Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	**)**	
	)	
Amendment of Part 97 of the Commission's	**)**	
Rules Governing the Amateur Radio Service	**)**	**RM-_____**
Rules Concerning Permitted Emissions	**)**	
and Operating Privileges for Technician Class	**)**	
Licensees		

To: The Chief, Wireless Telecommunications Bureau

PETITION FOR RULE MAKING

ARRL, the national association for Amateur Radio, formally known as The American Radio Relay League, Incorporated (ARRL), by counsel and pursuant to Section 1.401 of the Commission's Rules (47 C.F.R. §1.401), hereby respectfully requests that the Commission issue at an early date a Notice of Proposed Rule Making, proposing the changes requested in the attached Appendix to the Part 97 Service Rules governing the Amateur Radio Service. The rule changes proposed in this Petition would add limited High Frequency (HF) data and telephony privileges to those currently available to Technician Class Amateur licensees. This action will enhance the available license operating privileges in what has become the principal entry-level license class in the Amateur Service. It will attract more newcomers to Amateur Radio; it will result in increased retention of licensees who hold Technician Class licenses; and it will provide an improved incentive for entry-level licensees to increase technical self-training and pursue higher license class achievement and development of communications skills. This proposal is, in ARRL's view, critical to developing improved operating capabilities, increasing emergency

communications participation, improving technical self-training, and increasing growth overall in the Amateur Radio Service. For its Petition, ARRL states as follows:

Introduction.

1. Since its inception and at the commencement of Federal licensing in the early 1910s, the Amateur Radio Service has always been far more than a "hobby"- a means for those curious in electronics and radio to expand their knowledge, conduct technical self-training, and to further the art and science of radio. The varied purposes and goals for the Service summarized by the Commission's rules (47 C.F.R. §97.1) establishing the Amateur Service illustrate its versatility:

> *The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:*
>
> *(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.*
>
> *(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.*
>
> *(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.*
>
> *(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.*
>
> *(e) Continuation and extension of the amateur's unique ability to enhance international goodwill.*

2. Each of those five principles is interrelated, having in common as a foundation the radio Amateur's ability to communicate effectively and efficiently in a variety of circumstances. However, subsections (b), (c) and (d) each relate specifically to continuing education, self-training and contributions to the science of radio. Achieving these three goals requires a regular influx of newcomers and an incentive to enter the Service; to participate in the avocation actively

on an ongoing basis, and to provide an incentive to upgrade one's license class in the course of continued, ongoing self-training. This allows the licensee to have the opportunity to contribute to the advancement of the radio art and science, and for the individual to take full advantage of the substantial educational benefits inherent in Amateur Radio.

3. In 1999, the Commission observed that "[t]he current operator frequency privileges, the structure of the license classes, and the requirements for obtaining an amateur operator license were developed in accordance with the expressed desires of the amateur community to provide an incentive, *i.e.*, additional frequency privileges, to motivate amateur radio operators to advance their communication and technical skills."[1] One corollary to that observation is that the entry level license in the Amateur Service must be one that offers sufficient exposure to our public service avocation so that (1) people who are interested in becoming radio Amateurs will find sufficient incentive to do so while holding the license class that most of them choose as the entry point to the Service; and (2) that they will have sufficient reward for that effort that they retain that interest in the Amateur Service and seek to improve their knowledge base and engage in continuous self-training thereafter. On the other hand, the entry level Amateur license should not provide operating privileges so substantial so as to inhibit that incentive to upgrade the license and pursue more advanced self-training. A balance must be struck between providing relevant, attractive privileges for new licensees and additional privileges for those holding higher license classes as an incentive to continue the process of self-training and continuous learning. This balance changes over time as new technology supplants the old. Changes in demographics and changes in technology call for a periodic rebalancing so as to provide an accommodating

[1] *See* 1998 Biennial Regulatory Review -- Amendment of Part 97 of the Commission's Amateur Service Rules, *Report and Order*, WT Docket No. 98-143, 15 FCC Rcd 315, 321 ¶ 9 (1999).

licensing process[2] and an allotment of operating privileges such that both goals can be met at once. There has not been such a rebalancing in many years. It is time to do that now.

4. ARRL, as the largest Volunteer Examiner Coordinator (VEC) offering examination opportunities to candidates for new and upgraded Amateur Radio licenses, has found that there is insufficient growth in the Amateur Service to sustain the Service in the long term, relative to the benefits of involvement in it, especially among younger people. This trend has continued for too long, as can be seen from the data provided hereinbelow. At the same time, the Commission has not conducted any significant examination of operating privileges for the entry level Amateur Radio license class since 2005. It is timely, given demographic, social and technological changes since then, to re-examine the entry level license privileges. In July of 2016, ARRL's Board of Directors noted that the Novice Class license examination was discontinued in 2000 and the telegraphy examination requirement was removed from all licenses a few years later, at which time the Technician Class license indisputably became the new entry point for newcomers to the Service. Now that there has been 17 years of experience with the current Technician Class license as that entry point, ARRL suggests that it is urgent to improve the Service's ability to attract newcomers and to pass along to a new generation of Amateurs the proud tradition of emergency and communications support; the interest in hands-on projects; and to improve upon science, technology, engineering, and mathematics (STEM) education that inescapably accompanies a healthy, growing Amateur Radio Service. To that end, ARRL established an *ad hoc* Committee to examine the current license exam requirements for the Technician Class

[2] It is well-understood, as is discussed hereinbelow, that the Amateur Service, through the Volunteer Examiner Coordinators, determines to some extent the content of license examinations for the various license classes, subject to a Commission-developed syllabus. It is also acknowledged that regulatory reform in the operating privileges for the Technician Class license as proposed herein will not, alone, result in a large influx of new licensees. However, those reforms will contribute to the goal and are a necessary component in the process.

license and make recommendations for possible changes to create a more targeted examination with a set of operating privileges that would attract a new generation of radio Amateurs.

