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September 4, 1986

ORIGINAL

Mr. William J. Tricarico
Secretary
Federal Communications Commission
1919 M Street, N.W. - Room 222
Washington, D.C. 20554

RE: Amendment, Non-Commercial Education
Application, BPED-860307MK
Station WSGN(FM)

Dear Mr. Tricarico:

On behalf of Gadsden State Community College, licensee of non-commerical, education station WSGN(FM), there is transmitted herewith, in triplicate, an amendment to its pending application, file no. BPED-860307MK. It should be noted that the college was formerly named Gadsden State Junior College.

Should any questions arise, please contact the undersigned.

Sincerely,

M. Scott Johnson

MSJ/dal

AMENDMENT

The application of Gadsden State Community College (formerly Gadsden State Junior College) for modification of Radio Station WSGN-FM, Gadsden, Alabama (File No. BPED 860307MK), is hereby amended to include the attached amended engineering information.

SIGNED:

Robert W. Howard
President
Gadsden State Community College

DATED: September 4, 1986

ENGINEERING STATEMENT IN SUPPORT OF
AMENDMENT TO APPLICATION FOR MAJOR CHANGES
WSGN (FM) CH. 271C2 91.3 MHZ 15 KW 158.7 METERS
GADSDEN STATE JUNIOR COLLEGE
GADSDEN, ALABAMA

INTRODUCTION

Gadsden State Junior College ("GSJC"), licensee of Educational FM Broadcast Station WSGN, has applied to the Federal Communications Commission for authority to make major changes to the technical facilities of WSGN. WSGN is presently licensed to serve Gadsden, Alabama and the surrounding area on Channel 218C, using an effective radiated power ("ERP") of 3.5 kW and an antenna height of 23 meters above the average of the terrain within the distance range of 3.2 to 16.1 km. from the antenna ("HAAT"). In its application to the FCC, GSJC proposed to increase the power of WSGN to 15 kw (vertically polarized only); to increase the antenna height to 158.7 meters HAAT; and to change frequency to Channel 217C2.

Herein, GSJC proposes to amend its application by specifying a small amount of radiation in the horizontally polarized mode. It does so in order to qualify for the adjustment of television receiving antenna directivity specified in paragraph (e)(1)(iii) of Section 73.525 of the Federal Communications Commission Rules and Regulations ("the FCC Rules"). No other changes are being proposed.

All calculations, graphs, contours, and other technical data have been determined in accordance with the existing FCC Rules.

REASON FOR INSTANT AMENDMENT

Section 73.525(e)(1)(iii) of the FCC Rules provides that an adjustment of 6 dBu for television receiving antenna directivity will be added to each non-commercial FM interference calculation at all points outside the Grade A field strength contour of the TV Channel 6 station and within an arc of plus/minus 110 degrees from the bearing to the TV station. Section 73.525(e)(4)(i) states:

"The maximum permissible effective radiated power (ERP) and antenna height may be adjusted for vertical polarity as follows:

(i) If the applicant chooses to use vertically polarized transmissions only, the maximum permissible vertically polarized ERP will be the maximum horizontally polarized ERP permissible at the same proposed antenna height, calculated without the adjustment for television receiving antenna directivity specified in paragraph (e)(1)(iii) of this section, multiplied by either: 40 if the predicted interference area lies entirely outside the limits of a city of 50,000 persons or more; or 10 if it does not.

(ii) If the applicant chooses to use mixed polarity, the permissible ERP is as follows:

[H + V/A] is no greater than P

Where:

H is the horizontally polarized ERP in kilowatts for mixed polarity;

V is the vertically polarized ERP in kilowatts for mixed polarity;

A is 40 if the predicted interference area lies entirely outside the limits of a city of 50,000 persons or more, or 10 if it does not; and

P is the maximum permitted horizontally polarized-only power in kilowatts.

DESCRIPTION OF INSTANT AMENDMENT

Herein, GSJC amends its proposal so as to include a horizontally polarized, non-directive radiation of 0.084 kw. The computed contours of interference to Television Channel 6 Station WBRC (Birmingham, Alabama), based on both the present and the proposed operations of WSGN have been determined and are presented in map form as Figure 1, attached.

