

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

Amendment of the Commission's)
Rules to Establish a Radio Astronomy) ET Docket No. 96-2
Coordination Zone in Puerto Rico) RM-8165
)
)

REPORT AND ORDER

Adopted: September 26, 1997;

Released: October 15, 1997

By the Commission:

I. INTRODUCTION

1. By this action, the Commission establishes a Coordination Zone that covers the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra within the Commonwealth of Puerto Rico (the Puerto Rican Islands). The Coordination Zone requires applicants for new and modified radio facilities in various communications services within the Coordination Zone to provide notification of their proposed operations to the Arecibo Radio Astronomy Observatory (Observatory) near Arecibo, Puerto Rico, at the time their applications are submitted to the Commission. The Observatory will have 20 days to file comments with the Commission regarding each application's potential for interference, and applicants will be responsible for making reasonable efforts to accommodate the interference concerns of the Observatory. The Coordination Zone and notification procedures will enable the Observatory to receive information needed to assess whether an applicant's proposed operations will cause harmful interference to the Observatory's operations and will promote efficient resolution of problems through coordination between applicants and the Observatory.

II. BACKGROUND

2. In the *Notice of Proposed Rule Making (NPRM)* in this proceeding, we stated that the Observatory, operated by Cornell University (Cornell) under a cooperative arrangement with the National Science Foundation (NSF) as part of the National Astronomy and Ionosphere Center, is the largest, most sensitive radio astronomy telescope in the world and that the Observatory has a long history of research and discoveries that could not have been accomplished at any other

facility.¹ We noted Cornell's contention that the increasing number of radio services in Puerto Rico is creating interference to the Observatory's operations, that passive experiments outside the Radio Astronomy Service (RAS) bands are very difficult to perform, and that interference is an everyday occurrence even in the RAS bands. We further noted Cornell's contention that a \$22.8 million upgrade to the Observatory was underway and that after the upgrade is completed, the sensitivity of the Observatory's telescope will be increased by 50 percent. Finally, we noted Cornell's contention that a four mile "Protection Zone" around the Observatory established by the Commonwealth of Puerto Rico is inadequate to protect the Observatory from interference.

3. In the *NPRM*, we proposed to establish a Coordination Zone covering the Puerto Rican Islands.² Specifically, we proposed to require applicants for new and modified radio facilities within the Coordination Zone that propose to operate on frequencies below 15 GHz under Parts 5, 21, 22, 23, 24, 25, 26, 73, 74, 78, 80, 87, 90, 94, 95, and 97 of our rules to provide written notification of their proposed operations to the Observatory at the time their applications are submitted to us.³ We requested comment on whether it would be in the public interest to impose the notification requirement with regard to Part 90 base or fixed stations upon a frequency coordinator rather than the licensees because many Part 90 private land mobile licensees are small businesses for whom a notification requirement to the Observatory might be burdensome. We did not propose any notification requirement for applicants for mobile stations in land mobile radio services, temporary base or temporary fixed stations other than short-term broadcast auxiliary operations, the Civil Air Patrol, new amateur stations other than amateur beacon and repeater stations, mobile Earth terminals licensed under Part 25, or stations aboard ships or aircraft. With respect to amateur beacon and repeater stations, we proposed that if such stations are planned within 10 miles of the Observatory, operators be required to notify the Observatory. With respect to short-term temporary broadcast auxiliary stations, we proposed that -- except in emergency situations -- operators of those stations be required to notify the Observatory in

¹ For example, the 1993 Nobel Prize for Physics was awarded to two Princeton physicists for discoveries made in pulsar research conducted at the Observatory. This accomplishment and others are elaborated on in comments filed by Cornell; Center for Astrophysics-Harvard College Observatory; Smithsonian Astrophysical Observatory; National Research Council, Committee on Radio Frequencies; National Science Foundation; National Radio Astronomy Observatory, and astronomy professors at various universities.

² See *Notice of Proposed Rule Making*, ET Docket No. 96-2, 11 FCC Rcd 1716 (1996).

³ Subsequent to adoption of the *NPRM*, we consolidated portions of Part 21 and the entirety of Part 94 of the rules into Part 101; see *Report and Order*, WT Docket No. 94-148 and CC Docket No. 93-3, 11 FCC 13449 (1996). Additionally, we established a new Wireless Communications Service (WCS) at 2305-2320 MHz and 2345-2360 MHz under Part 27 of the rules; see *Report and Order*, GN Docket No. 96-228, FCC 97-50, released February 19, 1997. Because permanent fixed and base stations in the WCS have the same potential to cause harmful interference to operations of the Observatory as other permanent fixed and base stations subject to the proposals set forth in the *NPRM*, we are including such WCS stations in the Coordination Zone.

advance of their proposed operations and that prior coordination with the Observatory be required for operations within four miles of the Observatory. In emergency situations, we proposed that notification be accomplished as soon as possible after operations begin.

4. We proposed requiring applicants to be responsible for making reasonable efforts to accommodate the interference concerns of the Observatory. We further proposed to permit the Observatory to make a good faith effort to evaluate the interference potential of each application. Additionally, we proposed to provide the Observatory a 20-day period -- commencing when the application is filed with the Commission -- to evaluate, coordinate, and file comments with the Commission regarding the application. We encouraged coordination early in the design phase of a project, but required only that the information in the application be provided to the Observatory by the time the application is filed with the Commission.

5. We further proposed to permit the Observatory to evaluate the interference potential of applications for new or modified services within the Coordination Zone based on all relevant factors, rather than specifying precise interference standards. We stated that specifying such standards may not be desirable because of the multitude of services that may cause interference to the Observatory and the varying situations in which these services may operate. We proposed that the applicant be required to make "reasonable technical modifications" to its proposal in order to resolve or mitigate any potential harmful interference to the operations of the Observatory. We stated that once an applicant has satisfied its responsibility of making reasonable efforts to accommodate the Observatory, its application may be granted even if the Observatory would suffer interference as a result.

6. In response to the *NPRM*, we received 20 comments and six reply comments. Generally, the comments from the scientific community support the establishment of a Coordination Zone, while telecommunication providers and amateur operators either entirely oppose or oppose certain aspects of a Coordination Zone.

III. DISCUSSION

A. Need for a Coordination Zone

7. In support of the Observatory's need for a Coordination Zone, NSF comments that the Observatory is able to coordinate with Government operations through spectrum user groups, but that no similar mechanism exists to permit the Observatory to coordinate with private users of the spectrum.⁴ Cornell concurs, and states that coordination is particularly vital because United States' standards for suppression of spurious emissions are far less strict than in other

⁴ See NSF Comments at 3.

industrialized nations, such as those in Europe. The Society of Broadcast Engineers, Inc. (SBE) states that due to Cornell's assurance that the Observatory is not asking for additional spectrum rights, SBE does not oppose a Coordination Zone.⁵ SBE states that providing a copy of the application to the Observatory at the time the application is filed with the Commission is a small burden and that a 20-day review period would be unlikely to delay the Commission's application process.

8. Other commenters dispute whether a Coordination Zone is appropriate or necessary. The Asociacion De Radiodifusores De Puerto Rico (PRBA) contends that there is insufficient evidence of past interference problems to justify a Coordination Zone. PRBA and the Puerto Rico Telephone Company (PRTC) argue that Commission Public Notices provide adequate notification of radio licensee activity.⁶ PRTC also states that inexpensive services are available to monitor the Commission's Public Notices and alert the Observatory if a relevant application is filed. Further, PRTC contends that the Observatory is already protected by the four-mile Protection Zone.⁷ Finally, PRBA proposes that if a Coordination Zone is adopted it should be implemented on a five-year trial basis.