5. The Committee conducted studies during the next year, through July of 2017, and made certain very specific, data-supported and survey-supported findings about growth in the Amateur Service and Amateur Radio's place in the advanced technological demographic that includes individuals under age 30. The Committee's analysis noted that today, Amateur Radio exists among many more modes of communication than it did half a century ago, or even twenty years ago. The proliferation of wireless technologies, such as cellular phones and the Internet of Things[3] has had a profound effect on both spectrum competition and on the overall interest in and support for Amateur Radio. In order to ensure that Amateur Radio remains among these competing services a vital and relevant avocation whose allocations continue to be justified by its contributions to society, certain initiatives should be pursued immediately. Among these are to encourage new entrants to Amateur Radio; to increase public awareness and knowledge of Amateur Radio; to support global interactions throughout Amateur Radio; and to support and develop programs that prepare youth as the next generation of radio Amateurs.

6. Obstacles to these goals include the fact that growth in the Service in terms of new licensees is insufficient, especially among those under 30 years of age. They are too few in number, and many of those who do obtain Technician Class licenses do not participate actively, pursue the avocation and public service opportunities, renew their licenses prior to expiration, or pursue higher license classes. There should be improvements in the ability of Amateur Radio to compete with other technical avocations that are available, and improvements in retaining and engaging Technician class licensees especially, including students and young adults. These

[3] The "Internet of Things" is the networking of physical objects such as phones, automobiles, and other mass consumer products.

initiatives require that the entry level license class provide sufficient, relevant operating privileges to allow these individuals to find value in Amateur Radio, and to build in a strong incentive to upgrade to the next license class by a culture of involvement among new licensees. More specifically, the current entry level license does not include have the right privileges to attract and retain newcomers, and those entry level operating privileges do not contribute to socialization with those holding higher license class licensees.

7. Since 2006, when the Commission last evaluated the entry level Amateur Radio license, there have been significant changes in both Amateur Radio activities and in non-Amateur communications technology. In the past dozen years, for example, the use of cell phones and mobile broadband has become the norm: in 2014, 64% of all adults had a smartphone, up from 35% in 2011. Of those in the age bracket 18-29 years, the number in 2014 was 85%. More than half of all smartphone users have used them to get help in an emergency situation.[4] Formerly, Amateur Radio VHF and UHF mobile facilities were the norm for such purposes. On the other hand, there has been a significant increase during that period in the educational focus on STEM fields. There is also a fast-growing "Maker" movement[5] that is based on hands-on, do-it-yourself hobbies and activities. Both of these trends should favor an increasing interest in Amateur Radio and to some extent they do. Within Amateur Radio, Morse telegraphy has not exhibited any increase during the period but digital activity has grown very substantially. ARRL contest activity using data modes has more than doubled since 2004. PSK-

[4] *See,* Pew research - http://www.pewinternet.org/2015/04/01/ussmartphone-use-in-2015/

[5] Maker culture emphasizes learning-through-doing (active, experiential learning) in a social environment. Maker culture emphasizes informal, networked, peer-led, and shared learning motivated by fun and self-fulfillment using novel applications of technologies, and the exploration of intersections between traditionally separate domains. Community interaction and knowledge sharing are often mediated through networked technologies, with websites and social media tools forming the basis of knowledge repositories and a central channel for information sharing and exchange of ideas in shared spaces. Maker culture has attracted the interest of educators concerned about students' disengagement from STEM subjects (science, technology, engineering and mathematics) in formal educational settings. ARRL views Amateur Radio as a natural participant in this movement.

31 emissions ("Phase-shift keying, 31 baud") started to become popular around 2000, and in 2001, WSJT (computer software for weak-signal communications) and its application emissions FSK441, JT6M, JT65, JT9 and FT8 was debuted and has become popular. Since then, the number of digital modes, most especially FT-8 [6] has multiplied as has the amount of activity.[7] For newcomers, data emissions are far more popular than telegraphy (which is the only mode allowed on HF bands below 10m by Technician Class licensees). Given these trends, it is worth examining what the entry level Amateur Radio license currently offers, what is required to get started, and what regulatory changes should be implemented as the result.