CHANNEL UTILIZATION DATA - TV CHANNEL 6

A detailed study has been made which examines potential

interference to television Channel 6 operations. There is only one TV-6 operation (WBRC, Birmingham, AL) which is within the 174 km range specified in Section 73.525(a)(1) of the FCC Rules. As stated above, map Figure 1, attached hereto, presents the pertinent section of the WBRC Grade B (47 dBu) contour, as well as the computed interference contours for both the present and proposed WSGN operations.

The basic undesired/desired signal strength (U/D) ratios for Educational FM channels are given in graphical form as Figures 1 and 2 of Section 73.599 of the FCC Rules. For that portion of the predicted interfering contour which is within the angle of +/- 110° of the line connecting the WSGN and WBRC transmitter locations has been increased by 6 dB to allow for television receiving antenna directivity. The 47 dBu contour, plus the U/D ratio, plus the 6 dB antenna directivity value result in a potentially interfering signal strength value of approximately 82 dBu (F50/10) for the proposed WSGN operation on Channel 217, and of approximately 85.5 dBu for the present operation on Channel 218.

Those predicted interfering contours were based on using a fortieth of the proposed vertically radiated power to account for television antenna polarization discrimination plus the horizontally polarized radiated power. Therefore, a power level of 3.5 kW (5.44 dBk) was used to define the predicted interference in the case of the present operation, and a power level of 0.459 kW (-3.38 dBk) for the proposed operation.

The unique (non-common) population which is predicted to receive new interference is less than half of the population which (according to the prescribed calculations) presently receiving interference to Channel 6 TV reception from WSGN. Specifically, it was determined that 11,056 persons reside in the former area, and 22,680 in the latter area. Thus, the proposed operation of WSGN will cause interference to TV 6 reception to only 48.7% as many receiving locations as does the present operation.

The population data used for this determination were taken directly from the 1980 U.S. Census of Population and Housing Census Tract Report for the Gadsden, Alabama Standard Metropolitan Statistical Area. This report provides the total number of people residing within each census tract. For the purpose at hand, it was assumed that tract population is evenly distributed within the tract.

NO CHANGE OF SERVICE AREA TO RESULT FROM AMENDMENT

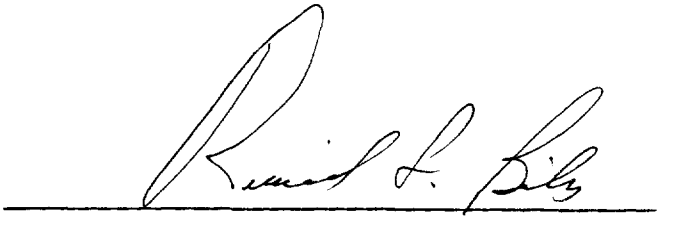
The computed 60 dBu (1.0 mV/m) service contour of the proposed 0.084 kW horizontal plane power will be totally contained within the corresponding contour of the 15 kw vertical plane power as proposed originally. Therefore, no new contour maps need be provided.

NO CHANGE IN ANALYSIS OF RF RADIATION COMPLIANCE

The amount of power being proposed for the horizontal plane of radiation is so much less than that for the vertical plane (and which was the subject of a detailed analysis in the original application), that no change in the original analysis is warranted.

CERTIFICATION

Under penalty of perjury, I state that the above is true and correct to the best of my knowledge and belief.



Richard L. Biby
Registered Professional Engineer
District of Columbia Reg. No. 5170E
Commonwealth of Virginia Reg. No. 14018
August 19, 1986

Name of Applicant: Gadsden State Junior College

1. Purpose of authorization applied for: Amendment to application for major changes (WSGN) FCC File # BPED-860307MK

☐ Construct a new station ☐ Install Auxiliary system

Change:
- ■ Effective radiated power
- ■ Frequency
- ■ Antenna height above average terrain
- ■ Transmitter location
- ☐ Studio location outside community of license
- ■ Other (*Summarize briefly the nature of the changes proposed.*) Specify horizontal power

2. Community of license: no change State: Alabama City or Town: Gadsden

3. Facilities requested:

Frequency	Channel No.	Class (Check one below)
91.3 MHz	217	☐ A ☐ B ☐ B1 ☐ C ☐ C1 ■ C2 ☐ D

4. Geographic coordinates of antenna (to nearest second) no change

North Latitude 34° 04' 29" West Longitude 86° 01' 11"

5. Effective radiated power: specify horizontal power

Polarization	Horizontal Plane	Maximum (Beam tilt only)
Horizontal	.084 kW	DNA kW
Vertical	15 kW	DNA kW

6. Height in meters of antenna radiation center: no change

	Above Average terrain (HAAT)	Above Mean Sea Level	Above Ground
Horizontal	158.7 meters	384.1 meters	54.9 meters
Vertical	158.7 meters	384.1 meters	54.9 meters

7. Is a directional antenna being proposed? no change ☐ YES ■ NO

If Yes, attach as Exhibit No. DNA an engineering statement with all data specified in Section 73.316(d) of the Commission's Rules.