9. Centennial Cellular Corp. (Centennial) questions whether the Commission has adequately investigated a smaller Coordination Zone.⁸ Celpage, Inc. (Celpage) argues that the Coordination Zone proposal does not provide the applicant with prior notice of the FCC's requirements for an application grant and appears to delegate authority impermissibly to the Observatory to determine the conditions of a grant.⁹ Celpage also opposes a Coordination Zone because it claims that such a Zone may deprive or delay the provision of communications services to Puerto Rico's citizens. Celpage argues that the Zone would require paging services to leave unserved areas around the Observatory, regardless of the Observatory's actual need for the spectrum used by those services. Finally, Celpage argues that many licensees now must pay millions of dollars in auctions to purchase licenses, and that they should not be required to accommodate the Observatory, which does not pay to use frequencies.¹⁰

10. In reply comments, Cornell and the National Research Council, Committee on Radio

⁵ See SBE Comments at 1.

⁶ See PRBA Comments at 3; PRTC Comments at 2.

⁷ See PRTC Comments at 2-4.

⁸ See Centennial Comments at 7.

⁹ See Celpage Comments at 5.

¹⁰ See Celpage Comments at 7-8.

Frequency (CORF) argue that not all applications are placed on public notice and that many applications that are placed on public notice do not provide the Observatory with sufficient technical information to determine the likelihood of interference. Cornell also contends that gathering the information for an application that is placed on public notice is time consuming and does not permit the Observatory to contact the applicant until well after the application is filed. Further, Cornell states that providing copies of the technical portions of an application to the Observatory is only slightly burdensome, and well worth the effort if costly delays in implementing the applicant's service are avoided. Similarly, CORF states that providing the technical portions of an application to the Observatory may eliminate the need for the Observatory to file a petition to deny against the applicant.

11. Additionally, Cornell states that the local zoning regulations in Puerto Rico are not sufficient to protect the Observatory's operations and that the Observatory's added sensitivity due to equipment upgrades increases the need for a Coordination Zone. CORF concurs, stating that the Puerto Rican Protection Zone is not sufficient to protect the Observatory because harmful emissions often originate at distances further than four miles from the Observatory.¹¹

12. Decision. We believe that the Observatory is a unique scientific tool, and find that harmful interference to the Observatory's operations is a serious concern. We also agree with comments from Puerto Rican telecommunications service providers that their services are highly important and must be maintained. However, we note that we have a statutory obligation to prevent and resolve radio frequency interference through enforcement and effective spectrum management policies. Whenever possible, we attempt to streamline our processes and reduce the burden on licensees and license applicants, but in some instances a minimally increased burden must be imposed to allow the public the widest range of telecommunications benefits.

13. We agree with Cornell that sources of technical information currently available to the Observatory are insufficient. Further, the provision of technical information to the Observatory would be a minimal burden and could be done electronically at little or no cost to the applicant. We also agree with Cornell that the Commonwealth of Puerto Rico Protection Zone is inadequate to protect the Observatory's operations. Four miles is a relatively short range for many radio transmitters, and high power transmitters at a high elevation can interfere with the Observatory from a much greater distance. For similar reasons, we believe that a smaller Coordination Zone not encompassing the entirety of the Puerto Rican Islands would provide insufficient protection to the Observatory.¹²

¹¹ See CORF Reply at 3.

¹² We note that Puerto Rico has a mountainous terrain and service providers typically place their antennas at a high elevation in order to achieve better coverage.

14. We disagree with comments from telecommunications providers who argue that the Coordination Zone will deprive the citizens of Puerto Rico of adequate radio service. We believe that if service providers and the Observatory work together, adequate service can be maintained without harming the operations of the Observatory. We also observe that adoption of a Coordination Zone would neither allocate additional spectrum for RAS use, nor provide the Observatory additional rights to spectrum allocated to other services. For that reason, we disagree with arguments that state that money expended by those service providers to use frequencies in the Puerto Rican Islands is relevant to establishment of a Coordination Zone. Further, we disagree with comments that state that allowing the Observatory to challenge a license application would result in an illegal delegation of the Commission's authority to the Observatory to determine whether an application will be granted. We emphasize that while the Observatory may challenge an application, only the Commission can make the decision regarding the grant of that application. Finally, we see no need to establish the Coordination Zone on a five-year trial basis. We can address any unforeseen problems at any time.

15. Accordingly, we are establishing a Coordination Zone that covers the Puerto Rican Islands. Within the Coordination Zone, applicants in affected services will be required to submit to the Observatory technical information about the proposed transmissions no later than the date the application is filed with the Commission. The technical submission must include: 1) proposed frequency and FCC Rule Part; 2) effective radiated power or effective isotropic radiated power; 3) antenna height; 4) antenna directivity and gain, if any; 5) geographic coordinates of the antenna (NAD-83 datum); 6) type of emission; and 7) whether the proposed use is itinerant. To minimize the administrative burden on service applicants, we will permit this notification to be made either in writing, as we proposed in the *NPRM*, or electronically. We believe that either notification method will safeguard the Observatory's operations without diminishing the provision of important radio services to Puerto Rican citizens.

B. Affected Services

16. The scientific community generally supports the range of services and frequencies proposed in the *NPRM* for inclusion in the Coordination Zone. However, the Director of the National Radio Astronomy Observatory (NRAO) in Green Bank, West Virginia states that protection to the Observatory should not be limited to certain bands. Cornell states that at present it is willing to accept the *NPRM*'s proposal to limit service applicants' coordination with the Observatory only to operations that use bands below 15 GHz, but suggests that the Commission commit to revisit that limit in the future.¹³ Similarly, NSF supports excepting from coordination with the Observatory operations that use frequencies above 15 GHz.

¹³ Cornell also notes that under current local zoning restrictions, any point-to-point links that bisect the existing Puerto Rico Protection Zone are prohibited, regardless of whether the band used is above or below 15 GHz. Our action herein does not affect this prohibition.

17. Proponents of various radio services argue that the range of services proposed for inclusion in the Coordination Zone is excessively broad, or that their service should be excluded. For example, PRTC argues that radio astronomy observations are normally conducted in a narrow frequency range, but that the proposals set forth in the *NPRM* cover radio services across a large portion of the frequency spectrum, including regions in which the Observatory conducts only passive experiments. PRTC argues that Cornell should be required to indicate specifically which frequencies are most important. Similarly, Centennial states that the proposal is overly broad geographically, spectrally, and methodologically; and would affect all radio services regardless of whether or to what extent the Observatory utilizes the spectrum or whether the spectrum is allocated to the RAS.

18. PRBA contends that applicants within the Coordination Zone seeking Special Temporary Authorizations (STAs) to operate at variance with their licensed technical parameters should not be required to coordinate with the Observatory. PRBA states that STAs are frequently necessitated by unusual and unforeseen circumstances that require emergency approval, and therefore coordination cannot always be effected with the Observatory.¹⁴

19. The amateur radio community argues that amateur beacon and repeater stations should not have to coordinate formally with the Observatory because they are not required to notify the Commission of their operations. The Puerto Rico Amateur Radio League, Inc. (PRARL) and the Puerto Rico Volunteer Frequency Coordinators, Inc. (PR/VI) state that amateur radio stations are granted in combination with operators' licenses, that amateurs do not have to file applications for new or modified stations, and that Part 97 of the rules mentions only informal coordination. Additionally, the American Radio Relay League, Inc. (ARRL) and PRARL argue that inclusion of Part 97 in the Coordination Zone proposal is inconsistent with the exclusion of Civil Air Patrol (CAP) repeaters from the proposal. ARRL and PRARL argue that in many cases CAP repeaters are indistinguishable from amateur repeaters, except for differing frequencies. PRARL also states that the military amateur radio system (MARS) is excluded from the proposal, but that MARS poses the same type of potential interference threat to the Observatory as amateur repeaters.

