Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Review of Quiet Zones	)	WT Docket No. 01-319
Application Procedures	)	

COMMENTS OF THE
NATIONAL ACADEMY OF SCIENCES'
COMMITTEE ON RADIO FREQUENCIES

The National Academy of Sciences, through the National Research Council's Committee on Radio Frequencies[1] (hereinafter, "CORF"), hereby submits its comments in response to the Commission's November 21, 2001, Notice of Proposed Rulemaking in the above-captioned docket ("NPRM"). In these comments, CORF supports certain proposals for improvement of coordination between wireless operators and Quiet Zone entities, to encourage early coordination while protecting the current procedural rights of Quiet Zone entities when early coordination is not performed.

I. Introduction: The Importance of Radio Astronomy Observations, and the Unique Vulnerability of Passive Services to Out-of-Band and Spurious Emissions.

CORF has a substantial interest in this proceeding, as CORF represents the interests of the scientific users of the radio spectrum, including users of the Radio Astronomy Service ("RAS") bands. RAS observers perform important research that is extremely vulnerable to interference from out-of-band and spurious emissions.

As the Commission has long recognized, radio astronomy is a vitally important tool used by scientists to study our universe. Through the use of radio astronomy, scientists have in recent years made the first discovery of planets outside the solar system. Measurements of radio spectral line emission have identified and characterized the birth sites of stars in our own galaxy, and the complex distribution and

[1] A roster of the committee membership is attached.

evolution of galaxies in the universe. Radio astronomy measurements have revealed ripples in the cosmic microwave background, generated in the early universe, that later formed the stars and galaxies we know today. Observations of supernovae have led to valuable information on the creation and distribution of heavy elements essential to the formation of planets like Earth and of life itself. In addition, radio astronomy provides a unique and important method for exploring our own solar system—the planets, their moons, and comets—which aids in understanding the properties of our own planet Earth. This vibrant area of scientific research, with important results obtained through years of work and supported by a substantial federal investment, needs to be protected.

As passive users of the spectrum, radio astronomers have no control over the frequencies at which they must observe, or over the character of the "transmitted" signal. These parameters are set by the laws of nature. Furthermore, the emissions that radio astronomers receive are extremely weak—a typical radio telescope receives only about one-trillionth of a watt from even the strongest cosmic source and routinely receives sources even one million times weaker than that. Because radio astronomy receivers are designed to pick up such remarkably weak signals, such facilities are particularly vulnerable to interference from spurious and out-of-band emissions from licensed and unlicensed users of neighboring bands, and those that produce harmonic and other unwanted emissions that fall into the RAS bands.

In sum, radio astronomy observations are very important to scientific research, yet they are uniquely vulnerable to interference from out-of-band and spurious emissions. Accordingly, protection of RAS facilities serves the public interest. The FCC's Quiet Zone regulations are an important method of protecting radio astronomy observations.

II. The Importance of Quiet Zones.

As noted in the NPRM, Section 1.924 of the Commission's Rules sets forth procedures regarding coordination of Wireless Telecommunications Services applications for operations within areas known as Quiet Zones. Among the Quiet Zones are the two that protect the National Radio Astronomy Observatory in Green Bank, West Virginia ("NRAO"), and the Arecibo Observatory in Arecibo, Puerto Rico

("Arecibo"). CORF is pleased that the Commission has stated that in issuing the NPRM in this proceeding, it is "not proposing to reduce or eliminate carrier requirements to coordinate with Quiet Zones" (NPRM at paragraph 5). CORF strongly agrees with the Commission's statement that protection of the Quiet Zone areas from interference is "critically important" (Id.).

Both the NRAO and Arecibo provide state-of-the-art facilities for use by U.S. astronomers, as well as astronomers from other countries. Of the radio telescopes observing in the centimeter wavelengths, NRAO and Arecibo are the most sensitive instruments in the world. As a result, there is high demand for use of the facilities of these two observatories, and any increase in radio frequency interference to these facilities would negatively affect the important scientific investigations performed at these sites.

