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June 13, 1997

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Federal Communications Commission
Office of Secretary

VIA HAND DELIVERY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, DC 20554

Re: Petition for Partial Reconsideration
MM Docket No. 87-268
Advanced Television Systems and Their Impact Upon
the Existing Television Broadcast Service

Dear Mr. Caton:

Enclosed, on behalf of Cornell University, and pursuant to Section 1.429 of the Commission's rules, are the original and three copies of its Petition for Partial Reconsideration of the Sixth Report and Order in MM Docket No. 87-268.

If you have any questions regarding this matter, please contact me.

Very truly yours,



Paul J. Feldman
Counsel to Cornell University

PJF/jr
Enclosures
cc: Certificate of Service

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ORIGINAL

BEFORE THE

Federal Communications Commission

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JUN 13 1997

Federal Communications Commission
Office of Secretary

In the Matter of)
)
Advanced Television Systems)
and Their Impact Upon the)
Existing Television Broadcast)
Service)

MM Docket No. 87-268

PETITION FOR PARTIAL RECONSIDERATION

Cornell University ("Cornell"), by its attorneys and pursuant to Section 1.429 of the Commission's rules, hereby submits its Petition for Partial Reconsideration of the Sixth Report and Order in the above-captioned proceeding, released April 21, 1997 ("*Sixth R&O*"). In this Petition, Cornell addresses only the allotment of digital television Channel 38 to Fajardo, Puerto Rico, and proposes that Channel 15 or 16 be substituted instead for that allotment.

I. INTRODUCTION AND STATEMENT OF INTEREST

Cornell manages and operates the Arecibo Radio Astronomy Observatory in Arecibo, Puerto Rico (the "Arecibo Observatory") under a Cooperative Agreement with the National Science Foundation ("NSF"). In Comments filed in response to the Sixth Notice of Proposed Rulemaking in this proceeding ("Comments"), Cornell noted that the Commission has for years, and in many proceedings, recognized the importance of protecting the unique research performed at the Arecibo Observatory and other radio

astronomy observatories.¹ Cornell also noted therein, that at a cost of \$22.8 million, provided by the NSF and the National Aeronautics and Space Administration, the telescope at the Arecibo Observatory is being upgraded so that it will be able to make routine observations anywhere from 50 MHz up to 10 GHz and beyond. In combination with reduced system temperatures, the sensitivity of the world's most sensitive radio astronomy telescope will be increased by 50 to 500 percent.

In its Comments, Cornell expressed serious concern regarding the likely damaging impact of the proposed allotment of Channel 38 to Christiansted, Virgin Islands, on radio astronomy observations at 608-614 MHz at the Arecibo Observatory and at the National Radio Astronomy Observatory ("NRAO") facilities at St. Croix, Virgin Islands, as well as to critical spectral line observations of the hydrogen band (1400-1427 MHz) at the Arecibo Observatory. Cornell requested that Channel 38 not be allotted to any community in Puerto Rico or the Virgin Islands.² Cornell suggested that the allotment to Christiansted be a duplication of a channel used in Western Puerto Rico (other than Channels 52-54).³

¹ See, e.g., ET Docket No. 96-2 (Proposed Radio Astronomy Coordination Zone in Puerto Rico) and MM Docket No. 95-17 (Protection of Radio Astronomy Activities on Channel 37).

² Cornell believes that no commenter opposed this request.

³ Cornell's Comments noted that the 21 centimeter (1420 MHz) emission of atomic hydrogen, and the 1400-1427 MHz band protected on a world-wide basis for observations of Doppler shifts of the hydrogen signal, are in the second harmonic of Channel 53 (704-710 MHz). The same problem exists with Channels 52 and 54, but not with Channel 55. Spurious emissions from Channels 52-54 could thus substantially impede observations in what is probably the most observed spectral band for radio astronomy. Cornell thus remains concerned regarding the allotment of DTV Channel 53 to Arecibo. Cornell has had some success in negotiating [continued on next page]

