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APR 24 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

April 24, 1995

**VIA HAND DELIVERY**

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20005

DOCKET FILE COPY ORIGINAL

Re: MM Docket No. 95-17  
Amendment of Parts 73 and 74 of the  
Commission's Rules to More Effectively  
Protect Radio Astronomy Activity on Channel 37

Dear Mr. Caton:

Transmitted herewith on behalf of Cornell University and The National Astronomy and Ionosphere Center are an original and four copies of its Reply Comments in the above-referenced proceeding. While Reply Comments in this proceeding were due on April 21st, the Commission closed its offices on that day.

Should there be any questions concerning this matter, please communicate with the undersigned counsel.

Very truly yours,



Paul J. Feldman  
Counsel for  
Cornell University and  
The National Astronomy and Ionosphere Center

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Enclosures

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BEFORE THE  
**FEDERAL COMMUNICATIONS COMMISSION**

WASHINGTON, D.C. 20554

In the Matter of )  
)  
Amendment of Parts 73 and 74 of )  
the Commission's Rules to More )  
Effectively Protect Radio )  
Astronomy Activity on Channel 37 )

MM Docket No. 95-17

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APR 24 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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COMMENTS OF  
CORNELL UNIVERSITY AND  
THE NATIONAL ASTRONOMY AND IONOSPHERE CENTER

Cornell University ("Cornell") and the National Astronomy and Ionosphere Center ("NAIC"), which operates the Arecibo Observatory ("the Observatory") near Arecibo, Puerto Rico under the terms of a cooperative agreement with the National Science Foundation, hereby submit their Reply Comments in response to the Commission's Notice of Proposed Rule Making, FCC 95-35, released February 21, 1995 in the above-captioned proceeding ("NPRM"). The record in these proceedings shows that there is no clear advantage in adopting a field strength value for adjacent channel protection over adopting the standard minimum separation distance. Cornell supports the Commission's proposal to limit the power of current Channel 38 operation in Puerto Rico.

**I. A Minimum Separation Distance is the Simplest Solution for All**

The NPRM proposed to use a field strength level of 64 dBu as the baseline for protection of Channel 37 operations at US radio astronomy observatories. A fixed field strength level would allegedly provide greater flexibility for the broadcasters and this representative value represents a UHF station with a typical visual EIRP of 1000 kW at 87.7 km distance. S&E Network, Inc. ("S&E"), Cohen, Dippell and Everist, P.C. ("CDE") and the Association of Federal Communication Con-

sulting Engineers ("AFCCE") all react favorably to the Commission's question in the NPRM on "whether an alternative field strength of 72 dBu should be adopted" rather than the 64 dBu value. Although the Commission had requested arguments supporting raising the maximum field strength level, these parties do not provide any. AFCCE only states that it "finds no basis for the [Commission's] claim" that 64 dBu better reflects typical UHF facilities. While raising the allowed field strength level 8 dBu might provide additional flexibility for broadcasters, it would also allow 8 dB more adjacent band emission in the Channel 37 band. Since the proposed field strength level already is the required Grade B field strength level and the broadcasters do not provide any strong arguments for raising the permitted field strength, it would be against the public interest to burden the radio astronomy observatories with 8 dB more interference in the Channel 37 band.

S&E, AFCCE, and CDE also comment on the use of alternative path calculation methods in situation where nearby and distant terrain types are significantly different. Cornell is acutely aware of the terrain in Puerto Rico and agrees with S&E, AFCCE, and CDE that appropriate alternative calculations could be considered in such situations. However, in conflict situations there will always be the question as to which method is the most applicable for determining the true field strength level. Therefore, for the sake of simplicity and uniformity in the Rules concerning the use of Channel 37 for radio astronomy, Cornell continues to support the notion of a fixed separation distance within which no adjacent channel stations will be allowed.

