

FEDERAL COMMUNICATIONS COMMISSION

CLASS OF STATION FM

RITA1

The following application is submitted for action by the Chief, Broadcast Bureau.

ST	FILE NUMBER	CALL	APPLICANT AND LOCATION	NATURE OF APPLICATION
PA	BPED -891108MA N/M	WRCT 88.3MHZ	CARNEGIE-MELLON STUD. GOVT. CORP. PITTSBURGH	CP TO CHANGE ERP: 1.50 KW (H&V)
		830509MS KA-88921	STEVENS-POINT PITTSBURGH	WI PA

LICENSE EXPIRATION DATE AUG 1, 1991

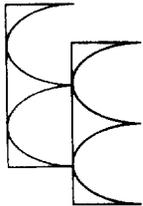
\_\_\_\_\_  
CHIEF, LICENSE DIVISION

RECOMMENDATION: GRANT( ) CONSTRUCTION DATES, START \_\_\_\_\_ END \_\_\_\_\_  
 CONTESTED ( ) UNCONTESTED ( )

APPROVED \_\_\_\_\_

\_\_\_\_\_  
FOR CHIEF, BROADCAST BUREAU

F.C.C.-WASHINGTON, D.C.



# EVANS ASSOCIATES

Consulting Communications Engineers

216 North Green Bay Road  
Thiensville, Wisconsin 53092-1684  
Telephone (414) 242-6000

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FCC MAIL BRANCH

November 6, 1989

Ms. Donna R. Searcy, Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, DC 20554

RE: WRCT(FM), Pittsburgh, PA  
FCC Form 340 Application

NOV 8 2 59 PM '89  
AUC 10 1 1989

Dear Ms. Searcy:

On behalf of Carnegie-Mellon Student Government Corporation, licensee of non-commercial educational FM station WRCT (88.3 MHz), in Pittsburgh, Pennsylvania, we submit herewith an original and two (2) copies of its application for major change to the transmitting facilities of WRCT.

In the event that the Commission should have any questions concerning this application, please refer them to the undersigned.

Very truly yours,

B. Benjamin Evans  
Engineering Consultant

BBE:pw  
Attachments (x3)  
cc: George Polly, WRCT

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FM EXAMINERS

88.3MHZ  
BPED -891108MA WRCT  
PITTSBURGH PA  
CARNEGIE-MELLON STUD. GOVT. CORP.

Code 30 PN: 11/30/89

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Approved by OMB

3060-0034

NOV 08 1989

Expires 4/30/92

See Page 23 for information regarding public burden estimate

Federal Communications Commission  
Washington, D. C. 20554

FCC 340

APPLICATION FOR CONSTRUCTION PERMIT FOR  
NONCOMMERCIAL EDUCATIONAL BROADCAST STATION  
(Carefully read instructions before filing form) Return only form to FCC

FCC MAIL BRANCH

For Commission Use Only

File No.

BPED-891108MA

Section I - GENERAL INFORMATION

1. Name of Applicant  Carnegie-Mellon Student Government Corp.		
Street Address or P.O. Box ✓ 5020 Forbes Avenue		
City Pittsburgh	State PA	ZIP Code 15213
Telephone No. (Include Area Code) (412) 621-9728		

Send notices and communications to the following person at the address below:		
Name  George Polly WRCT Radio		
Street Address or P.O. Box 5020 Forbes Avenue		
City Pittsburgh	State PA	ZIP Code 15213
Telephone No. (Include Area Code) (412) 621-9728		

2. This application is for:  AM  FM  TV

(a) Channel No. or Frequency Ch. 202 (88.3 MHz)
--

(b) Principal Community	City	State
	Pittsburgh	PA

(c) Check one of the following boxes:

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

NOV 8 2 59 PM '89  
REC'D  
FCC

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

3. Is this application mutually exclusive with a renewal application?  Yes  No

If Yes, state:	Call letters	Community of License	
		City	State

Entered  
11.29.89

EVANS ASSOCIATES  
Consulting Engineers

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ENGINEERING EXHIBIT

APPLICATION FOR CONSTRUCTION PERMIT  
TO INCREASE EFFECTIVE RADIATED POWER

CARNEGIE-MELLON STUDENT GOVERNMENT CORPORATION  
WRCT (FM), PITTSBURGH, PENNSYLVANIA

CHANNEL 202A 1.50 KW ERP 16 M HAAT

OCTOBER 1989

<b>Section V-B - FM BROADCAST ENGINEERING DATA</b>	<b>FOR COMMISSION USE ONLY</b> File No. _____ ASB Referral Date _____ Referred by _____
--	--

Name of Applicant

Carnegie-Mellon Student Government Corporation

Call letters (if issued)  <p style="text-align: center;">WRCT</p>	Is this application being filed in response to a window? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, specify closing date: _____
---	---

Purpose of Application: (check appropriate boxes!)

- |  |   |
|--|---|
| <input type="checkbox"/> Construct a new (main) facility                       | <input type="checkbox"/> Construct a new auxiliary facility                         |
| <input type="checkbox"/> Modify existing construction permit for main facility | <input type="checkbox"/> Modify existing construction permit for auxiliary facility |
| <input checked="" type="checkbox"/> Modify licensed main facility              | <input type="checkbox"/> Modify licensed auxiliary 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 checked="" 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                 | <input type="checkbox"/> Other (Summarize briefly)           |

File Number(s) BLED-840419DP

1. Allocation:

Channel No.	Principal community to be served:			Class (check only one box below)					
202	City	County	State	<input checked="" type="checkbox"/> A	<input type="checkbox"/> B1	<input type="checkbox"/> B	<input type="checkbox"/> C3		
	Pittsburgh	Allegheny	PA	<input type="checkbox"/> C2	<input type="checkbox"/> C1	<input type="checkbox"/> C	<input type="checkbox"/> D		

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.