20. ARRL and PRARL also contend that inclusion of some amateur operations in the Coordination Zone will ruin a good informal working relationship between the amateur community and the Observatory. PRARL states that it has agreed to supply the Observatory any available information in its records related to frequencies used by amateur repeaters in Puerto Rico. Similarly, PR/VI states that it will informally aid the Observatory in tracking any signals within the amateur service that may interfere with the Observatory. Finally, PRARL and PR/VI state that an informal "repeater frequency coordination program" already exists in Puerto Rico,

¹⁴ See PRBA Comments at 7.

and has been effective in preventing interference to the Observatory for the last five years.

21. Cornell replies that the needs of the Observatory encompass a wide range of frequencies, and that the Commission's proposal is not excessively broad. With respect to STAs, Cornell responds that not all STA requests reflect emergencies, and that the Observatory should be permitted to evaluate the interference potential of STAs to the extent that circumstances permit. Finally, with respect to amateur radio operations, Cornell states that new amateur beacon and repeater stations should not be exempted from the requirements of the Coordination Zone because they create interference potential to the operations of the Observatory. However, Cornell states that it is willing to rely on PR/VI if PR/VI is designated as the official Commission coordinator for all amateur operators in the Coordination Zone.

22. Decision. As stated in the *NPRM*, the sensitivity of the Observatory and the many types of services that could cause interference necessitates the inclusive nature of our proposal. While we see no need to include in the Coordination Zone frequencies above 15 GHz, which are not currently used or requested by the Observatory, harmonic and spurious emissions from different services are often spread across a wide range of spectrum below 15 GHz. Additionally, scientific exploration requires flexibility and the ability to passively utilize spectrum below 15 GHz that may not be allocated to the RAS.

23. With respect to STAs, we note that they are used in several services for a variety of purposes, and that some of these uses could cause substantial interference to the operations of the Observatory. We also find that it will be minimally burdensome in most instances for an STA applicant to provide technical information to the Observatory at the same time it files the STA request with the Commission. In the case of an emergency operation, the licensee will be permitted to notify the Observatory as soon as possible after beginning operation.¹⁵

24. With respect to amateur radio operations, we are adopting our proposal to exclude from the Coordination Zone a large number of amateur stations. However, we agree with Cornell that new amateur beacon and repeater stations within 10 miles of the Observatory have a significant potential for interference -- a greater potential than CAPS repeaters or the MARS service -- and find that those amateur operations must be included in the Coordination Zone. We are not designating an official Commission coordinator for amateur operators in the Coordination Zone, but encourage informal coordination.

25. Accordingly, we are adopting our proposal that most applicants for Part 5, 21, 22,

¹⁵ An emergency operation may be necessary as a result of, for example, severe weather or a major breaking news story.

23, 24, 25, 26, 27, 73, 74,¹⁶ 78, 80, 87, 90, 95, 97, and 101 services within the Coordination Zone must notify the Observatory of their proposed operations. This requirement will not apply to applicants for services that operate on frequencies above 15 GHz, nor will it apply to applicants for mobile stations in land mobile radio services, temporary base or temporary fixed stations (other than short-term broadcast auxiliary operations), the Civil Air Patrol, new amateur stations (other than amateur beacon and repeater stations within 10 miles of the Observatory), mobile Earth terminals licensed under Part 25, or stations aboard ships or aircraft. We emphasize again that we are not providing the Observatory additional rights to spectrum allocated to services, but that the high potential for interference from multiple services requires an inclusive Coordination Zone.

C. Observatory Comment Period

26. Cornell states that the proposed 20-day period for the Observatory to evaluate the interference potential of each application after the application is filed with the Commission is insufficient, and requests 30 days after the issuance of a public notice of the acceptance of an application for new or modified operations.¹⁷ Cornell argues that the additional time would allow parties to resolve differences and possibly eliminate the need in many instances to file comments.

27. Celpage opposes Cornell's request for additional time to evaluate coordination information, arguing that grant of this request would delay the application process.¹⁸ Cellular Communications of Puerto Rico, Inc. (CCPR) submits an alternative proposal, arguing that the 20-day Observatory comment period should begin at the time the applicant notifies the Observatory of a proposed new or modified radio facility, even if that date is prior to the date that the applicant submits its application to the Commission.¹⁹ However, for confidentiality reasons, SBE is opposed to any requirement to make application details available to the Observatory prior to the filing of the application with the Commission. Regarding this latter concern, Cornell states that information provided the Observatory prior to filing of the application

¹⁶ In the *NPRM*, we noted that in MM Docket No. 95-17, we have proposed technical standards for protecting thirteen radio astronomy sites, including the Arecibo Observatory, where TV Channel 37 frequencies (608-614 MHz) are used for radio astronomy observations. Those proposed standards address potential first-adjacent channel interference caused by TV stations operating on Channels 36 and 38. See *Notice of Proposed Rule Making* ("Radio Astronomy Activity on Channel 37"), 10 FCC Rcd 2088 (1995). The Docket No. 95-17 proceeding remains open and the rules we are adopting herein do not supplant the Docket No. 95-17 proceeding.

¹⁷ See Cornell Comments at 6.

¹⁸ See Celpage Reply at 5-6.

¹⁹ See CCPR Reply at 6.

will be kept confidential and not shared with any third party.²⁰

28. Decision. We acknowledge Cornell's concern that our proposed 20-day Observatory comment period is brief; however, we note that this same comment period is provided to the NRAO and appears to have worked satisfactorily. Further, we agree with Celpage that the application process must proceed as rapidly as possible. However, we are not adopting CCPR's proposal that the Observatory comment period be initiated at an earlier time if advance notification is given to the Observatory. As discussed by SBE, many service applicants may not wish to divulge technical details to the Observatory in advance of filing with the Commission, but even if this is not the case, we find that the Observatory should have a minimum of 20 days to evaluate the technical details of the proposal submitted to the Commission, not 20 days to evaluate the technical details of a proposal that may not be ready to be submitted to us. Accordingly, we are adopting our proposal to permit the Observatory a 20-day comment period, commencing when the application is filed with us.²¹

D. Interference Evaluation

29. The scientific community supports permitting the Observatory to evaluate the interference potential of each application for a new or modified radio facility. NSF argues that the Observatory's interference computations should be guided by available International Telecommunication Union (ITU) studies, taking into account terrain and other characteristics, rather than by specific interference standards in the Commission's rules. Similarly, CORF states that specific standards may not be useful, given the broad range of frequencies and varying circumstances under which services operate. Cornell concurs, stating that useful standards cannot be specified at present.

30. Several service providers disagree, arguing that interference standards must be established by the Commission to prevent the Observatory from having overly broad power to determine whether an applicant's proposal would cause interference. PRBA contends that the Observatory may request modification to applications for radio facilities even when the interference potential to its operations is minimal. Centennial argues that a lack of specific standards would heighten the prospect of disagreement between the parties, and CCPR argues that a standard is needed for the early design phase of a radio facility.

