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

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FCC Mail Room

In the Matter of	)	
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Amendment of Parts 2 and 97 of the Commission's Rules to Facilitate Use by the Amateur Radio Service of the Allocation at 5 MHz	))))	ET Docket No. 10-98 RM-11353

REPORT AND ORDER

Adopted: November 16, 2011 **Released: November 18, 2011**

By the Commission:

I. INTRODUCTION

1. By this action, we amend Parts 2 and 97 of the Commission's Rules to facilitate more efficient and effective use by the Amateur Radio Service of five channels in the 5330.5-5406.4 kHz band (the 60 meter band).[1] Specifically, and consistent with our proposals in the *Notice of Proposed Rulemaking* (*NPRM*) in this proceeding, we replace one of the channels with a less encumbered one, increase the maximum authorized power amateur stations may transmit in this band, and authorize amateur stations to transmit three additional emission designators.[2] We also adopt an additional operational rule that prohibits the use of automatically controlled digital stations and makes editorial revisions to the relevant portions of the Table of Frequency Allocations (Allocation Table) and our service rules.

II. BACKGROUND

2. In 2003, the Commission allocated five channels in the 60 meter band to the amateur service on a secondary basis. In Part 97 of its Rules, the Commission makes the frequencies 5332 kHz, 5348 kHz, 5368 kHz, 5373 kHz, and 5405 kHz available for use by stations having a control operator holding a General, Advanced, or Amateur Extra Class license; requires that amateur operators ensure that their station's transmission occupies only 2.8 kHz centered at each of these frequencies; and requires that amateur stations not cause harmful interference to other authorized stations.[3]

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[1] Part 2 of the Rules, *inter alia*, sets forth the frequency allocations for the various radio services. Part 97, the Amateur Radio Service, provides rules for amateur operators to participate in a voluntary noncommercial communication service that, among other things, allows stations to communicate among themselves, provide emergency communications, and experiment with various radio techniques and technologies to further the understanding of radio use and the development of new technologies. In the Amateur Radio Service, wavelength bands, rather than frequency bands are the usual means of identifying radio spectrum. In this Order, we use the term "60 meter band" when referring to the 5330.5-5406.4 kHz band.

[2] Amendment of Parts 2 and 97 of the Commission's Rules to Facilitate Use by the Amateur Radio Service of the Allocation at 5 MHz, ET Docket No. 10-98, *Notice of Proposed Rulemaking*, 25 FCC Rcd 5108 (2010) (*NPRM*).

[3] Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency Allocation for the Amateur Radio Service, ET Docket No. 02-98, *Report and Order*, 18 FCC Rcd 10258 (2003) (*60 Meter Allocation R&O*). The Commission codified this allocation by adding footnote US381 (renumbered herein as US23) to the Allocation Table. Assigned frequency is defined to be the center of the frequency band assigned to a station. Thus, the frequencies listed in footnote US381 are assigned frequencies, which are also known as center frequencies. 47 C.F.R. §§ 2.1(c); 2.106, footnote US381.

3. The 60 meter band is part of the larger 5060-5450 kHz band, which is a Federal/non-Federal shared band that is allocated to the fixed service on a primary basis and to the mobile except aeronautical mobile service on a secondary basis. The 5060-5450 kHz band is primarily used by Federal agencies for ship-to-shore and fixed point-to-point communications. Non-Federal use of the 5060-5450 kHz band includes state government licensees and licensees in the Industrial/Business Pool that operate standby and/or backup communication circuits for use during emergency and/or disaster situations, entities prospecting for petroleum and natural gas or distributing electric power, coast stations, and aeronautical fixed stations.[4]

4. The Commission added the secondary amateur service allocation after determining that such frequencies could be useful to the amateur radio community for completing disaster communications links at times when existing frequencies in the 3500-4000 kHz (80 and 75 meter) and 7000-7300 kHz (40 meter) bands are not available due to ionospheric conditions. It concluded that such an allocation represented the best compromise available to give the amateur service access to new spectrum while assuring the Federal Government agencies that their use is protected.[5]

5. At the request of the National Telecommunications and Information Administration (NTIA),[6] the Commission restricted amateur stations operating on the five channels in the 60 meter band to upper sideband (USB) voice transmissions (phone emission 2K80J3E) and to a maximum effective radiated power (ERP) of 50 watts (W) peak envelope power (PEP).[7] The Commission adopted these operating restrictions to decrease the interference potential between amateur stations and Federal stations.

6. On October 10, 2006, the American Radio Relay League (ARRL) filed a Petition for Rulemaking requesting that the Commission amend Parts 2 and 97 of its Rules to replace one of the allocated center frequencies (5368 kHz) with a less encumbered frequency (5358.5 kHz); increase the maximum ERP from 50 to 100 W PEP; and authorize the use of additional emissions types, limited to emission designators 150HA1A, 60H0J2B, and 2K80J2D. It said that its proposals were designed to facilitate more efficient and effective use of the secondary amateur radio service allocation in the 60 meter band.[8] As part of its petition, ARRL attached a May 12, 2006 letter from NTIA indicating that it would "look favorably" on the above-described modifications should ARRL choose to pursue rule changes with

[4] We briefly note two U.S. footnotes that apply to the 5060-5450 kHz band: Footnote US22 lists the 68 preferred carrier frequencies in the 2-10 MHz band that are available for disaster or long distance communications and which are expected to support most, if not all, non-Federal requirements for disaster and long distance communications. Notably, none of these frequencies fall within the 60 meter band channels. Footnote US212 designates a carrier frequency (5167.5 kHz) for emergency communications and other purposes in Alaska. While this frequency is available for limited amateur use under specified conditions, it is not affected by the instant rulemaking.

[5] *See 60 Meter Allocation R&O*, 18 FCC Rcd at 10268.

[6] NTIA is an agency of the United States Department of Commerce that serves as the President's principal advisor on telecommunications and information policy issues. NTIA manages Federal use of the radio spectrum and coordinates Federal use with the FCC. *See* 47 C.F.R. § 2.1.

[7] *See 60 Meter Allocation R&O*, 18 FCC Rcd at 10268. See note 28, below, for a description of this phone emission. ERP (in a given direction) is the product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction. 47 C.F.R. §§ 2.1, 97.313(i).

[8] *See* ARRL Petition for Rulemaking (*ARRL Petition*). We note that ARRL also identifies itself as ARRL – the national association for Amateur Radio.

the Commission.[9] The Commission issued a public notice on December 8, 2006 seeking comment on the ARRL Petition.[10] No comments were received in response to the public notice.

7. On May 4, 2010, the Commission issued a *NPRM* in this proceeding, in which we proposed to adopt the three rule modifications requested by ARRL. We also identified and sought comment on four operational issues: (1) Would a transmission time limit help ensure that amateur operators transmitting the two data emissions avoid causing harmful interference to Federal users in instances where Federal agencies exercise their primary use of the 60 meter band, and if so, would 3 minutes be sufficient, or is another limit more appropriate? (2) Should amateur stations be permitted to transmit emission types in addition to those proposed in the *NPRM*? (3) Would a Voice-Operated Transmit (VOX) mode of operation, which ARRL recommended that we require for amateur operators transmitting phone emissions, increase the potential for interference because of its susceptibility to keying a radio to transmit under high surrounding noise environments such as might be found in an emergency operations center? (4) Should amateur operators that provide emergency communications using the 60 meter band be encouraged to add a sound card-generated Automatic Link Establishment (ALE) capability to their stations? In response to the *NPRM*, ARRL and 42 amateur service licensees filed comments in this proceeding.[11]

III. DISCUSSION

8. We first address the three key rule changes identified in the *NPRM* that can lead to more efficient and effective use of the 60 meter band by the Amateur Radio Service: replacing one channel, increasing power limits, and adding emission designators. We then discuss modifications to specific operational rules, including several matters where we conclude that it is unnecessary to change the existing rules.

