Before the
Federal Communications Commission
Washington, D.C. 20554

In re Application of	)	
	)	
Mixteco/Indigena	)	
Community Organizing Project	)	
	)	
For a New Low Power FM Station	)	File No. BNPL-20131113BOF
	)	
Facility ID No. 194972,	)	
Oxnard, CA	)	

Directed to: Office of the Secretary
Attention: Chief, Audio Division, Media Bureau

REPLY TO OPPOSITION TO PETITION TO DENY

Pacific Broadcasting Company ("Pacific Broadcasting"), licensee of FM broadcast station KDB(FM), Santa Barbara, CA, Facility ID No. 51169, by its attorneys, hereby respectfully submits its Reply to the Opposition to Petition to Deny filed by Mixteco/Indigena Community Organizing Project ("MICOP") with regard to its application for a new low power FM station on Channel 231L1, Oxnard, California (Facility ID No. 194972) , File No. BNPL-20131113BOF (the "Application").[1] With respect thereto, the following is stated:

[1] Pacific Broadcasting believes that this Reply is timely filed. While Section 1.45(c) specifies that replies to oppositions shall be filed within five days of when the time for filing oppositions expires, and that period normally would have expired on February 6, 2014, Mixteco/Indigena requested, and Pacific Broadcasting informally agreed to, an extension of time to February 18, 2014. Although Pacific Broadcasting has seen no evidence that Mixteco/Indigena formally requested an extension of time, it appears that the its Opposition actually was filed on February 18, 2014. Pacific Broadcasting is constrained to use this date to calculate the due date, as otherwise, its Reply could have been due before the Opposition was filed. Likewise, as no certificate of service was attached to the Opposition, the particular service method upon which Mixteco/Indigena relied is unclear, but since Pacific

In its Petition to Deny, Pacific Broadcasting demonstrated that the proposed MICOP LPFM station will cause objectionable interference to full power station KDB(FM), Santa Barbara, California, in violation of the Commission's Rules and, therefore, cannot be granted in accordance with those Rules. While MICOP requested a waiver of the Commission's Rules with respect to KDB(FM), Pacific Broadcasting demonstrated that it has not met the standards for such a rule waiver.

MICOP's Opposition, while full of sound and fury, signifies virtually nothing, in that it does not demonstrate that Pacific Broadcasting's showings of prohibited interference were in error. Attached hereto is an Engineering Report which refutes the claims made by MICOP and further demonstrates the presence of predicted second-adjacent channel interference to KDB. While MICOP's Opposition claims that Pacific Broadcasting was objecting to its application based upon a power level greater than that proposed, the fact of the matter remains that there is no question in FCC Form 318, the application for construction permit for a new LPFM station, that elicits a proposed effective radiated power. Rather, that value is assigned by the Commission, and, as set forth in the attached Engineering Report, the figure reflected in the Commission's databases is 61 watts. It is, therefore, this power level which is proposed and must be assessed. Even the 50 watt power level advanced in MICOP's Opposition as its proposal is substantially above that which would ensure no objectionable interference. The variance which MICOP colorfully derides as being tiny is actually one of twelve percent.

Furthermore, despite its lengthy discussion of burden of proof, MICOP seems to have a fundamental lack of understanding of the burdens inherently placed upon a proponent of a rule

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Broadcasting received the Opposition by both mail and e-mail, it is responding within five days as calculated in accordance with Section 1.4 of the Commission's rules.

waiver. This is not an instance in which an applicant has submitted an application facially in compliance with the Commission's Rules, but which a petitioner nonetheless seeks to demonstrate would not serve the public interest. Here, in contrast, the MICOM application, on its face, does not comply with the Rules, and MICOM is tasked with demonstrating that, in this instance, its proposal would better serve the public interest than would strict adherence to the Rule.

