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60 RR2d 204

Amateur Radio Service (Repeater Coordination)

FCC 86-201

Federal Communications Commission

May 02, 1986

Headnotes

►97.3 ►97.201 ►97.205

The rules are amended to make amateur stations in repeater or auxiliary operation mutually responsible for resolving any interference associated with their operations, unless one station's operation is coordinated and the other's is not, in which case the non-coordinated station has primary responsibility for resolving interference. The assertion that coordination was a concept alien to the amateur service in light of the general absence of fixed individual frequencies was without merit in the repeater context, since repeater operation is not frequency-agile. Mandatory coordination was also unacceptable, however.

Opinion

Amendment of Part 97 of the Commission's Rules Concerning Frequency Coordination of Repeaters in the Amateur Radio Service.

FCC 86-201
PR Docket No. 85-22
Released: May 2, 1986;
REPORT AND ORDER

Background

1. In the *Notice of Proposed Rule Making* in this proceeding, 50 FR 6219, February 14, 1985, we proposed to grant preferred status in instances of harmful repeater-to-repeater interference to amateur repeated operators whose repeater input and output frequencies had been recommended by a frequency coordinator. The rules we proposed would also impose equal responsibility upon repeater operators of similar status (both not coordinated or both coordinated) to mutually resolve instances of harmful interference. We proposed these rules in order to significantly reduce the number of repeater interference disputes.

2. We received sixty-four comments and reply comments to the *Notice.* Commenters included the American Radio Relay League, Inc. (ARRL), and many leading amateur volunteer coordination entities: the Alabama Repeater Council, the 220 MHz Spectrum Management Association of Southern California (SMA), the Florida Repeater Council, Inc., the Wisconsin Association of Repeaters (WAR), the Two-Meter Spectrum Management Association of Southern California (TASMA), The Texas VHF-FM Society, the Iowa Repeater Council, the Southern California Repeater and Remote Base Association (SCRRBA), the Repeater Frequency Coordination Committee of the MO-KAN Council of Amateur Radio Clubs (MO-KAN), the Ohio Area Repeater Council, Inc., the Western New York - Southern Ontario Repeater Council (WNYSORC), the Tri-State Amateur Repeater Council, Inc. (TSARC), and the Northern Amateur Relay Council of California (NARC).

3. We sought comment not only upon the proposed rules but also upon many topics related to the concept of amateur repeater coordination. We received a significant number of comments on the following issues: the appropriate geographical scope of amateur repeater coordination; whether a national umbrella organization would be of use to local coordinators; whether repeater coordination should be required; whether advancements in technology could resolve certain repeater interference problems in lieu of or in conjunction with coordination; the appropriate use for the ARRL repeater directory; whether a national database is needed; the powers of the local

coordinator; the extent of appropriate FCC involvement in the coordination process; open and closed repeaters; and band plans.

Discussion

4. Regarding the proposed rules, the majority of the commenters supported such rules in some form. The comments of Walter A. Breining are typical:

By granting preferred status to coordinated repeaters, a clear message will be sent to repeater operators that the FCC expects compliance with frequency coordinators' recommendations, and that the FCC will take appropriate action when continued non-compliance results in harmful interference. As a result, local coordinators will be able to resolve most conflicts without requiring FCC assistance.

TASMA noted that such support for coordinated repeater operators ratifies the efforts of the coordinating councils and should eliminate the need for additional regulation.

5. On the other hand, commenters like Norman Borenstein, Greg W. Reed, Richard A. Stalls and George A. Morris, Jr., felt that enforcement of the present rules and guidelines or voluntary use of new technology will suffice to resolve interference problems. SCRRBA, while voicing no objection to the proposed rules, emphasized that for over 20 years it has voluntarily coordinated the operations of amateur fixed and mobile relay stations on the 29 MHz, 52 MHz, 420-450 MHz and microwave frequency bands, enabling large numbers of amateur operators to operate relay stations in Southern California (e.g. 330 stations on the 70 centimeter band) without the need for FCC intervention. John L. Hackman stated:

Only those complaints thought incapable of solution within the amateur ranks have been reported. The adoption of a new 2-mater band plan by at least twelve state coordinating bodies and several areas of Canada, as well as the Republic of Mexico, gives testimony to far more serious problems that are being resolved by amateurs, without recourse to the Commission. Amateurs have purposely refrained from coming to the Commission with most complaints.