A. Replacement Channel

9. In its petition, ARRL requested that we replace one of the five channels in the 60 meter band (5368 kHz) with a channel (5358.5 kHz) that NTIA has identified. ARRL based its request on reports from amateur operators of frequent interference from a digital signal on the existing authorized channel. We conclude that our proposal to replace the 5368 kHz channel with one centered on 5358.5 kHz will benefit amateur operations in the 60 meter band and adopt this rule change.

10. Commenters supporting the channel replacement proposal (ARRL, Davis, McIntosh, Thomas, Whedbee) agree that the replacement channel would allow for greater amateur use.[12] For example, McIntosh observes that the 5368 kHz channel is normally occupied by a primary user that operates for long periods of time and that replacing this channel would have the effect of restoring amateur radio operations to five "clear" channels in the 60 meter band. In its comments, ARRL reports that numerous amateur licensees have experienced substantial and frequent interference on 5368 kHz and reiterates its support for substituting 5358.5 kHz for that channel to alleviate interference to amateur

[9] *See* Letter from Karl Nebbia, Deputy Associate Administrator, Office of Spectrum Management, NTIA, to Paul L. Rinaldo, ARRL Chief Technology Officer, May 12, 2006 (2006 NTIA Letter). This letter is attached, as Appendix A, to the ARRL Petition.

[10] *Public Notice*, Report No. 2799 (rel. Dec. 8, 2006). RM-11353 was established for the ARRL Petition.

[11] See Appendix A for the list of parties filing in this proceeding. This list includes late-filed comments, which we include as part of the record.

[12] *See* comments of ARRL at 8, Davis at 1, McIntosh at 1-2, Thomas at 1, and Whedbee at 1. While these five commenters specifically stated that they support the replacement channel proposal, we observe that many other commenters expressed general support for the proposals in the *NPRM* without specifically addressing this issue.

operations. We observe that the replacement channel will also eliminate an existing overlap of the existing channel on primary coast station channels 5367 kHz and 5370 kHz.[13]

11. One commenter (Slye) asserts that there is no reason to believe that the replacement channel would be immune to future Federal use. However, we note that the replacement channel was identified as offering favorable use characteristics during discussions between ARRL and NTIA.[14] While the nature of the amateur secondary allocation means that any 60 meter channel could become difficult to use due to increased activity by primary users, we conclude that there is tangible value in switching to the more lightly used 5358.5 kHz channel. Similarly, we do not find persuasive the concerns raised by Slye and Tisdale that it will be difficult for amateur radio operators and equipment manufacturers to adjust to the replacement channel. While there will be nominal costs for users who wish to retune their equipment to be able to access the new channel, they will benefit by being able to make greater use of the 60 meter band via the replacement channel. Moreover, amateur radio operators are not required to modify their equipment; those who choose not to will no longer be permitted to use a channel that they have not, as a practical matter, had reliable access to for some time. This action, which represents the first channel modification since the rules were adopted in 2003, provides a way to resolve what has become an impediment to amateur use of the 60 meter band. Moreover, licensees that decline to upgrade their stations to operate on the replacement channel will continue to be able to access the four remaining channels.[15]

12. We note that three commenters (Jones, Slye, Tisdale) suggest that the new channel should be an additional channel, not a replacement channel.[16] Because the existing model of secondary amateur radio use of five channels is acceptable to the primary Federal users in the 60 meter band and was the basis of the discussions between ARRL and NTIA that formed the outline of our proposal, we will not pursue this proposal.

13. Finally, in considering those comments that discuss the adjustments that amateur radio operators and equipment manufacturers will need to make to use the replacement channel, we conclude that proposed Section 97.303(h) requires a *de minimis* adjustment.[17] This action ensures that a large installed base of equipment is not rendered technically out of compliance under our modified rules. Accordingly, we amend footnote US381 and Section 97.303(h) by removing 5368 kHz, by adding the center (assigned) frequency 5358.5 kHz, and by defining the 60 meter band as the 5330.5-5406.4 kHz band; and we also amend Section 97.303(h) by adding carrier frequencies for each of the five channels in

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[13] See call signs KPH and WNU.

[14] *See* 2006 NTIA Letter, *supra* note 9.

[15] Based on the record of intensive use of the 5368 kHz channel by primary users, we conclude that, for a significant number of amateur licensees, the replacement channel is the only means of gaining access to a fifth channel. Thus, under current practice, many amateur radio operators have practical access to only four channels.

[16] *See* comments of Jones at 1, Slye at 1, and Tisdale at 1-2.

[17] When the use of a center frequency is restricted to emission designator 2K80J3E and to USB transmission, it is generally understood to mean that the carrier frequency is set 1.4 kHz below the center frequency, and the proposed rules reflected this convention. However, in this instance, NTIA recommends that the carrier frequency be set 1.5 kHz below the center frequency, and ARRL repeats NTIA's guidance on its website. *See NTIA 2003 Letter* to Chief, Office of Engineering and Technology, FCC, received by the Commission's Office of the Secretary on March 19, 2003; http://www.arrl.org/60m-channel-allocation. Additionally, one manufacturer states that "transmission is impossible" on any 5 MHz band frequency other than the five carrier frequencies recommended by NTIA. *See* instruction manual for the Icom IC-7000 at 40 (available at http://www.icomamerica.com/en/downloads/DownloadDetails.aspx?Document=13). For these reasons, we conclude that the rule as proposed, if adopted, could cause a large install base of equipment to be slightly non-compliant with the Rules.

the 60 meter band that are 1.5 kHz below the center frequency. In addition, we renumber footnote US381 as US23 to be consistent with our current numbering system for domestic footnotes that is based on frequency order.

B. Power Increase

14. Section 97.313(i) states that no station may transmit with an ERP exceeding 50 W PEP on the 60 meter band and also provides a simplified means of calculating ERP. In the *NPRM*, we proposed to increase the maximum ERP that amateur stations may transmit on channels in the 60 meter band from 50 to 100 W PEP. Based on the record, we adopt our proposal.

15. Twelve commenters (ARRL, Blanchard, Floberg, Hobart, Houlne, Kinter, Leggett, McIntosh, Slye, Thomas, Tisdale, Whedbee) specifically state that they support the proposed power increase.[18] For example, Kinter identifies a situation where the 50 W PEP power limit "hindered the communication between a field group preparing for an emergency drill across the state and the state control center" and states that additional power would have allowed him to hear clearly above the noise.[19] ARRL states that a transmitter power output increase to 100 W PEP limit would substantially increase the communications reliability in the use of these channels without significantly increasing the risk of interference to Federal users.[20] Similarly, Slye states that "most stations are 100 Watt units, and a 3 dB increase in signal may make the difference in maintaining essential communications, while the increased potential for harmful interference is slight."[21] We agree with these commenters that the current power limitation of 50 W PEP hinders communications and that a small amount of additional power would make it easier for amateur users to communicate in the band.