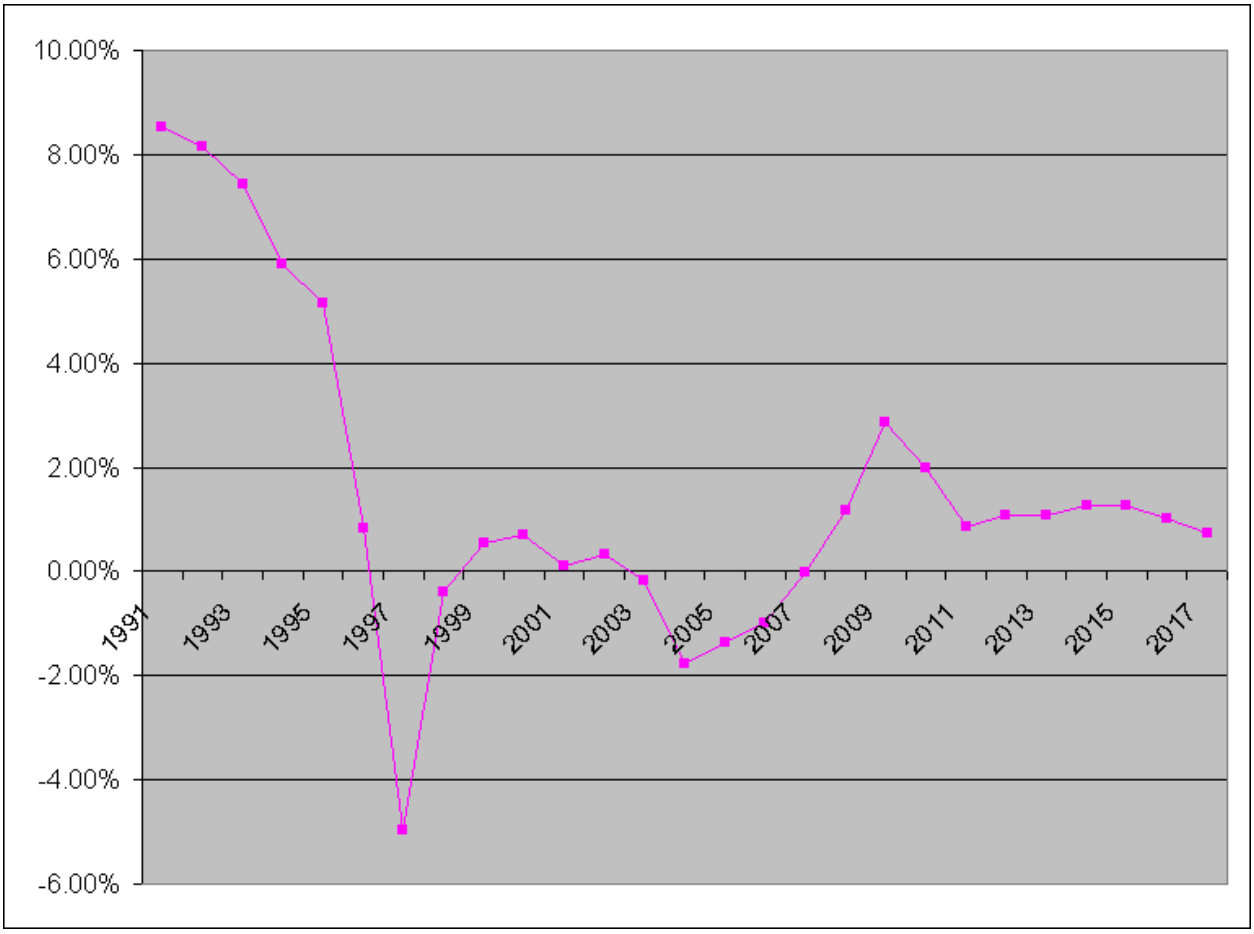
8. The data below support a current review of entry level license operating privileges. They tend to indicate that the scope of the examination and operating privileges for an entry level Amateur Radio license as currently configured have each become less relevant to the needs and interests of those otherwise interested in Amateur Radio. Since the Part 97 rules changed to eliminate telegraphy testing in 2006 (rules which went into effect in February of 2007), the growth of Amateur Radio[8] has been relatively modest:

	Novice	Technician	General	Advanced	Extra	Total
Feb 2007	22,891	323,493	131,463	69,025	108,605	655,477
Dec 2017	9,056	377,902	174,206	41,938	145,034	748,136

Since February of 2007, overall Amateur Radio growth has barely been 1% per year, in an environment of huge technological change with ubiquitous smart phones and Internet usage now commonplace. The following graph of Amateur Radio licensee growth overall between 1991 and

[6] FT8 was named after the two radio Amateurs who developed it, Steven Franke, K9AN and Joe Taylor, K1JT. The numeral designates the mode's 8-frequency-shift-keying format.
[7] *See, Mode Usage Evaluation: 2017 Was "The Year When Digital Modes Changed Forever"* - *http://www.arrl.org/news/mode-usage-evaluation-2017-was-the-year-when-digital-modes-changed-forever* (last visited February 5, 2018)
[8] *See,* http://www.ah0a.org/FCC/Licenses.html last visited January 3, 2018.

2017 illustrates that growth in the Amateur Service ranks has been at a low level since 1997, save for the bump in licensees following the Commission's decision in 2007 to delete the Morse telegraphy licensing requirement:



The peak of the growth in recent years was in 2009 (2.85%) and 2010 (1.98%), a short time after the telegraphy requirement was eliminated. That coincided with an influx of 30,000-35,000 new licensees and tends to indicate that examination requirements that are relevant to the operating privileges provided encourages growth. In the ten years prior to that time, the total number of licenses peaked at 711 thousand in 1996 and it was steady or slowly dropping until 2007. Though the Commission has stopped collecting age data of Amateur licensees, that data

available through about 1995 reveals that at that time, most Amateur licensees were "baby boomers" who will start aging out of the Amateur Service license rolls, and it is anticipated that the number of Amateur licensees may start to drop thereafter, absent some regulatory changes that affect the trend.

II. Regulatory Background

9. The Commission has in the recent past periodically expressed reluctance to make changes in the licensing structure, and it has been especially and consistently averse to changing operating privileges of entry level licensees. That reluctance in recent years appears to have been related at least partially to the view that removing the Morse telegraphy requirement as an examination component would lead to a large increase in licensed amateurs. It didn't, though growth, however insufficient, resumed since that regulatory change. Another often-heard reason for refusing to consider the operating privileges of the Technician Class license is the supposed ease of obtaining a General Class license, which the Commission has said several times became (in 2006) a "simple matter of taking a written examination." What this fails to account for is that in order for a newcomer to have an incentive to upgrade his or her license class, he or she must have had a positive experience while holding an entry level license. That positive experience is in part dependent on the extent to which the newcomer is able to experience interesting, relevant aspects of the avocation. And in order to obtain a Technician Class license in the first place, the examination must be relevant to the operating privileges afforded and those operating privileges must be sufficient to promote involvement as an initial experience. The relative ease or difficulty of the General Class license examination is not really relevant to the two issues to be addressed: attracting young newcomers and retaining their interest once they obtain a Technician Class license.

10. The Commission commenced a proceeding in 1998 to streamline and update the licensing requirements in the Amateur Service. WT Docket 98-143 was not specifically a license restructuring proceeding. It was, rather in the nature of a "Biennial Review" of Amateur Service regulations. Though biennial review proceedings were not statutorily required[9] in the Amateur Service, the Commission found it convenient at the time to commence a review of its Part 97 regulations at the same time it evaluated other radio service rule parts in the fulfilment of its overall biennial review obligation. As such, the Commission examined rules that could be streamlined or eliminated, and did not undertake a comprehensive review of licensing requirements and operating privileges. Nevertheless, the proceeding resulted in a substantial revision of certain licensing provisions. Principal among these were the decisions to reduce the number of license classes for which new licenses would be issued from six to three; to reduce the number of required telegraphy elements from three to one; to reduce the number of written examination elements from five to three; and other miscellaneous changes.[10] The proceeding did not, however, and was not intended to address operating privileges. The Commission specifically held that task for \some unspecified future date. Nor did it examine the nature of the entry level license class, or the extent to which that license class encouraged or discouraged further progress in technical self-training and integration of newcomers into higher license classes and in use of new technologies. It did eliminate the issuance of new Novice class licenses, on the theory that the Technician Class license was the preferred entry level license class. How effective the Technician Class license was at encouraging newcomers, retaining them and encouraging further development in Amateur Radio, however, was not a subject for that proceeding.