31. SBE recommends that Cornell establish field strength levels at specific coordinates, below which an applicant can be assured the Observatory will not object. SBE states that a

²⁰ See Cornell Reply at 4.

²¹ In the case of STAs, the Observatory may have a lesser period to comment or, in some cases, no comment period prior to authorization of an emergency STA, *see* para. 23, *supra*.

maximum signal level guideline would permit an applicant to consider protection of the Observatory at early design stages. Alternatively, SBE proposes that interference guidelines be published by the Observatory regarding the level of protection that it considers reasonable. SBE argues that such guidelines would allow flexibility to treat potential interference on a case-by-case basis, and permit service applicants to appeal unreasonable guidelines to the Commission.²²

32. In response to SBE's comments, Cornell replies that it intends to prepare interference guidelines to act as a starting point in discussions between the Observatory and service applicants. Cornell agrees with SBE that if these guidelines are used by service applicants in advance of preparing applications, the guidelines could reduce or eliminate subsequent costs or delays.²³ CORF supports Cornell's proposal.²⁴

33. Decision. The Coordination Zone encompasses a large number of services, operating at differing powers and frequencies. Additionally, factors such as terrain and propagation characteristics further complicate interference evaluations. Therefore, we find that it would be extremely time-consuming and difficult for the Commission to establish interference standards that would apply to all service applicants. However, we concur with comments that state that interference guidelines could lessen coordination problems, and Cornell has proposed to develop such guidelines. While we are cognizant of the concerns of service providers regarding Cornell's objectivity in developing these guidelines, we believe that Cornell will have an incentive to cooperate with service providers. If Cornell develops unrealistically stringent guidelines, service providers would undoubtedly challenge them, resulting in a large administrative burden on Cornell. Further, under a guideline approach, the Commission would remain the sole entity that has the authority to rule on any service applications.

34. Accordingly, we are not establishing Commission interference standards, but are adopting SBE's alternative proposal that Cornell provide interference guidelines to service applicants so that applicants may consider protection to the Observatory in the early design phase of radio facilities. Cornell has stated that such guidelines can be made available to applicants in advance of application preparation. We believe that these guidelines will help ensure that coordination between applicants and the Observatory will proceed in a smooth manner, and as experience is gained by both applicants and Cornell, become routine. We recommend that Cornell place these guidelines on its Internet web site so that they will be easily and widely accessible by Commission applicants in the Coordination Zone

²² See SBE Comments at 3-4.

²³ See Cornell Reply at 9.

²⁴ See CORF Reply at 5.

E. Resolution Procedures

35. PRTC states that there is no discussion in the *NPRM* of what would constitute "reasonable technical modifications" or what service applicants would be required to do to accommodate the Observatory's interference concerns. Accordingly, PRTC argues that the Commission's Coordination Zone proposal violates the Administrative Procedure Act because the proposal does not provide the terms or substance of the proposed rule or a description of the subjects and issues involved. PRTC contends that the Commission must provide sufficient detail and rationale for the proposed rule to permit interested parties to participate meaningfully.²⁵ Similarly, Celpage states that our proposal to require a service applicant to make reasonable efforts to accommodate the interference concerns of the Observatory is vague and will cause the Commission, the applicant, and Observatory to expend resources to determine what is reasonable in a particular case.²⁶ Celpage also argues that the Commission has not considered the substantial expenses of the proposal to applicants -- including negotiating costs, engineering and legal fees, site lease, and equipment costs -- and that applicants should not be required to pay such expenses to benefit the Observatory.²⁷

36. SBE recommends that "reasonable efforts" be defined as any modification that would not delay the applicant's project or increase the applicant's costs. SBE argues that any modification that would delay a project or increase the applicant's cost would be unreasonable.²⁸ SBE further argues that Cornell's suggested interference avoidance tools of power reduction, site relocation, and directionalization are reasonable only if undertaken at the planning stages of a radio facility. SBE contends that once a radio facility is in the application stage, changes in site, power, or antenna will almost assuredly increase costs and create delays.

37. In reply comments, Cornell states that "reasonable efforts" are best defined by the Observatory's existing voluntary coordination with service applicants. Cornell states that pre-selection of antenna sites and directionalizing antennas, installation of filters, shielding, avoiding use of excessive power, and making use of terrain obstruction can in many instances eliminate potential interference at a reasonable cost. Cornell argues that it is impossible to predict what is reasonable in every situation because each case is different, but that what is reasonable will become clearer over time as coordination takes place. Moreover, Cornell argues that applicants can refuse to take steps considered unreasonable, and allow the Commission to make a

²⁵ See PRTC Comments at 7-9.

²⁶ See Celpage Comments at 6.

²⁷ See Celpage Comments at 4-5.

²⁸ See SBE Comments at 3.

determination of what is reasonable.²⁹ Finally, Cornell argues that applicants' expenses attendant to obtaining Commission licenses and meeting Commission requirements are part of the costs of doing business, and that applicants should be responsible for paying these costs.

38. CORF states that it is not necessary for the Commission to define the term "reasonable efforts" because the Commission can define it on a case-by-case basis. Further, CORF contends that it is not necessary as a matter of administrative procedure to define this term because it is common for Commission rules mandating resolution of interference between parties to require "reasonable" accommodation of another party's facilities without listing more specific requirements.³⁰

39. Decision. We find that "reasonable efforts" will vary from case to case, depending on the degree of harm to the Observatory's operations and the extent of the change needed to prevent such harm. For example, if significant harm to the Observatory's operations could be avoided by a service applicant making a minor, low-cost change to its operations, making that change would be reasonable. On the other hand, if minor harm to the Observatory's operations could be avoided only by a service applicant making a major, high-cost change to its operations, making that change would be unreasonable. Nonetheless, to attempt to set forth a general definition of the term "reasonable efforts" is extremely difficult, if not impossible. We find that use of this term in our rules without definition would not violate the Administrative Procedure Act. As CORF notes, we use the word "reasonable" without definition in several of our rule parts. Further, we are encouraged that the Observatory has in the past successfully coordinated informally with many providers of Puerto Rican Island radio services, and believe that there is some understanding among service providers of what constitutes a "reasonable effort." We anticipate that future coordination will simply be on a more formal basis, and that the Observatory and service providers will come to mutually acceptable agreements in most cases.

40. To the extent that a service applicant and the Observatory agree that the applicant's proposed operations would cause harmful interference to the Observatory, the applicant may either pay to modify its own proposed operations or -- with the consent of the Observatory -- to upgrade the Observatory's facilities. Should a dispute arise between the Observatory and the applicant regarding whether the applicant has made a reasonable effort to avoid interference to the Observatory, the applicant may refuse to pay for any modifications or upgrades recommended by the Observatory and permit the Commission to resolve the dispute. To the extent that the Commission determines that reasonable efforts have been made by the applicant to protect the Observatory from interference, there will be no further obligation for the applicant to modify its

²⁹ See Cornell Reply at 5-7.

³⁰ Specifically, CORF cites examples from Sections 21.31(a), 24.431, 25.274, 73.685(d) of the Commission's rules. See CORF Reply at 6-7.

proposed operations or to upgrade the Observatory's facilities. Consequently, if under those circumstances the Observatory believes that the applicant's proposed operations must be modified or its own facilities upgraded to protect the Observatory from interference, the Observatory will be required to pay for any such modification or upgrade.