Cornell also requests the Commission to consider the adjacent channel emissions in Channel 37 resulting from Advanced TV ("ATV") operation in Channels 36 and 38. Cornell commends CDE for expressing concerns about the adjacent band emissions within the Grand Alliance ATV design.

## **II. Practical Conditions in Puerto Rico**

S&E Network, licensee of station WJWN-TV, Channel 38, San Sebastian comments on the applicability of the proposed Rules for Channel 38 operation in Puerto Rico. A path calculation between Arecibo Observatory and Channel 38 in Puerto Rico<sup>1</sup> clearly warrants the use of alternative methods taking into account the dramatic terrain differences. Unfortunately, the calculations presented by S&E completely ignore the height of the receiving platform of the Observatory above the

terrain. Taking into account the platform height (383 m AMSL) in the path calculation shows that the WJWN-TV installation is nearly in direct line-of-sight to the Observatory, as shown in Appendix A. Contrary to the conclusions of the Technical Statement of S&E, expanded WJWM-TV operations would pose a substantial threat to the Observatory.

The arguments regarding Channel 38 operations brought forward by S&E should therefore be reconsidered. With the present power level the target city of San Sebastian lies well within the station's Grade A contour, which is also true for other population centers in western Puerto Rico of Mayaguez, Aguadilla, San German, and Quebradillas. No foreseeable need exists for the station to raise its power. Considering the nearly direct line-of-sight to the Observatory, the suggested use of a field strength of 72 dBu would add a further 5 dB to the signal in the Channel 37 band at Arecibo, which would seriously affect observations in this band. Cornell will accept the Commission's suggestion of considering Channel 38 in Puerto Rico as a waiver to the Rules and allow operation at a field strength of 67 dBu. Cornell also supports the notion of limiting the power of WJWN-TV at the present level as this will not have an unnecessarily restrictive and prejudicial impact on the station. Considering the limited size and the terrain of the island of Puerto Rico, an increase of power for Channel 38 may not even be efficient for reaching a larger audience.

The above-mentioned path calculations of S&E clearly show the need to consider the physical properties of the radio observatories and particularly the altitude of each observatory. The observing platform of the Arecibo Observatory is located slightly above the feed systems and provides the main scattering path of entry for interfering signals into the feed system at a height of 1256 ft (383 m) AMSL. Cornell requests that the Commission include this height as part of the physical description of the radio observatories in its Rule Making.

#### **IV. Conclusions**

Cornell is pleased with the generally positive response of all comments in the record. No serious objections have been raised against the need for further protection for radio astronomy facilities on Channel 37 and the Commission's proposed

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<sup>1</sup>S&E at Technical Statement Figure 1.

implementation within the Rules. Cornell reiterates its assertion in its original Comments that US Footnote 74 requires that radio astronomy observatories be protected in the same manner as full service stations. In this framework the standard separation rules need to be used, which precludes adjacent channel operation within a distance of 85.7 km. Cornell also requests that the platform height of the Arecibo Observatory be used in conjunction with the height of all other US radio telescopes. Cornell urges the Commission to limit the field strength of the two adjacent channel stations in Puerto Rico to the present operating level.