5000 Forbes Avenue, City of Pittsburgh, Allegheny County, Pennsylvania

(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 or East Longitude where applicable; otherwise, North Latitude or West Longitude will be presumed.

Latitude	40° 26' 39"	Longitude	79° 56' 37"
----------	-------------	-----------	-------------

3. 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. \_\_\_\_\_

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. \_\_\_\_\_

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            °            '            "	Longitude           °            '            "
---	---

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. **Alteration of the existing antenna structure is not proposed.**

Exhibit No.
-------------

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

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)	_____	N.A.	_____
(b)	_____	_____	_____

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

- (1) of site above mean sea level; 288.6 meters
- (2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and 40.5 meters
- (3) of the top of supporting structure above mean sea level [(aX1) + (aX2)] 329.2 meters

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

- (1) above ground 35.7 meters (H)
- 35.7 meters (V)
- (2) above mean sea level [(aX1) + (bX1)] 324.3 meters (H)
- 324.3 meters (V)
- (3) above average terrain 16.2 meters (H)
- 16.2 meters (V)

8. Attach as an Exhibit sketch(es) of the supporting structure, labelling all elevations required in Question 7 above, except item 7(bX3). 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. <b>Eng.Fig.1</b>
---------------------------------

9. Effective Radiated Power:

(a) ERP in the horizontal plane 1.50 kw (H\*) 1.50 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.
-------------

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

\*Polarization

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.

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.

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 or to radio receivers in use prior to grant of this application. (See 47 C.F.R. Sections 73.315(b), 73.316(d) and 73.318.)

Exhibit No.  
Eng.

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.  
On File

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.  
Eng. Fig. 2

- (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 428.5 sq. km.      Population 807,951

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.  
Eng. Fig. 2

Enter the following from Exhibit above:      Gain Area 319.9 sq. km. ~~XXXXXX~~  
Loss Area 0 ~~XXXXXX~~

Percent change (gain area plus loss area as percentage of present area) 295 %.  
If 50% or more this constitutes a major change. Indicate in question 2(c), Section I, accordingly.

Exhibit No.

17. For an application involving an auxiliary facility only, attach as an Exhibit a map (*Sectional Aeronautical Chart or equivalent*) that 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.: \_\_\_\_\_)

18. 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: BPED-790814AB)

Other (*briefly summarize*).

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)
0	24.4	11.24
45	21.9	11.24
90	- 17.1	11.24
135	50.9	14.47
180	16.5	11.24
225	7.3	11.24
270	15.5	11.24
315	9.4	11.24

**Allocation Studies**

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

19. 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.

SECTION V-B - 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 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.  
Eng.

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:

Exhibit No.  
Eng. Fig. 3

- (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.
- (h) 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)*.

Exhibit No.

None pertinent.

23.(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

(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.

(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.

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 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.
- (5) The official title(s) of the map(s) used in the exhibits(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?

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.  
Eng. Fig. 4

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

Yes  No

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

Exhibit No.

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

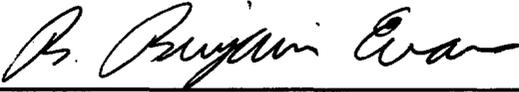
If you answer Yes, submit as an Exhibit an Environmental Assessment required by Section 1.1311.

Exhibit No.

If No, explain briefly why not. See Engineering 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) B. Benjamin Evans	Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer
Signature 	Address (Include ZIP Code) 216 N. Green Bay Road Thiensville, WI 53092
Date October 20, 1989	Telephone No. (Include Area Code) ( 414 ) 242-6000

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ENGINEERING STATEMENT

FCC MAIL BRANCH

This Engineering Statement and the attached figures have been prepared on behalf of Carnegie-Mellon Student Government Corporation, licensee of Non-Commercial Educational FM station WRCT in Pittsburgh, Pennsylvania, by B. Benjamin Evans of Evans Associates, Consulting Communications Engineers in Thiensville, Wisconsin. This Engineering Exhibit supports an application for construction permit to increase the effective radiated power of WRCT, which operates on Channel 202A (88.3 MHz).

+ + + + +

PRELIMINARY

WRCT presently operates on 88.3 MHz with an effective radiated power of 100 watts. It is proposed herein to increase the ERP to 1.50 kilowatts. The antenna system and antenna-supporting tower will not be altered, since they are more than adequate to accomodate the proposed power increase.

In addition, this application corrects an error in the antenna height above average terrain, which is currently listed in the Commission's files as 18 meters. Using the antenna height above mean sea level and the average terrain heights above mean sea level of the eight equally-spaced radials shown in a previous application for construction permit (FCC File No. BPED-790814AB), the HAAT is 16.2 meters.

PROPOSED FACILITIES

The present WRCT antenna, a Jampro JSCP-3, and transmission line are rated for the power level proposed herein. A new one-kilowatt transmitter will be installed and will be adjusted to operate at 1.02 kilowatts. The transmission line loss is 0.077 dB. Using the published Jampro antenna gain of 1.5, the effective radiated power is 1.50 kilowatts.

Figure 1, attached, is a sketch showing the WRCT antenna structure, which is included for reference even though no changes are to be made thereto.

ALLOCATIONS

An allocation study conducted by this affiant has determined that WRCT may operate at 1.50 kilowatts ERP on Channel 202 without causing predicted interference to primary FM facilities, either

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Engineering Statement  
WRCT(FM), Pittsburgh, PA

authorized or proposed. Figure 3 is an allocation study which shows that the instant proposal will not cause prohibited overlap of predicted contours with any other FM facility so as to cause or receive interference in contravention of Section 73.509 of the FCC Rules. Also, there are no commercial FM facilities within 53 or 54 channels to which IF interference would be caused.

