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HENRY M. ROBINSON LABORATORY OF ASTROPHYSICS 105-24

November 4, 1992

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MAIL BRANCH

Ms. D.R. Searcy, Secretary
Federal Communication Commission
1919 M Street, NW
Washington, D.C. 20554

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Subject: RM No. 8109, Rule Sec. Part 73 and 74

Dear Ms. Searcy,

I support the Petition for Rulemaking submitted by CORF, to improve adjacent channel protection of Channel 37 and to delete Channel 38 at Hilo, Hawaii, from the Television Table of Allotments.

The National Radio Astronomy Observatory is now bringing an antenna into operation on the summit of Mauna Kea, close to Hilo. This antenna is one of ten comprising a system known as the VLBA (Very Long Baseline Array) which will make high-precision studies of a wide variety of astronomical objects. The Mauna Kea antenna is the farthest west of the ten, and widely separated from the next group in the western continental U.S.. Because of this geographical isolation, the Mauna Kea antenna is for many purposes the most important antenna of the ten, and if its effectiveness is lost then the precision of the entire system is reduced by nearly 50%.

I am one of the original founders of the techniques underlying the VLBA; I have used these techniques for many years, and I plan to use the VLBA as soon as it becomes operational. My personal work mainly will consist of making high-precision radio images of distant objects (quasars, radio galaxies). I will mainly do this at frequencies higher than the 608-614 MHz band, but it is necessary also to have images at the lower frequencies, including 608-614 MHz. There are two reasons why images over the full spectrum of frequencies are important: (1) confusion between internal motions and distortions due to interstellar scintillations can only be eliminated by using many frequencies, and (2) different frequencies bring out different features in the images, and we can only get the full topological structure of a radio source (e.g. the degree of twistedness) by making images at many radio astronomy bands. Experience has shown that if the Mauna Kea antenna has serious interference in Channel 37, then its data will not be useable, and then the 608 MHz map from the VLBA will be of limited use.

Very truly yours,



Marshall H. Cohen
Professor of Astronomy