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These comments are submitted in response to WT Docket 98-143, the Commission's proposal to restructure licensing in the amateur radio service.

I currently hold an Extra class license, AK6C, and have held that class of license for over twenty years. I also currently hold the Commission's general radiotelephone license, GMDSS operator/maintainer license, second class radiotelegraph operator's license, and ship radar endorsement.

I have written numerous books and magazine articles over the years dealing with amateur radio and related radio hobbies.

WT Docket 98-143 is a welcome step toward a needed restructuring of the amateur radio service. However, in its current form it does not address the major problems facing amateur radio; in fact, WT Docket 98-143 would exacerbate those problems, and create new ones, for the following reasons:

- the structure proposed by WT Docket 98-143 would actually make it more difficult for Technicians to upgrade to higher license classes;
- WT Docket 98-143 does not deal with the relevance of Morse code proficiency in the amateur radio service and the proper role of Morse proficiency testing as a requirement of amateur licensing;
- By proposing indefinite renewal of existing Novice and Technician Plus licenses, WT Docket 98-143 does not simplify the licensing structure nor reduce the Commission's record keeping and administrative load;
- WT Docket 98-143 does not provide sufficient incentives to promote upgrading by already licensed amateurs to higher license classes, nor does it offer sufficient incentives for technically competent persons who are not amateurs to obtain a license.

DISCUSSION

The key shortcoming of WT Docket 98-143 lies in not addressing the role of Morse code proficiency in amateur radio licensing. It is not possible to solve the problems of slow growth and the low rate of license upgrading in the amateur radio service without addressing the role of Morse code in the license structure.

Under the current structure, one could make a strong case that Morse code proficiency is the most important single requirement for obtaining an amateur radio license and upgrading to a higher class of license. However, the use of Morse code outside of the amateur radio bands is minimal and is being replaced by new technologies. An example of this will take place in a few months when the GMDSS system will replace mandatory shipboard radiotelegraph operators aboard ships traveling the high seas. Similarly, U.S. armed forces radio operators are no longer trained in Morse code.

The argument is frequently made that Morse code is useful for emergency communications and can, as is often stated, “get through when other modes fail.” However, actual use of Morse in emergency situations is exceptionally rare; most emergency traffic goes via voice or packet/digital modes. And contemporary modes, such as spread spectrum, offer reliable communications in situations where Morse code fails.

The Commission instituted the basic framework of the current licensing structure back in 1951 with the introduction of the Novice, Technician, and Extra licenses. Since then, radio communications technology has increased in complexity and breadth at a rapid rate. Today’s radio amateur station employs technologies—such as microprocessors, frequency synthesis, satellite communications, packet radio, digital signal processing, semiconductor memories, etc.—that were undreamed of in 1951. Despite these changes, however, the scope, difficulty, and comparative weights of the Morse code and written examination requirements have remained essentially static over the last 47 years. The Morse code proficiency requirements are still the same despite Morse’s greatly diminished role in radio communications, while the number of questions on the written exams are about the same despite the much larger body of knowledge an amateur must possess to competently operate an amateur radio station.

The Commission urgently needs to change its licensing structure and examination requirements to reflect these changes. The current situation is akin to requiring a reading knowledge of Latin for someone wishing to obtain a college degree in computer science or electrical engineering; the Morse requirement is not relevant in the least to the current state of radio communications or any conceivable future needs. While the Commission is required by international agreement to test for proficiency in Morse code for amateur licenses authorizing operation below 30 MHz, the minimum standards for proficiency and how it is to be tested is not specified and is up to the Commission’s discretion.

The Commission’s task is clear: the Commission must reduce the level of Morse proficiency to the minimum required by international treaties while simultaneously increasing the scope of the written examinations to reflect the current state of the radio art. In the process, it should simply the current licensing structure to provide a logical upgrading path based upon mastery of knowledge relevant to current needs and technology. Incentives should be maintained throughout the licensing structure to encourage amateurs to acquire additional skills and knowledge.

Since the body of relevant technical knowledge is now broader than in 1951, the technical exams should include more questions to reflect the greater knowledge required

to understand and use contemporary amateur equipment as well as experiment with emerging communications technologies.

A growing problem in the amateur service has been violations of the Commission's rules and regulations. One possible reason for this may be that it is currently possible to answer incorrectly all questions pertaining to rules and regulations on the written exams and still pass. To assure that all prospective amateurs possess a sufficient understanding of the Commission's regulations, there should be separate exams on rules and regulations, one for frequencies above 30 MHz and another for frequencies below 30 MHz, which would have to be passed by applicants for amateur licenses.

Several years ago, the Commission went to a system of releasing all possible questions and answers for the written examinations to the public. While the number of possible questions greatly exceeds the number on each exam, it is nonetheless possible to pass written exams through rote memorization instead of mastery of the subject material. To combat this trend, I strongly urge the Commission to increase the number of questions required on the written examinations, increase the number of possible questions in the question pools, and to increase the complexity of the questions and possible answers. By "increasing the complexity," I refer to such techniques as questions that require more than one correct response or questions that require the selection of the most appropriate of several correct responses. Such techniques are widely used in computer certification examinations.

STIMULATING INTEREST IN THE AMATEUR SERVICE

The amateur radio service is experiencing problems with slow growth outside of the Technician class license and inactivity by already licensed amateurs.