F. Other Issues

41. Minor Modifications. Some commenting parties argue that not all modifications are significant and should not have to be coordinated with the Observatory. For example, PRBA argues that our proposed rules included many technical modifications that are minor. PRBA recommends that applicants be required to notify the Observatory only of modifications deemed "major" by the Commission's rules.³¹ PRBA contends that service applicants seeking minor changes are exempt from the Commission's local public notice requirements and should not be required to notify the Observatory. In reply comments, Cornell states that "minor" modifications may include increases in power and antenna height that could have a significant impact on the Observatory.

42. Decision. We agree with PRBA that some modifications would not increase a station's potential to create interference to the Observatory. However, the categorization between major and minor modifications differs between services. We find that all modifications that have a potential to increase interference to the Observatory must be coordinated with the Observatory. However, we will rely on the engineering judgment of the service applicant to determine when a modification has the potential for increased interference. We believe this approach is preferable to requiring that all modifications be reported to the Observatory, because the latter approach could significantly increase the administrative burden on both the applicant and Cornell.

43. Services In Which No Individual Licenses Are Issued. We have been streamlining our applications process for several commercial wireless radio services to reduce unnecessary paperwork and increase efficiency. For example, with respect to paging towers, cellular base stations, and PCS base stations, no individual station licenses are issued -- rather, geographical licenses are issued to cover an entire area. Some commercial wireless entities argue that the Coordination Zone should not apply to these services, except to the extent that the Commission must be notified of their operations. Specifically, Centennial argues that our proposal should not apply if no filing is required to the Commission. Centennial states that cellular licensees provide notification only upon commencement and operation of cells that change the authorized service area, and that PCS licensees receive blanket licenses; *i.e.*, no applications are filed for individual sites.³² PRTC and Celpage express similar concerns.³³ However, in reply comments, Cornell

³¹ See PRBA Comments at 5-7.

³² See Centennial Comments at 5.

supports including notification to the Observatory of new transmitters in these services, even where no Commission notification is required. Cornell maintains that individual transmitters in these services may pose an interference threat to the operations of the Observatory.

44. Decision. Although the Commission is streamlining the application process for commercial wireless services, we find no reason why transmitters in services in which individual licenses are not issued should not have to comply with the requirements of the Coordination Zone. Further, we note that operators in these services must comply with the notification requirements of the Radio Quiet Zone when new transmitters are introduced, and believe it will be minimally burdensome for them to notify the Observatory. Because operators of such services are not required to file with the Commission, we believe it appropriate for them to notify the Observatory at least 45 days prior to commencing operation of a new transmitter.

45. Accordingly, operators of transmitters in services in which no individual licenses are issued will be required to notify the Observatory at least 45 days prior to commencing operations of a new transmitter that may cause harmful interference to the operations of the Observatory. We will rely upon each operator to determine when a transmitter may pose an interference threat to the operations of the Observatory. As is the case with other services within the Coordination Zone, the Observatory will have 20 days to file comments with the Commission regarding any such transmitter.

46. Frequency Coordination. Cornell supports our proposal to permit Part 90 service applicants to make their notifications to the Observatory through frequency coordinators. However, Cornell states that if the Observatory determines that a potential for interference exists, the applicant -- and not the coordinator -- should be responsible for making reasonable efforts to resolve the problem. CCPR states that in some instances frequency coordination is performed with several parties, including the Observatory, in advance of a service application being filed, and proposes that in those instances no additional coordination be required at the time the application is filed with the Commission.

47. Decision. We agree with Cornell and will permit Part 90 service applicants to make their notifications to the Observatory through recognized frequency coordinators, while holding applicants responsible for making reasonable efforts to accommodate the interference concerns of the Observatory. With respect to CCPR's proposal, we agree that advance coordination with several parties, including the Observatory, is sufficient in cases in which no changes that could affect the operations of the Observatory are made to the application subsequent to such coordination. However, to the extent that such changes are made, the Observatory must be notified at the time the application is filed with the Commission. Our goal is to permit flexibility

³³ See PRTC Reply at 9.

in coordination, while ensuring that the Observatory has adequate notice of applications that could affect its operations.

IV. PROCEDURAL INFORMATION

48. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603 ("RFA"), a Final Regulatory Flexibility Analysis ("FRFA") is set forth in Appendix B.

49. Accordingly, IT IS ORDERED that Parts 5, 21, 22, 23, 24, 25, 26, 27, 73, 74, 78, 80, 87, 90, 95, 97, and 101 ARE AMENDED as specified in Appendix A, effective 60 days after publication of a summary of this document and the rule changes in the Federal Register. This action is authorized by Sections 4(i), 303(c), 303(f), 303(g), 303(r) and 309(j)(13) of the Communications Act of 1934, as amended, 47 U.S.C. Section 154(i), 303(c), 303(f), 303(g), 303(r), and 309(j)(13).

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
Acting Secretary

APPENDIX A: FINAL RULES

A. Part 5 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 5 continues to read:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.
Interpret or apply sec. 301, 48 Stat. 1081, as amended; 47 U.S.C. 301.

2. Section 5.70 is added to read as follows:

§ 5.70 Notification to the Arecibo Observatory.

Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: precz@naic.edu

- (1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

- (2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from

interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

B. Part 21 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 21 continues to read:

AUTHORITY: Secs. 1, 2, 4, 201-205, 208, 215, 218, 303, 307, 313, 403, 404, 410, 602, 48 Stat. as amended, 1064, 1066, 1070-1073, 1076, 1077, 1080, 1082, 1083, 1087, 1094, 1098, 1102; 47 U.S.C. 151, 154, 201-205, 208, 215, 218, 303, 307, 313, 314, 403, 404, 602; 47 U.S.C. 552, 554.

2. The heading of Section 21.113 is amended, and Section 21.113(d) is added to read as follows:

§ 21.113 Quiet zones and Arecibo Coordination Zone.

* * * * *

(d) Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

C. Part 22 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 22 continues to read:

AUTHORITY: 47 U.S.C. 154, 303, unless otherwise noted.

2. The heading of Section 22.369 is amended, and Section 22.369(d) is added to read as follows:

§ 22.369 Quiet zones and Arecibo Coordination Zone.

* * * * *

(d) *Arecibo, Puerto Rico.* The requirements of this paragraph are intended to minimize possible interference at the Arecibo Observatory in Puerto Rico. Licensees must make reasonable efforts to protect the Observatory from interference.

(1) Carriers planning to construct and operate a new Public Mobile Services station at a permanent fixed location on the islands of Puerto Rico, Desecheo, Mona, Vieques and Culebra or planning a modification of an existing authorization on these islands that would increase the likelihood of the authorized facility causing interference must notify, at least 20 days in advance, the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically (e-mail address: prcz@naic.edu), of the technical parameters of the planned operation. Carriers may wish to use the interference guidelines provided by Cornell University as guidance in designing facilities to avoid interference to the Observatory. The notification must include the geographical coordinates of the antenna location (NAD-83 datum), the antenna height, antenna directivity (if any), proposed channel and FCC Rule Part, type of emission, and effective isotropic radiated power.

(2) When an application for authority to operate a station is filed with the FCC, the notification required in paragraph (d)(1) of this section should be sent at the same time. The application must state the date that notification in accordance with paragraph (d)(1) of this section was made. After receipt of such applications, the FCC will allow a period of 20 days for comments or objections in response to the notifications indicated.

(3) If an objection to the planned operation is received during the 20-day period from the Interference Office, the FCC will take whatever action is deemed appropriate.

D. Part 23 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 23 continues to read:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082 as amended; 47 U.S.C. 154, 303.
Interpret or apply sec. 301, 48 Stat. 1081; 47 U.S.C. 301.