Respectfully submitted,

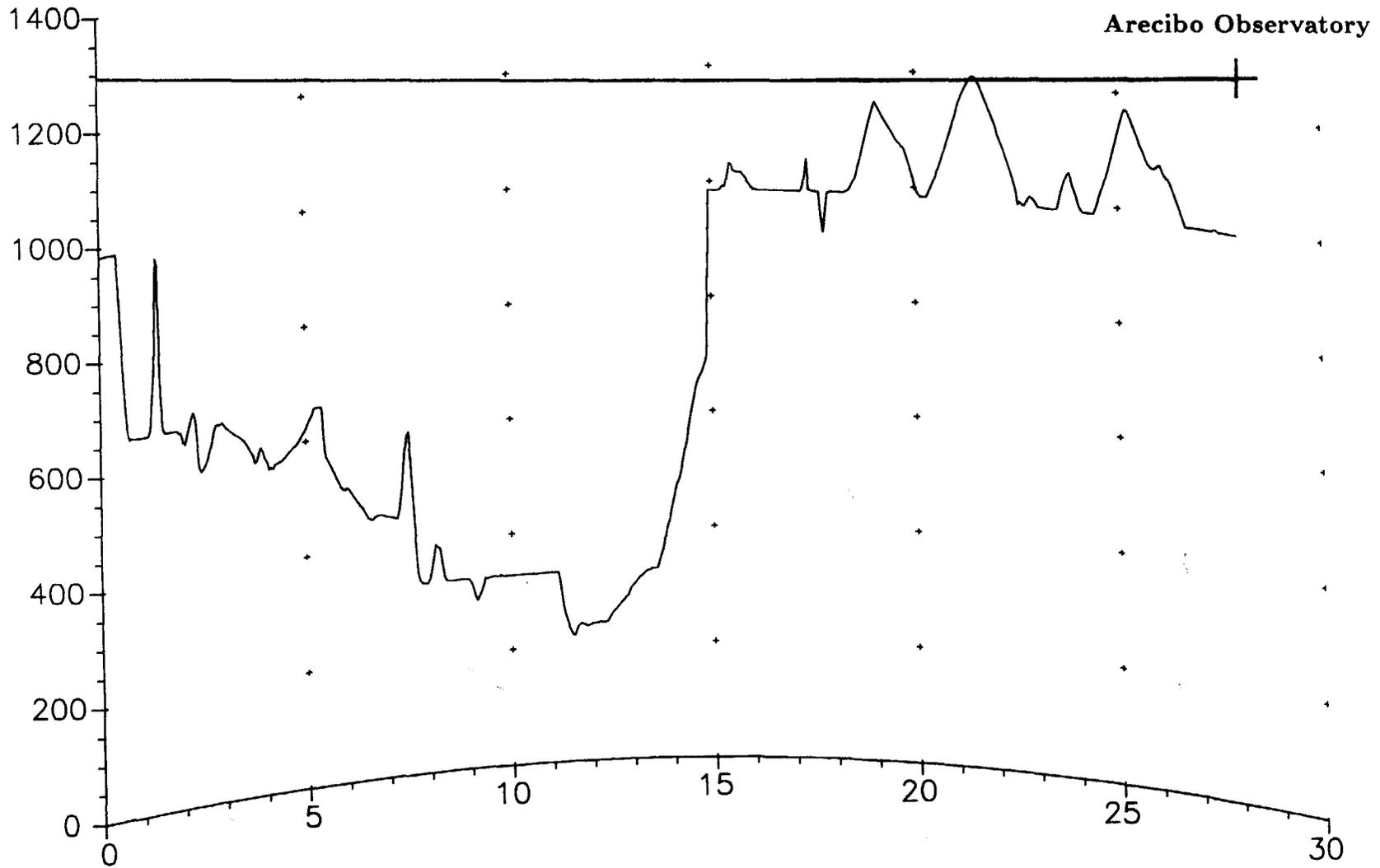
CORNELL UNIVERSITY

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April 21, 1995

Appendix A — WJWN-TV Channel 38, San Sebastian, PR



Coordinates: 18-19-06.00 67-10-42.00 (NAD27), bear: 86.03 deg, units: feet and miles, terplt v%1%

Thu Apr 20 10:40:20 1995

CERTIFICATE OF SERVICE

I, Inder M. Kashyap, hereby certify that copies of the foregoing "Comments" were filed with the Federal Communications Commission on April 24, 1995, and copies served on that same day by first class U.S. mail, postage prepaid, to the following:

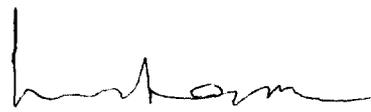
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