16. Three commenters – Davis, Furman, and Jones – state the proposed power increase should not be adopted or that it will cause problems for incumbents in the band.[22] We believe that the examples cited by the twelve commenters above offer compelling reasons to support our tentative conclusion that an increase in maximum power would serve to facilitate many amateur radio communications with minimal risk of harmful interference.[23] We also reject requests for higher power limits, such as 500 W PEP.[24] There is no indication that a greater power limit would produce substantially greater benefits or that any increased potential for harmful interference at this power limit has been fully considered. Additionally, we do not believe that it would be useful to complicate the rules by establishing different power limits for different circumstances, as some commenters suggest.[25] Because the minimal 50 W PEP increase does not

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[18] *See* comments of ARRL at 8, Blanchard at 1, Floberg at 1, Hobart at 1, Houlne at 2-4, Kinter at 1, Leggett at 3, McIntosh at 4, Slye at 2, Thomas at 1, Tisdale at 2, and Whedbee at 3.

[19] *See* Kinter comments at 1.

[20] *See* ARRL comments at 8. *See also* Tisdale comments at 2 (stating that the power increase would greatly improve radio service on these frequencies at all times, especially during the summer "when there is generally a lot of static and noise on these frequencies").

[21] *See* Slye comments at 2.

[22] *See* comments of Davis at 1 and Jones at 1. *See also* Furman comments at 1 (describing his individual experience in operating an 8 foot magnetic loop at 5 feet above ground and with 8 watts that can work worldwide with no difficulty, and claiming that an increase in power would just add to the interference).

[23] *See, e.g.,* ARRL at 8 (describing how these frequencies are susceptible to high static levels on a seasonal and geographic basis which affects communications reliability during emergencies, and supporting the proposed power increase as a way to overcome these difficulties); Houlne at 4 (describing the "effective difference in signal strength between 50 and 100 watts is minimal as to interference").

[24] *See* Currier comments at 1.

[25] Seven commenters in all (Currier, Davis, Furman, Hambrecht, Jones, Kinter, Mabry) suggest a range of power limits. *See, e.g.*, comments of Mabry at 1 (suggesting that the transmitter output power limit should remain at 50 W (continued....)

significantly increase the potential for interference between stations, such a distinction is not necessary or warranted. Just as with the existing 50 W PEP power limit, a 100 W limit that applies to all channels will be straightforward, easy to understand, and easy to apply. Thus, we conclude that there is a tangible benefit—greater communication abilities that will enhance amateur emergency communication activities—that will accrue if we increase the power limit to 100 W PEP and that the record shows that the costs (*i.e.*, the increased potential for harmful interference) are minimal. We specifically reject alternate options such as an even higher power increase or different power limits for different circumstances, because these options would introduce added costs—a significantly greater interference potential and added regulatory complexity—that would sharply reduce the overall benefits of the rule change.

17. As part of our amendment of the transmitter power standard applicable to the 60 meter band, we clarify the second sentence in Section 97.313(i) by revising "dipole" to read "half-wave dipole antenna," by removing unnecessary text, and by explicitly stating that a numeric gain of 1 is equivalent to 0 dBd.[26] We likewise correct an errant cross-reference in Section 97.313(f) of our transmitter power rules that was introduced when we recently combined two footnotes.[27]

C. Additional Emissions

18. Under the existing rules, only upper sideband voice transmissions are permitted in the 60 meter band.[28] In the *NPRM*, we proposed to authorize the use of three additional emission designators in the band: CW emission 150HA1A, which is Morse telegraphy by means of on-off keying, and data emissions 2K80J2D and 60H0J2B. In Section 97.307(f)(14)(i) of the proposed rules, we restricted emission designator 2K80J2D to data using PACTOR-III technique and emission designator 60H0J2B to data using PSK31 technique.[29] We also sought comment on whether amateur stations could be permitted to transmit emission types in addition to those requested by ARRL in the 60 meter band without increasing the likelihood of interference to primary users. As discussed below, we adopt our proposal to allow the use of the three additional emission designators.

19. *Emission Designators*. Our proposal drew a wide range of responses. Although the majority of commenters fully or generally support the proposals that we made in the *NPRM*, many commenters

(Continued from previous page)
PEP, except under declared communications emergencies, during which times the transmitter output power limit would be temporarily raised to 1.5 kW PEP) and Hambrecht at 1 (recommending that a lower power limit apply to the data emissions).

[26] We are clarifying Section 97.313(i) after reviewing the issues raised in Houlne's comments.

[27] When we combined the text from footnotes US7 and NG135 and numbered the resulting footnote as US270, we failed to update the cross reference to footnote US7 in Section 97.313(f). *See* Amendment of Parts 1, 2, 15, 25, 73, and 90 of the Commission's Rules to Make Non-Substantive Editorial Revisions to the Table of Frequency Allocations and to Various Other Rules, *Order*, DA 10-762, 25 FCC Rcd 9712, 9735-9736 (2010).

[28] Specifically, the amateur service is limited to emission designator 2K80J3E, *i.e.*, a necessary bandwidth of 2.8 kHz (2K80); single-sideband, suppressed carrier modulation of the main carrier (symbol J); a single channel containing analog information that modulates the main carrier (symbol 3); and telephony, which is the type of information that is transmitted (symbol E). 47 C.F.R. Part 2, Subpart C. The use of this phone emission is further limited to USB transmission. Many amateur digital emissions and PSK31are transmitted by inserting an audio signal into the microphone input of an amateur radio transmitter, which is generally used to modulate single-sideband emissions. In the 60 meter band, two of the additional emission designators requested by ARRL (2K80J2D and 60H0J2B) are generally used in this manner. CW emissions can also be generated in this manner, but the third requested emission designator (150HA1A) does not permit this type of operation.

[29] PSK31 is a data system using phase shift keying (PSK) at 31.1 baud and PACTOR-III is a data system with a potential throughput of up to 5.2 kbit/s. *See* Recommendation ITU-R M.1732 at p. 4. ARRL describes PSK31 and PACTOR-III on its website; *see* http://www.arrl.org/FandES/field/regulations/techchar/PSK31.html and http://www.arrl.org/FandES/field/regulations/techchar/PACTOR-III.html.

expressed concerns about some or all of the proposed new emission designators. Commenters were most supportive of the proposed addition of emission designators 150HA1A and 60H0J2B. For example, Leggett states that the proposal to allow Morse code and PSK31 would allow amateur radio operators to handle record traffic (radiogram messages) with greater efficiency, Davis states that CW is a bandwidth-efficient and effective way of passing emergency traffic under noisy channel conditions, and McIntosh states that PSK31 can "be used to transmit information quickly and is a good choice for text data transmission in an emergency."[30]

20. By contrast, the proposal to add emission type 2K80J2D proved much more divisive. Whedbee, who supports our proposal, states the data and CW "emissions have great utility when other signals are particularly weak and are very robust against interference or noise" and notes that these emissions offer the possibility of connecting federal and amateur radio users of the 5 MHz band via PACTOR-III e-mails as part of the overall national disaster communications plan.[31] Other commenters do not believe that it is possible to integrate PACTOR-III into the existing amateur use of the 60 m band.[32] For example, parties question whether PACTOR-III can be considered a narrowband emission,[33] fear that PACTOR-III is often used in a disruptive manner,[34] or assert that it is an expensive and proprietary data mode that is not widely used within the amateur community.[35] Thomas, for example, states that, because PACTOR-III is not commonly used by the amateur community, it would be "difficult for the average Amateur licensee to be able to discern a difference between an Amateur 2K80J2D emission and a primary user signal without making a significant financial investment in PACTOR-III hardware and software." This, in turn, "would have the effect of reducing the value of the band to the Amateur service in general by impeding its utilization for fear of interfering with a primary user."[36]

21. Nine commenters suggested that we add various other emissions to the 60 meter band. These commenters ask that we add all or most digital modes (Currier, Davis, Hambrecht, Kinter, Prats, Richmond), include additional specific emissions (Baumruck, Leggett), or that we add different emissions than those proposed in the *NPRM*.[37] ARRL states that, due to the absolute obligation of amateur stations

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[30] *See* comments of Leggett at 2, Davis at 1, and McIntosh at 2-3. *See also* comments of ARRL at 9, Erickson at 1, and Whedbee at 2-3. We note that Whedbee also provides ideas on how to mitigate the interference potential between these modes.

