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January 3, 1990

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JAN 3 - 1990

Federal Communications Commission  
Office of the Secretary

Ms. Donna R. Searcy  
Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

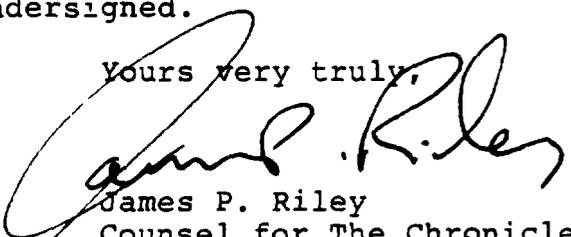
RE: BPED-881205MB  
Joy Public Broadcasting Corp.  
Lincoln, Nebraska

Dear Ms. Searcy:

Transmitted herewith on behalf of The Chronicle Publishing Company, licensee of television station WOWT, Omaha, Nebraska is the original and four (4) copies of its Petition to Deny the above-referenced application.

If any further information is necessary, please correspond directly with the undersigned.

Yours very truly,

  
James P. Riley  
Counsel for The Chronicle Publishing  
Company

JPR/ms

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BEFORE THE

JAN 3 - 1990

**Federal Communications Commission**

Federal Communications Commission  
Office of the Secretary

WASHINGTON, D.C. 20554

In re: )  
 )  
 Application of )  
 )  
 JOY PUBLIC BROADCASTING CORP. ) BPED-881205MB  
 Lincoln, Nebraska )  
 )  
 For a New Noncommercial )  
 Educational FM Station )

To: Chief, Audio Facilities Division,  
 Mass Media Bureau

**PETITION TO DENY**

The Chronicle Publishing Company, licensee of television station WOWT, Omaha, Nebraska, by counsel, submits this petition to deny the above-captioned application.

1. WOWT broadcasts on Channel 6. The application of Joy Public Broadcasting Corp. ("Joy") seeks authorization to broadcast on NCE-FM Channel 203 (88.5 MHz) at Lincoln, Nebraska. As the applicant acknowledges, interference would be caused to the WOWT signal by the operation of Joy's station. Joy claims, however, that interference would not be caused to more than 2,623 persons, and that therefore its application complies with Section 73.525(c) of the Commission's rules.

2. WOWT provides the only broadcast NBC television network service to the Lincoln area. Thus, loss or degradation of its signal works a severe hardship on all of those persons deprived of their sole source of NBC network programming, as well as the

substantial local programming of WOWT. In Section 73.525(c) the Commission adopted a rule which tolerates some interference but limits the permissible interference to no more than 3,000 persons.

3. As shown in the attached statement of du Treil, Lundin & Rackley, WOWT's consulting engineers, it cannot be concluded on the basis of engineering data thus far provided by Joy that interference will be limited to fewer than 3,000 persons. Joy itself acknowledges interference to 2,623 persons, just 377 short of the limit. In making its calculations, Joy assumes that it will radiate its power omnidirectionally, that it will radiate only a vertically polarized signal, and that no part of Lincoln is within the interference area. However, the du Treil, Lundin & Rackley statement shows that Joy has provided insufficient information about its antenna and the antenna's environment to warrant acceptance of these assumptions. Indeed, the one certain piece of information supplied by Joy -- that its antenna will be sidemounted on an existing tower -- raises significant doubts that Joy will achieve either omnidirectional operation or purely vertical polarization, for the reasons shown in the du Treil, Lundin & Rackley statement.

4. The population of Lincoln is more than 50,000 persons. Joy claims that its predicted interference area does not include any portion of Lincoln (see, Exhibit E-4b, filed with amendment of August 23, 1989, which shows the interfering contour reaching to within one-quarter mile of Lincoln's city limits) and thus,

relying on that claim, Joy takes advantage of Section 73.525(e)(4) to multiply its proposed vertically polarized ERP to 40 times that which would be permitted as horizontally polarized ERP at the same antenna height and location. If, however, the interfering contour included any portion of Lincoln the maximum vertically polarized ERP would be limited to 10 times the permissible horizontally polarized ERP. And, as shown in the du Treil, Lundin & Rackley statement there is substantial reason to believe Joy's sidemounted antenna will produce a directional, not omnidirectional, signal, thus encompassing at least a portion of the city of Lincoln.