Moreover, while it is correct that the Commission did note that the Local Community Radio Act of 2010 did not prescribe the burden of proof imposed upon LPFM applicants seeking waivers, this statement has nothing to do with the relative burdens of proof of an applicant seeking a waiver and a petitioner objecting to such a waiver application. Indeed, in the very next sentence following the mention of burden of proof, the Commission states, "We conclude that Congress intended to ensure that LPFM stations operating pursuant to second-adjacent waivers do not cause interference to full-service FM and other authorized radio stations." *Fifth Order on Reconsideration and Sixth Report and Order in the Low Power Radio Proceeding*. FCC 12-144, released December 4, 2012, at ¶ 74. Pacific Broadcasting has demonstrated that, contrary to the Commission's explicitly stated goal, the proposed MICOP would cause interference to a full-service FM station, and it must therefore be denied.

Furthermore, the Commission has made it clear that applicants seeking to take advantage of the exception made for lack of population must show that there "*no* population, not merely low or negligible population." *The State of Oregon, Acting By and Through the State Board of Higher Education for the Benefit of Southern Oregon State College*, 15 FCC Rcd 11842, 11844 (2000) ("*State of Oregon*") *recon. denied* 16 FCC Rcd 4344 (2001). Even more to the point, the

Commission made it quite clear that it is, in fact, the applicant which bears that burden of proving that an area of predicted interference is completely without population. *Living Way Ministries, Inc.* FCC 02-244 at ¶8, *citing State of Oregon*. Therefore, it is clear that, in point of fact, it is incumbent on an applicant to prove that no one is present in a building, not upon Pacific Broadcasting to prove that floors within an office building actually are occupied rather than being left inexplicably vacant.

As set forth in its initial filing and in the attached Engineering Report, Pacific Broadcasting has demonstrated Application, as proposed, would result in significant interference to second-adjacent channel KDB(FM) in two nearby office buildings in violation of FCC Rules, and therefore is not grantable. Pacific Broadcasting would not, however, object to authorizing Mixteco/Indigena to operate the proposed LPFM station at a maximum of 15 watts ERP.

WHEREFORE, the premises considered Pacific Broadcasting requests that the Commission dismiss the MICOP application or limit any MICOP LPFM facility to 15 watts ERP.

Respectfully submitted,

PACIFIC BROADCASTING COMPANY

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February 25, 2014

Engineering Report in Support of Reply
to Opposition to Petition to Deny

Introduction

This Engineering Report has been prepared for Pacific Broadcasting Company, licensee of FM Station KDB, Santa Barbara, California. The Report is to be submitted to the Federal Communications Commission in support of a Reply to Opposition to Petition to Deny filed by Pacific Broadcasting Company with respect to the Opposition to Petition to Deny, dated February 18, 2014, filed by Mixteco/Indigena Community Organizing Project.

On January 22, 2014, Pacific Broadcasting Company filed a Petition to Deny ("KDB(FM) Petition") accompanied by an Engineering Report dated January 20, 2014 ("KDB Report"), directed to the pending application of Mixteco/Indigena Community Organizing Project ("MICOP") for a new LPFM station on Channel 231L1 at Oxnard, California, File Number BNPL-20131113BOF. MICOP subsequently filed an Opposition to Petition to Deny dated February 18, 2014 ("MICOP Opposition"), accompanied by an Engineering Report dated February 17, 2014 ("MICOP Report"), in response to the KDB(FM) Petition.

The transmitter site specified in the MICOP application is short-spaced to KDB(FM), and is located inside the predicted protected KDB(FM) service contour. The MICOP application would result in predicted second-adjacent-channel objectionable interference to KDB(FM). Included in the MICOP application is a request for waiver of Section 73.807(a)(1) of the Commission's Rules, with the claim that there is no population within the predicted area of interference.

The KDB(FM) Report that accompanies the KDB(FM) Petition clearly establishes that the proposed LPFM station would result in predicted interference to KDB(FM) in populated areas. As shown in this Engineering Report, there is nothing (notwithstanding the excessive and at times intemperate rhetoric) in the MICOP Report and in the MICOP Opposition that refutes the information presented in the KDB(FM) Report and in the KDB(FM) Petition. The MICOP Report might have been more persuasive if it provided factual information showing that the KDB(FM) Report is in any way in error.