The WRCT transmitter site is within 320 kilometers of the common border between the United States and Canada. This proposal is deemed in compliance with all pertinent agreements and treaties with Canada in matters of FM allocations.

#### TV CHANNEL 6 INTERFERENCE

The instant proposal complies with Section 73.525 of the FCC Rules, which protects the reception of TV Channel 6 stations from undue interference caused by non-commercial educational FM stations. The Channel 6 facility that is closest to WRCT is WJAC-TV in Johnstown, Pennsylvania.

The predicted interference within the WJAC-TV Grade B contour is shown in attached Figure 4-A, and an explanation of how the TV Channel 6 interference study was conducted is presented in Figure 4-C.

The predicted interference area is totally within the city grade contour of TV station WPXI in Pittsburgh, which is an affiliate of the same network as WJAC-TV, and completely outside the Grade A contour of WJAC-TV. Furthermore, no part of the predicted interference area is located in the same ADI market as WJAC-TV. Therefore, the proposed power increase is in compliance with Section 73.525 of the FCC Rules. Details are given in Figure 4-C.

#### BLANKETING

The distance to the proposed blanketing contour, as determined according to Section 73.318 of the FCC Rules, is 0.48 kilometer. The applicant will satisfy all complaints of blanketing interference which are received by the station during a one-year period.

Engineering Statement  
WRCT(FM), Pittsburgh, PA

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INTERFERENCE CONSIDERATIONS

No interference due to spurious or harmonic emissions or to cross modulation is expected to be caused to any of the other FM or TV facilities within 10 kilometers of WRCT. If, in spite of expectations, difficulties of this sort do occur, the applicant will cooperate fully in their resolution. The FM and TV broadcast facilities that are within 10 kilometers of WRCT include:

WQED-FM	WDUQ (FM)	WYEP-FM	WLTJ (FM)	WBZZ (FM)	WWSW-FM
WHTX (FM)	WPTS-FM	WSHH (FM)	WDVE (FM)	WAMO-FM	WDSY (FM)
KDKA-TV	WPXI (TV)	WQED (TV)	WQEX (TV)	WPGH-TV	

RADIO FREQUENCY EXPOSURE

The instant proposal has been reviewed in accordance with OST Bulletin No. 65 entitled "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation." The WRCT antenna is mounted on a 40-foot tower which is on the roof of a seven-story office building.

Figure 5-A, attached, is a tabulation of relative field antenna radiations for vertical angles between 90 and -90 degrees relative to the horizontal plane. As can be seen, the maximum relative field in the downward direction occurs at -61 degrees, where the field is 0.349. The shortest distance from any point two meters above the roof to the center of radiation is 5.3 meters. Using the method of calculating the power density described in the bulletin, the worst-case power density due to the proposed WRCT power level would be 0.435 mW/cm<sup>2</sup>, or 43.5% of the ANSI-recommended exposure level. There are no other buildings in the immediate area which extend into or above the aperture of the antenna. Therefore, the instant proposal would not be a radiation hazard to either the general public or to office personnel.

ENVIRONMENTAL ASSESSMENT

Since no changes are proposed to the existing antenna structure, and in view of the above, this proposal does not constitute a major environmental action.

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Engineering Statement  
WRCT(FM), Pittsburgh, PA

ATTACHED FIGURES:

<u>Figure #</u>		<u>Page #</u>
	FCC Form 340, Section V-B	2-7
	Engineering Statement	8-11
	Affidavit	12
1	Vertical Plan Tower Sketch	13
2	Map Showing Present/Proposed 1 mv/m Contours	14
3	FM Allocation Study	15
4	TV Channel 6 Interference Study	16-18
5	Antenna Radiation Fields at Vertical Angles	19-20

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A F F I D A V I T

COUNTY OF OZAUKEE     )  
                                  )   SS:  
STATE OF WISCONSIN    )

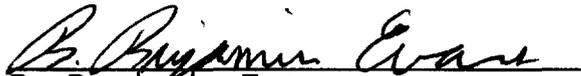
B. BENJAMIN EVANS, being duly sworn upon oath deposes and says:

That he is a Consulting Communications Engineer in Wisconsin, and is a partner in the firm of Evans Associates;

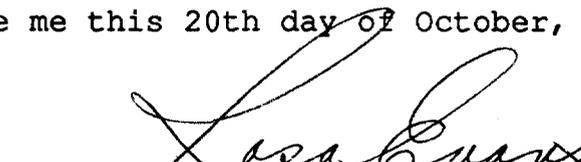
That his qualifications are a matter of record with the Federal Communications Commission;

That he has been retained by Carnegie-Mellon Student Government Corporation to prepare the instant engineering exhibit;

