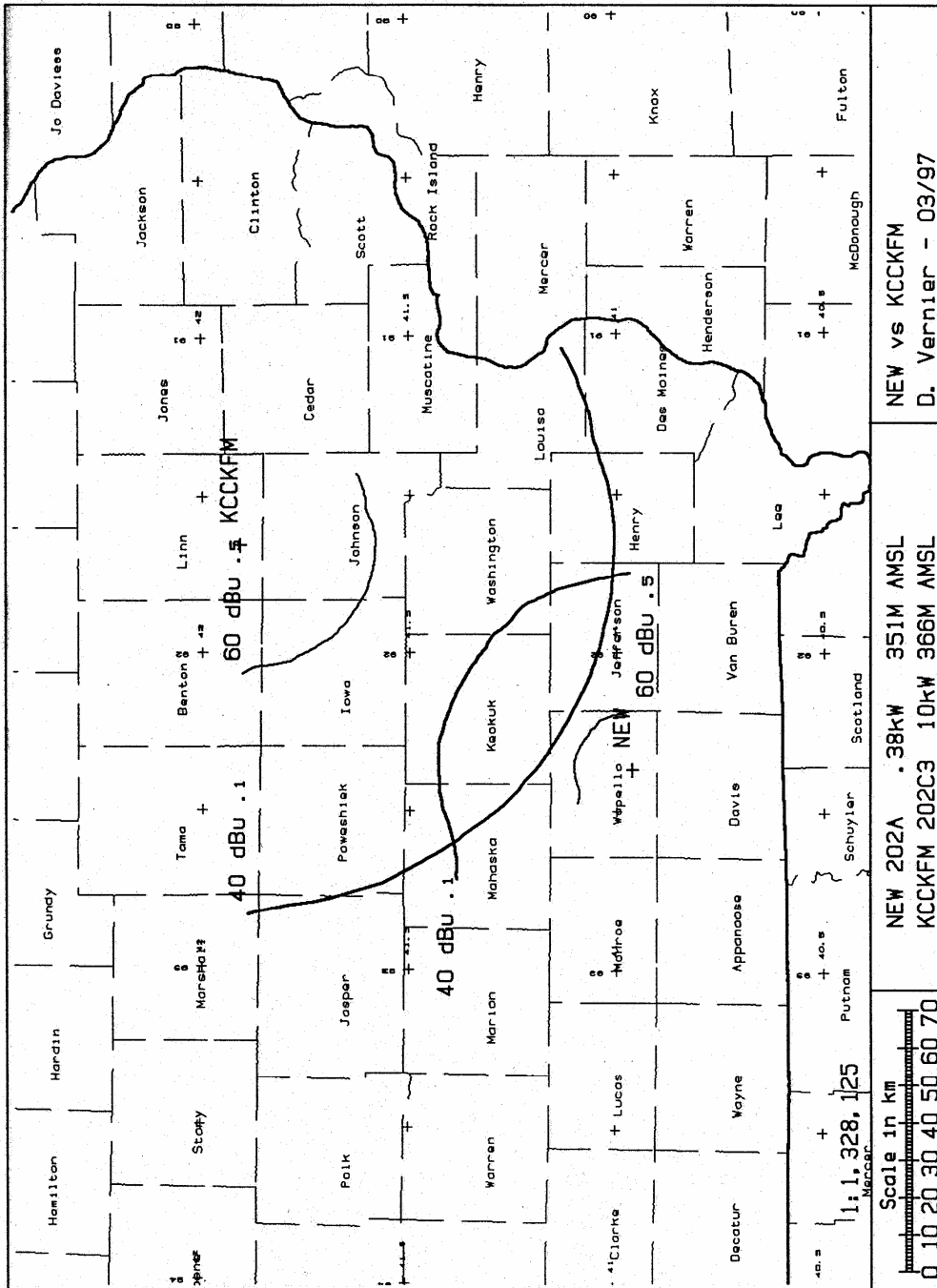
AP201 BPED960820MC  
Channel = 201A  
Max ERP = .25 kW  
RCAMSL = 274 M  
N. Lat = 40 59 38  
W. Lng = 91 58 48

Protected  
60 dBu

NEW BPED960820MC  
Channel = 202A  
Max ERP = .38 kW  
RCAMSL = 351 M  
N. Lat = 40 57 40  
W. Lng = 92 22 11

