

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D.C.

G
FCC 58-1111
65864

In the Matter of)

Amendment of Part 2 of the Commission's)
Rules and Regulations to give inter-)
ference protection to frequencies)
utilized for Radio Astronomy.)

Amendment of Parts 3, 4, 5, 6, 7, 9,)
10, 11, 16, 20, and 21 of the)
Commission's Rules and Regulations to)
give interference protection to fre-)
quencies utilized for Radio Astronomy.)

File FCC
DOCKET-NO. 11745

REPORT AND ORDER

By the Commission: Commissioner Bartley absent.

1. A Notice of Proposed Rule Making in Docket No. 11745 was adopted by the Commission on June 20, 1956, and appeared in the Federal Register on June 27, 1956 (21FR4680). Consideration of comments received in response to that Notice resulted in the adoption of a Further Notice of Proposed Rule Making in the same docket on June 5, 1958, which was published in the Federal Register on June 11, 1958 (23FR4103).
2. The period for filing comments in this proceeding expired September 3, 1958. Comments were received from the National Committee for Utilities Radio (NCUR), Central Committee on Radio Facilities of the American Petroleum Institute (API), International Municipal Signal Association (IMSA), Aeronautical Radio, Inc. (ARINC), Associated Universities, Inc. (AUI), and Shenandoah Valley Broadcasting, Inc. AUI also filed comments in reply to the comments filed by ARINC.
3. The comments of NCUR, API, and IMSA interposed no objection to the proposed rule amendment but asked for assurance from the Commission that there be no extension to other areas of the "application review" feature of the current proposal for the National Radio Astronomy Observatory (NRAO) at Green Bank, West Virginia. Additionally, they request that the amendment, if adopted, be confined exclusively to the Green Bank region and not be used as a precedent for similar rule making to protect other radio astronomy sites elsewhere until the relative public interest aspect of such protection is considered by the Commission.
4. The ARINC comment requests that the proposed amendment be revised to include aeronautical enroute (or aeronautical) stations among those to be **excepted** from the special application provisions contained in the proposed amendment. The ARINC comment states that the provisions of the proposal are too inclusive and could be reduced by excluding many additional types of applications without incurring hardships to radio astronomy interests and that no hardship to radio astronomy would result if these interests were required to comply with technical criteria similar to those governing the

coexistence of the safety, broadcasting, and common carrier services. ARINC also requested clarification as to whether NRAO was a Government or non-Government agency on the grounds that, if it were a Government agency, the procedure proposed by the Commission would duplicate the existing procedure of frequency assignment coordination effected between Government and non-Government users of radio and, therefore, would appear to be unnecessary. Since ARINC found the Commission proposal silent on this point, it then assumed correctly that NRAO was in fact a non-Government operation but assumed further, incorrectly, that the proposed procedure would be limited to NRAO facilities at Green Bank and that additional coordination would be undertaken by the Commission with the Department of the Navy at Washington, D.C. with respect to the Sugar Grove facility.

5. In response to the comments of ARINC, it is accepted generally that radio interference levels that are tolerable for ordinary radio communications may be intolerable for radio astronomy observations. The Commission is of the opinion that it would be in the public interest to provide maximum practicable protection from interference to radio astronomy measurements at Green Bank and Sugar Grove without unduly disrupting existing radio services. The exemption of aeronautical enroute stations from the requirement to coordinate with the NRAO would be inconsistent with the Commission's proposal to protect those facilities from interference and the request of ARINC in this regard is denied. On the subject of frequency assignment coordination, by agreement with the Inter-department Radio Advisory Committee, new Government radio facilities in the "protected zone" will be coordinated through the Naval Radio Research Observatory which in turn will bring the proposed operation to the attention of the Green Bank authorities. Conversely, non-Government applications coordinated with Green Bank will also be brought to the attention of the naval facility. ARINC's suggestion that the proposed coordination duplicates existing procedures is not correct. Existing procedures do not normally involve sites and, in any event, are not applicable to exclusive non-Government or exclusive Government bands.