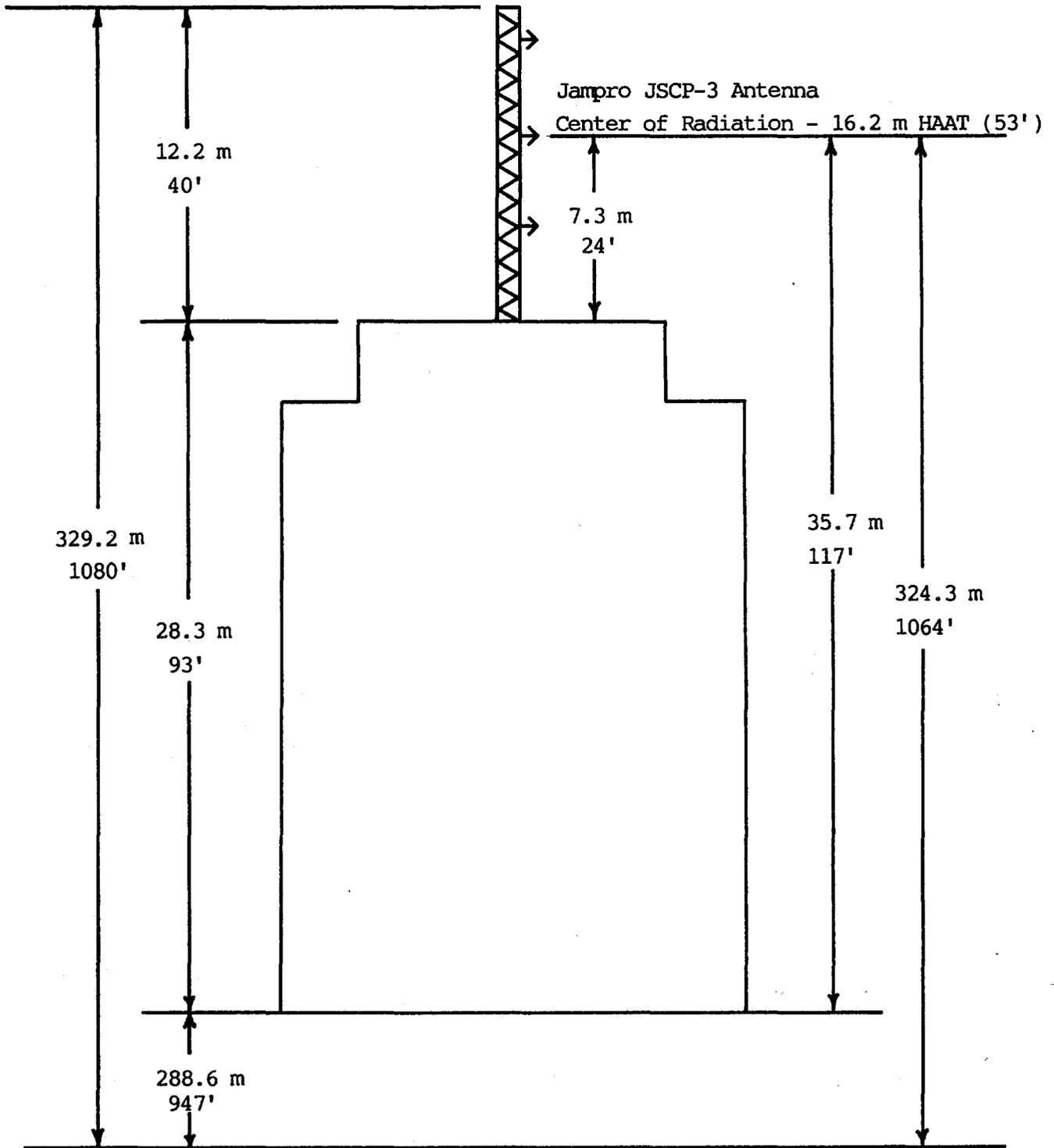
That he has either prepared or directly supervised the preparation of all technical information contained in this engineering exhibit, and that the facts stated in the attached engineering statement are true to his knowledge except such statements identified herein as based on information or belief and as to such statements he believes them to be true.

  
B. Benjamin Evans

Subscribed and sworn to before me this 20th day of October, 1989.

  
Notary Public

My Commission expires Oct 1992



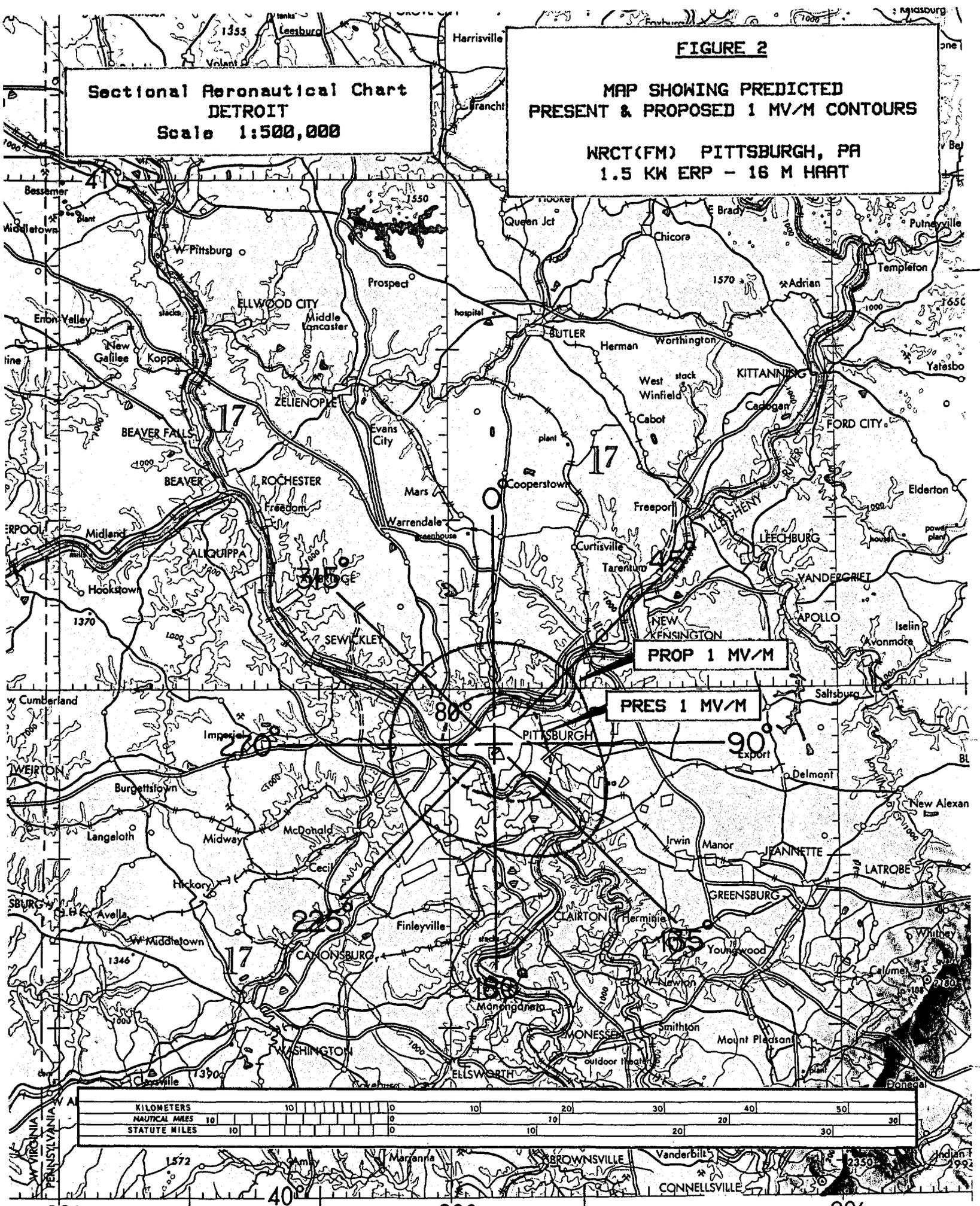
VERTICAL SKETCH OF EXISTING ANTENNA STRUCTURE