[31] *See* Whedbee comments at 3 (stating that "radio amateurs can establish radio gateways on 5 MHz that, in the case of this band, federal users could enjoy during crises"). *See also* comments of ARRL at 9, Davis at 1, and Tarsala at 2.

[32] *See* comments of Beck at 1, Carswell at 1, Chong at 1, Feller at 1, Klagge at 1, McIntosh at 3, Prats at 1, Teller at 1, Wierda at 1, Downs at 1, and Leggett at 2.

[33] *See* comments of Beck at 1, Carswell at 1 (stating that PACTOR-III is not a narrowband mode compared to other digital data modes used on amateur radio such as PSK31), and Chong at 1 (disputing ARRL's claim that PACTOR-III can be considered narrowband because the emission will automatically vary in emitted bandwidth according to conditions).

[34] *See* Klagge comments at 1 (stating that PACTOR stations are notorious for starting transmissions without checking to see if the frequency is busy and thus interfere with on-going transmissions).

[35] *See, e.g.*, Mabry reply comments at 1 (calling PACTOR III "a barely-known-to-the-amateur-community-at-large, proprietary, expensive, bandwidth-hogging data mode") and McVey comments at 4 (stating that PACTOR-III costs approximately $1,300).

[36] *See* Thomas comments at 2.

[37] *See, e.g.*, comments of Currier at 1 (asking for all digital modes that are currently authorized on other bands below 30 MHz); Kinter at 1 (proposing a generic "data" class with specific bandwidth/deviation restrictions); Leggett at 2 (proposing to allow for the transmission of photographs by means of slow scan TV techniques during emergencies); and Klagge at 1 (asking that we allow MFSK-16 or OLIVIA modes, instead of PACTOR).

to protect the incumbent, primary Federal users of these channels, it "strongly urges" that, for now, we limit our consideration of additional emission types to those requested in its petition.[38]

22. The record also includes a few commenters who are skeptical that additional emission types are appropriate for the 60 meter band. For example, one commenter (Houlne) states that with only five channels available, "it does not make sense to permit non-compatible modes such as CW and digital" data modes, and another commenter (Tisdale) opposes both data emissions.[39]

23. Finally, ten commenters (Furman, Jones, Kinter, Mabry, McIntosh, McVey, Schaaf, Slye, Thomas, Watkins) suggest limiting some or all of the proposed emissions to a specified channel or channels within the 60 meter band.[40] While the specific channel use proposals vary by commenter, there is a general view among these commenters that such an approach would help offset possible interference between emission types or that a specific channel/mode assignment would promote efficiency.[41]

24. *Specific Techniques of the Data Emissions*. Commenters strongly believe that the use of the emission designators 60H0J2B and 2K80J2D should not be restricted to the specific techniques of PSK31 and PACTOR-III, respectively.[42] This approach differs from what was proposed in the *NPRM*. For example, ARRL states that it is the emission designator and not the particular technique that defines the interference potential of the emission and the Commission's Rules should permit the ongoing evolutionary process to continue without regulatory intervention. Lafleur states that to limit a digital operation to specific protocols discourages the further development of additional protocols, which may be more efficient than those currently in use and that he supports restricting protocol types based on bandwidth and not as a specific mode.[43]

25. *Decision*. We adopt our proposal to authorize the use of three additional emission designators in the 60 meter band. These additional capabilities can serve to enhance amateur emergency communications and allow for greater experimentation in the band, and we believe that doing so is in the public interest. We note, however, that because "emission J2B" is specifically defined in Part 97 of our Rules to be a Radio Teletype (RTTY) emission, emission designator 60H0J2B must be codified as a RTTY emission in order to provide for consistency within Part 97 of our Rules.[44] Accordingly, we authorize control operators to transmit the following additional emission types and designators in the 60 meter band: CW emissions, limited to emission 150HA1A (*i.e.*, Morse code telegraphy); data emissions, limited to emission 2K80J3E (exemplified by PACTOR-III); and RTTY emissions, limited to emission 60H0J2D (exemplified by PSK31).

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[38] ARRL states that it supports revisiting this topic in the future once some experience is gained with these specific emission types. *See* ARRL comments at 9.

[39] *See* comments of Houlne at 2 and Tisdale at 2.

[40] *See* comments of Furman at 1, Jones at 1, Kinter at 1, Mabry at 1, McIntosh at 2-3, McVey at 5-12, Prats at 1, Schaaf at 1, Slye at 2, Thomas at 1-2, and Watkins at 1.

[41] Compare McVey (suggesting the authorization of CW and PSK31 on a dedicated channel, USB on three dedicated channels, and USB and PACTOR-III on a shared channel) with Schaaf (suggesting authorizing PSK31 on one channel, CW on two channels, and restricting the phone emission to two channels, with PACTOR-III replacing PSK31 under emergency conditions).

[42] *See, e.g.*, comments of ARRL at 12, Bane at 1, Currier at 1, Lafleur at 1, and Waterman at 1.

[43] Lafleur also states that, while a bandwidth restriction would not impede the ability to continue to develop the radio art, limiting the privilege to only few current protocols will stagnate the radio art.

[44] RTTY is defined as follows: "Narrow-band direct-printing telegraphy emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1 as the second symbol; B as the third symbol; and emission J2B. Only a digital code of a type specifically authorized in this part may be transmitted." 47 C.F.R. § 97.3(c).

26. We recognize that many commenters are concerned that the addition of new emission types—data emission types in general and PACTOR-III specifically—holds the risk of reducing the utility of these channels for many amateurs, especially for those who may not readily recognize data transmissions and may avoid use of the channels out of an abundance of caution. We conclude that there are ways to minimize any potential disruption that the new emission types could cause. ARRL notes that amateur "stations typically utilize relatively short transmissions in telegraphy and are able to manually detect the presence of a non-Amateur signal within the channel bandwidth while operating in that mode" and that the "same is true of 60H0J2B and 2K80J2D emissions, if careful manual operating practices are used."[45] Moreover, ARRL commits to the necessary dissemination of "best practices" information to the amateur community on a timely basis and to the adoption and publication of a comprehensive band plan for these channels that will maintain maximum flexibility in Amateur use without interference.[46] Lastly, we adopt certain operational rules, described below, that will serve to ensure that the new emission types are used in a manner that promotes continued shared use of the band by all.