2. Section 23.20(f) is added to read as follows:

§ 23.20 Assignment of frequencies.

* * * * *

(f) Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to

the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

E. Part 24 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 24 continues to read:

AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 309, and 332, unless otherwise noted.

2. Section 24.18 is added to read as follows:

§ 24.18 Notification to the Arecibo Observatory.

The requirements in this section are intended to minimize possible interference at the Arecibo Observatory in Puerto Rico. Licensees must make reasonable efforts to protect the Observatory from interference. Licensees planning to construct and operate a new station at a permanent fixed location on the islands of Puerto Rico, Desecheo, Mona, Vieques and Culebra or planning a modification of an existing authorization on these islands that would increase the likelihood of the authorized facility causing interference must notify, at least 20 days in advance of such operation, the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically (e-mail address: prcz@naic.edu), of the technical parameters of the planned operation. Licensees may wish to use the interference guidelines provided by Cornell University as guidance in designing facilities to avoid interference to the Observatory. The notification must include the geographical coordinates of the antenna location (NAD-83 datum), the antenna height, antenna directivity (if any), proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. If an objection to the planned operation is received during the 20-day period from the Interference Office, the FCC will take whatever action is deemed appropriate.

F. Part 25 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 25 continues to read:

AUTHORITY: Secs. 25.101 to 25.601 issued under Sec. 4, 48 Stat. 1066, as amended; 47 U.S.C. 154. Interpret or apply secs. 101-104, 76 Stat. 419-427; 47 U.S.C. 701-744; 47 U.S.C. 554.

2. Section 25.203(i) is added to read as follows:

§ 25.203 Choice of sites and frequencies.

* * * * *

(i) Any applicant for a new permanent transmitting fixed earth station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of such station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has

satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

G. Part 26 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 26 continues to read:

AUTHORITY: 47 U.S.C. Sections 154, 301, 302, 303, 309, and 332, unless otherwise noted.

2. Section 26.105 is added to read as follows:

§ 26.105 Notification to the Arecibo Observatory.

The requirements in this section are intended to minimize possible interference at the Arecibo Observatory in Puerto Rico. Licensees must make reasonable efforts to protect the Observatory from interference. Licensees planning to construct and operate a new station at a permanent fixed location on the islands of Puerto Rico, Desecheo, Mona, Vieques and Culebra or planning a modification of an existing authorization on these islands that would increase the likelihood of the authorized facility causing interference must notify, at least 20 days in advance of such operation, the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically (e-mail address: prcz@naic.edu), of the technical parameters of the planned operation. Licensees may wish to use the interference guidelines provided by Cornell University as guidance in designing facilities to avoid interference to the Observatory. The notification must include the geographical coordinates of the antenna location (NAD-83 datum), the antenna height, antenna directivity (if any), proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. If an objection to the planned operation is received during the 20-day period from the Interference Office, the FCC will take whatever action is deemed appropriate.

H. Part 27 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 27 continues to read:

AUTHORITY: 47 U.S.C. Sections 154, 301, 302, 303, 307, 309, and 332, unless

otherwise noted.

2. Section 27.62 is added to read as follows:

§ 27.62 Notification to the Arecibo Observatory.

The requirements in this section are intended to minimize possible interference at the Arecibo Observatory in Puerto Rico. Licensees must make reasonable efforts to protect the Observatory from interference. Licensees planning to construct and operate a new station at a permanent fixed location on the islands of Puerto Rico, Desecheo, Mona, Vieques and Culebra or planning a modification of an existing authorization on these islands that would increase the likelihood of the authorized facility causing interference must notify, at least 20 days in advance of such operation, the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically (e-mail address: prcz@naic.edu), of the technical parameters of the planned operation. Licensees may wish to use the interference guidelines provided by Cornell University as guidance in designing facilities to avoid interference to the Observatory. The notification must include the geographical coordinates of the antenna location (NAD-83 datum), the antenna height, antenna directivity (if any), proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. If an objection to the planned operation is received during the 20-day period from the Interference Office, the FCC will take whatever action is deemed appropriate.

I. Part 73 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 73 continues to read:

AUTHORITY: 47 U.S.C. 154, 303, 334.

2. Section 73.1030(a) of this chapter is redesignated as Section 73.1030(a)(1), and Section 73.1030(a)(2) is added to read as follows:

§ 73.1030 Notifications concerning interference to radio astronomy, research and receiving installations.

* * * * *

(a)(2) Any applicant for a new permanent base or fixed station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna

height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(i) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, and effective radiated power. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(ii) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

J. Part 74 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 74 continues to read:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, as amended, 1082, as amended; 47 U.S.C. 154, 303, 554.

2. Section 74.24(j) is added to read as follows:

§ 74.24 Short-term operation.

* * * * *

(j)(1) This subsection applies only to operations which will transmit on frequencies under

15 GHz. Prior to commencing short-term operation of a remote pickup broadcast station, a remote pickup automatic relay station, an aural broadcast STL station, an aural broadcast intercity relay station, a TV STL station, a TV intercity relay station, a TV translator relay station, a TV pickup station, or a TV microwave booster station within the 4-mile (6.4 kilometer) radius Commonwealth of Puerto Rico Protection Zone (centered on NAD-83 Geographical Coordinates North Latitude 18° 20' 38.28", West Longitude 66° 45' 09.42"), an applicant must notify the Arecibo Observatory, located near Arecibo, Puerto Rico. Operations within the Puerto Rico Coordination Zone (*i.e.*, on the islands of Puerto Rico, Desecheo, Mona, Vieques, or Culebra), but outside the Protection Zone, whether short term or long term, shall provide notification to the Arecibo Observatory prior to commencing operation. Notification should be directed to the following:

Interference Office
Arecibo Observatory
Post Office Box 995
Arecibo, Puerto Rico 00613
Tel. (809) 878-2612
Fax (809) 878-1861
E-mail prcz@naic.edu

(2) Notification of short-term operations may be provided by telephone, fax, or electronic mail. The notification for long-term operations shall be written or electronic, and shall set forth the technical parameters of the proposed station, including the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Observatory. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. After receipt of such applications in non-emergency situations, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted. In emergency situations in which prior notification or approval is not practicable, notification or approval must be accomplished as soon as possible after operations begin.

K. Part 78 of Chapter I of Title 47 of the Code of Federal Regulations is amended as

follows:

1. The authority citation in Part 78 continues to read:

AUTHORITY: Secs. 2, 3, 4, 301, 303, 307, 308, 309, 48 Stat., as amended, 1064, 1065, 1066, 1081, 1082, 1083, 1084, 1085; 47 U.S.C. 152, 153, 154, 301, 303, 307, 308, 309.

2. Section 78.19(c) of this chapter is redesignated Section 78.19(c)(1) and Section 78.19(c)(2) is added to read as follows:

§ 78.19 Interference.

* * * * *

(c)(2) Any applicant for a new permanent base or fixed station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(i) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the transmit antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective isotropic radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(ii) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has

satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(iii) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

L. Part 80 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 80 continues to read:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609; 3 UST 3450, 3 UST 4726, 12 UST 2377.

2. Section 80.21(f) is added to read as follows:

§ 80.21 Supplemental information required.

* * * * *

(f) Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow a period of 20 days

for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

M. Part 87 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation in Part 87 continues to read:

AUTHORITY: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-156, 301-609.