5. WOWT submits that Joy has failed to meet the basic requirement of Section 73.525(c) that it "must submit a showing" that interference will not be caused to an area with more than 3,000 persons. There is no description of Joy's proposed antenna, no description of the installation of that antenna beyond the fact, shown on Joy's Exhibit E6 and Form 340, that the antenna will be sidemounted, and no description of the tower on which the antenna will be mounted, nor any other relevant features of the antenna's proposed environment. Since Joy has failed to meet that basic requirement and since the essential facts needed to submit that showing are in Joy's possession, not WOWT's, Joy's application should not be granted.

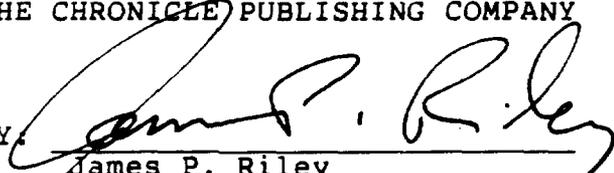
6. As the du Treil, Lundin & Rackley statement shows, without additional information it cannot be concluded that Joy will not create interference to an area containing more than

3,000 persons; potentially, given the proximity to Lincoln, substantially more. The Commission should require Joy to submit this information to allow a certain determination of the effect of its proposed operation on interference to WOWT's signal (see, Section 73.3514(b), empowering the Commission to require an applicant to amend its application to make it more definite and certain). In the absence of the submission of additional relevant information by Joy, the Commission should designate this application for hearing to determine whether Joy's proposed NCE-FM station will in fact create interference to an area with fewer than 3,000 persons.<sup>1/</sup>

Respectfully submitted,

THE CHRONICLE PUBLISHING COMPANY

BY:

  
James P. Riley  
Robert A. DePont

Of

FLETCHER, HEALD & HILDRETH  
1225 Connecticut Avenue, N.W.  
Suite 400  
Washington, D.C. 20036  
(202) 828-5700

Its Counsel

January 3, 1990

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<sup>1/</sup> The du Treil, Lundin & Rackley statement indicates that as an alternative to a hearing or pre-grant filing of additional information by Joy, any construction permit should be conditioned upon an adequate showing being made. Should the Commission adopt this alternative, it should require that showing to be made prior to authorizing commencement of program test operations.

TECHNICAL STATEMENT OF  
DU TREIL, LUNDIN & RACKLEY

TECHNICAL STATEMENT  
CONCERNING THE APPLICATION OF  
JOY PUBLIC BROADCASTING CORP.  
FOR AUTHORITY TO CONSTRUCT A NEW  
NONCOMMERCIAL EDUCATIONAL  
FM BROADCASTING STATION  
LINCOLN, NEBRASKA

The firm of du Treil, Lundin and Rackley has been retained by The Chronicle Publishing Company, ("Chronicle"), licensee of Television Broadcasting station WOWT(TV) to study the proposed operation of a new non-commercial FM broadcasting station at Lincoln, Nebraska (BPED-881205MB). By this application, Joy Public Broadcasting Corp. ("Joy"), seeks authority to operate on FM channel 203 (88.5 MHz) 60.7 kilometers (37.7 miles) from the WOWT(TV) transmitting site at Omaha. The proposed Joy transmitting site is located between the predicted WOWT(TV) Grade A and Grade B contours. Because station WOWT(TV) operates on channel 6 (82-88 MHz) which is adjacent in frequency, there is potential for interference to WOWT(TV) service from the operation of the FM station.