27. We will not adopt any emission designators beyond the three proposed in the *NPRM*. ARRL states that its discussions with NTIA about the additional emission types were very specific and what was endorsed by NTIA was very specifically limited to the three additional emissions requested in its petition and no others. We agree that this is the best course, as it is consistent with existing understandings between Federal and amateur radio interests. Similarly, we do not find it necessary to modify the band plan by, for example, requiring that certain emission types be used on specified channels or during specified emergency events. We believe that ARRL and the amateur community can work within the framework we establish to promote continued cooperative use of the 60 meter band and that the imposition of such complex and burdensome channel and emission use restrictions is unnecessary.[47] In sum, the additional emission designators will benefit the amateur radio community by providing new opportunities to use the 60 meter band. While we recognize that this added flexibility means that some users could face reduced utility of the band for certain emission types, we are confident that any detrimental impact can be avoided if the amateur radio community continues its legacy of following best practices and exercising sound judgment in sharing the available spectrum.

28. Finally, we agree with commenters that limiting digital operation to a specific technique discourages the further development of additional techniques, which may be more efficient than those currently in use. Therefore, we permit an amateur station transmitting RTTY emission 60H0J2B or data emission 2K80J3E to use any unspecified digital code, subject to the requirements of Section 97.309(b).[48] We amend Section 97.305(c) by inserting the 60 meter band entry, which lists "Phone, RTTY, data" under

[45] *See* comments of ARRL at 9.

[46] ARRL states that the necessary components of "best practices" and a viable band plan include the ability to clear a channel quickly if Federal users need it; the means of determining attempted channel access by Federal users immediately, regardless of emission type; a way to discourage usurpation of one or more of the channels by any one emission type; the means to minimize Federal and amateur interaction on any of the channels due to differing emission types; and absolute and strict adherence to listen-before-transmit prior to and during an ongoing amateur communication. *See* ARRL comments at 10-11.

[47] We think the lengthy time frame associated with the traditional rulemaking proceeding would frustrate the ability for us to implement and maintain a viable band plan; by contrast, ARRL can quickly establish and modify a voluntary channel use plan that is and remains responsive to evolving amateur use and needs.

[48] Specifically, a station may transmit a RTTY or data emission using an unspecified code, except to a station in a country with which the United States does not have an agreement permitting the code to be used. RTTY and data emissions using unspecified digital codes must not be transmitted for the purpose of obscuring the meaning of any communication. When deemed necessary by a District Director to assure compliance with the FCC Rules, a station must: (1) Cease the transmission using the unspecified digital code; (2) Restrict transmissions of any digital code to the extent instructed; and (3) Maintain a record, convertible to the original information, of all digital communications transmitted. 47 C.F.R. § 97.309(b).

the heading "Emission types authorized."[49] In addition, we amend Section 97.307 by adding new paragraph (f)(14) to list the emission types and designators and other restrictions.

D. Operational Requirements

29. *Transmission time limit.* The Commission also sought comment on whether to adopt a rule addressing transmission time limits. Our existing rules address station identification and require each amateur station operating on the 60 meter band to transmit its assigned call sign on its transmitting channel at the end of each communication, and at least every ten minutes during a communication, for the purpose of making the source of the transmissions from the station clearly known.[50] We proposed, at a minimum, to add a rule stating that "[t]he control operator of a station transmitting data emissions must exercise care to limit the length of transmission so as to avoid causing harmful interference to United States Government stations" but also asked whether codifying a specific time limit would help ensure that amateur licensees avoid causing harmful interference to primary Federal users.[51]

30. ARRL does not support a specific time limit, stating that a fixed, arbitrary time limit on individual transmissions is incompatible with the nature of Amateur radio communications and noting that its discussions with NTIA "revealed no necessity for a specific time limit on individual transmissions."[52] Two commenters (Erickson, Thomas) also state that time limits on the use of digital modes may be problematic or not practical.[53] Six commenters (Davis, Jones, Leggett, McIntosh, McVey, Whedbee) recommend specific transmission time limits but differ on both the actual time limit (ranging from one to ten minutes) and situations to which the limitations would apply.[54]

31. We decline to adopt a specific limit on transmission length and adopt the more general rule language that we proposed. Based on the clear history of successful amateur service sharing of the 60 meter band and the lack of a consensus among the commenters, we find that there is no need to adopt a specific time limit. We believe that the existing station identification rule and the new rule text, together with good amateur radio practice and the instruction and support of ARRL (including its anticipated "best practices" guide), will ensure that amateur radio operators using the data and RTTY emissions do not cause harmful interference to primary Federal users. Accordingly, we amend footnote US381 (renumbered herein as US23) and Section 97.307(f)(14)(ii)(B) by adding the proposed sentences (except that RTTY emissions are listed separately from data emissions).[55]

32. *Automatically Controlled Digital Stations.* Section 97.221(c) permits automatic control of an amateur station while transmitting a RTTY or data emission and Section 97.109 states that when a station is being automatically controlled, the control operator is not required to be at the control point.[56] Six commenters (Beck, Downs, Hambrecht, McIntosh, McVey, Wierda) express concern that data emissions – in particular, PACTOR-III – may not effectively detect USB emissions in progress and inhibit or cease transmissions when necessary when they are operating as automatic, unattended data stations.[57] ARRL

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[49] Transmission of a CW emission is authorized pursuant to Section 97.305(a).

[50] 47 C.F.R. § 97.119(a).

[51] *See NPRM* at paragraph 10 and Appendix at footnote US381 and Section 97.307(f)(14)(ii)(B).

[52] *See* ARRL comments at 14.

[53] *See* comments of Erickson at 1 and Thomas at 1.

[54] *See* comments of Davis at 1, Jones at 1, Leggett at 3, McIntosh at 3-4, McVey at 4, and Whedbee at 2.

[55] We note that the adopted rule is consistent with the approach ARRL and NTIA discussed prior to the initiation of this proceeding. *See* 2006 NTIA Letter, *supra* note 9.

[56] 47 C.F.R. §§ 97.109, 97.221(c).

[57] *See* comments of Beck at 1, Downs at 1, Hambrecht at 1, McIntosh at 3, McVey at 8 and 11, and Wierda at 1.

states that amateur stations typically utilize relatively short transmissions in telegraphy and are able to manually detect the presence of a non-amateur signal within the channel bandwidth while operating in that mode and that the same would be true of 60H0J2B and 2K80J2D emissions, if careful "manual" operating practices are used.[58] We find merit in the commenters' concerns and conclude that ARRL's underlying assumption that stations transmitting data emissions are not under automatic control should be incorporated in the Commission's Rules as part of our decision to add new data emission types. Our prohibition on automatically controlled stations will also help ensure that when Federal agencies need to exercise their primary use of the 60 meter band frequencies, amateur licensees will be better positioned to avoid causing harmful interference and we include this restriction in Section 97.221(c).

33. *Operation on Channel Centers*. Section 97.303(h) currently requires that amateur operators ensure that their station's transmission occupies only 2.8 kHz centered at each of the five center frequencies. The *NPRM* proposed that, for amateur stations transmitting CW emissions and PSK31 data emissions, the carrier frequency shall be set to the center frequency. NTIA has requested that we continue to restrict amateur service transmissions in this manner.[59]

34. Ten commenters (ARRL, Currier, Downs, Hambrecht, Mabry, McVey, Richmond, Schaaf, Thomas, Watkins) oppose our proposal because it would impose an inefficient limitation on the use of the frequency bands that make up the designated channels.[60] ARRL states that it is possible to have multiple CW and/or PSK31 communications ongoing simultaneously within the 2.8 kHz channel, so long as those simultaneous communications are not limited to the channel centers.[61] Two commenters (Hambrecht, Richmond) recommend that multiple emissions be permitted, if the emissions outside the allotted channel are suppressed.[62]

35. By contrast, NTIA opposes the authorization of multiple emissions within a 2.8 kHz channel and claims that such an action would significantly increase the likelihood of harmful interference to important Federal operations and that difficulty in identifying interfering amateur stations could significantly inhibit rapid use of these channels by primary Federal stations for such uses as emergency communications.[63] NTIA observes that all five of the channels allocated for secondary amateur service use are also authorized for use by primary Federal stations, and states that the five channels were provided to the amateur community in order to meet requirements for disaster communications, and that use of additional frequencies would not enhance interoperability with Federal stations.