2. Section 87.23(a) of this chapter is redesignated Section 87.23(a)(1) and Section 87.23(a)(2) is added to read as follows:

§ 87.23 Supplemental information required.

* * * * *

(a)(2) Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application

is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, if appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to Civil Air Patrol stations or to operations that transmit on frequencies above 15 GHz.

N. Part 90 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation for Part 90 continues to read as follows:

AUTHORITY: Sections 4, 303, and 332, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, and 332, unless otherwise noted.

2. Section 90.129(e) is amended to read as follows:

§ 90.129 Supplemental information to be routinely submitted with applications.

* * * * *

(e) Applicants proposing to construct a radio station in the vicinity of radio astronomy observatories in West Virginia; on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra; or in the vicinity of a radio receiving zone in Colorado must submit the statements prescribed by Section 90.177.

3. The introductory paragraph to Section 90.177 is amended, and paragraph (f) is added, to read as follows:

§ 90.177 Protection of certain radio receiving locations.

This section pertains to applications for new or modified authorizations in the vicinity of the National Radio Astronomy Observatory, Green Bank, Pocahontas County, WV; the Naval Radio Research Observatory, Sugar Grove, Pendleton County, WV; the Arecibo

Observatory, which is part of the National Astronomy and Ionosphere Center, located near Arecibo, PR; the Table Mountain Radio Receiving Zone, Boulder County, CO.; the Federal Communications Commission monitoring stations; and other protected sites.

* * * * *

(f) Any applicant for a new permanent base or fixed station to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, if appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

O. Part 95 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority citation for Part 95 continues to read as follows:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.

2. Section 95.42 is added to read as follows:

§ 95.42 Considerations in the Puerto Rico Coordination Zone.

Any applicant for a new base or fixed station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

3. Section 95.192(d) is added to read as follows:

§ 95.192 (FRS Rule 2) Authorized locations.

(d) Anyone intending to operate an FRS unit on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra in a manner that could pose an interference threat to the Arecibo Observatory shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the location of the unit. Operators may wish to consult interference guidelines, which will be provided by Cornell University. Operators who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made 45 days prior to commencing operation of the unit. The notification shall state the geographical coordinates of the unit.

(2) After receipt of such notifications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections. The operator will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory. If the Commission determines that an operator has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, the unit may be allowed to operate.

4. Section 95.206(c) is added to read as follows:

§ 95.206 (R/C Rule 6) Are there any special restrictions on the location of my R/C station?

(c) Anyone intending to operate an R/C station on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra in a manner that could pose an interference threat to the Arecibo Observatory shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the location of the unit. Operators may wish to consult interference guidelines, which will be provided by Cornell University. Operators who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made 45 days prior to commencing operation of the unit. The notification shall state the geographical coordinates of the unit.

(2) After receipt of such notifications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections. The operator will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory. If the Commission determines that an operator has satisfied its responsibility to make reasonable efforts to protect the

Observatory from interference, the unit may be allowed to operate.

5. Section 95.405(d) is added to read as follows:

§ 95.405 (CB Rule 5) Where may I operate my CB station?

(d) Anyone intending to operate a CB station on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra in a manner that could pose an interference threat to the Arecibo Observatory shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the location of the unit. Operators may wish to consult interference guidelines, which will be provided by Cornell University. Operators who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made 45 days prior to commencing operation of the unit. The notification shall state the geographical coordinates of the unit.

(2) After receipt of such notifications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections. The operator will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory. If the Commission determines that an operator has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, the unit may be allowed to operate.

6. Section 95.840 is added to read as follows:

§ 95.840 Considerations in the Puerto Rico Coordination Zone.

Any applicant for a new IVDS system authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission.

The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

7. Section 95.1003(c) is added to read as follows:

§ 95.1003 Authorized locations.

(c) Anyone intending to operate an LPRS transmitter on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra in a manner that could pose an interference threat to the Arecibo Observatory shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the location of the unit.

Operators may wish to consult interference guidelines, which will be provided by Cornell University. Operators who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made 45 days prior to commencing operation of the transmitter. The notification shall state the geographical coordinates of the unit.

(2) After receipt of such notifications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections. The operator will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory. If the Commission determines that an operator has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, the unit may be allowed to operate.

P. Part 97 of Chapter I of Title 47 of the Code of Federal Regulations is amended as

follows:

1. The authority citation in Part 97 continues to read:

AUTHORITY: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609, unless otherwise noted.

2. Section 97.203(h) is added to read as follows:

§ 97.203 Beacon station.

* * * * *

(h) The provisions of this paragraph do not apply to beacons that transmit on the 1.2 cm or shorter wavelength bands. Before establishing an automatically controlled beacon within 16 km (10 miles) of the Arecibo Observatory or before changing the transmitting frequency, transmitter power, antenna height or directivity of an existing beacon, the station licensee must give written notification thereof to the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Licensees who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above mean sea level (AMSL), antenna center of radiation above ground level (AGL), antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Licensees may wish to consult interference guidelines provided by Cornell University.

(2) If an objection to the proposed operation is received by the FCC from the Arecibo Observatory, Arecibo, Puerto Rico, within 20 days from the date of notification, the FCC will consider all aspects of the problem and take whatever action is deemed appropriate.

3. Section 97.205(h) is added to read as follows:

§ 97.205 Repeater station.

* * * * *

(h) The provisions of this paragraph do not apply to repeaters that transmit on the 1.2 cm or shorter wavelength bands. Before establishing a repeater within 16 km (10 miles) of the Arecibo Observatory or before changing the transmitting frequency, transmitter power, antenna height or directivity of an existing repeater, the station licensee must give written notification thereof to the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical parameters of the proposal. Licensees who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above mean sea level (AMSL), antenna center of radiation above ground level (AGL), antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Licensees may wish to consult interference guidelines provided by Cornell University.

(2) If an objection to the proposed operation is received by the FCC from the Arecibo Observatory, Arecibo, Puerto Rico, within 20 days from the date of notification, the FCC will consider all aspects of the problem and take whatever action is deemed appropriate.

Q. Part 101 of Title 47 of the Code of Federal Regulations is amended as follows:

1. The authority cite for Part 101 continues to read as follows:

AUTHORITY: 47 U.S.C. 154 and 303, unless otherwise noted.

2. The heading of Section 101.123 is amended, and Section 101.123(d) is added to read as follows:

§ 101.123 Quiet zones and Arecibo Coordination Zone.

* * * * *

(d) Any applicant for a new permanent fixed station authorization to be located on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location of a station on these islands and would increase the likelihood of the authorized facility causing interference, shall notify the Interference Office, Arecibo Observatory, Post Office Box 995, Arecibo, Puerto Rico 00613, in writing or electronically, of the technical

parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: prcz@naic.edu

(1) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification shall state the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency and FCC Rule Part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(2) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(3) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

APPENDIX B: FINAL REGULATORY FLEXIBILITY ANALYSIS

As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603 ("RFA"), an Initial Regulatory Flexibility Analysis ("IRFA") was incorporated into the *NPRM* in ET Docket No. 92-6.³⁴ The Commission sought written public comments on the proposals in the *NPRM*, including the IRFA. The Commission's Final Regulatory Flexibility Analysis ("FRFA") in this *Report and Order* conforms to the RFA, as amended by the Contract With America Advancement Act of 1996 (CWAAA), Pub. L. No. 104-121, 110 Stat. 847 (1996).³⁵

Need For and Objective of the Rules

In this decision, the Commission establishes a Coordination Zone that covers the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra within the Commonwealth of Puerto Rico (the Puerto Rican Islands). The Arecibo Observatory is the largest and most sensitive radio astronomy facility in the world and the increasing number of communications services on Puerto Rico has caused increased interference problems for the Observatory. The Coordination Zone is needed to inform the Arecibo Observatory of future stations that may have a potential to interfere with the Observatory's operations and to encourage applicants for radio services to coordinate their operations with the Observatory to prevent interference problems.