Radio Station WRCT(FM)  
Pittsburgh, Pennsylvania

**Sectional Aeronautical Chart  
DETROIT  
Scale 1:500,000**

**FIGURE 2  
MAP SHOWING PREDICTED  
PRESENT & PROPOSED 1 MV/M CONTOURS**

**WRCT(FM) PITTSBURGH, PA  
1.5 KW ERP - 16 M HAAT**



KILOMETERS	0	10	20	30	40	50
NAUTICAL MILES	0	10	20	20	40	30
STATUTE MILES	0	10	10	20	20	30

FM FREQUENCY ALLOCATION STUDY

Channel: 202A ( 88.3 MHz) 1.5 KW ERP  
 Coordinates: 40 - 26 - 39 79 - 56 - 37 16 M HAAT  
 Job Title: WRCT - PITTSBURGH PA

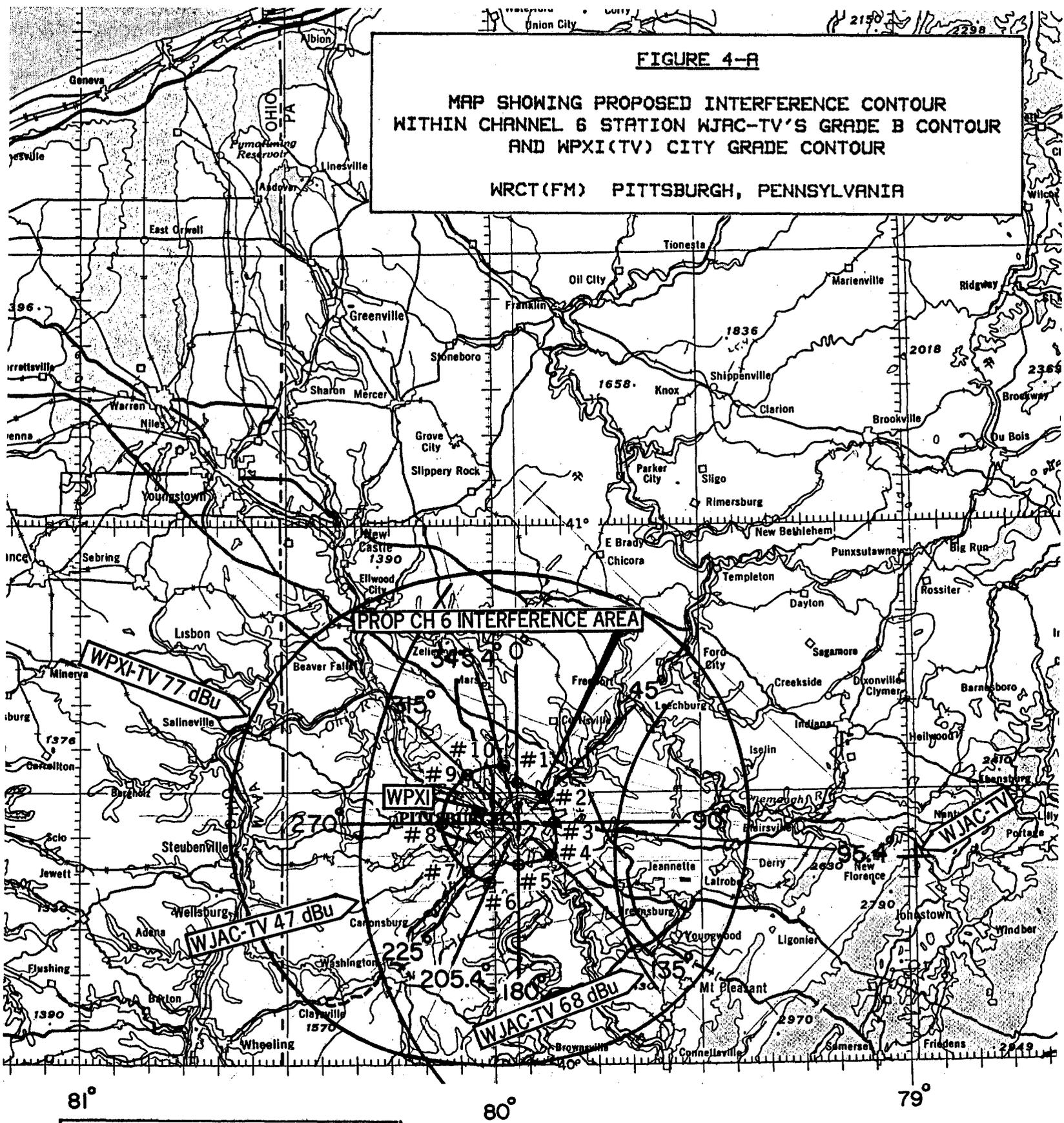
CALL STATUS	CITY STATE	CH/CL-ZN FCC#	ERP-kw COMMENTS	HAAT-m DA	LATITUDE LONGITUDE	BEAR-to -from-°T	DIST-km CLEAR-km	REQ -km
WVBC LIC	Bethany WV	201A BLED850206LM>	1.10	125	40 12 58 80 33 31	244.3°	58.1	
Des. WVBC	60 dBu -	21.1 km	Undes. WRCTPI	54 dBu -	16.1 km		+20.9	37.2
Undes. WVBC	54 dBu -	31.5 km	Des. WRCTPI	60 dBu -	11.2 km		+15.4	42.7
WGEV APP	Beaver Falls PA	202A BPED880623MK>	.100	71	40 46 21 80 18 33	319.9°	47.8#	
WYSU CP	Youngstown OH	203B BPED880114MA>	50.	107	41 3 28 80 38 42	319.3°	90.3	
Des. WYSU	60 dBu -	46.1 km	Undes. WRCTPI	54 dBu -	16.1 km		+28.1	62.2
Undes. WYSU	54 dBu -	71.7 km	Des. WRCTPI	60 dBu -	11.2 km		+7.4	82.9
NEW APP	Slippery Rock PA	201A 890424MK>	.100	24	41 3 43 80 2 35	353.7°	69.1	61.0
							+8.1	
WYSU LIC	Youngstown OH	203B BLED821019AD>	45.	47	41 6 19 80 38 42	321.4°	94.3	
Des. WYSU	60 dBu -	31.7 km	Undes. WRCTPI	54 dBu -	16.1 km		+46.5	47.8
Undes. WYSU	54 dBu -	53.3 km	Des. WRCTPI	60 dBu -	11.2 km		+29.8	64.5