[9] *See* 47 U.S.C. § 161.
[10] *See*, the *Report and Order*, FCC 99-412, 15 FCC Rcd. 315 (1999), and *Errata* released April 19,2000; *Affirmed as Modified by Memorandum Opinion and Order*, FCC 01-108, released April 6, 2001.

11. The Commission was unable at the time of the Docket 98-143 proceeding, in fact, to undertake a more comprehensive review of license restructuring relative to operating privileges, because its authority to do so was still limited by the Morse telegraphy requirement in the ITU Radio Regulations. It was stated in the *Report and Order* [11]in that proceeding that the Commission continued to believe that there should be a structure of license classes that was sufficient to encourage Amateur Radio operators to increase and advance their skills in meaningful ways, and that three license classes was the appropriate number to do that while at the same time streamlining and simplifying the Amateur Service licensing system. ARRL supported the Commission's overall effort in that proceeding, but asked that the Commission undertake simplification of the license structure only as part of a comprehensive review of both the licensing process and operating privileges. The Commission declined to do that but did issue an invitation to the Amateur Radio community to complete the process begun in Docket 98-143:

> We disagree with the ARRL, however, that simplification of the license structure only should be undertaken as part of a comprehensive restructure of the licensing process and operating privileges (footnote omitted). We believe that in light of ongoing discussions concerning implementation of new and more modern communications technologies within the amateur service community, we should accord the amateur service community an opportunity to complete such discussions and possibly reach a consensus regarding implementation of new technologies before we undertake a comprehensive restructuring of the amateur service operating privileges and frequencies…[12]

12. Changes in Article 25 of the International Radio Regulations following the 2003 World Radiocommunication Conference (Geneva, 2003) triggered a series of Petitions for Rule Making proposing to delete the domestic Part 97 rules governing Morse telegraphy

[11] *Id.*,at ¶11.
[12] *Id.*,at ¶17. Since 1999, there has been a great deal of progress and standardization in the use of new digital emissions at HF and above. There is no dispute within the Amateur community about the types of emissions that are regularly in use today.

examinations. Among these was ARRL's RM-10867, filed in January of 2004. ARRL suggested that the elimination of Morse telegraphy as an examination element was not sufficient and was short-sighted. More had to be done in the course of evaluation of license structure. ARRL proposed, far more comprehensively, to review licensing issues that otherwise would, looking forward ten or fifteen years, require consideration. Among the licensing issues that concerned ARRL at the time was the fact that "only the current entry level license class, the Technician class, because it offers operating privileges principally limited to the VHF bands and above, leaves newcomers to the Amateur Service in an isolated position of conducting only local, rather than worldwide communications, and thus provides very little encouragement to progress and develop technical and operating skills…" Also noted was the fact that the entry level Technician Class license examination is (of necessity) overly comprehensive in its subject matter,[13] and it is therefore a deterrent to newcomers and inadequate as an entry level license class. It is noted that ARRL's prediction, 14 years later, has unfortunately proven accurate.

13. ARRL in RM-10867 noted that it had conducted in 2003 an extensive review of the licensing and operating privileges then available to licensees and candidates for Amateur licenses, and found that the then-current structure fell short in several important respects. ARRL offered a new format for Amateur licensing looking forward for "the next ten to fifteen years." ARRL argued that its proposal included the Commission's stated philosophies in the Docket 98-143 proceeding, and furthered the Commission's goals: (1) to streamline the licensing process; (2) to provide licensing rules and operating privileges that allow radio amateurs to continue their

[13] This was not to suggest that the examination was, or is now, overly difficult. A review of examination preparation materials for Technician class licenses reveals that the examination is overbroad in terms of the subject matter on which an entry-level examination candidate must be prepared to be examined. ARRL argued at the time, based on that concern, that the Technician license is inadequate as an entry level license class. ARRL had taken a survey in 2003 which revealed that a large proportion of then-recent Technician Class licensees felt that the examinations were not relevant to their Amateur Radio operations.

tradition of contributing to the advancement of the radio art; (3) to implement licensing requirements and operating privileges that are harmonious, to the extent that the licensing requirements pertain to the privileges the operator license authorizes and which constitute the minimum requirements necessary to demonstrate that the control operator of a station can ensure the proper operation of that station; and finally, (4) to attract and retain technically inclined persons, particularly the youth of our country, and encourage them to learn and to prepare themselves in areas where the United States needs expertise. With respect to the entry level Technician Class license, ARRL noted in 2003 that the last substantial increase in the number of new radio amateurs occurred at the time of the creation of the Technician Class license without a Morse telegraphy requirement. This provided something of an entry-level opportunity for people to obtain a first-time license, but as it turned out, the operating privileges that accompanied the license class isolated them from their peers as a practical matter. It relegated them to communications within local geographic areas and they became largely segregated into Amateur Radio clubs and groups oriented toward FM repeater communications. The Technician Class license offered at the time little opportunity to experience other facets of Amateur Radio, or to conduct worldwide communications. This led, ARRL argued, to disinterest, and to the failure to upgrade one's license class, and it focuses the mind-set of licensees on local communications. Amateur Radio is a national and worldwide network of licensees who have historically interacted and formed worldwide fraternities without local boundaries. Appropriate, modern HF operating privileges at the entry level are necessary to address this, ARRL's petition stated, and it was further necessary to broaden the scope of experience of the entry-level licensee; to allow that licensee to become part of the whole of the Amateur Radio community; and to encourage technical experimentation and self-training. The entry-level license, ARRL posited, should

ensure that the potential licensee knows basic Commission rules, basic safety and electronics, and something about basic operating procedures. The entry-level license should offer limited operating privileges, but those privileges have to be (1) sufficient for the licensee to experience enough of the many facets of Amateur Radio, including nationwide and worldwide communications to nurture an interest in proceeding further, but (2) not so comprehensive a portfolio that the range of topics on which the entry-level examination candidate must be examined becomes so extensive and cumbersome that the license examination becomes daunting. Because in 2004, the Technician Class license met neither criterion, ARRL urged that a reconfiguration of the entry level license was timely and compelling. ARRL thus proposed the creation of a new "Novice" class license that included in effect limited telegraphy, telephony, image and data HF privileges in relatively small segments of the HF bands, with low power limits, and essentially the same VHF, UHF and above privileges that applied to the old Technician Class license as it was originally configured.

14. The operating privileges proposed by ARRL for the new entry level license class did not include any automatically controlled stations. Licensees could not be the control operator of beacon or repeater stations. No remote-control space station operation was proposed to be permitted, and locally controlled operation from Space would be permitted. It was felt that this structure would provide a true, entry level license with HF and other operating privileges which will both promote growth in the Amateur Service and integrate newcomers into the mainstream of Amateur Radio. It would better introduce newcomers to more seasoned licensees who will assist them. The reduced power levels and the portfolio of operating privileges envisioned at the time would, ARRL asserted, permit a smaller, less daunting question pool content so as to encourage newcomers.

15. The Commission did not adopt the ARRL proposal. In 2005, in a *Notice of Proposed Rule Making and Order* (*NPRM*) in WT Docket 05-235, released by the Commission on July 19, 2005, the Commission dismissed a series of petitions addressing the Morse telegraphy requirement and various proposals for license class restructuring, and which sought comment on proposed revisions to the Commission's Amateur Radio Service rules.[14] The *NPRM* proposed to eliminate the Morse telegraphy examination in order to qualify for any amateur radio operator license. In 2006, in the *Report and Order* in this same proceeding, the Commission increased the operating privileges for Technician Class licensees to include the privileges that were authorized to Novice and Technician Plus Class licensees.[15]

16. The Commission refused, however, to conduct a more comprehensive review of the needs of entry-level licensees, presuming (a decision which ARRL believed to be erroneous at the time, but in any case erroneous in hindsight) that the General Class license was easily obtained by newcomers with minimal effort, thus obviating the need for an entry level license class with meaningful privileges that would encourage a sustained interest in Amateur Radio and encourage further development of knowledge and operating skills. The *Report and Order* noted that in the *NPRM* in that proceeding it had denied several requests to authorize additional operating privileges, particularly with respect to Technician Class licensees.[16] In denying these requests, the Commission noted that additional frequency bands and emission types in the MF and HF bands are currently authorized to General Class licensees, and that Novice and

[14] Amendment of Part 97 of the Commission's Rules to Implement WRC-03 Regulations Applicable to Requirements for Operator Licenses in the Amateur Radio Service, *Notice of Proposed Rule Making and Order*, WT Docket No. 05-235, 20 FCC Rcd 13247 (2005) (*NPRM*).
[15] *See* Amendment of Part 97 of the Commission's Rules to Implement WRC-03 Regulations Applicable to Requirements for Operator Licenses in the Amateur Radio Service, *Report and Order and Order on Reconsideration*, WT Docket No. 05-235, 21 FCC Rcd 14797, 14808 ¶ 21 (2006).
[16] *See NPRM*, 20 FCC Rcd at 13258 ¶ 23.

Technician Plus Class licensees can earn the requested additional privileges by passing only two or one written examinations, respectively.[17]

17. However, in Docket 05-235, ARRL had argued that if the Morse code requirement was to be eliminated, there would be a disparity between operating privileges afforded to Technician licensees and what was then the "Technician Plus" license class even though licensees in both classes had passed the same written examination element. The Commission agreed with the argument, and eliminated that potential disparity by amending Section 97.301(e) of the Rules to afford Technician and Technician Plus licensees identical operating privileges, which were voice and telegraphy privileges identical to Novice Class licensees in four HF amateur service bands as well as the privileges historically afforded to Technician Class licensees, principally at VHF and above.

18. Since 2006, there has not been any consideration given to revising the operating privileges afforded to Technician Class licensees. In fact, On October 17, 2013[18] the Commission dismissed a petition for Rule Making filed by the Toledo Mobile Radio Association (TMRA) filed June 3, 2013, without even affording that Petition a file number. TMRA had requested that the Commission amend the Amateur Service rules to allow Technician Class licensees additional frequency privileges in the 10-meter band privileges. Specifically, the request was that the operating privileges for Technician Class licensees be expanded to include 29.520-29.700 MHz so that these licensees can make use of repeater stations that transmit and receive on frequencies above 28.5 MHz. The rationale for the Commission's dismissal of this Petition was, in part, that:

[17] *Id.* at ¶ 24.
[18] See, DA 13-2023.

> As an initial matter, we note that a Technician Class licensee may transmit messages through a repeater licensed to a General Class or higher licensee that has an output channel in the 29.5-29.7 MHz frequency segment if the repeater has an input channel in the 2 meter or 70 centimeter amateur band, because Technician Class licensees are authorized to transmit messages on the 2 meter of 70 centimeter bands. Therefore, contrary to TMRA's assertion, the rules do not prevent Technician Class licensees from taking advantage of systems such as IRLP or Echolink, or from exchanging voice communications with other stations in the 29.5-29.7 MHz segment of the 10 meter band.

However, the Commission also asserted that:

> In 2006, the Commission increased the operating privileges for Technician Class licensees to include the privileges that are authorized to Novice and Technician Plus Class licensees. (footnote omitted) Since these revisions became effective, tens of thousands of licensees have qualified for amateur service operator licenses that authorize greater operating privileges. A Technician Class licensee can upgrade to a General Class operator license and receive significantly more frequency privileges (including those at issue here) by answering correctly a minimum of twenty-six questions on a thirty-five question written examination. TMRA has submitted no evidence that we should depart from the Commission's long-standing policy of providing additional frequency privileges as an incentive to motivate amateur radio operators to advance their communication and technical skills. We conclude, therefore, that the petition does not present grounds for the Commission to issue a notice of proposed rulemaking regarding this matter.

19. With respect, it is suggested that the above view is incorrect. The Commission correctly notes that it is in fact possible for a Technician Class licensee to upgrade to a General Class license by taking an additional written examination. But that is not the issue. The issue is whether or not the entry level license offers newcomers a sufficient incentive to obtain an Amateur license in the first place; and once that entry level license is obtained, whether it provides enough exposure to various facets of the avocation that the newcomer is integrated into the avocation and has an incentive to proceed further to the General, and then the Amateur Extra Class license. If the answer to either of these issues is no, then growth in the Service is stifled and the newcomer's experience is insufficient to cause the person to proceed further. It becomes

irrelevant whether the new licensee could upgrade to General Class conveniently; he or she simply has no incentive to do so and finds another avocational activity instead.

III. ARRL's Survey Results.

20. In the course of its study of the entry level license class over the past year and a half, the ARRL Committee studied the comparable entry level license class operating privileges of other countries. Special focus was on the experiences of Australia, Canada and the United Kingdom, each of which has more than ten years' experience with revised examinations and operating privileges. In general, the "Foundation" license parameters adopted by Australia and United Kingdom were most instructional. Basically, they offer a low-power entry level license with privileges *on almost all bands and operating modes*, and a relatively simple examination process.

21. For any product or service to be purchased, the product or service must appeal enough to the "buyer" to induce the person to "kick the tires", take a "test drive", and eventually "purchase" and enjoy the product, or service. For Amateur Radio, that means having an entry level license that appeals to candidates for licenses or new licensees. The potential "customer" needs to see enough value in it to take a closer look, ask questions, and decide whether to engage or not. Prospective radio Amateurs may have little idea what opportunities are available; how much work it will take to become licensed or to be active on the air. The entry level license itself should be attainable for someone curious about technology, building things, or getting involved in social groups of like-minded, technical communicators. It can convey a subset of privileges available to higher class licensees, but it should offer the new licensee an opportunity to try out various facets of Amateur radio. Those privileges must be interesting enough *in themselves* for

an entrant to pursue the first license. The promise of eventual expanded privileges is inadequate to engage new participants in today's society.

22. In February of 2017, ARRL's study Committee conducted a survey about the entry level license. It was posted on the ARRL web site and circulated in an ARRL online newsletter that went to more than 100,000 ARRL members. ARRL received 7,891 responses. This was not a scientific survey, in that those responding were self-selected, and they were not subject to any controls over geography, age or license class. Because this factor could skew the results toward less central responses,[19] the Committee decided to conduct a second survey (using the same questions) of 1000 randomly chosen ARRL members in the United States, in order to be able to compare results with the original results for corroboration purposes. This was done by e-mail. This second survey resulted in an additional 375 responses (a 37% return), which were summarized separately. The results for both surveys were quite similar, since the results of the second survey tended to validate the first survey results from the self-selected group.[20]

23. The survey focused on whether either a new entry level license or a modified Technician class license might encourage people to become licensed and actively participate in Amateur Radio. Respondents recalled with satisfaction their original introduction into Amateur Radio through the Novice license, and urged that the entry level license examination not be overly complex, lest the test become an obstacle that would deter newcomers, who would therefore not obtain a license or experience on-the-air activities. Additionally, the survey results showed that, to be successful, there are processes, all of which must be in place: these include (1) finding potential radio Amateurs; (2) getting them interested enough to learn the basic material; (3) taking the examination; and (4) working with a mentor to get the person started in on-air

[19] i.e., the more strongly someone feels positively or negatively about the topic, the more likely they are to respond.
[20] Note, however, that neither the self-selected survey nor the second one sent to 1000 random ARRL members was designed to account for or evaluate differences in responses by license class, age or location, if any.

activities. In short, the amateur community well understands that changes to the entry level license will not, without more, make a significant difference in increasing the number of new licensees and retaining them.

24. When asked which HF bands an entry level licensee should have access to, a clear majority said 10 meters (which Technician licensees currently can access using telegraphy, data and telephony), followed by 40 meters, 15 meters, 80 meters (where Technician licensees now only have telegraphy access), then 20 meters, and finally the 17 and 12 meter bands. A clear majority favored a revision to the Technician Class license operating privileges rather than the creation of a new entry level license. About 25% of those responding favored retaining the current 35-question examination, but more than 50% preferred an examination with fewer questions for the entry level license, and only 20% preferred more than 35 questions. There is strong support for digital and telephony access for entry level licensees on the HF bands. There is a preference for a limited-duration entry level license. There is strong support for an entry level license that does not include some of the more specialized or technical challenging aspects, such as high power on bands at UHF and above, repeater control or satellite control operation. The ultimate and very clear conclusion from the survey, combining some of the question categories, is that there should be for the Technician Class license a better-targeted examination with a broader, more useful set of privileges and emission modes than that currently offered in the Part 97 rules. It is also concluded that accompanying these regulatory changes, there must be an improvement in better support, outreach and mentoring efforts for newcomers, which ARRL is committed, for its part, to accomplish. The general goal is to have an entry level license that offers a way for newcomers to experience multiple facets of Amateur Radio, encouraging them to get on the air, meet other licensees, and engage in a lifetime of learning while using Amateur

Radio. In order to meet this goal, it is necessary to give the prospective radio Amateur meaningful, modern operating privileges available at the entry level. As was recently stated by the President of the International Amateur Radio Union, Mr. Tim Ellam, VE6SH/G4HUA at a regional meeting of IARU Region 1 last September in Landshut, Germany, with reference to engaging young newcomers to participate in Amateur Radio:

> Our ambition should be to embrace these individuals in their activities and accept that some of the more traditional aspects of the hobby will hold little interest to them, and indeed may no longer be relevant…That is not to say that some are not enthused with what we all hold as the core of our hobby…(but) we need to look at what will attract the new generations to Amateur Radio and make sure we promote Amateur Radio as meeting their needs, rather than promoting the historical view of what Amateur Radio has to offer.