6. We acknowledge that volunteer amateur coordinating entities have resolved most major repeater coordination issues and the vast majority of interference problems related to repeater use. Nonetheless, the number of amateur operators has grown from 275,778 at the end of fiscal year (FY) 1972 to 418,201 as of February 25, 1986. During this period, the number of amateur operators participating in repeater operation has steadily increased. Our statistics show that the number of reported instances of interference to amateur repeaters from other amateur repeaters jumped from 30 in FY 1983 to 111 in FY 1984 and 100 in FY 1985. The number of reported instances of interference to amateur repeaters from all other amateur sources has risen from 90 in FY 1979 to 391 in FY 1984 and 273 in FY 1985. To deal with this trend we proposed rules to *enhance* current volunteer coordination efforts, not to replace them.

7. Paul B. Williams argued that the concept of coordination does not belong in Part 97. The Livingston Amateur Repeater Society and Richard G. Collins argued that the concept of repeater coordination is diametrically opposed to the principle found in Section 97.63 of the rules, that individual frequencies are not specified in the Amateur Radio Service. Collins commented that a coordinated amateur repeater operator thinks that he "owns" the frequency pair assigned for his repeater, and that this is contrary to Part 97, for in the Amateur service no individual or group may claim possession of any particular frequency by prior occupancy or license.

8. Repeater operation in the Amateur service inherently requires operation on established fixed frequencies. Amateur repeater operation is not frequency agile, as are other types of amateur station operation. As a result, most amateur operators have been willing to voluntarily cooperate to avoid interference to frequencies designated for repeater operation in the Amateur service in favor of the greater good, particularly since many amateur repeaters are open to all amateur operators who desire to use them. This cooperation has taken the form of adherence to the determinations of local frequency coordinators. While no amateur operator or amateur station "owns" a frequency, this type of coordination is the minimum joint effort by the amateur community needed to facilitate repeater operation in the Amateur service.

9. SCRRBA and TSARC both suggested that the applicability of the proposed rules be limited to the 144-148 MHz frequency band, or "two meters," since that band is the source of the majority of interference problems in the Amateur service. The two meter spectrum happens to be the area of most congested repeater usage in the Amateur service at this moment and it generates the most interference problems. Nonetheless, in the interest of uniformity and the need to promote orderly repeater usage in all repeater bands, we believe it best to apply the rules we adopt across the board.

10. For these reasons, we are adopting the rules set forth in the attached Appendix. The rules we proposed have been partially modified as stated below. Following is a discussion of the various issues related to amateur repeater coordination raised by the commenters.

11. *Geographic scope of coordination.* Eight commenters, including Ronald D. Klein, Philip Stein, James R. Valdes and Bruce Woodward, favored a national amateur coordinating entity. Three commenters (the Livingston Amateur

Repeater Society, the Mt. Hood Repeater Association, Inc., and Peter R. O'Dell) favored a national coordinator as the best way to insure against favoritism or elitism in the coordination of repeater operations. Harold F. Wallick, citing an instance of an Illinois coordinator authorizing a Missouri repeater in order to eliminate interference in Illinois, advocated a national coordinator to eliminate cross-jurisdiction disputes.

12. Eighteen commenters opposed the concept of a single national coordinating entity for the Amateur service and instead supported local or regional coordinators. The Iowa Repeater Council summed up this position: "(t)he effectiveness and 'power' of the local Councils is inherent only by and through the cooperation given to it by its members." Many commenters indicated that the far-reaching nature of the Amateur service, with a multitude of frequency bands with differing propagation characteristics, coupled together with local geographic differences makes the Amateur service unsuited to a nationwide approach to repeater coordination. The Iowa Repeater Council went on to say that ". . . the mechanism for coordination is already in place on the local/regional level. To set up a national mechanism at this late date would be prohibitive." The ARRL, TSARC, MO-KAN, Edward A. Gribi, Jr., and Richard D. Russell went on record as opposing any alternatives whatever to the local coordination process.