\*\* ---> CHANNEL SUITABLE FOR ASSIGNMENT WITH SPECIFIED POWER AND HEIGHT

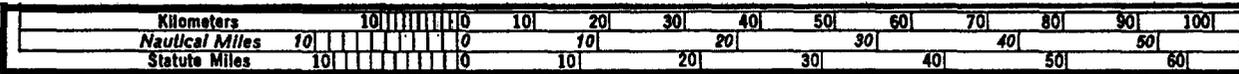
FIGURE 4-A

MAP SHOWING PROPOSED INTERFERENCE CONTOUR  
WITHIN CHANNEL 6 STATION WJAC-TV'S GRADE B CONTOUR  
AND WPXI(TV) CITY GRADE CONTOUR

WRCT(FM) PITTSBURGH, PENNSYLVANIA



World Aeronautical Chart  
LAKE ERIE (309)  
Scale 1:1,000,000



**TABULATION OF TV CHANNEL 6 INTERFERENCE CALCULATIONS**  
**AT POINTS ON PREDICTED FM INTERFERENCE CONTOUR**

**WRCT(FM), PITTSBURGH, PA**  
**WJAC-TV, JOHNSTOWN, PA**

Point#	Coordinates	[---Desired Signal from TV Channel 6---]					S73.599 Figure 1 U/D Ratio -dB- (B)	[--Undesired Signal from Proposed FM---]					Directivity Adjust-dB (C)	F(50,10) FM Interf Signal-dBu (A)+(B)+(C)
		Dist-km	Bear-°T	Ant Ht AboveAve-m	F(50,50) Signal-dBu (A)			Dist-km	Bear-°T	Ant Ht AboveAve-m	F(50,10) Signal-dBu			
1	40-31-11 79-56-37	83.2	281.8	489*	59.7	-0.7	8.4	0.0	24.4	65.0	6.0	65.0		
2	40-29-35 79-52-45	77.3	280.4	489*	62.1	-1.5	7.7	45.0	21.9	66.6	6.0	66.6		
3	40-26-39 79-51-22	74.6	276.5	485*	63.1	-1.8	7.4	90.0	-17.1	67.3	6.0	67.3		
4	40-22-59 79-51-48	74.8	271.3	477*	62.8	-1.7	9.6	135.0	50.9	67.1	6.0	67.1		
5	40-22-07 79-56-37	81.6	270.1	477*	60.0	-1.0	8.4	180.0	16.5	65.0	6.0	65.0		
6	40-20-16 80-00-36	87.3	267.9	469*	57.3	0.0	13.1	205.4	-15.2*	57.3	0.0	57.3		
7	40-21-16 80-03-41	91.6	269.2	469*	55.4	+0.7	14.1	225.0	7.3	56.1	0.0	56.1		
8	40-26-38 80-07-32	97.3	275.1	485*	53.5	+1.2	15.4	270.0	15.5	54.7	0.0	54.7		
9	40-32-04 80-03-45	93.3	281.6	489*	55.3	+0.7	14.2	315.0	9.4	56.0	0.0	56.0		
10	40-33-19 79-58-54	87.1	283.9	485*	57.9	-0.2	12.8	345.4	20.2*	57.7	0.0	57.7		

\* Antenna heights above average determined using the NGDC 30-Second Topographic Data Base. All others are from data on file with the Commission.