IV. ARRL's Proposal for an Enhanced Entry Level Technician Class License for the Next Decade

25. ARRL concludes from the extensive and persuasive study by its Entry Level License Committee, and for all the reasons discussed hereinabove, that is it is necessary now to add some HF digital and telephony access to the current Technician class operating privileges. Adding these privileges will not have any adverse effect on the incentive of Technician Class licensees to upgrade to General or Amateur Extra Class licenses. Quite the opposite: it will contribute to retention of new licensees and provide a meaningful incentive to those, especially young people, who will enter the Service in the next ten years of the initial license term (or longer) to experience aspects of Amateur Radio that will interest them and cause them to progress.

26. Few, if any, changes would need to be made to the current examination in order to prepare Technician licensees or prospective newcomers to utilize the additional operating privileges.[21] The current FCC syllabus already covers all of the relevant topics. The problem

[21] The Technician Class license examination already includes HF concepts, including antenna theory and propagation, and questions on digital and telephony operating modes.

with the current examination, in fact, is that it covers far more material than is necessary for an entry level examination because it addresses specialized operations that a beginner is unlikely to attempt, such as the use of high power (up to 1500 watts) on bands at and above UHF or repeater control operator service. The addition of modern, digital data emissions and increased HF telephony privileges requires the simplest revision to the Part 97 rules, as can be seen from the attached Appendix. The current Technician examination already covers HF, as well as digital and telephony operating modes. The current Technician Class license offers only telegraphy privileges in portions of the 80-meter, 40-meter and 15-meter bands. Telegraphy is no longer required for any license class. Currently, Technician licensees can operate only telegraphy at 3525-3600 kHz, 7025-7125 kHz and 21,025- 21,200 kHz. A more appropriate entry level license class would include digital access (including RTTY) to 3525-3600 kHz, 7025-7125 kHz, and 21,025-21,200 kHz (as is permitted for General Class licensees), and telephony access to 3900-4000 kHz,[22] 7225-7300 kHz[23] and 21,350-21,450 kHz (less than is permitted for General Class licensees). There are only about 9500 Novice licenses now outstanding, so ARRL proposes no changes for those licensees, but would encourage them to upgrade to Technician.

V. Conclusions.

27. ARRL has urged since 1999 that revisions to the entry level license class are necessary in order to attract new radio amateurs and to retain their interest in actively engaging in the avocation. The need to do so has been manifest since at least 1997 due to the low rate of growth rate in the total number of Amateur Radio operators overall, and most especially among

[22] ARRL filed on January 8, 2016 a Petition for Rule Making (RM-11759) that, if granted, would affect the RTTY/data and telephony subbands in the 80- and 75-meter allocations. The instant Petition appendix does not presume prior Commission action on RM-11759. However, the instant Petition does not serve as a substitute for, nor does it supersede RM-11759.

[23] Note that this authority would not apply to Commission licensees in ITU Regions 1 and 3 where telephony is proposed for Technician Class licensees at 7075-7100 kHz as per the attached Appendix.

young persons. The solution to this, ARRL is convinced, is to make the entry level license class more relevant to the needs and interests of technically inclined young persons. That requires, at least, the addition of meaningful access to digital HF operating modes, and increased telephony privileges in a wider range of HF allocations. The Commission's reluctance (reiterated consistently over a very long span of time) to examine the operating privileges of entry level Amateur licensees is based on an argument that ARRL views as a *non-sequitur*: that it is not necessary to permit meaningful entry level operating privileges to Technician Class licensees because it is not burdensome for Technician Class licensees to upgrade their license class by taking a single written examination. ARRL understands and agrees with the Commission's concern underlying that argument: that the panoply of entry level license operating privileges should not be so extensive as to create a disincentive to study and upgrade one's license class. However, the current Technician Class operating privileges are insufficient to the point that they are not providing enough of an incentive to attract and retain newcomers *in the first place*. An entry level license class that offers insufficient operating privileges (i.e. operating privileges that reflect, and fulfill the current interests of current-generation candidates for Amateur Radio licenses) will not ever result in new licensees who will upgrade to General Class because they won't ever get to the point that upgrading to General Class becomes an issue. Indeed, they will not ever get an Amateur license to start with, and they will not retain their interest even if they go so far as to obtain one.

28. ARRL acknowledges that, in itself, no regulatory change in the entry level license will be successful in attracting and retaining new licensees, unless the other processes that lead up to and follow an examination for even an updated entry level license are well supported. ARRL initiatives to accompany the instant proposal include (1) revised examination preparation

and training materials aimed at STEM subjects; (2) a well-designed set of programs focused on outreach and recruitment; (3) improved exposure to builders and users of wireless technologies such as robotics and Maker groups; and (4) use of social media to illustrate the value, service opportunities and fulfillment offered by Amateur Radio. ARRL also intends to use Amateur clubs to work with newcomers and help them with training, and to increase partnerships with educational institutions at all levels to utilize Amateur Radio in STEM and other experiential learning programs. ARRL also intends to work cooperatively with the National Conference of VECs (NCVEC) to revise Technician examinations and question pools to make them appropriate to the privileges offered. In addition, ARRL intends to improve outreach to new radio Amateurs and local clubs to assist them in successfully initiating Amateur Radio activities on-air and to try different aspects of Amateur Radio. ARRL requests that the Commission become a partner in this effort to promote Amateur Radio as a public benefit by making the very nominal changes proposed herein in the Technician Class license operating privileges.

Therefore, the foregoing considered, ARRL, the National Association for Amateur Radio, respectfully requests that the Commission issue a Notice of Proposed Rule Making at an early date, looking toward adoption of the rule changes set forth in the attached Appendix, and adopt

the entry level license configuration proposed herein as a blueprint for the future of Amateur Radio regulation.

ARRL, the National Association for Amateur Radio

225 Main Street
Newington, CT 06111-1494

By: Christopher D. Imlay
Christopher D. Imlay
Its General Counsel

Booth, Freret & Imlay, LLC
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525
W3KD@arrl.org

February 28, 2018

APPENDIX A

PROPOSED RULE CHANGES

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

Section 97.301(e) is amended to read as follows; and a new Section 97.301(f) is created to read as follows:

§97.301 Authorized frequency bands.

The following transmitting frequency bands are available to an amateur station located within 50 km of the Earth's surface, within the specified ITU Region, and outside any area where the amateur service is regulated by any authority other than the FCC.

*****

(e) For a station having a control operator who has been granted an operator license of Technician Class:

Wavelength band	**ITU region 1**	**ITU region 2**	**ITU region 3**	**Sharing requirements *see* §97.303 (paragraph)**
HF	**MHz**	**MHz**	**MHz**	
80 m	3.525-3.600	3.525-3.600	3.525-3.600	(a)
75 m	3.900-4.000	3.900-4.000	3.900-4.000	(a)
40 m	7.025-7.125	7.025-7.125	7.025-7.125	(i)
40 m		7.225-7.300		(i)
15 m	21.025-21.200	21.025-21.200	21.025-21.200	
15 m	21.350-21.450	21.350-21.450	21.350-21.450	
10 m	28.0-28.5	28.0-28.5	28.0-28.5	
VHF	**MHz**	**MHz**	**MHz**	
1.25 m		222-225		(a)
UHF	**MHz**	**MHz**	**MHz**	
23 cm	1270-1295	1270-1295	1270-1295	(d), (o)

(f) For a station having a control operator who has been granted an operator license of Novice Class:

Wavelength band	**ITU region 1**	**ITU region 2**	**ITU region 3**	**Sharing requirements *see* §97.303 (paragraph)**
HF	**MHz**	**MHz**	**MHz**	
80 m	3.525-3.600	3.525-3.600	3.525-3.600	(a)
40 m	7.025-7.125	7.025-7.125	7.025-7.125	(i)
15 m	21.025-21.200	21.025-21.200	21.025-21.200	
10 m	28.0-28.5	28.0-28.5	28.0-28.5	
VHF	**MHz**	**MHz**	**MHz**	
1.25 m		222-225		(a)
UHF	**MHz**	**MHz**	**MHz**	
23 cm	1270-1295	1270-1295	1270-1295	(d), (o)

Section 97.305(c) is amended to read as follows:

(c) A station may transmit the following emission types on the frequencies indicated, as authorized to the control operator, subject to the standards specified in §97.307(f) of this part.

Wavelength band	**Frequencies**	**Emission types authorized**	**Standards see §97.307(f), paragraph:**
LF:			
2200 m	Entire band	RTTY, data	(3).
2200 m	Entire band	Phone, image	(1), (2).
MF:			
160 m	Entire band	RTTY, data	(3).
160 m	Entire band	Phone, image	(1), (2).
630 m	Entire band	RTTY, data	(3).
630 m	Entire band	Phone, image	(1), (2).
HF:			

80 m	Entire band	RTTY, data	(3), (9), (15).
75 m	Entire band	Phone, image	(1), (2), (16).
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), (15).
40 m	7.075-7.100 MHz	Phone, image	(1), (2), (9), (11), (15).
40 m	7.100-7.125 MHz	RTTY, data	(3), (9) (15).
40 m	7.125-7.300 MHz	Phone, image	(1), (2), (16).
30 m	Entire band	RTTY, data	(3).
20 m	14.00-14.15 MHz	RTTY, data	(3).
20 m	14.15-14.35 MHz	Phone, image	(1), (2).
17 m	18.068-18.110 MHz	RTTY, data	(3).
17 m	18.110-18.168 MHz	Phone, image	(1), (2).
15 m	21.0-21.2 MHz	RTTY, data	(3), (9) (15).
15 m	21.20-21.45 MHz	Phone, image	(1), (2) (16).
12 m	24.89-24.93 MHz	RTTY, data	(3).
12 m	24.93-24.99 MHz	Phone, image	(1), (2).
10 m	28.0-28.3 MHz	RTTY, data	(4).
10 m	28.3-28.5 MHz	Phone, image	(1), (2), (10), (16).
10 m	28.5-29.0 MHz	Phone, image	(1), (2).
10 m	29.0-29.7 MHz	Phone, image	(2).
VHF:			
6 m	50.1-51.0 MHz	MCW, phone, image, RTTY, data	(2), (5).
Do	51.0-54.0 MHz	MCW, phone, image, RTTY, data, test	(2), (5), (8).
2 m	144.1-148.0 MHz	MCW, phone, image, RTTY, data, test	(2), (5), (8).
1.25 m	219-220 MHz	Data	(13)
Do	222-225 MHz	RTTY, data, test MCW, phone, SS, image	(2), (6), (8)
UHF:			

70 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(6), (8).
33 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
23 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(7), (8), and (12).
13 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
SHF:			
9 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
5 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
3 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(7), (8), and (12).
1.2 cm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
EHF:			
6 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
4 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
2.5 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
2 mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
1mm	Entire band	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).
	Above 275 GHz	MCW, phone, image, RTTY, data, SS, test, pulse	(7), (8), and (12).

*****

Sections 97.307(f)(9) and (10) are amended to read as follows; and new Sections 97.307(f)(15) and (16) are created, which will read as follows:

§97.307 Emission standards.

*****

(f) The following standards and limitations apply to transmissions on the frequencies specified in §97.305(c) of this part.

*****

(9) A station having a control operator holding a Novice Class operator license may only transmit a CW emission using the international Morse code.

(10) A station having a control operator holding a Novice Class operator license may only transmit a CW emission using the international Morse code or phone emissions J3E and R3E.

*****

(15) A station having a control operator holding a Technician Class operator license may transmit a CW emission using the international Morse code or data emissions.

(16) A station having a control operator holding a Technician Class operator license may transmit a CW emission using the international Morse code or phone emissions J3E and R3E.