13. Nonetheless, seventeen commenters, including many who opposed a single national coordinator, favored some sort of umbrella entity above the local and regional coordinators. In this regard, we note the comment of Walter A. Breining, a repeater coordinator in Indiana:

It has been our experience that most disputes between coordinated repeaters involve repeaters under the jurisdiction of different coordinating bodies and usually one of these repeaters should never have been coordinated.

The ARRL offered to create a national repeater database and to facilitate use of its Repeater Directory as a reference source. Thus, while there is little support for frequency coordination on a national level, we encourage local coordinators to participate in a regional or umbrella entity.

14. *Voluntary vs. mandatory coordination.* Ten commenters, including TSARC, SMA, the Florida Repeater Council, Inc., the Texas VHF-FM Society and the Iowa Repeater Council favored requiring prospective amateur repeater operators to obtain coordination from a recognized local coordinating entity before commencing operation. The Florida Repeater Council, Inc., MO-KAN, and Solid State Systems, Inc. favored mandatory coordination at least in major metropolitan areas. Walter T. Wiederhold and George A. Morris, Jr., opposed any sort of mandatory coordination. SCRRBA contended that the alternative of a field study was not suited to the capabilities and skill of the average amateur seeking to engage in repeater operation.

15. We are not prepared to impose so drastic a remedy as a requirement that all amateur repeaters be coordinated without first determining whether the rules we adopt today will suffice. If repeater-related interference problems continue to increase in the Amateur service without adequate voluntary resolution, then perhaps we may need to examine whether to pursue such a course in the future.

16. *Spectrum-efficient technology.* SMA, MO-KAN, WNYSORC, the Iowa Repeater Council and the Florida Repeater Council all commented that use of spectrum efficient technology should be left to the discretion of the coordinators. Several other commenters generally favored mandatory use of spectrum-efficient technology as a coordination tool. Wilton Helm proposed that all two-meter repeaters be required to operate in a PL access mode on the basis that:

By far the most common interference problem is not that of a strong undesired signal overriding a weak desired one, but rather a weak undesired signal holding the carrier detect open between transmissions of the desired user, thus timing out the repeater on its autopatch.

17. Nonetheless, SCRRBA stated that use of input receivers with tone-operated squelch is not such a substitute for competent frequency coordination because its use does not modify or change the fundamental laws of engineering and physics. In the case of FM emissions, a strong signal on the input frequency which does not contain the proper authorization will still "capture" the receiver and will successfully prevent a weaker signal on the same frequency which carries the proper tone from activating the receiver.

18. It is our view that while tone-operated squelch and other spectrum-efficient technologies may be desirable generally, their utility in solving particular repeater interference problems in the Amateur service must be determined on a case-by-case basis by the local or regional coordinator. We therefore decline to adopt rules to mandate use of any particular technology.

19. *National repeater database.* Albert W. Hamilton asserted that the ARRL Repeater Directory is no more than 25% accurate. He and Joseph Anthony Wolos concurred that about 1% of its repeater entries are outdated weekly. SCRRBA added that the ARRL directory contains listings for only a minority of the stations which SCRRBA has coordinated, primarily because SCRRBA does not disclose coordination data about closed repeaters. SCRRBA maintained in its comments that this practice is essential to persuade their owners to seek coordination.

20. Whatever its accuracy has been in the past, the ARRL Repeater Directory is nevertheless the closest thing there is to a national listing of amateur repeaters. We encourage amateur coordinators to pool together to create an accurate data base, either by updating this directory or by some alternative method. [1] We decline to adopt rules

which would require such a data base. We hop that inter-jurisdiction interference could be prevented by use of a national data base by the coordinators.

21. *Local coordinator functions.* Several existing coordinators maintained that they should be able to: (1) deny requests for coordination in congested bands or require the use of less congested bands; (2) set aside frequencies for certain operating modes; (3) limit antenna height and effective radiated power; and (4) require special access requirements as a prerequisite for coordination. See Comments of the Alabama Repeater Council, the Florida Repeater Council and the Iowa Repeater Council. All of those functions except band planning are legitimate functions of an amateur frequency coordinator. Even the band planning function, although voluntary and possibly regional or even national in scope, certainly will involve the repeater coordinator to some extent.