36. We adopt the center frequency requirement as proposed in the *NPRM*. Because the amateur service operates in the 60 meter band on a secondary basis, we pay particular attention to NTIA's position and the interests of Federal agencies that have primary status in the band. We conclude that continuing to restrict amateur stations to transmitting on the center frequencies will maintain the limited number of amateur operators using the five channels at any given time and provide certainty as to where such

[58] *See* ARRL comments at 9.

[59] *See* Letter from Associate Administrator, Office of Spectrum Management, NTIA, to Chief, Office of Engineering and Technology, FCC, which was submitted on September 2, 2011 (2011 NTIA Letter).

[60] In addition, Leggett recommends that the issue of multiple frequencies within a 2.8 kHz channel be considered in a Notice of Inquiry. *See* comments of ARRL at 12-13, Currier at 1, Hambrecht at 1, Leggett at 2, Mabry at 1, McVey at 3-7, Richmond at 1, Schaaf at 1, Thomas at 2, and Watkins at 1; and Downs Additional Comments at 1.

[61] *See* ARRL comments at 12-13. *Cf.* comments of Thomas at 2; Downs Additional Comments at 1; and McVey at 3-7 (asserting that up to 14 simultaneous PSK31or CW communications with 200 Hz spacing could be accommodated in 2.8 kHz channel).

[62] *See* comments of Hambrecht at 1 and Richmond at 1.

[63] *See* 2011 NTIA Letter.

operations can be found. By not upsetting the expectations of the Federal users of the band, we are confident that they will be able to immediately reclaim these frequencies from secondary amateur radio operations, if and when necessary. Accordingly, we amend Section 97.303(h) to specify that control operators of stations transmitting phone, data, and RTTY emissions (emission designators 2K80J3E, 2K80J2D, and 60H0J2B, respectively) may set the carrier frequency 1.5 kHz below the center frequency, and that, for stations transmitting CW emissions (emission designator 150HA1A), the carrier frequency is set to the center frequency.[64]

37. *VOX Requirement.* We requested comment on whether amateur operators should be required to use VOX in the phone emission mode, which ARRL stated would permit a Federal user to interrupt an amateur station's transmission quickly and easily without waiting for an unpredictable end of the transmission.[65] We specifically sought comment on whether a VOX mode of operation might increase the potential for interference because of its susceptibility to keying a radio to transmit under high surrounding noise environments such as might be found in an emergency operations center.

38. Twelve commenters (Davis, Hobart, Houlne, Kinter, Leggett, Mabry, McIntosh, Slye, Thayer, Thomas, Walkler, Whedbee) state that we should not adopt a VOX requirement and two commenters (Leggett, Mabry) state that this issue should be left up to the operator to choose Push-to-Talk (PTT) or VOX based upon his abilities, equipment, and operating conditions.[66] For example, Hobart states that he has witnessed that noise or nearby casual conversation in an emergency operations center or shelter or wind noise in the field would cause frequent inadvertent activation of a transmitter adjusted to respond to voice activation.[67] Moreover, four commenters (ARRL, Erickson, Hobart, Kinter) state that VOX mode can or might increase the potential for interference.[68] Among the two commenters (Blanchard, McVey) that support the required use of VOX, McVey states that use of "differential microphone elements, as is commonplace with aviation communications microphones, would eliminate false triggering of VOX circuitry from background noise."[69]

39. We agree with the majority of commenters that improper operation of VOX would cause increased interference, and we therefore decline to require the use of VOX by amateur stations transmitting a phone emission in the 60 meter band. Moreover, as McIntosh observes, amateur communications in the 60 meter band already successfully co-exist without a VOX requirement,[70] and we see no reason why this

[64] We adopt a modified instruction for PSK31 channel use to correct an error introduced in the *NPRM*. To have a PSK31 signal transmitted on the center frequency, the control operator should not set the carrier frequency to the center frequency but should instead set the carrier frequency 1.5 kHz below the center frequency (i.e., the same as for phone and data emissions). *See, e.g.*, "The BUXCOMM Digital Handbook," by Glynn E. "Buck" Rogers Sr., at 11 (available at http://www.buxcomm.com/pdfzips/2011-BUXCOMM_Digital-handbook.pdf).

[65] VOX uses a keying relay that actuates a radio to transmit when sound energy above a certain threshold is sensed by the transducer. *See* ARRL Petition at 7, 12.

[66] *See* comments of Davis at 1; Houlne at 4-5; Kinter at 1; Leggett at 3; McIntosh at 1; Slye at 2; Thayer at 1; Thomas at 1, 3; Whedbee at 2-4; Walkler at 1 (expressing concerns that the VOX would activate from the noise of passengers, or other radios in the car); Leggett at 3 (suggesting that we "leave it to the judgment and experience of amateur radio operators" because these licensees "have demonstrated again and again that they have the knowledge and the capability to make such decisions for themselves"); and Mabry at 1.

[67] *See* Hobart comments at 1.

[68] ARRL states that while VOX should properly be considered one method of allowing frequent channel monitoring to guard against Federal access preclusion, it should not be mandatory. *See* ARRL comments at 16-17. *See also* Erickson comments at 1.

[69] *See* McVey at comments at 4. *See also* Blanchard comments at 1 (stating that "VOX should be mandatory in this day and age").

[70] *See* McIntosh comments at 4.

cannot continue. We will rely on control operators to choose between PTT and VOX operations, based on their abilities, equipment, and operating conditions.

40. *ALE Capability*. At the request of NTIA, we solicited comment on whether amateur operators that provide emergency communications using the 60 meter band should be encouraged to add a sound card generated ALE capability to their stations. ALE is a standard for initiating and sustaining communications using High Frequency (HF) radio.[71] There was no consensus of opinion among the five parties (ARRL, Davis, Leggett, Slye, Thomas) that commented on this issue.

41. We recognize that ALE allows emergency control operators to use multiple channels efficiently and reduces the time spent trying to connect with another station.[72] However, we also share commenters' concerns that there is a potential for channel monopolization due to periodic transmissions, which are not subject to manual control,[73] and that users who do not have ALE capability may have no way of determining who is interfering with their operation.[74] ARRL takes no position on whether we should encourage amateur operators to add ALE capability to their stations but does state that it would not support modifying the Commission's Rules to specifically require ALE.[75] Thomas states that the inclusion of ALE on 60 meters is a larger issue and ought to be addressed in a separate proceeding that considers amateur ALE operation in general.[76] We further note that ARRL and local emergency management agencies already have the latitude to encourage – and indeed require – that participants in specialized emergency communications programs (such as the Radio Amateur Civil Emergency Service (RACES) and Amateur Radio Emergency Service (ARES)) add a sound card-generated ALE capability to their stations. Because there is no consensus in the record, nor evidence that adding ALE will be beneficial in all situations, we decline to make any recommendation as to its use as part of this proceeding.