EVANS ASSOCIATES  
Consulting Engineers

RECEIVED BY

TV CHANNEL 6 INTERFERENCE STUDY

NOV 08 1989

EXPLANATION OF CONCLUSIONS

FCC MAIL BRANCH

The closest TV Channel 6 station is WJAC-TV in Johnstown, Pennsylvania, located 82.0 kilometers away. Figure 4-A, attached, is a map showing the calculated Grade B (47 dBu) contour of WJAC-TV. Also shown is the predicted interference contour of WRCT at the power level proposed herein, calculated in accordance with Section 73.525(e)(1) of the FCC Rules. This contour was determined in the following manner:

Ten radials from WRCT were evaluated (the eight standard radials plus 205.4 degrees and 345.4 degrees) to determine a set of ten points (one point per radial) such that at each point, the ratio of the undesired FM signal (from the F(50,10) curves) to the desired TV signal (from the F(50,50) curves) is equal to the required U/D ratio for the corresponding TV signal level as given in Figure 1 of Section 73.599. For the 220-degree arc centered at the bearing from WRCT to WJAC-TV, which is 345.4 degrees True clockwise to 205.4 degrees True, an adjustment of +6 dB was added to each of the FM interfering field strength levels to account for TV antenna directivity, since the predicted interference area is well outside of WJAC-TV's predicted Grade A contour. A smooth curve was then drawn through the ten points thus determined.

Figure 4-B is a tabulation showing the calculated FM and TV signal levels at each of the ten points on the interference contour. As can be seen, for all ten points, the predicted unwanted FM signal is exactly equal to the field strength required for "just-perceptible" interference to the TV Channel 6 signal as derived from Figure 1 of Section 73.599, after directivity adjustment if appropriate. This means that the WRCT interference contour was correctly determined.

WJAC-TV is an affiliate of NBC. TV station WPXI, Channel 11 in Pittsburgh, is also an NBC-affiliate, and is located 5.3 kilometers from WRCT. The predicted Channel 6 interference area is completely outside of the ADI market of WJAC-TV. Figure 4-A shows the predicted city grade (77 dBu) contour of WPXI. As can be seen, this contour completely encompasses the interference area. In accordance with 73.525(e)(3)(iii), the entire population within the interference area may be subtracted from the number of people predicted to receive interference, the result of which, of course, is zero. Therefore, the instant proposal is in substantial compliance with Section 73.525 of the FCC Rules.