Interfering  
54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
260.0	000.2500	046.1	008.9	084.9	000.3800	116.7	024.2	53.4
261.0	000.2500	047.1	009.0	084.5	000.3800	116.5	024.1	53.5
262.0	000.2500	048.0	009.1	084.2	000.3800	116.2	024.0	53.5
263.0	000.2500	048.7	009.1	083.8	000.3800	115.8	023.9	53.5
264.0	000.2500	049.5	009.2	083.4	000.3800	115.4	023.8	53.6
265.0	000.2500	050.7	009.3	083.0	000.3800	115.1	023.7	53.6
266.0	000.2500	051.7	009.4	082.6	000.3800	114.9	023.6	53.7
267.0	000.2500	052.7	009.5	082.2	000.3800	114.7	023.5	53.7
268.0	000.2500	053.6	009.6	081.8	000.3800	114.5	023.4	53.8
269.0	000.2500	054.7	009.7	081.3	000.3800	114.4	023.3	53.8
270.0	000.2500	055.1	009.8	080.9	000.3800	114.2	023.3	53.8
271.0	000.2500	055.5	009.8	080.5	000.3800	114.1	023.3	53.8
272.0	000.2500	055.9	009.8	080.0	000.3800	114.0	023.3	53.8
273.0	000.2500	056.3	009.9	079.6	000.3800	114.0	023.3	53.8
274.0	000.2500	056.8	009.9	079.2	000.3800	114.0	023.3	53.8
275.0	000.2500	057.1	009.9	078.7	000.3800	114.0	023.3	53.8
276.0	000.2500	057.1	009.9	078.3	000.3800	113.9	023.4	53.7
277.0	000.2500	056.8	009.9	077.9	000.3800	113.9	023.5	53.7
278.0	000.2500	056.6	009.9	077.6	000.3800	113.8	023.5	53.6
279.0	000.2500	056.0	009.8	077.2	000.3800	113.7	023.6	53.5
280.0	000.2500	055.5	009.8	076.9	000.3800	113.6	023.8	53.5
281.0	000.2500	055.3	009.8	076.5	000.3800	113.6	023.8	53.4
282.0	000.2500	054.9	009.7	076.2	000.3800	113.5	023.9	53.3
283.0	000.2500	054.5	009.7	075.8	000.3800	113.4	024.1	53.2
284.0	000.2500	054.4	009.7	075.5	000.3800	113.3	024.1	53.2
285.0	000.2500	053.9	009.7	075.2	000.3800	113.2	024.3	53.1
286.0	000.2500	053.2	009.6	074.9	000.3800	113.2	024.4	53.0
287.0	000.2500	052.4	009.5	074.7	000.3800	113.2	024.6	52.8
288.0	000.2500	051.7	009.4	074.5	000.3800	113.2	024.7	52.7
289.0	000.2500	051.4	009.4	074.2	000.3800	113.3	024.8	52.7
290.0	000.2500	051.7	009.4	073.8	000.3800	113.4	024.9	52.6



University of Northern Iowa  
03-06-1997

30 Sec. Terrain Data

Exhibit #E7, Page 6

NEW BPED960820MC  
Channel = 202A  
Max ERP = .38 kW  
RCAMSL = 351 M  
N. Lat = 40 57 40  
W. Lng = 92 22 11

KCCKFM BLED1408  
Channel = 202C3  
Max ERP = 10 kW  
RCAMSL = 366 M  
N. Lat = 41 54 33  
W. Lng = 91 39 17