Additional Information About Preparation of KDB(FM) Report

The MICOP Report questions the validity and even the propriety of the elementary survey on which parts of the KDB(FM) Report are based.

The elementary survey was carried out by this engineer and the associate of this engineer, to obtain height information and to verify distances for the scale drawings of Figures A and B of the KDB(FM) Report. This work was done during daytime and evening hours, at times when the large parking area at the property was relatively unoccupied by automobiles. It was not necessary to use the services of a licensed surveyor, because the only purpose of the survey is for illustrative purposes in the KDB(FM) Report. The undersigned engineer has taken a class in Surveying, at the engineering level in college.

The Commission's fundamental requirement for material submitted to it for consideration is that the presentation needs to be correct. There is nothing in the MICOP Report showing that any part of either Figure A or Figure B of the KDB(FM) Report is not correct.

Response to MICOP Complaints Related to Far-Field Analysis and Values of Effective Radiated Power

The MICOP Report objects to the values of effective radiated power used in the KDB(FM) Report, for the radiating far-field analysis of the proposed LPFM station facilities.

There is no space in the Tech Box portion of FCC Form 318 for the applicant to enter a requested value of effective radiated power for the proposed LPFM station. As stated in Item 7 of the Tech Box, this value is assigned by the Commission when the application is reviewed. Both the FCC's FM Query program and Consolidated Database System show the MICOP application has been assigned 61 watts effective radiated power.

From the scale drawings of the 500 Building and the 300 Building provided in Figure A of the KDB(FM) Report, and using far-field calculations, it was determined that at 61 watts effective radiated power there would be predicted objectionable interference from the proposed LPFM station to KDB(FM) on a number of floors in the 300 Building, and that in order to avoid such interference to KDB(FM), the maximum effective radiated power for the proposed LPFM station would be 44 watts. The assigned value of 61 watts effective radiated power is therefore too high by 39 percent.

However, the KDB(FM) Report also describes a second, more serious interference problem. As shown in the KDB(FM) Report, on the basis of radiating near-field calculations and utilization of the antenna system specified in the MICOP application, the proposed LPFM station operating at more than 15 watts effective radiated power would cause predicted interference to KDB(FM) on two floors of the 500 Building.

Response to MICOP Complaints Related to Near-Field Analysis

The MICOP Report further objects to the use of radiating near-field calculations in the KDB(FM) Report, for the analysis of the proposed LPFM station antenna system.

Contrary to the characterization in the MICOP Report, this engineer makes no pretense in the KDB(FM) Report about having any special knowledge of the performance of the proposed LPFM station antenna system, relying instead on well-known antenna design principles set forth in recognized, authoritative sources.

The vertical radiation pattern data for the proposed LPFM station antenna system included in the MICOP Report, which was provided by Shively Labs, a highly respected, pioneering manufacturer of FM antennas, was derived from far-field calculations. However, the location of the proposed antenna array on the roof of the 500 Building is much too close to occupied parts of this building for such calculations to be valid for determining field strength values on the upper floors. Near-field calculations are required for this purpose. The next section of this Report includes an extended discussion of these topics.

The KDB(FM) Report shows in some detail that on the basis of radiating near-field calculations, the proposed LPFM station would cause predicted interference to KDB(FM) on two floors of the 500 Building. The Commission's policies require that a waiver request for second-adjacent-channel interference must demonstrate that there is no population within the predicted area of interference. /1, /2

/1 The Commission's Memorandum Opinion and Order released September 9, 2002, in "Living Way Ministries, Inc." (FCC 02-244) explains in Paragraphs 7 through 13 the Commission's expectations for demonstrating the lack of population for the purpose of showing the absence of predicted interference. It also defines listeners and potential listeners of full-service FM stations as those who live, work or regularly travel in an area.

/2 In the Commission's Webinar on Low Power FM Radio presented on October 24, 2013, the FCC staff made it clear that a waiver of the second-adjacent-channel spacing

With respect to attenuation of VHF radio signals by building walls, ceilings and windows suggested in the MICOP Report, there are no provisions in the Commission's Rules for taking into account any such attenuation factors when calculating field strength values.