Summary of Issues Raised by the Public Comments in Response to the IRFA

No comments were filed in direct response to the IRFA. In general comments to the *NPRM*, however, some parties raised concerns that establishment of a Coordination Zone might burden Commission licensees and license applicants, including some entities that may be small businesses. Specifically, some parties that would be affected by the Coordination Zone argue that it is an unnecessary burden that would delay the provision of communications services and increase the costs of establishing an operation with limited benefit to the Observatory. Some comments argue that this action would give the Observatory additional rights to spectrum not allocated to the Radio Astronomy Service and would delegate authority to the Observatory to determine whether a proposed station would cause interference and whether the application should be granted. However, the Commission has determined that providing the Observatory information regarding proposed facilities would be a minimal burden, and that the public benefit in protecting the Observatory's operations from harmful interference justifies any minimal burden that may be created. Further, an applicant may

³⁴ 11 FCC Rcd 1716 (1996).

³⁵ Subtitle II of the CWAAA is "The Small Business Regulatory Enforcement Fairness Act of 1996" (SBREFA), codified at 5 U.S.C. § 601 *et seq.*

refuse to make modifications that it believes are unreasonable and permit the Commission to determine whether such modifications are necessary. If the Commission determines that an applicant has made a reasonable effort to address the interference concerns of the Observatory, the application may be granted even if the resultant operations cause interference to the Observatory.

Description and Estimate of Small Entities Subject to Which Rules Will Apply

The rules adopted in the *Report and Order* will apply to applicants for Part 5, 21, 22, 23, 24, 25, 26, 27, 73, 74, 78, 80, 87, 90, 94, 95 and 97 services within the Coordination Zone, with the following exceptions: The rules will apply only to applicants for services that operate on frequencies under 15 GHz, and will not apply to applicants for mobile stations in land mobile radio services, temporary base or temporary fixed stations (other than short-term broadcast auxiliary operations), the Civil Air Patrol, new amateur stations (other than amateur beacon and repeater stations within 10 miles of the Observatory), mobile Earth terminals licensed under Part 25, or stations aboard ships or aircraft. The Commission has not developed a definition of small entities applicable to the services affected by this *Report and Order*. Therefore, the applicable definition of small entity is the one under the Small Business Administration (SBA) rules applicable to Communications Services, Not Elsewhere Classified. This definition provides that a small entity is expressed as one with \$11.0 million or less in annual receipts.³⁶ We acknowledge the likelihood that under this definition the great majority of entities affected by the *Report and Order* are small entities; however, the number of such entities cannot be accurately estimated.

Projected Reporting, Recordkeeping and Other Compliance Requirements of the Rules

The Coordination Zone will require applicants for new and modified radio facilities in various communications services within the affected areas to provide notification of their proposed operations to the Observatory, at the time their applications are submitted to the Commission. The Coordination Zone will facilitate advanced coordination between the Observatory and applicants for new services so that applicants can consider the protection of the Observatory when designing their system. Service applicants will be responsible for making reasonable efforts to accommodate the interference concerns of the Observatory and the Observatory will be permitted to file comments regarding an application up to 20 days after the application is filed with the Commission.

The Coordination Zone encompasses a large number of services, operating at differing powers and frequencies. Additionally, factors such as terrain and propagation characteristics

³⁶ 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4899.

further complicate interference evaluations. Therefore, we find that it would be extremely time-consuming and difficult for the Commission to establish interference standards that would apply to all service applicants. However, we concur with comments that state that interference guidelines could lessen coordination problems, and Cornell has proposed to develop such guidelines. While we are cognizant of the concerns of service providers regarding Cornell's objectivity in developing these guidelines, we believe that Cornell will have an incentive to cooperate with service providers. If Cornell develops unrealistically stringent guidelines, service providers would undoubtedly challenge them, resulting in a large administrative burden on Cornell. Further, under a guideline approach, the Commission would remain the sole entity that has the authority to delay any service applications, if we find that an applicant has not made reasonable efforts to avoid interference to the Observatory.

We are not establishing Commission interference standards, but are adopting SBE's alternative proposal that Cornell provide interference guidelines to service applicants so that applicants may consider protection to the Observatory in the early design phase of radio facilities. Cornell has stated that such guidelines can be made available to applicants in advance of application preparation. We believe that these guidelines will help ensure that coordination between applicants and the Observatory will proceed in a smooth manner, and as experience is gained by both applicants and Cornell, become routine.

Steps Taken to Minimize Significant Economic Impact on Small Entities Consistent with Stated Objectives

To the extent that a service applicant and the Observatory agree that the applicant's proposed operations would cause harmful interference to the Observatory, the applicant may either pay to modify its own proposed operations or -- with the consent of the Observatory -- to upgrade the Observatory's facilities. Should a dispute arise between the Observatory and the applicant regarding whether the applicant has made a reasonable effort to avoid interference to the Observatory, the applicant may refuse to pay for any modifications or upgrades recommended by the Observatory and permit the Commission to resolve the dispute. To the extent that the Commission determines that reasonable efforts have been made by the applicant to protect the Observatory from interference, there will be no further obligation for the applicant to modify its proposed operations or to upgrade the Observatory's facilities. Consequently, if under those circumstances the Observatory believes that the applicant's proposed operations must be modified or its own facilities upgraded to protect the Observatory from interference, the Observatory will be required to pay for any such modification or upgrade.

Report to Congress: The Commission shall send a copy of this Final Regulatory Flexibility Analysis, along with this *Report and Order*, in a report to Congress pursuant to the

Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. § 801(a)(1)(A).
A copy of this FRFA will also be published in the Federal Register.

APPENDIX C: COMMENTING PARTIESComments to *NPRM* in ET Docket No. 96-2

The American Radio Relay League, Incorporated
The Asociacion De Radiodifusores De Puerto Rico
Bruce Balick, Professor of Astronomy, University of Washington
Frank N. Bash, Director, McDonald Observatory at Mount Locke, Univ. of Texas at Austin
Celpage, Inc.
Center for Astrophysics-Harvard College Observatory, Smithsonian Astrophysical Observatory
Cornell University
John M. Dickey, Professor of Astronomy, University of Minnesota
Carl Heiles, Professor of Astronomy, University of California, Berkeley
Mayor of Arecibo
Mayor of Hatillo
National Research Council, Committee on Radio Frequencies
National Science Foundation
Puerto Rico Amateur Radio League, Inc.
Puerto Rico Telephone Company
P.R./V.I. Volunteer Frequency Coordinators, Inc.
Morton S. Roberts, Senior Scientist, National Radio Astronomy Observatory
Society of Broadcast Engineers, Inc.
TRW, Inc.
Paul A. Vanden Bout, Director, National Radio Astronomy Observatory

Reply Comments to *NPRM* in ET Docket No. 96-2

Centennial Cellular Corp.
Cellular Communications of Puerto Rico, Inc.
Celpage, Inc.
Cornell University
Puerto Rico Telephone Company

Late-Filed Comments to *NPRM* in ET Docket No. 96-2

National Research Council, National Academy of Sciences, Committee on Radio Frequencies