Protected  
60 dBu

Interfering  
40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
359.0	000.3800	118.6	015.6	213.9	010.0000	125.0	107.9	38.0
001.0	000.3800	118.7	015.7	213.7	010.0000	125.0	107.5	38.0
003.0	000.3800	119.9	015.7	213.4	010.0000	125.1	107.2	38.1
005.0	000.3800	120.9	015.8	213.2	010.0000	125.1	106.9	38.2
007.0	000.3800	122.2	015.9	213.0	010.0000	125.1	106.5	38.2
009.0	000.3800	122.0	015.9	212.7	010.0000	125.1	106.3	38.3
011.0	000.3800	120.1	015.8	212.4	010.0000	125.1	106.2	38.3
013.0	000.3800	119.0	015.7	212.1	010.0000	125.1	106.1	38.3
015.0	000.3800	118.2	015.6	211.8	010.0000	125.0	106.0	38.4
017.0	000.3800	116.8	015.5	211.5	010.0000	125.0	105.9	38.4
019.0	000.3800	116.4	015.5	211.2	010.0000	125.1	105.9	38.4
021.0	000.3800	116.2	015.5	210.9	010.0000	125.1	105.8	38.4
023.0	000.3800	115.6	015.4	210.6	010.0000	125.2	105.7	38.4
025.0	000.3800	114.8	015.4	210.3	010.0000	125.4	105.7	38.4
027.0	000.3800	113.7	015.3	210.0	010.0000	125.5	105.8	38.4
029.0	000.3800	113.7	015.3	209.7	010.0000	125.7	105.7	38.4
031.0	000.3800	113.7	015.3	209.5	010.0000	125.9	105.8	38.4
033.0	000.3800	113.2	015.3	209.2	010.0000	126.1	105.8	38.4
035.0	000.3800	113.0	015.2	208.9	010.0000	126.3	105.9	38.4
037.0	000.3800	112.8	015.2	208.6	010.0000	126.5	106.0	38.4
039.0	000.3800	112.9	015.2	208.3	010.0000	126.6	106.0	38.4
041.0	000.3800	115.1	015.4	208.0	010.0000	126.8	106.0	38.4
043.0	000.3800	116.6	015.5	207.7	010.0000	126.9	106.0	38.4
045.0	000.3800	115.2	015.4	207.5	010.0000	127.0	106.3	38.4
047.0	000.3800	113.2	015.3	207.2	010.0000	127.0	106.6	38.3
049.0	000.3800	113.1	015.3	206.9	010.0000	127.1	106.8	38.3
051.0	000.3800	115.3	015.4	206.6	010.0000	127.1	106.9	38.2
053.0	000.3800	118.7	015.7	206.3	010.0000	127.2	106.9	38.2
055.0	000.3800	121.0	015.8	206.0	010.0000	127.3	107.0	38.2
057.0	000.3800	121.0	015.8	205.8	010.0000	127.3	107.3	38.2
059.0	000.3800	119.2	015.7	205.6	010.0000	127.4	107.7	38.1

Exhibit #E8

Channel-Six Television Protection  
University of Northern Iowa

The only channel-six television station within the 257 kilometer, channel 202, cutoff distance is KWQCTV, Davenport, Iowa. This station is located at a distance of 171.51 kilometers. Section 73.525 of the Commission's Rules lists the proposed FM station's 50.8 dBu F(50-10) signal contour as the relevant interference contour. Since the proposed FM station is within the arc where receiver antenna directivity credit can be assigned, the interference signal becomes the 56.8 dBu contour. Using the proposed station's antenna height above average terrain on the 67.5 degree radial toward KWQCTV and a radiated power of  $0.38 + .38/40$  kilowatts (totals .3895 kW - the proposed FM station operates with mixed polarization) it can be shown that the 56.8 dBu signal contour travels only 18.75 kilometers.

The KWQCTV protected 47 dBu signal contour travels a total of 114.59 kilometers on the direct azimuth toward the proposed FM station, therefore there is some 39.17 kilometers ( $171.51 - 114.59$ ) clearance between the station signal contours. Consequently, no interference will be caused KWQCTV.

**EXHIBIT # E9**  
**R.F. RADIATION COMPLIANCE STATEMENT**

Channel 202 - .38 kW  
University of Northern Iowa  
Ottumwa, Iowa

March 1997

Based on the formulas expressed in the OST Bulletin, No. 65, Oct. 1985, "Evaluating Compliance with F.C.C. Specified Guidelines for Human Exposure to Radio Frequency Radiation", published by the Federal Communication's Office of Science and Technology, the proposed facility is predicted to produce a worst case maximum R.F. non-ionization radiation level at a position six feet above the tower base (head level), without regard to the actual vertical elevation field toward the nadir which will cause a reduction in the predicted value, of 2.013 microwatts per square centimeter. This is .201 percent of the maximum A.N.S.I. standard for the frequency in use.

Since the proposed facility contributes less than one percent of the total combination of non-ionization radiation, no further calculations were deemed necessary.

All users of this tower have an agreement to reduce power or terminate operation in the event a worker must get closer to the radiating antennas than the A.N.S.I. standard would permit.

Consequently, the proposed FM station will be in compliance with the Commission's rules regarding exposure to workers or the general public to levels of radio frequency radiation in excess of the American National Standard Safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz. (ANSI 95.1-1982)