Reducing the Morse code proficiency requirements to a minimal level would encourage interest in amateur radio by non-amateurs and also make it easier for Technician class licensees to upgrade.

When the Commission established the framework of the existing license structure in 1951, it allowed General class operators to use all radiotelephone frequencies below 30 MHz. Previously, these had been restricted to holders of the Class A/Advanced license. Following this, amateur radio entered a period of rapid growth that lasted until the mid-1960s. A similar change today would likely have a similar positive impact on growth of the amateur radio service. In this regard, I urge the Commission to heed the proposal previously made by the American Radio Relay League to upgrade all existing Novice and Technician Plus licenses to General class licenses.

With the elimination of the Novice class license, there will no longer be a need for special reduced-power segments for Novice class operators. The existing segments

should be re-allocated to provide additional phone privileges for Advanced and Extra class operators.

Amateur radio has traditionally been largely structured around two-way communications between amateur stations. The number of permissible one-way transmissions is limited to emergency transmissions, code practice transmissions, “bulletins” of interest to the amateur radio services, remote control signaling, and test transmissions. The rise of the internet and World Wide Web, particularly internet telephony, has made worldwide two-way communications widely and inexpensively available. As a result, amateur radio can no longer rely strictly on two-way communications privileges to attract technically competent individuals.

There has recently been proposals before the Commission for a low power “microcasting” broadcasting service in the 88 to 108 MHz range. Moreover, the Commission’s enforcement personnel have been fighting a rising tide of “pirate” radio operations throughout the radio spectrum. This indicates that some form of low power, non-commercial broadcasting activity would be an attractive incentive for potential radio amateurs. Therefore, I urge the Commission to permit amateur radio operators to make one-way transmissions, on a time-limited and non-commercial basis, intended for reception by non-amateurs. The initial privileges should be limited in order to test the concept and resolve any problems; if successful, these quasi-broadcasting privileges could be extended by the Commission.

SPECIFIC PROPOSALS

I urge the Commission to incorporate the following points in its final report and order in response to WT Docket 98-143:

- Reduce the code speed requirement for the General, Advanced, and Extra class licenses to five words per minute.
- Either of the following methods shall be considered as satisfactory evidence of proficiency in Morse code: 1) copying 25 or more consecutive characters without error, or 2) answering 7 out of 10 multiple choice questions correctly about the content of the test message. Volunteer exam coordinators shall use both methods in testing applicants and accept either as satisfactory if passed.
- Upgrade all existing Novice and Technician Plus licenses to General class.
- The Technician class written exam shall consist of two sections. The first section will consist of 24 questions pertaining to FCC rules and regulations for frequencies above 30 MHz, and the passing score shall be 18 or more correct answers. The second section will be 50 questions devoted to VHF/UHF techniques, with the passing score being 37 or more correct answers.

- All applicants for the General, Advanced, and Extra class licenses shall be required to pass both sections of the Technician written exam. In addition, all applicants will be required to pass a 24 question exam on FCC rules and regulations for operation below 30 MHz. Applicants for the General class license will pass a 50 question exam largely devoted to HF techniques, with a passing score of being 37 or more correct answers. Applicants for the Advanced class license will need to pass all exams for the Technician and General licenses, plus an additional 100 question exam on advanced communications techniques. Passing score shall be 74 or more questions answered correctly. Applicants for the Extra class license shall pass all exams for the Technician, General, and Advanced licenses, and in addition shall pass an additional 100 question exam on advanced communications techniques, with 74 or more correct answers being a passing score.
- General class licensees shall receive full operating privileges in the current Advanced class phone allocations.
- Extra class licenses should receive exclusive use of the 3675 to 3700, 7100 to 7125, 21150 to 21175, and 28150 to 28250 kHz ranges for phone operation. Extra and Advanced license holders should receive exclusive use of the 3700 to 3725, 7125 to 7150, 21175 to 21200, and 28250 to 28300 kHz ranges for phone operations.
- Maximum power levels in the current Novice CW ranges should be raised to the current amateur maximum of 1500 watts PEP.
- One-way non-commercial transmissions for reception by non-amateurs will be permitted in the 53.5 to 54.0 MHz and 420 to 432 MHz ranges. All such transmissions shall be limited to no more than one hour in a twenty-four period, and must be limited to FM/PM with 5 kHz maximum deviation. Transmission of music shall be permitted.
- One-way non-commercial television transmissions for reception by non-amateurs will be permitted on amateur frequencies above 1240 MHz. All such transmissions shall be limited to no more than one hour in a twenty-four period.
- Extra class licensees shall be permitted to make one-way non-commercial transmissions for reception by non-amateurs in the ranges of 3675 to 3700 kHz, 7100 to 7125, and 28150 to 28250 kHz. All such transmissions shall be limited to a maximum of one half-hour in a twenty-four period. Transmission of music shall not be permitted.

CONCLUSION

The existing licensing structure and operating privileges for the amateur radio service reflect circumstances and technologies as they existed several decades ago. Much has changed since then. We are now on the edge of the twenty-first century, and the Commission must change the licensing structure and operating privileges of the amateur

radio service to reflect contemporary realities. To keep the amateur radio service anchored in the 1950s would doom it to irrelevance and slow extinction in the years ahead. The suggestions made in these comments certainly represent a major break with the existing licensing structure and privileges of amateur radio, but I believe they are necessary if amateur radio is to have a viable future. I urge the Commission to give my suggestions serious consideration in its deliberations on WT Docket 98-143.