Standards to control the extent of interference to television channel 6 stations from educational FM stations are contained in 47 CFR 73.525. To reduce interference or increase facilities, FM stations may elect to operate predominately or entirely with vertical polarization. It is assumed that television receiving antennas at locations outside of cities respond primarily to the horizontal component of field strength. In this

case, Joy proposes to use only vertical polarization which permits a forty fold power increase over horizontal polarization.

Joy proposes to operate with 5.0 kilowatts effective radiated power radiated omnidirectionally. Proposed antenna height above average terrain is 96 meters. However, Joy proposes to side-mount the transmitting antenna on an existing tower. As is well known, the tower is expected to distort the antenna pattern from the omnidirectional unless the antenna system is carefully designed. Radiation pattern distortion is particularly severe for vertical polarization. The radiation pattern of vertically polarized signals is usually distorted even for top-mounted antennas. For such antennas, distortion of the pattern of the vertical component is caused by the pole supporting the antenna. In either case, the result is that the maximum effective radiated power may be substantially greater than the nominal omnidirectional effective radiated power. The Joy application does not specify the type of antenna nor present details of the proposed mounting. Thus, it is not possible to assess the actual extent of predicted interference.

A Petition for Rule Making was filed by the firm of Hammett & Edison, Inc. that proposes standards for FM broadcasting antennas (RM-6015). The petition cited a case where the maximum effective radiated power of a nominally omnidirectional station was 6 dB above the pattern RMS. In other words, maximum effective radiated power was four times the licensed effective radiated power. Depending on the effect of the antenna mounting

the population receiving predicted interference could be greater than permitted by the rules.

In addition, a tower may reradiate a significant portion of the intended vertically polarized transmitted signal in the form of horizontal polarization. Considering that the permissible horizontally polarized power is only approximately 0.125 kilowatt, this is not a trivial concern.

To obtain an essentially omnidirectional pattern for vertical polarization, the straightforward approach is the use of a panel antenna. Reradiation from the supporting structure, the tower in this case, is essentially eliminated. However, for towers of triangular cross-section only three panels per layer are normally used. Circularity may still be poor, especially for large towers. For example, the circularity for a panel antenna may be on the order of  $\pm 3$  dB or worse. Unless the orientation is proper, the interference limit of the rules may be exceeded.

The predicted area of interference as shown in the Joy application extends within approximately 0.4 kilometer (0.25 mile) of the Lincoln city limits. An increase in effective radiated power of greater than approximately 0.8 dB would cause the inclusion of at least some portion of the city of Lincoln. If any portion of Lincoln were included, the rules would permit only a 10 fold power increase instead of forty fold. It is normal practice to mount FM antennas on the side of a tower in the direction of the center of population of the intended service area, Lincoln in this case. The increase in

radiation of a side-mounted antenna above the pattern RMS is expected to generally exceed 0.8 dB. Thus, under normal practice, a violation of the rules would be expected in this case.

Joy should provide a showing that the horizontal plane radiation pattern of the proposed antenna as mounted is omnidirectional. If this is not feasible, Joy should show that the operation complies with the interference provisions of the rules. It may be necessary that the Joy showing include appropriate measurements such as model studies to show the effect of side-mounting. The Commission normally requires pattern measurements for directional antennas where control of radiation is necessary to avoid predicted interference. Because of the complexity of this problem and to assure that there will be compliance with the rules, it is desirable that the showing of compliance be made before a construction permit is issued. As an alternate, the construction permit could contain a condition that the showing be made.

In summary, the Joy construction permit should be held in abeyance until the proper showing has been made or contain a condition requiring such a showing.

  
J. W. Stielper

January 3, 1990

CERTIFICATE OF SERVICE

I, Marlene Szach, a secretary in the law firm of Fletcher, Heald & Hildreth do hereby certify that a true copy of the foregoing "Petition to Deny" was sent this 3rd day of January, 1990, by first-class United States mail, postage prepaid to the following:

Mr. Lowell Bush  
President  
Joy Public Broadcasting Corp.  
5712 Massachusetts Avenue  
Bethesda, Maryland 20816

Marlene Szach  
Marlene Szach