8. Transmitter location:

no change

State Alabama County Etowah

City or Town: Gadsden

Street Address (*or other identification*): Lookout Mtn., near Tuckahoe Hts.

9. Overall height of complete structure above ground, including all appurtenances and lighting (if any, see Part 17). no change 60.1 meters

10. Attach as Exhibit No. E map(s) (*Sectional Aeronautical charts or equivalent*) of the area proposed to be served and shown thereon:

(a) Proposed transmitter location and the radials along which the profile graphs have been prepared;

(b) The 1mV/m predicted contour;

(c) Area (*sq. mi.*) and population (*latest census*) within 1 mV/m contour;

(d) Scale of miles or kilometers (*kilometers if available*).

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

no change

Enter the following from Exhibit above:

Gain Area 4820 km

Loss Area 0 km

Percent change (gain area plus loss area as percentage of present area) 660 %.
If 50% or more this constitutes a major change. Indicate in question 2(e), Section I, accordingly.

12. If the main studio will not be within the boundaries of the principal community to be served, attach as Exhibit No. DNA a justification pursuant to Section 73.1125(f) of the Commission's Rules.

13. Attach as Exhibit No. E map(s) (*7.5 minute U.S. Geographic Survey topographic quadrangles if available*) of the proposed antenna location showing the following information:

(a) Proposed transmitter location accurately plotted with the latitude, the longitude lines clearly marked and showing a scale of statute kilometers.

(b) Transmitter location and call letters of all AM broadcast stations within 2 miles of the proposed antenna location.

14. If there are any FM or TV stations within 200 feet of proposed antenna or non-broadcast radio stations (*except amateur and citizens band*), or established commercial and government receiving stations in the general vicinity which may be adversely affected by the proposed operation, attach as Exhibit No. DNA the expected effect, a description of remedial steps that may be pursued if necessary, and a statement from the applicant accepting full responsibility for the elimination of any objectionable effect on existing stations.

none

15. Tabulation of Terrain Data. *(Calculated in accordance with the procedure prescribed in Section 73.313 of the Commission's Rules utilizing 7.5 minute topographic maps, if available.)* no change

Radial bearing *(degrees true)*	Height of antenna, radiation center above average elevation of radial (3-16 kilometers) Meters	Predicted Distance To the 1 mV/m contour (60 dBu) Kilometers
0°	127.3	38.4
45°	109.0	36.0
90°	176.9	43.9
135°	207.0	46.7
180°	207.4	46.7
225°	202.3	46.3
270°	129.4	38.7
315°	110.3	36.2

Allocation Studies
(See Subpart C of Part 73 of the Commission's Rules and Regulations)

16. 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 Exhibit No. DNA 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.

17. With regard to stations within 320 kilometers (199 miles) of the common border between the United States and Mexico, attach as Exhibit No. DNA information required in 1/.

18. If the proposed operation is for a channel in the range from channel 201 through 220 (88.1 through 91.9 MHz), then with regard to stations more than 320 kilometers (199 miles) from the common border between the United States and Mexico 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 Exhibit No. E a complete allocation study to establish the lack of prohibited overlap of contours involving these stations. The allocation study should include the following:

(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 miles 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).

1/ A showing that the proposed operation meets the minimum distance separation requirements. If any separations are proposed that are less than the applicable minimum separation requirements plus 15 kilometers, include these stations. Also include existing stations, proposed stations, and cities which appear in the Table of Assignments; the location and geographic coordinates of each antenna, proposed antenna or reference point, as appropriate; and distance to each from proposed antenna location

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

If Yes, attach as Exhibit No. DNA 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.