22. Walter Wiederhold commented that Section 97.67(c), which specifies repeater power limits based on antenna height, should be modified to instead base power limits upon area of coverage. Patrick Sheedy recommended replacing this rule with three different power limitations for repeaters associated with three different minimum separation requirements. On the other hand, the Alabama Repeater Council, the Florida Repeater Council, Inc., and the Iowa Repeater Council recommended that repeater coordinators should have maximum flexibility to consider power and height as factors in the voluntary coordination process. Several of our current rules regarding amateur repeater operation were adopted in the infancy of repeater use in the Amateur service, at a time when there were no amateur repeater coordination entities and we anticipated moderate growth in the use of repeater coordination. With the advent of amateur voluntary cooperation to coordinate repeater operation through adherence to the determinations of local repeater coordinators, we find that our rules which restrict repeater power and antenna height above average terrain are at best redundant and, at worst, may unduly constrain local coordinators. These rules (47 CFR Secs. 97.3(r), 97.67(c) (with accompanying table), 97.85(g), and Appendix 5 to Part 97) are therefore removed. In doing so, we intend to maximize the flexibility of local coordinators.

23. Also, many amateur repeater councils commented that they should have the authority to decoordinate repeaters for failure to commence operation, for not being in use for a lengthy period of time, for not being in accord with established national or regional band plans, or for departing from previously agreed upon voluntary technical standards. See Comments of WNYSORC, the Alabama Repeater Council and the Florida Repeater Council. The Iowa Repeater Council commented that it has criteria for decoordination and applies them and urges their adoption elsewhere. We agree that decoordination, like coordination, is vital to the proper usage of repeaters so long as both are done according to criteria which are known to the local amateur community.

24. Many commenters recommended various levels of increased FCC involvement in the repeater coordination process - from taking over the coordination function itself to reinstating repeater licensing to providing forums for appeal of local coordinator decisions to appointing arbitration or mediation boards to resolve interference disputes. We seek to promote the voluntary resolution of repeater interference disputes at the local or regional level by amateurs themselves in the finest tradition of the Amateur service. And at the same time it is important to support the decision of the local coordinator. We believe the rules contained in the Appendix to this document achieve this objective without interjecting this agency into the volunteer coordination process.

25. *Official recognition of coordinators.* Several coordinators urged us to establish some mechanism to officially recognize local or regional coordinators. Others were concerned about the potential for abuse of power at the local level. Another concern was exclusive right to coordinate within a geographical area. It is essential that repeater coordinators respond to the broadest base of local amateurs, and consider the concerns not only of repeater owners but also of those users of spectrum affected by repeater operation. Their authority is derived from the voluntary participation of the entire amateur community; their recognition must be derived from the same source. We believe the new rules will assure that a coordinator is representative of all local amateur operators.

26. *Open vs. closed repeaters.* Several commenters urged us to abolish closed repeaters in the Amateur service, or, alternatively, to permit coordinators to relegate closed repeaters to secondary status or to give open repeaters preference when coordinating. We are not of the view, as were these commenters, that closed repeaters are any more or less desirable than open repeaters. As SCRRBA succinctly stated: "... both types of relay stations are necessary for the continued growth and usefulness of the ARS." Neither should receive any priority of coordination.

27. *Uniform band plans.* Seven commenters favored nationally uniform band plans to facilitate coordination. Two opposed them. We will not adopt rules to formulate national band plans or to require them. As a general proposition, we favor voluntary band plans over Commission-imposed subbands in the Amateur service. Rule-mandated band plans may result in inflexibility, increased enforcement burdens and greater regulatory burdens. See *Order,* April 18, 1984 (Mimeo No. 3676), at para. 5; see also *Order,* RM-3761, *supra,* at paras. 4-6.

28. *Miscellaneous.* The ARRL, TSARC, SMA and the Iowa Repeater Council urged us to include auxiliary operation along with repeater operation in the context of the new coordination rules. It appears that this change further serves the purpose of our initial proposal and therefore we are modifying the rules to incorporate it.

29. We proposed to make non-coordinated repeaters primarily responsible to resolve interference associated with coordinated repeaters. The ARRL commented that we should go even further and make non-coordinated repeaters solely responsible to resolve such interference, and require non-coordinated repeaters to cease operation if the

interference is not resolved. Although the focus must be placed in the first instance upon the non-coordinated repeater to resolve such interference, we are adopting our proposed rules which continue to make the coordinated repeater secondarily responsible. This permits local coordinators and the FCC to consider technical alternatives, questions of equity, and spectrum efficiency in reaching the most reasonable solution.

30. In accordance with Section 605 of the Regulatory Flexibility Act of 1980 (5 U.S.C. Sec. 605) we certified in the *Notice of Proposed Rule Making, supra,* in this proceeding that these rules would not, if promulgated, have a significant economic impact on a substantial number of small entities, because these entities do not use the Amateur service for commercial radio communication (see 47 CFR Sec. 97.3(b)). The Chief Counsel for Advocacy of the Small Business Administration has been so notified.

31. The new rules adopted herein have been analyzed with respect to the Paperwork Reduction Act of 1980 and found to contain no new or modified form, information collection and/or record keeping, labeling, disclosure, or record retention requirements; and will not increase or decrease burden hours imposed on the public.

Conclusion

32. We are amending the Part 97 Amateur Radio Service rules consistent with the previous discussion. The rules we are adopting make stations in repeater or auxiliary operation mutually responsible for resolving any interference associated with their operations, unless one station's operation is coordinated and the other's is not. In that case, the station with the non-coordinated repeater or auxiliary operation has primary responsibility to resolve any interference between them. Rules adopted as interim measures before the evolution of voluntary amateur coordination of repeater and auxiliary operation are being removed. We take this action in order to minimize the number of interference disputes related to amateur repeater and auxiliary operation.

33. Accordingly, IT IS ORDERED, THAT effective 0001 UTC July 12, 1986, Part 97 of the Commission's rules (47 CFR Part 97) is amended as shown in the Appendix attached hereto. The authority for this action is found in Sections 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. Secs. 154(i) and 303.

34. IT IS FURTHER ORDERED, THAT this proceeding is terminated.

35. For further information concerning this document, contact John J. Borkowski, (202) 632-4964.

William J. Tricarico, Secretary

APPENDIX

Part 97 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

Part 97 - Amateur Radio Service

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

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. Paragraphs (k), (r) and (aa) of Section 97.3 are revised to read as follows:

Sec. 97.3 Definitions.

* * *

(k) *Coordinated station operation.* The repeater or auxiliary operation of an amateur station for which the transmitting and receiving frequencies have been implemented by the licensee in accordance with the recommendation of a frequency coordinator.

* * *

(r) *Harmful interference.* Interference which seriously degrades, obstructs or repeatedly interrupts the operation of a radio communication service.

* * *

(aa) *Frequency coordinator.* An individual or organization recognized in a local or regional area by amateur operators whose stations are eligible to engage in repeater or auxiliary operation which recommends frequencies and, where necessary, associated operating and technical parameters for amateur repeater and auxiliary operation in order to avoid or minimize potential interference.

* * *

3. Paragraph (c) of Section 97.67, including the table contained therein, is removed and reserved.

4. Paragraph (g) of Section 97.85 is revised to read as follows:

Sec. 97.85 Repeater operation.

* * *

(g) Where an amateur radio station in repeater or auxiliary operation causes harmful interference to the repeater or auxiliary operation of another amateur radio station, the two stations are equally and fully responsible for resolving the interference unless one station's operation is coordinated (see Sec. 97.3(k)) and the other's is not. In that case, the station engaged in the non-coordinated operation has primary responsibility to resolve the interference.

* * *

5. Appendix 5 to Part 97 is removed and reserved.

End Notes

1. We are informed that the ARRL has agreed to establish and maintain a computerized data base of the nation's repeaters. We commend this undertaking.

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