The MICOP Opposition suggests that some or all of Floors 14 and 15 of the 500 Building may presently be unoccupied, and can therefore be considered unpopulated, without providing any further information. Whether any or all the offices on either floor are occupied is not relevant under the Commission's policies for determining no population. See Footnote 1. Nevertheless, this engineer has observed that in the 500 Building there are business names on doors to the office suites on Floors 14 and 15, and there are illuminated ceiling lights in these offices visible from ground level during both business hours and nighttime hours.

Review of Importance of Near-Field Analysis

The following paragraphs of this Report include quotations from a technical paper prepared by Shively Labs; and also quotations from one of the authoritative books on the subject of antennas, all in support of the need to evaluate the performance of an antenna array on the basis of radiating near-field considerations when appropriate.

The web site of Shively Labs (www.shively.com) provides pertinent material about how FM antenna radiation patterns are calculated. Under the "Technical Information" part of the web site, in the paper titled "Reducing Downward Radiation" presented to the FCC and FAA engineering staff in February 1997, the section "Antenna Array Theory" reads as follows:

> Antenna arrays operate on the principle of superposition of electromagnetic (EM) fields in space; when there are [sic] more than one source of EM fields, the total field at any point in space is simply the vector sum of the fields from each source at that point in space. In theory, summing the fields at some location due to multiple sources at another location is a simple concept; however, in practice, this quickly becomes cumbersome. Antenna array theory has developed some approximations and shortcuts to make the task of determining an array's pattern easier.

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requirement for a new LPFM will be considered only when the application shows there is absolutely no population in the area of predicted interference. For example, a building within the interference area will be assumed to be occupied unless proven otherwise.

> The first approximation involves the distance from the array at which field intensity is to be determined. To simplify the math, only "far field" patterns are considered [emphasis added]. In the far field, the EM fields radiated by the array can be approximated by plane waves.
>
> The far field region is defined as anywhere in space that meets the condition:
>
> $$R \geq 2D^2/\lambda \ldots$$
>
> where R is the distance from the array, D is the length of the array (the physical aperture) and λ is the wavelength of the antenna....When R is less than $2D^2/\lambda$, our simplifying assumptions become inaccurate and the calculated pattern is a poor approximation of the true pattern [emphasis added].

The boundary of the radiating near-field as defined in the Shively Labs paper is most applicable to the main lobe of radiation of an antenna array. In those directions where radiation is suppressed, the boundary extends farther. A more rigorous discussion of the topic of radiated fields is given in Antenna Engineering Handbook, Richard C. Johnson, Editor, and Henry Jasik, Editor of First Edition /3, in Chapter 1, Section 1-3, "Field Regions." The Handbook provides an authoritative explanation of when the radiating near-field of an antenna array must be considered. Quoting from the text:

> That region in space in which the reactive component of the field predominates is called the *reactive near-field region*, and beyond this region the radiating field predominates.
>
> That region in which the radiating field predominates is further subdivided into the *radiating near-field region* and the *radiating far-field region*. In the radiating near-field region, the angular distribution of radiated energy is dependent on the distance from the antenna, whereas in the radiating far-field region the angular distribution of radiated energy is essentially independent of distance from the antenna.
>
> In the radiating near-field region, the relative phases and the relative amplitudes of contributions from various elements of the antenna are functions of the distance from the antenna....[and] one sees that the measured radiation pattern of the antenna will depend upon the radius to the observation point.
>
> When the distance to the observation point gets very large, straight lines from any two contributing elements to the observation point...are essentially

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/3 Antenna Engineering Handbook, Third Edition, Edited by Richard C. Johnson (Henry Jasik, Editor of First Edition), McGraw-Hill, Inc., 1993.