TABLE OF FIELD STRENGTH

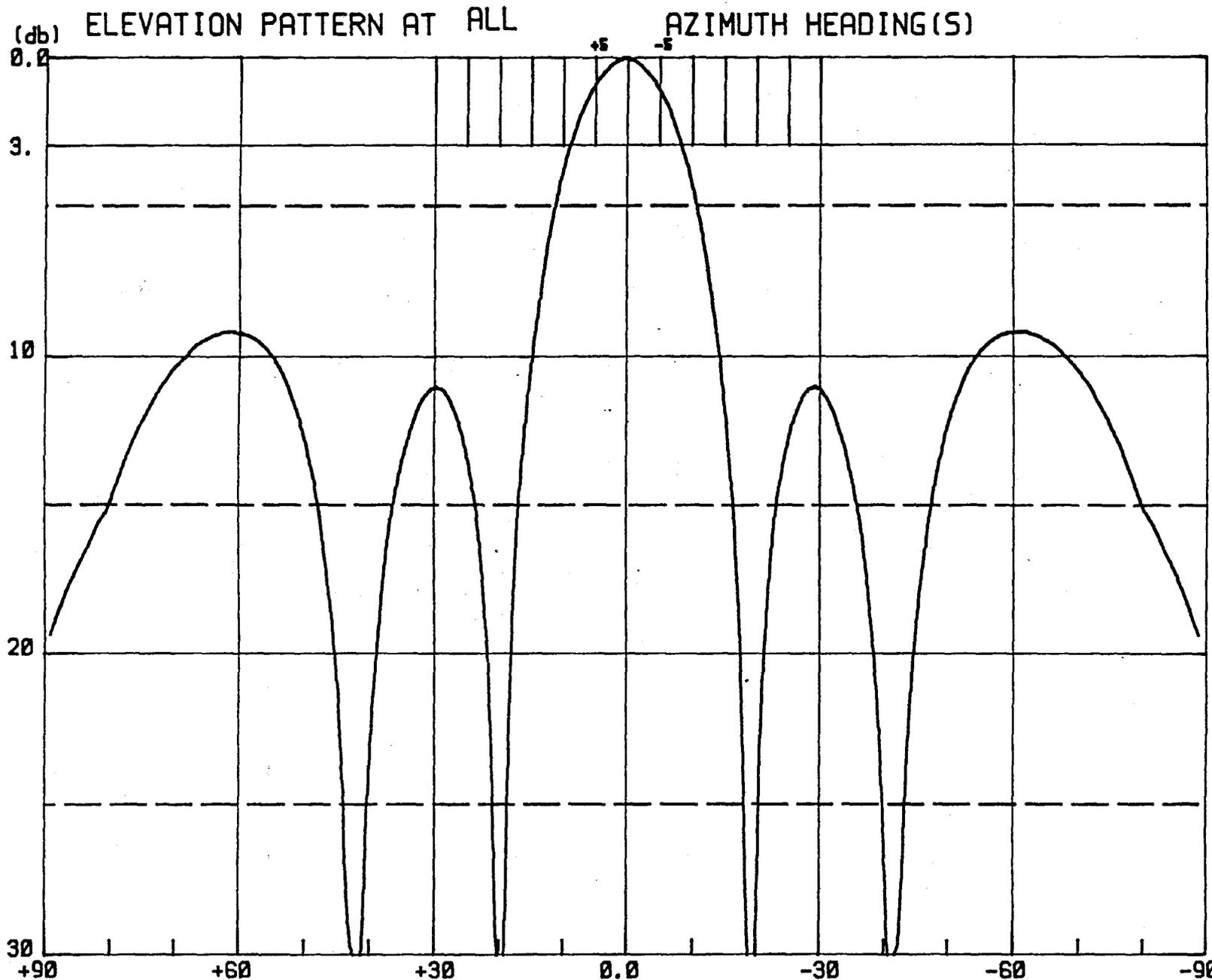
3-BAY

ELEV. ANGLE	FIELD STRNGTH								
90.0	.100	89.0	.108	88.0	.116	87.0	.123	86.0	.131
85.0	.139	84.0	.147	83.0	.154	82.0	.162	81.0	.170
80.0	.177	79.0	.191	78.0	.204	77.0	.218	76.0	.231
75.0	.243	74.0	.256	73.0	.268	72.0	.280	71.0	.291
70.0	.301	69.0	.310	68.0	.319	67.0	.326	66.0	.333
65.0	.339	64.0	.343	63.0	.346	62.0	.348	61.0	.349
60.0	.347	59.0	.346	58.0	.342	57.0	.337	56.0	.330
55.0	.320	54.0	.308	53.0	.294	52.0	.278	51.0	.259
50.0	.239	49.0	.214	48.0	.188	47.0	.161	46.0	.132
45.0	.102	44.0	.070	43.0	.038	42.0	.006	41.0	.026
40.0	.058	39.0	.090	38.0	.121	37.0	.151	36.0	.179
35.0	.204	34.0	.227	33.0	.246	32.0	.262	31.0	.274
30.0	.281	29.0	.280	28.0	.275	27.0	.264	26.0	.247
25.0	.225	24.0	.196	23.0	.162	22.0	.123	21.0	.078
20.0	.028	19.0	.026	18.0	.085	17.0	.147	16.0	.212
15.0	.280	14.0	.349	13.0	.419	12.0	.489	11.0	.559
10.0	.626	9.0	.689	8.0	.747	7.0	.801	6.0	.850
5.0	.892	4.0	.929	3.0	.958	2.0	.980	1.0	.994
.0	1.000	-1.0	.994	-2.0	.980	-3.0	.958	-4.0	.929
-5.0	.892	-6.0	.850	-7.0	.801	-8.0	.747	-9.0	.689
-10.0	.626	-11.0	.559	-12.0	.489	-13.0	.419	-14.0	.349
-15.0	.280	-16.0	.212	-17.0	.147	-18.0	.085	-19.0	.026
-20.0	.028	-21.0	.078	-22.0	.123	-23.0	.162	-24.0	.196
-25.0	.225	-26.0	.247	-27.0	.264	-28.0	.275	-29.0	.280
-30.0	.281	-31.0	.274	-32.0	.262	-33.0	.246	-34.0	.227
-35.0	.204	-36.0	.179	-37.0	.151	-38.0	.121	-39.0	.090
-40.0	.058	-41.0	.026	-42.0	.006	-43.0	.038	-44.0	.070
-45.0	.102	-46.0	.132	-47.0	.161	-48.0	.188	-49.0	.214
-50.0	.239	-51.0	.259	-52.0	.278	-53.0	.294	-54.0	.308
-55.0	.320	-56.0	.330	-57.0	.337	-58.0	.342	-59.0	.346
-60.0	.347	-61.0	.349	-62.0	.348	-63.0	.346	-64.0	.343
-65.0	.339	-66.0	.333	-67.0	.326	-68.0	.319	-69.0	.310
-70.0	.301	-71.0	.291	-72.0	.280	-73.0	.268	-74.0	.256
-75.0	.243	-76.0	.231	-77.0	.218	-78.0	.204	-79.0	.191
-80.0	.177	-81.0	.170	-82.0	.162	-83.0	.154	-84.0	.147
-85.0	.139	-86.0	.131	-87.0	.123	-88.0	.116	-89.0	.108
-90.0	.100								



6939 Power Inn Road, P.O. Box 28425, Sacramento, CA 95828 (916) 383-1177 Telex: 377321

FIGURE 5-B



Station: WRCT

CH./Freq.: 88.3 MHz

Antenna type: JSCP

No. of Bays: 3

Comments:



(DEG.)

**SECTION VI - EQUAL EMPLOYMENT OPPORTUNITY PROGRAM**

1. Does the applicant propose to employ five or more full-time employees? **Not Applicable**  Yes  No

If Yes, the applicant must include an EEO program called for in the separate Broadcast Equal Employment Opportunity Program Report (FCC 396-A).

**SECTION VII - CERTIFICATION**

1. Has or will the applicant comply with the public notice requirements of 47 C.F.R. Section 73.3580?  Yes  No

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

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

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

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

**WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT.  
U.S. CODE, TITLE 18, SECTION 1001.**

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

Name of Applicant <b>CARNEGIE-MELLON STUDENT GOVERNMENT CORP.</b>	Title <b>FACULTY ADVISOR</b>
Signature <b>Rois E. Cox</b>	Date <b>October 27, 1989</b>

**FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT  
AND THE PAPERWORK REDUCTION ACT**

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The principal purpose for which the information will be used is to determine if the benefit requested is consistent with the public interest. The staff, consisting variously of attorneys, analysts, engineers and applications examiners, will use the information to determine whether the application should be granted, denied, dismissed, or designated for hearing. If all the information is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Accordingly, every effort should be made to provide all necessary information. Your response is required to obtain the requested authority.

Public reporting burden for this collection of information is estimated to vary from 76 to 80 hours with an average of 78 hours 04 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Office of Managing Director, Washington, D.C. 20554, and to the Office of Management and Budget, Paperwork Reduction Project (3060-0034), Washington, D.C. 20503.

**THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.**