20. With regard to station separated by 53 or 54 channels (10.6 or 10.8 MHz) attach as Exhibit No. E information required in 1/*(separation requirements involving intermediate frequency [i.f.] interference).*

21. Is the proposed operation on Channel 218, 219 or 220? ☐ Yes ■ No

If Yes, attach as Exhibit No. DNA information required in 1/ regarding separation requirements with respect to stations on Channels 221, 222, and 223.

22. Is the proposed station for a channel in the range from Channel 201 to 221 (88.1-91.9 MHz) and the proposed antenna location within the Grade B contour of a channel 6 television station or sufficiently near the Grade B contour that a question of interference to channel 6 may be raised? ■ Yes ☐ No

If Yes, attach as Exhibit No. E a map showing the Grade B contour of the television station and the proposed antenna location. Also include discussion of the possibility of interference to the Channel 6 station and the steps proposed to remedy any interference which may occur.

23. 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 Exhibit No. DNA information required in 1/ *(Except for class D [secondary] proposals.)*

24. If the proposed antenna location is in or near a populated area, attach Exhibit No. E a discussion of blanketing and the steps proposed to remedy any interference which may occur.

25. Environmental Statement, See Part I, Subpart 1 of the Commission's Rules.

Would a Commission grant of this application be a major action as defined by Section 1.1305 of the Commission's Rules? no change ☐ Yes ■ No

If Yes, attach as Exhibit No. DNA a narrative statement in accordance with Section 1.1311 of the Commission's Rules.

If No, explain briefly. See Exhibit E. Existing tower, no increase in overall height.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Aug. 20, 1986
Date

Richard L. Biby, P. E.
Name

Richard L. Biby
Signature *(check appropriate box below)*

Communications Engineering Services, P. C.
1600 Wilson Blvd., Suite 1003
Address *(include ZIP Code)*

Arlington, VA 22209

(703) 522-5722
Telephone No. *(include Area Code)*

☐ Technical Director ■ Registered Professional Engineer ☐ Chief Operator

☐ Technical Consultant ☐ Other *(Specify)*

Name of Applicant	Call Sign	Station Location
Gadsden State Junior College	WSGN	Gadsden, AL

Purpose of Application (Put "X" in appropriate box)

- ☐ New antenna construction — no change
- ■ Alteration of existing antenna structure
- ☐ Change in location

Facilities Requested: Amendment to application for change of site, height, power and channel. See Exhibit E

1. Location of Antenna: no change

State	County	City or Town
Alabama	Etowah	Gadsden

Exact antenna location (*street address*). If outside city limits, give name of nearest town and distance and direction of antenna from town.

on Lookout Mountain near Tuckahoe Heights

Geographical coordinates (*to nearest second*). For directional antenna give coordinates of center of array. For single vertical radiator give tower location. no change

North Latitude	West Longitude
34° 04' 29"	86° 01' 11"

2. Is the proposed site the same transmitter-antenna site of other stations authorized by the Commission or specified in another application pending before the Commission? ☐ YES ■ NO

If Yes, give call sign:

3. Has the FAA been notified of proposed construction? ■ YES ☐ NO
If Yes, give date and office where notice was filed. Southern Region, February, 1986

4. List all landing areas within 5 miles of antenna site. Give distance and direction to the nearest boundary of each landing area from the antenna site. no change

	Landing Area	Distance	Direction
(a)	Gadsden	11.7 km	SSW
(b)			
(c)			

5. Attach as Exhibit No. E a description of the antenna system, including whether tower(s) are self-supporting or guyed. If a directional antenna, give spacing and orientation of towers. no change

Tower		#1	#2	#3	#4	#5	#6
Overall height above ground (include obstruction lighting)	meters	60.1					
	feet	197					
Overall height above mean sea level (include obstruction lighting)	meters	389.3					
	feet	1277					

6. Attach as Exhibit No. E a vertical plan sketch for the proposed total structure (including supporting building, if any) giving heights above ground in feet and meters for all significant features. Clearly indicate existing portions, noting lighting, and distinguish between the skeletal or other main supporting structure and the antenna elements.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Richard L. Biby
Name

Richard L. Biby
Signature (*Check appropriate box below*)

Communications Engineering Services, P.C.
1600 Wilson Blvd., Suite 1003
Address (*include ZIP Code*)

Arlington, VA 22209

(703) 522-5722
Telephone No. (*Include Area Code*)

☐ Technical Director ■ Registered Professional Engineer ☐ Other (*specify*)

☐ Technical Consultant ☐ Chief Operator