II. CHANNEL 15 OR 16 SHOULD BE SUBSTITUTED FOR THE ALLOTMENT OF CHANNEL 38 TO FAJARDO, PUERTO RICO.

In the *Sixth R&O*, the Commission revised its proposed table of allotments in apparent response to comments filed by Cornell and the NRAO: it replaced the allotment of DTV Channel 38 in Christiansted with Channel 20, but replaced the allotment of DTV Channel 55 in Fajardo with Channel 38. Essentially, instead of eliminating the Channel 38 allotment, the Commission moved it to closer to Arecibo, in Fajardo. Accordingly, while Cornell is grateful that the Commission apparently attempted to address the concerns of Cornell and the NRAO, the result is unfortunately at least as damaging as the original problem. That is, the Fajardo Channel 38 allotment is now line-of-sight to both Arecibo and St. Croix, and Arecibo will be receiving transmissions from two Channel 38's: an NTSC station in San Sebastian, and the DTV allotment at Fajardo.⁴ The damage is further compounded by the fact that each of the Channel 38 operations will have a different interference signature: DTV's "spread spectrum" character allows a higher average signal level in adjacent bands than NTSC

[continued from previous page] and implementing shielding of the current NTSC Channel 54 facilities, and is hopeful that similar shielding can be negotiated and implemented for the DTV Channel 53 facilities. However, while such shielding may be effective against harmonic emissions (*i.e.*, from Channels 53 and 54), it would not be effective against adjacent channel emissions from Channel 38. In any case, in regards to the Channel 53 allotment, Cornell hopes that as DTV implementation is finalized, the Puerto Rico/ Virgin Islands allotments outside of the core channels 7-51 will be eliminated.

⁴ The staff of NRAO has informed Cornell that while the allotment of Channel 38 to Fajardo creates some increased distance separation from NRAO facilities, because Fajardo is still line-of-sight to those facilities, the reduction of potential damaging interference from the increased distance will be minimal at best.

transmissions, while NTSC transmission have a higher peak signal level in adjacent bands. In sum, if the allotment of DTV Channel 38 to Fajardo remains, the damage to radio astronomy observations at the Arecibo Observatory will be substantial.

Cornell appreciates that in moving the Channel 38 allotment from Christiansted to Fajardo, the distance separation protection proposed in MM Docket 95-17 may have been used. However, the protection standard proposed in Docket 95-17 certainly was not designed to provide protection in the unique situation here, in which the Observatory will be in the line-of-sight of two different Channel 38's, each with a different interference signature. Accordingly, a different solution is necessary.

Cornell thus proposes that DTV Channel 38 in Fajardo be deleted, and that Channel 15 or Channel 16 be used instead. In the Table set out in the *Sixth R&O*, Channel 15 is not allotted to any community in Puerto Rico or the Virgin Islands. NTSC Channel 16 is allotted to Mayaguez, but Mayaguez is at the opposite side of the Island of Puerto Rico from Fajardo, and the intervening terrain is quite mountainous. The Commission has already used these distance and terrain criteria in creating the DTV table for Puerto Rico. See note 367 in the *Sixth R&O*. Such a revision to the table of allotments would provide a simple solution to the interference concerns of both NRAO⁵ and the Arecibo Observatory, and would provide a more attractive lower channel position for the Fajardo station.

⁵ The staff of the NRAO has informed Cornell that NRAO supports the proposal to substitute Channel 15 or 16 for Channel 38 at Fajardo.

III. CONCLUSION

The allotment of Channel 38 to Fajardo, Puerto Rico, will substantially harm critical radio astronomy observations at the Arecibo Observatory. Accordingly, Cornell requests that the DTV Table of Allotments be revised to eliminate Channel 38 at Fajardo, and substitute Channel 15 or 16.

Respectfully submitted,

CORNELL UNIVERSITY

By: 
Paul J. Feldman

Its Attorney

Fletcher, Heald & Hildreth, P.L.C.
1300 North 17th Street, 11th Floor
Rosslyn, VA. 22209
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June 13, 1997

CERTIFICATE OF SERVICE

I, Judy Ryan, a secretary in the law firm of Fletcher, Heald & Hildreth, P.L.C., hereby certify that true copies of the foregoing Petition for Partial Reconsideration of Cornell University was served via United States First Class Mail, prepaid, this 13th day of June, 1997, upon:

Mr. Jose F. Mendez, Jr.
General Manager
Station WMTJ
P.O. Box 21345
Rio Piedras, PR 00928



Judy Ryan