> parallel and the relative distance to the elements...is essentially constant with changes in distance to the observation point. Thus, at large distances, the relative phases and amplitudes of contributions from the various elements change very slowly with distance, and the angular distribution of radiated energy measured at such large distances is essentially independent of the distances to the observation point. This condition is indicative of the radiating far-field region.

Continuing forward in Johnson, Section 1-3:

> ...the commonly used criterion to define the distance to the boundary between the radiating near-field and far-field regions is
>
> $$R = 2D^2/\lambda$$
>
> where D is the largest dimension of the aperture and λ is the wavelength.
>
> Although the aforementioned criterion to define distance to the far-field region is generally accepted and is used quite widely, one must always remember that it is an arbitrary choice and that it is inadequate for some special situations. For example, if one must accurately measure patterns of antennas having very low sidelobes ..., the measurement distance may have to be much longer than $2D^2/\lambda$ [emphasis added].

Returning to this Report, the far-field calculation methodology is actually a special case of applying simplifying assumptions to the near-field calculation methodology. Use of near-field calculations for determining the field strength at any given observation point will always be correct, including in the far field, but the results of calculations based on the simplified far-field methodology become progressively less accurate as distance to the antenna array decreases.

Therefore, from a practical standpoint, the boundary between the near-field and far-field regions for a given antenna array will be where the differences between near-field and far-field calculations of field strength at the observation point of interest become relatively small. In the case of the proposed LPFM station antenna system, where the antenna array is designed for extreme suppression of downward radiation, the radiating near-field extends much farther downward than would be expected from use of the $R = 2D^2/\lambda$ equation, as shown in the examples in the next paragraph.

For the far-field calculations used in the MICOP application, the field strength at Point A shown in Figure B of the KDB(FM) Report would be 86 mV/m, while the more accurate value derived from near-field computations is 504 mV/m, or over 500 percent greater. At point B shown in Figure B, the field strength using far-field calculations would be 7.9 mV/m, while the more accurate value derived from near-field computations is 235 mV/m, or over 2900 percent (!) greater. These drastic differences

clearly confirm that Points A and B are both well inside the radiating near-field region for the proposed LPFM station antenna system, and that calculations based on the Shively Labs far-field radiation pattern cannot be used for determining field strength values on Floors 14 and 15 of the 500 Building.

Whether a few near-field calculations turn out to be simple or cumbersome to make is irrelevant if the objective is a meaningful determination of the existence of objectionable interference to KDB(FM). The Appendix to the KDB(FM) Report demonstrates that calculating the field strength at a given point in space using near-field methodology is not an especially cumbersome process

Conclusion

The KDB(FM) Report and this Engineering Report firmly establish that the pending application of Mixteco/Indigena Community Organizing Project would result in objectionable predicted second-adjacent-channel interference to station KDB(FM).

The results of the near-field calculations made for the KDB(FM) Report need to be taken fully into account, so that predicted objectionable interference to KDB(FM), correctly determined from straightforward mathematical calculations based on accepted antenna design principles, receives the proper recognition.

Fred W. Volken
Engineering Consultant

February 2014

Sierra Madre, California

Statement of Engineer

FRED W. VOLKEN, whose place of business is located at 348 W. Sierra Madre Blvd., Sierra Madre, California, hereby states that he is a graduate physicist holding the degree Bachelor of Arts from Occidental College, Los Angeles, California; that his qualifications as an engineering consultant are a matter of record with the Federal Communications Commission; that he has prepared, or supervised the preparation of, this document as engineering consultant for Pacific Broadcasting Company, licensee of FM Station KDB, Santa Barbara, California; and that all of the information contained in this document is accurate and correct to the best of his knowledge and ability.

I state under penalty of perjury that the foregoing is true and correct. Executed on February 24, 2014.

Fred W. Volken

Fred W. Volken

CERTIFICATE OF SERVICE

I, Deborah N. Lunt, a secretary in the offices of Fletcher, Heald & Hildreth, P.L.C., certify that on this 25th day of February, 2014, I caused a copy of the foregoing Reply to Opposition to Petition to Deny to be served by First Class U.S. Mail to:

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By: _____
Deborah N. Lunt