42. *Additional Issues Raised by Commenters*. Finally, we briefly discuss three issues raised by commenters that fall outside the scope of this proceeding, are not necessary to grant the relief sought by ARRL, or that are already provided for in our current rules. Three commenters (Colston, Leggett, McIntosh) request that we investigate expanding the 60 meter band allocation beyond the five channels that are currently allocated.[77] We note that NTIA has recently indicated that it cannot support ARRL's request for a secondary amateur service allocation of 50 kilohertz near 5 MHz,[78] and we did not propose such an action in the *NPRM*.[79] One commenter (Whedbee) recommends that, for routine messages, any one transmission of the two digital mode emissions be restricted to three hundred characters and that any one transmission of CW be restricted to 40 characters.[80] No other party raised this issue, it was not within

[71] For more information, see http://hflink.com/automaticlinkestablishment/.

[72] *See* comments of Davis at 1 and Slye at 1.

[73] *See* Leggett comments at 3-4.

[74] *See* Houlne comments at 5.

[75] *See, e.g.*, ARRL comments at 16 (discussing the proposal and noting a risk that ALE could make it harder to achieve interference avoidance to Federal stations).

[76] *See* Thomas comments at 3.

[77] *See* comments of Colston at 1; Leggett at 4; and McIntosh at 2, 4.

[78] *See* ARRL Petition, Exhibit A ("With respect to the request for a 50 kHz domestic secondary allocation, the IRAC Members do not believe they could support such an allocation in light of the spectrum requirements of the federal agencies.").

[79] We also note that the 2007 World Radiocommunication Conference considered, but did not allocate the 5260-5410 kHz band (150 kilohertz) to the amateur service and that the issue is not under consideration at the upcoming 2012 World Radiocommunication Conference.

[80] *See* Whedbee comments at 2.

the scope of the *NPRM*, and it is not directly germane to providing the relief sought by ARRL. Lastly, two commenters (Colston, Houlne) request that we allow antenna tuning transmissions.[81] This type of transmitting is already authorized pursuant to Section 97.305(b), which authorizes amateur stations to transmit test emissions on HF and MF frequencies to, among other purposes, match transmitters to antennas.

IV. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Certification

43. The Regulatory Flexibility Act of 1980, as amended (RFA),[82] requires that an initial regulatory flexibility analysis be prepared for notice and comment rulemaking proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[83] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[84] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[85] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[86]

44. In this Report and Order, we amend the amateur service rules in order to replace one of the channels in the 60 meter band with a less encumbered channel, to provide for additional emission designators, and to increase the maximum authorized power. Because "small entities," as defined in the RFA, are not persons eligible for licensing in the amateur service, the proposed changes to Part 97 do not apply to "small entities." Rather, they apply exclusively to individuals who are the control operators of amateur radio stations.

45. As of April 1, 2011, the Commission has issued the following types of licenses in the 5330.5-5406.4 kHz band (60 meter band): (1) 91 call signs to 41 licensees in the Conventional Industrial/Business Pool Radio Service (IG); (2) five call signs to four licensees in the Coastal Group Radio Service (MC); and (3) one call sign in the Aeronautical and Fixed Radio Service (AF).

46. IG Licensees. We note that, while the 91 call signs list the 5005-5450 kHz band, these IG licensees are actually authorized to operate only on the 13 carrier frequencies (with a maximum necessary bandwidth of 2.8 kHz) listed in footnote US22 of the Allocation Table (*i.e.*, 5046.6, 5052.6, 5055.6, 5061.6, 5067.6, 5074.6, 5099.1, 5102.1, 5135, 5140, 5192, 5195, and 5313.6 kHz) and that none of these frequencies are within the 60 meter band. Therefore, we find that the 41 IG licensees are not affected by the rule changes that we adopt today.

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[81] *See* comments of Colston at 1 and Houlne at 2.

[82] The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[83] 5 U.S.C. § 605(b).

[84] 5 U.S.C. § 601(6).

[85] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[86] 15 U.S.C. § 632.

47. MC Licensees. With regard to the four MC licensees (Globe Wireless, CruiseEmail, XNet Yacht Association, and Richard C Giddings), we note that only one licensee is authorized to transmit within the allocated channel bandwidth of a 60 meter band frequency. Specifically, CruiseEmail is authorized (pursuant to call sign KDS) to operate a public coast station (station class FC) in Olympia, Washington. We note that the necessary bandwidth (5330-5332.8 kHz) of this primary station overlaps the 5332 kHz channel (5330.6-5333.4 kHz), which is allocated to the amateur service on a secondary basis.

48. AF Licensees. With regard to the sole AF licensee, we note that this licensee (Aviation Spectrum Resources Inc) is authorized (pursuant to call sign KNE96) to operate at the Agana NAS Guam International Airport in Agana, Guam. We further note that the necessary bandwidth (5370-5372.8 kHz) of this primary aeronautical fixed station (station class AX) overlaps the 5373 kHz channel (5371.6-5374.4 kHz), which is allocated to the amateur service on a secondary basis.

49. Accordingly, we certify that the rules adopted in this Report and Order will not have a significant economic impact on a substantial number of small entities. The Commission will send a copy of this Report and Order including a copy of this Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the SBA.[87] This certification will also be published in the Federal Register.[88]

B. Paperwork Reduction Act Analysis

50. This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

C. Congressional Review Act

51. The Commission will send a copy of this *Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

V. ORDERING CLAUSES

52. Accordingly, IT IS ORDERED that, pursuant to Sections 4(i), 301, 302(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 301, 302a(a) 303(c), 303(f), 303(g), and 303(r), this Report and Order IS ADOPTED and Parts 2 and 97 of the Commission's Rules ARE AMENDED as set forth in Appendix B, effective 30 days after publication in the Federal Register.

[87] *See* 5 U.S.C. § 605(b).

[88] *Id.*

53. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch

Marlene H. Dortch
Secretary

APPENDIX A

List of Commenting Parties

American Radio Relay League (ARRL)
Bane, Orval L. (Bane)
Baumruck, William (Baumruck)
Beck, Kenneth M. (Beck)
Blanchard, Richard B., Jr. (Blanchard)
Carswell, Thomas (Carswell)
Chong, Kenneth A. (Chong)
Colston, Lloyd (Colston)
Currier, Scott (Currier)
Davis, Carlton (Davis)
Downs, Kenneth R. (Downs)
Erickson, Ronald D. (Erickson)
Feller, Howard (Feller)
Floberg, Randall (Floberg)
Furman, Frank S. (Furman)
Hambrecht, Fred (Hambrecht)
Hobart, Joseph (Hobart)
Houlne, William (Houlne)
Jones, Larry D. (Jones)
Kinter, James, Jr. (Kinter)
Klagge, Neil (Klagge)
Lafleur, Thomas R. (Lafleur)
Leggett, Nickolaus E. (Leggett)
Mabry, William K. (Mabry)
McVey, W. Lee (McVey)
McCorison, Peter (McCorison)
McIntosh, Jory (McIntosh)
Prats, Bill (Prats)
Richmond, Cortland E. (Richmond)
Russell, James (Russell)
Schaaf, Dan (Schaaf)
Slye, William R., Jr. (Slye)
Squires, Caleb (Squires)
Tarsala, Jan A. (Tarsala)
Teller, Howard (Teller)
Thayer, C. Daniel (Thayer)
Thomas, Glenn (Thomas)
Tisdale, Wayne D. (Tisdale) [Note: comments listed in ECFS as "Amateur Radio Station N7VQN"]
Walkler, Matthew (Walkler)
Waterman, Steve (Waterman)
Watkins, John W., Jr. (Watkins)
Whedbee, James Edwin (Whedbee)
Wierda, Clark (Wierda)

APPENDIX B

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2 and 97 to read as follows:

PART 2 -- FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended to read as follows.

a. Page 8 is revised.

b. In the list of United States (US) Footnotes, footnote US23 is added and footnote US381 is removed.