III. CORF Supports Certain Proposals for Improvement of Coordination Procedures.

CORF agrees with the Commission's statement that current Quiet Zone coordination procedures have generally been successful (NPRM at paragraph 5). Although CORF does not believe that the current procedures impose unnecessary burdens on wireless operators, CORF supports changes to the current procedures that will increase the efficiency of the coordination and application process for all parties, as long as there is no reduction in the procedural protection for radio astronomy facilities.

CORF's approach starts with the principle that the earlier a wireless operator and an affected Quiet Zone entity ("QZE") begin the coordination process, the better the result will be for all parties. Early coordination allows the wireless operator to better understand the requirements of the QZE, so that the operator can design its system appropriately before it has invested in equipment and entered into agreements with customers that are based on facilities that would cause harmful interference to the QZE. Similarly, early coordination allows the QZE additional time to properly analyze a proposal and provide detailed guidance to the operator. The result is an application to the FCC that is more likely to be granted without objection from the QZE and thus to reduce the application processing burden on the Commission. Accordingly, CORF fully supports the proposal in paragraph 10 of the NPRM to allow parties to provide

notification to and begin coordination with Quiet Zone entities in advance of filing an application with the Commission.

Proposals in paragraphs 8 and 9 of the NPRM address, respectively, conditional operation by applicants for Part 101 facilities prior to granting of the application by the Commission, and expedited processing of applications with QZE consent. CORF proposes the following procedures, which are intended to encourage early coordination while protecting the current procedural rights of the QZE when early coordination is not performed:

- If the wireless operator performs early coordination with the QZE, and the operator files its application with the written consent of the QZE attached, then the Commission should be free to expedite the processing of the application, without regard to the mandated 20-day waiting period for comments or objections from the QZE.[2]

- Similarly, applicants for Part 101 facilities who have performed early coordination and attached the written consent of the QZE to their application should be allowed to operate facilities in a Quiet Zone on a conditional basis, pending the Commission's processing of the application.

- In all other cases, the current Quiet Zone procedures and rules should apply; i.e., the Commission should forbear from processing the application for the mandated 20-day period, and Part 101 applicants should not commence conditional operations in Quiet Zones.

In paragraph 11 of the NPRM, the Commission seeks comments on rules that cross-reference Quiet Zone requirements in Section 1.924. CORF asserts that, first, such rules should not be eliminated. Such rules provide important notice to applicants who might not otherwise read Section 1.924 and thus might not otherwise be aware of the need to comply with Quiet Zone regulations. Similarly, CORF supports the continued reference to Quiet Zone coordination requirements in all rule parts that apply to wireless area-specific licenses (e.g., licenses for "basic trading areas" or metropolitan statistical areas) rather than to site-specific licenses. CORF recognizes that Section 90.655 of the Rules requires that Part

[2] CORF recommends that the written consent of the QZE contain reference to the parameters of the wireless operation consented to, so that the Commission can compare those parameters with the parameters sought in the application. If the parameters are different in any way, then the grant of consent is void, and the Commission not only should adhere to the mandated 20-day waiting period, but it also should either return the application without processing, or alert the QZE, so that the QZE knows that it should review the application and provide comments or objections, where appropriate, to the Commission. Even when the wireless operator attaches written consent, it should still be required to serve a copy of the application on the affected QZE.

90 licensees operating in Quiet Zones must be individually licensed on a site-by-site basis. CORF suggests, however, that the Commission clarify this rule to specify who is responsible for contacting the QZE: the applicant, or the applicant's frequency coordinator. Although the frequency coordinator may be better qualified to perform this task, the matter should be clarified in any case.

IV. Conclusion.

CORF believes that early coordination between a wireless applicant and a QZE promotes the best results for both parties and for the Commission. Accordingly, CORF supports certain proposals described above that can encourage early coordination while protecting the current procedural rights of the QZE when early coordination is not performed.

Respectfully submitted,

NATIONAL ACADEMY OF SCIENCES'
COMMITTEE ON RADIO FREQUENCIES

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