6. The comments filed by AUI support the proposed amendments in general; however, AUI suggested the following changes in the appendix to the Further Notice of Proposed Rule Making:

- a. Change the name "Naval Radio Facility" to Naval Radio Research Observatory" (NRRO), a change in which the Department of the Navy concurs.
- b. Applicant's notification of the National Radio Astronomy Observatory regarding technical particulars of proposed stations should be sent via registered mail, return receipt requested. The receipt should then be sent to the Commission with the station application and a verified copy of the notification to the NRAO. The return receipt would advise the applicant as to the time his notification was received at the NRAO. Receipt of notifications at NRAO may be delayed because Green Bank is served neither by railroads or airlines.
- c. A period of twenty days should be allowed in lieu of the proposed two week period for comments or objections in response to any notification sent to the NRAO. The 20 day period will be required to study adequately the possible effects of the proposed operation,

to coordinate the study with the NPRO when necessary or desirable, and to allow for possible delays in delivery of the notification to the NRAO.

Notification of NRAO via registered mail appears unnecessary inasmuch as the applicant would thus be required to delay filing his application with the Commission for a period of time equal to the round-trip mail time from the applicant to NRAO. Additionally, the amendment to the Rules will require each applicant concerned to indicate the date NRAO was notified in writing of the technical particulars of his station. Failure to indicate proper notification of NRAO when required would constitute a faulty application. The remaining suggestions of AUI for changes in the proposed amendment appear worthy and adequately justified. Therefore, inasmuch as they do not change the basic intent of the proposed amendment and are meant only to improve the mechanics of administration thereof, the suggested changes are hereby incorporated into the amendment.

7. The comments of Shenandoah Valley Broadcasting, Inc., WSWA-AM, WSWA-FM, and WSWA-TV, hereinafter referred to as Shenandoah, expressed the belief that the proposed amendment would place unnecessary restrictions on the development of radio facilities in the Harrisonburg, Virginia area and suggests that the proposed restricted area, which includes a large portion of the population served by Shenandoah, be reduced. These comments noted that the eastern boundary of the proposed zone of protection is approximately 72 miles from Green Bank whereas the western boundary is only 36 miles from Green Bank. Shenandoah urges that the Commission recognize the need for broadcast services within the restricted zone and encourage radio astronomers to avoid using broadcast frequencies required to serve the public in the Harrisonburg area. Shenandoah's comments include the following specific recommendations and requests:

- a. The primary function of the applicant's notification should be to provide information relative to new or changed radio facilities in order to enable NRAO to adjust its operations to the pattern of radio usage in the Green Bank area.
- b. Radio astronomy observers should avoid certain frequencies, especially the VHF TV assignments in the area surrounding Green Bank.
- c. Radio astronomy observers should be encouraged to use tunable receiving equipment in order to avoid terrestrial interference.
- d. NRAO objections to any application should be furnished in writing to the applicant in order that the applicant may reply thereto prior to any decision by the Commission.
- e. The eastern border of the protected zone should be at 79° west longitude. (Instead of $78^{\circ} 30'$ W, as proposed.)

With respect to the comments submitted by Shenandoah, the Commission has concluded that both the NRAO at Green Bank and the NPRO at Sugar Grove should be afforded the special protection which the proposed amendment embodies. It is improbable that the proposed protection zone could be reduced appreciably with-

out jeopardizing radio astronomy observations at NRAO. It is considered necessary that all Government and non-Government applications for new or modified radio transmitting facilities, except those excluded by the proposed amendment to the Rules, within the proposed protection zone be coordinated as originally contemplated prior to the granting of authority to operate. Although the proposal does not require that NRAO objections to any application be furnished in writing to the applicant concerned, NRAO has pledged to endeavor to resolve problems of interference which any such application may indicate. Problems, which cannot be resolved without amendment of the application filed, will be taken up with the Commission. Furthermore, it should be noted that the Commission is not required automatically to accede to such objections as NRAO may make but will be guided by the public interest aspects of each application. Also see Section 309(b) of the Communications Act.

8. The Commission recognizes the need for broadcast services within the proposed restricted zone and does not believe that the proposed procedure for applicants within the zone will hamper such services. However, the possibility of interference to radio astronomy observations must be considered in order to provide maximum protection necessary to operations at NRAO and NRRO.

9. It is assumed that much tunable receiving equipment will be used at NRAO and NRRO inasmuch as flexibility in scanning the radio spectrum appears necessary to ensure comprehensive radio astronomy observations.

10. It must be pointed out that the rules being adopted, while for the purpose of establishing a system by which radio astronomy observations near Green Bank may be protected, are not intended to impede the development of radio services. Appropriate consideration of radio astronomy problems and of radio service problems will be necessary on the part of all parties concerned to the end that neither activity will be adversely affected.

11. In view of the foregoing, the Commission finds that the public interest, convenience and necessity will be served by the amendments herein ordered and, pursuant to authority contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended,

12. IT IS ORDERED, That effective December 26, 1958 Parts 3, 4, 5, 6, 7, 9, 10, 11, 16, 20 and 21 of the Commission's Rules are amended as set forth in the attached appendices.

FEDERAL COMMUNICATIONS COMMISSION

Mary Jane Morris
Secretary

Attachment:

Adopted: November 19, 1958

Released: November 24, 1958

NOTE: Rules changes herein will appear in Amendments 3-129, 4-14, 5-9, 6-1, 7-6, 9-28, 10-8, 11-20, 16-36, 20-3, 21-15.

APPENDIX 1

Amend Part 3 of the Commission's Rules in the following particulars:

1. Add a new paragraph (c) to Section 3.24 to read as follows:

(c) In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new standard broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by $39^{\circ} 15'$ N on the north, $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

2. Designate existing text of Section 3.211 as paragraph (a) and add a new paragraph (b). As amended, §3.211 will read as follows:

§3.211 Application for FM broadcast stations. (a) If the application is for a construction permit or for modification of an existing authorization, FCC Form 301 shall be filed; if for a license, FCC Form 302 shall be filed; if for a renewal of license, FCC Form 303 shall be filed.

(b) In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new FM broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area

bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

3. Designate existing text of Section 3.511 as paragraph (a) and add a new paragraph (b). As amended § 3.511 will read as follows:

§ 3.511 Application for non-commercial educational FM broadcast stations(a) Each applicant for a construction permit for a new noncommercial educational FM broadcast station, change in facilities of any existing noncommercial educational FM broadcast station, or noncommercial educational FM broadcast station license or modification of license shall file with the Commission in Washington, D.C. two copies of applications and a like number of exhibits and other papers incorporated therein and made a part thereof. Only the original copy need be sworn to. If the application is for authority to construct or make changes in a noncommercial educational FM broadcast station, FCC Form 340 should be filed; for a noncommercial educational FM license, FCC Form 341 should be filed.

(b) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new noncommercial educational FM broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area

bounded by $39^{\circ} 15'$ N on the north, $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, F.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

4. Designate existing text of Section 3.622 as paragraph (a) and add a new paragraph (b). As amended §3.622 will read as follows:

§3.622 Applications for television stations. (a) Applications for new stations or for modifications of existing authorizations shall be filed on FCC Form 301; for licenses, on FCC Form 302; for renewal of licenses, on FCC Form 303. Separate applications shall be filed by each applicant for the voluntary sharing of television channels. Such applications shall be accompanied by copies of the time-sharing agreements under which the applicants propose to operate.

(b) In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new television broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by $39^{\circ} 15'$ N on the north, $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such

notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

5. Add a new paragraph (d) to Section 3.711 to read as follows:

(d) In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new international broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

APPENDIX 2

Amend. Part 4 of the Commission's Rules in the following particulars:

Add a new paragraph (d) Section 4.11 to read as follows:

(d) In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct any class of station specified in paragraphs (a), (b) and (c) of this section except remote pickup broadcast mobile and TV pickup stations, or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by $39^{\circ} 15'$ N on the north, $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

A P P E N D I X 3

Amend Part 5 of the Commission's Rules by adding a new Section 5.69 to read as follows:

§ 5.69 Notification to the National Radio Astronomy Observatory.

In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, temporary fixed, Citizens Radio, Civil Air Patrol, or Amateur seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

A P P E N D I X 4

Amend Part 6 of the Commission's Rules in the following particulars:

1. Designate the existing text of Section 6.20 as paragraph (a) and add a new paragraph (b). As amended, § 6.20 will read as follows:

§6.20 Assignment of frequencies. (a) Effective December 1, 1954 only those frequencies which are in accordance with §2.104(a) of this chapter may be authorized for use by stations in the Fixed Public and Fixed Public Press services. Selection of specific frequencies within such bands shall be made by the applicants therefore. After an application has been filed with the Commission for a particular frequency, its availability for assignment as requested will be determined by study of the probabilities of interference to and from existing services assigned on the same or adjacent frequencies and if necessary, by coordination with other agencies utilizing frequencies in these ranges. The applicant will be notified of the results of such study and coordination. All new assignments of frequencies may be made subject to certain conditions as may be required to minimize the possibility of harmful interference to existing services.

(b) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, temporary fixed, Citizens Radio, Civil Air Patrol, or Amateur seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station with the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

APPENDIX 5

Amend Section 7.31 of the Commission's Rules by adding a new paragraph (f) to read as follows:

(f) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, or temporary fixed, seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15'$ on the north, $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

A P P E N D I X 6

Amend Part 9 of the Commission's Rules by adding a new section 9.117 to read as follows:

§9.117 Radio astronomy protection. In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, temporary fixed, or Civil Air Patrol seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15'$ N on the north $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty(20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

APPENDIX 7

Amend Part 10 of the Commission's Rules by adding a new paragraph (d) to Section 10.8, to read as follows:

(d) In addition to the provisions of paragraph (a) of this section, in order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, or temporary fixed seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15'$ N on the north $78^{\circ} 30'$ W on the east, $37^{\circ} 30'$ N on the south and $80^{\circ} 30'$ W on the west shall, at the time of filing such application with the Commission simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

APPENDIX 8

Amend Part 11 of the Commission's Rules by adding a new paragraph (k) to Section 11.8, to read as follows:

(k) The provisions of paragraph (a)(1) of this section notwithstanding, in order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, or temporary fixed seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

Amend Part 16 of the Commission's Rules in the following particulars:

1. Designate the existing text of Section 16.9 preceding paragraph (a) as paragraph (a); redesignate the existing paragraphs (a), (b), and (c), as (a)(1), (2), and (3), respectively, and add a new paragraph (b). As amended, Section 16.9 will read as follows:

§ 16.9 Frequency coordination. (a) Each application requesting assignment of a frequency not currently authorized for use by that station shall be accompanied by a statement as evidence that applicant is aware of and has complied with the requirement that he cooperate with other licensees in the selection of a frequency. This statement may be submitted in any one of the following forms, but any recommendations submitted in connection therewith are purely advisory in character and cannot be considered as binding upon the Commission:

(1) A statement, including an engineering survey if necessary, which sets forth the technical and other considerations in support of the selection of the particular frequency requested. The Commission expects that the applicant will notify the licensees of all known stations in the same or other services located within the local interference range of the proposed station location and operating on any frequency within 30 kc of the frequency proposed to be used by the applicant, of the applicant's intention to request that frequency.

(2) A statement from a local frequency advisory committee of users suggesting a specific frequency or commenting upon the frequency which in its opinion would result in the least interference being caused to existing stations in the area by the proposed station. In the event the frequency recommended in accordance with the above is not in the frequency band desired by the applicant, the committee should also indicate a frequency in the band desired by the applicant which in its opinion would result in the least amount of interference and would therefore appear to be most suitable. Such statements may appropriately include comments on other technical factors such as power, antenna height and other limitations which may serve to mitigate any possible interference. The frequency advisory committee must be so organized that it is representative of the industry eligible for radio facilities in the service concerned in the area in which the committee functions and for which recommendations are made.

(3) A recommendation from a frequency coordinating committee, or other appropriate representative of a national association composed of a majority of persons eligible for radio facilities in the particular service involved.

(b) In addition to the provisions of paragraph (a) of this section, in order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocohontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, or temporary fixed seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After the receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

A P P E N D I X 10

Amend Part 20 of the Commission's Rules by adding a new paragraph (e) to Section 20.13, to read as follows:

(e) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, temporary fixed, Citizens Radio, Civil Air Patrol, or Amateur seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

A P P E N D I X 11

Amend Part 21 of the Commission's Rules by adding a new paragraph (o) to Section 21.15, to read as follows:

(o) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, any applicant for a station authorization other than mobile, temporary base, or temporary fixed seeking a station license for a new station, a construction permit to construct a new station or to modify an existing station license in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area bounded by $39^{\circ} 15' N$ on the north, $78^{\circ} 30' W$ on the east, $37^{\circ} 30' N$ on the south and $80^{\circ} 30' W$ on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box #2, Green Bank, West Virginia, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.