§ 2.106 Table of Frequency Allocations.

* * * * *

The additions and revisions read as follows:

4.063-4.438 MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128			4.063-4.438 MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 US82 US296 US340		Maritime (80) Aviation (87)
4.438-4.65 FIXED MOBILE except aeronautical mobile (R)		4.438-4.65 FIXED MOBILE except aeronautical mobile	4.438-4.65 FIXED MOBILE except aeronautical mobile (R) US22 US340		Maritime (80) Aviation (87) Private Land Mobile (90)
4.65-4.7 AERONAUTICAL MOBILE (R)			4.65-4.7 AERONAUTICAL MOBILE (R) US282 US283 US340		Aviation (87)
4.7-4.75 AERONAUTICAL MOBILE (OR)			4.7-4.75 AERONAUTICAL MOBILE (OR) US340		
4.75-4.85 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	4.75-4.85 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113	4.75-4.85 FIXED BROADCASTING 5.113 Land mobile	4.75-4.85 FIXED MOBILE except aeronautical mobile (R) US340		Maritime (80) Private Land Mobile (90)
4.85-4.995 FIXED LAND MOBILE BROADCASTING 5.113			4.85-4.995 FIXED MOBILE US340	4.85-4.995 FIXED US340	Aviation (87) Private Land Mobile (90)
4.995-5.003 STANDARD FREQUENCY AND TIME SIGNAL (5 MHz)			4.995-5.005 STANDARD FREQUENCY AND TIME SIGNAL (5 MHz) US1 US340		
5.003-5.005 STANDARD FREQUENCY AND TIME SIGNAL Space research					
5.005-5.06 FIXED BROADCASTING 5.113			5.005-5.06 FIXED US22 US340		Aviation (87) Private Land Mobile (90)
5.06-5.25 FIXED Mobile except aeronautical mobile 5.133			5.06-5.45 FIXED US22 Mobile except aeronautical mobile US23 US212 US340		Maritime (80) Aviation (87) Private Land Mobile (90) Amateur Radio (97)
5.25-5.45 FIXED MOBILE except aeronautical mobile					
5.45-5.48 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	5.45-5.48 AERONAUTICAL MOBILE (R)	5.45-5.48 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	5.45-5.68 AERONAUTICAL MOBILE (R) 5.111 5.115 US283 US340		Aviation (87)
5.48-5.68 AERONAUTICAL MOBILE (R) 5.111 5.115					Page 8

UNITED STATES (US) FOOTNOTES

* * * * *

US23 In the band 5330.5-5406.4 kHz (60 m band), the assigned frequencies 5332, 5348, 5358.5, 5373, and 5405 kHz are allocated to the amateur service on a secondary basis. Amateur service use of the 60 m band frequencies is restricted to a maximum effective radiated power of 100 W PEP and to the following emission types and designators: phone (2K80J3E), data (2K80J2D), RTTY (60H0J2B), and CW (150HA1A). Amateur operators using the data and RTTY emissions must exercise care to limit the length of transmissions so as to avoid causing harmful interference to Federal stations.

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PART 97 – AMATEUR RADIO SERVICE

3. The authority citation for Part 97 continues to read as follows:

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.

4. Section 97.221 is amended by revising paragraph (c) to read as follows:

§ 97.221 Automatically controlled digital station.

* * * * *

(c) Except for channels specified in Section 97.303(h), a station may be automatically controlled while transmitting a RTTY or data emission on any other frequency authorized for such emission types provided that: (1) The station is responding to interrogation by a station under local or remote control; and (2) No transmission from the automatically controlled station occupies a bandwidth of more than 500 Hz.

5. Section 97.303 is amended by revising paragraph (h) to read as follows.

§ 97.303 Frequency sharing requirements.

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(h) 60 m band: (1) In the 5330.5-5406.4 kHz band (60 m band), amateur stations may transmit only on the five center frequencies specified in the table below. In order to meet this requirement, control operators of stations transmitting phone, data, and RTTY emissions (emission designators 2K80J3E, 2K80J2D, and 60H0J2B, respectively) may set the carrier frequency 1.5 kHz below the center frequency as specified in the table below. For CW emissions (emission designator 150HA1A), the carrier frequency is set to the center frequency. Amateur operators shall ensure that their emissions do not occupy more than 2.8 kHz centered on each of these center frequencies.

60 M BAND FREQUENCIES (KHZ)

Carrier	Center
5330.5	5332.0
5346.5	5348.0
5357.0	5358.5
5371.5	5373.0
5403.5	5405.0

(2) Amateur stations transmitting on the 60 m band must not cause harmful interference to, and must accept interference from, stations authorized by: (i) the United States (NTIA and FCC) and other nations in the fixed service; and (ii) other nations in the mobile except aeronautical mobile service.

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6. Section 97.305 is amended by inserting the new entry "60 m" between the "75 m" and "40 m" entries in the table following paragraph (c) to read as follows.

§ 97.305 Authorized emission types.

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(c) * * *

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), paragraph:
* *	*	*	*
HF:			
80 m	Entire band.....	RTTY, data.....	(3), (9).
75 m	Entire band.....	Phone, image.....	(1), (2).
60 m	5.332, 5.348, 5.3585, 5.373 and 5.405 MHz	Phone, RTTY, data	(14).
40 m	7.000-7.100 MHz.....	RTTY, data.....	(3), (9).
* *	*	*	*

7. Section 97.307 is amended by adding new paragraph (f)(14) to read as follows.

§ 97.307 Emission standards.

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(f) * * *

(14) In the 60 m band:

(i) A station may transmit only phone, RTTY, data, and CW emissions using the emission designators and any additional restrictions that are specified in the table below (except that the use of a narrower necessary bandwidth is permitted):

60 M BAND EMISSION REQUIREMENTS

Emission type	Emission designator	Restricted to:
Phone	2K80J3E	Upper sideband transmissions (USB)
Data	2K80J2D	USB (for example, PACTOR-III)
RTTY.....	60H0J2B	USB (for example, PSK31)
CW	150HA1A	Morse telegraphy by means of on-off keying

(ii) The following requirements also apply:

(A) When transmitting the phone, RTTY, and data emissions, the suppressed carrier frequency may be set as specified in § 97.303(h).

(B) The control operator of a station transmitting data or RTTY emissions must exercise care to limit the length of transmission so as to avoid causing harmful interference to United States Government stations.

8. Section 97.313 is amended by revising paragraphs (f) and (i) to read as follows.

§ 97.313 Transmitter power standards.

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(f) No station may transmit with a transmitter power exceeding 50 W PEP on the UHF 70 cm band from an area specified in paragraph (a) of footnote US270 in § 2.106, unless expressly authorized by the FCC after mutual agreement, on a case-by-case basis, between the District Director of the applicable field facility and the military area frequency coordinator at the applicable military base. * * *

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(i) No station may transmit with an effective radiated power (ERP) exceeding 100 W PEP on the 60 m band. For the purpose of computing ERP, the transmitter PEP will be multiplied by the antenna gain relative to a half-wave dipole antenna. A half-wave dipole antenna will be presumed to have a gain of 1 (0 dBd). Licensees using other antennas must maintain in their station records either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain.