

Entry Level License Committee Report to the ARRL Board of Directors January 2017

This is a preliminary report covering the areas the committee has reviewed since getting started in September. We expect to have a final report to the Board in July.

The Entry Level License (ELL) committee was created during the July 2016 Board Meeting with the following resolution:

41. Mr. Frenaye moved, seconded by Mr. Pace, that

WHEREAS the Novice Class examination was discontinued in 2000 and the Morse Code requirement was removed from all licenses a few years later, and the Technician Class license became the new entry point; and

WHEREAS, there was a considerable increase in difficulty for the new entry point, and new licensees were then accorded extensive privileges not appropriate for all newcomers, and

WHEREAS we now have more than 15 years of experience with the current FCC Technician Class license as that entry point; and

WHEREAS we need to improve upon our efforts to attract newcomers to Amateur Radio and pass along the tradition of emergency and communication communications support, developing interest in hands-on projects, and improving on science, technology, engineering, and mathematics educations;

THEREFORE BE IT RESOLVED that an ad hoc committee be established to examine the current license exam requirements for the Technician Class license and make recommendations for change, including consideration of a new entry license class, to the Board for possible changes that might be recommended to create a more targeted examination with a more limited set of privileges that would attract a new generation of amateurs.

After discussion, the proposal was ADOPTED.

Appointments to the committee were finalized in early September 2016 by President Roderick, and bi-weekly conference calls started on September 13th. We've had a total of eight conference calls since we started.

General Review

We wanted to make sure our efforts were aligned with the ARRL Strategic Plan (adopted January 2016). Here is the most relevant section - near the beginning:

GOAL 1: Grow Amateur Radio worldwide.

ARRL, since its inception, has been of critical importance to the Amateur Radio Service. This goal is as important today as it has ever been. Today, Amateur Radio exists among many more modes of communication than it did a century ago. The growth of wireless technologies, such as cell phones and the Internet of Things*, have had a profound effect on both spectrum competition and on the overall interest in and support for Amateur Radio. We must ensure that Amateur Radio is a vital and relevant service whose existence is justified by its contributions to society.

* The “Internet of Things” is the networking of physical objects such as phones, automobiles, and other mass consumer products.

Initiative 1.1: Encourage new entrants to Amateur Radio.

Initiative 1.2: Increase public awareness and knowledge of Amateur Radio.

Initiative 1.3: Support global interactions throughout Amateur Radio.

Initiative 1.4: Support and develop programs that prepare youth as the next generation of radio amateurs.

We reviewed the Board motion and Strategic Plan, and adopted the following:

What is the problem we're trying to solve?

- Not enough new hams, especially under-30 new hams
- New hams are not getting involved enough to participate and renew
- Unable to compete with other technical hobbies available
- Need to be better at retaining and engaging Technician hams
- Amateur radio needs to embrace and develop new technologies

The working mission:

- Encourage students and young adults to learn about ham radio
- Train licensees for concepts necessary to be effective and successful
- Provide sufficient privileges to find value in ham radio
- Build in a strong incentive to upgrade to next license

Other Countries

We’ve looked at the entry level license requirements and privileges for a number of countries and focused on Australia, Canada and the United Kingdom who each have more than ten years experience with a revised examination and privileges. In general, the “Foundation” license parameters adopted by Australia and United Kingdom seem the most appealing. Basically they offer a low power entry level license with privileges on almost all bands and modes, and a relatively simple examination process.

Requirements for Testing

Testing requirements are set by guidelines from the ITU, as implemented by the FCC in the USA. The FCC gives fairly general guidance to the Volunteer Exam Coordinators on the examinations, who have a lot of latitude in the questions placed in the Question Pool for each license.

The FCC requires 35 questions on the exam for Technician and General and 50 for the Extra, with the Question Pools having at least ten times more questions. They also specify ten topic areas that should be covered.

The Question Pools have more questions in them than required by the FCC. After the QP is finalized there are usually few (under ten) questions that may have to be removed because they are not clear enough or other reasons, so some extra questions are appropriate. The current Question Pool for Technician has 426 questions (76 extra), the General has 464 (114 extra) and the Extra has 713 (213 extra). Why would the exams be any more complicated than is necessary?

A readability review of the questions in the various question pools is enlightening. There are standard readability calculations to assess the reading level required to understand what is written. They are mostly based on the number of syllables in words and the number of words in sentences. Doing a review on the Question Pools results in a score of 50 in the Flesch scale, which equates to "fairly difficult to read" and "difficult to read" (12th grade to college level). That is not exactly a recipe for high school or middle school students except for the very brightest. To reach most audiences, a reading level of 7th or 8th grade is recommended by most sources.

Recent ARRL Survey Data

We reviewed the relevant portions of the marketing survey ARRL conducted in 2015. Some primary items of interest from the survey showed:

The primary reason to get licensed for those licensed 2010 or later, influence significantly increased in these areas:

- website, online social networking, podcast, or blog
- community emergency manager/personnel
- to support communications during disasters and other emergencies
- to enhance personal safety
- to support wilderness, off-road, or other activity in remote areas

Those first licensed in the 2010 or later studied:

- by yourself 65%
- in a radio club-sponsored class 23
- under 10% each
 - with help from a friend, neighbor/co-worker
 - with help from a family member
 - with help from a local instructor not associated with a club or school
 - in a school-sponsored class

For those licensed 2010 or later, just 8% were under age 25, and only 20% were under age 35. The largest group of new licensees was in the 55-64 age range (27%), about the same for those licensed before 2010 (31%).

Review the History of License Class Changes

We took a close look at the various changes in Amateur Radio licensing over the last 100 years, especially the last 25. **Appendix A** has a summary of relevant FCC actions and shows that action in the last ten years has been relatively quiet on this front. The last major changes were in 2006, after WRC-03 eliminated the requirement for Morse code testing.

Current ARRL ELL Policy Position

The ARRL Board has been clearly on record that the Technician license is not a satisfactory entry level license since the FCC discontinued the Novice in late 1999 (FCC 98-143). After an ARRL proposal in 2002 for “refarming” the Novice bands by expanding the phone bands on 80/40/15m, the FCC made that specific change in 2006 (and more than we asked for on 80m phone).

In 2003 the World Radio Conference (WRC-03) removed the requirement for Morse code testing for any Amateur Radio license. In 2004 the ARRL petitioned the FCC (RM-10867) with an entry-level license proposal, consolidation of six license classes into three (Novice, General, Extra), and to retain the 5 wpm requirement for the Extra. The introductory text in that proceeding is in **Appendix B**.

The 2004 ARRL filing proposed merging the existing Technician/TechPlus into General, and Advanced into Extra. The new Novice would have a 25 question exam, allow 100w on General segments on 80/40/15, 50w on 10/6/2m, plus 222/430 MHz. They would not be able to use automatic control, be a control operator, operate beacons, or conduct remote space control.

A year and a half later, the FCC proposed (FCC 05-253) to simply drop the CW requirement for all license classes. They did not agree with new entry level license proposed by ARRL nor to consolidate license classes. ARRL commented again, forcefully pointing out why the Technician was not suitable as an entry level license and why combining some license classes would be a reasonable way to simplify FCC rules. In late 2005 the FCC chose to simply remove the CW requirement for all license classes (now just Technician, General and Extra).

Significant Influences

Since the last major changes in license classes by the FCC there have been some significant changes to both the Amateur Radio world and the external world.

In the past dozen years, for example, the use of cell phone has become the norm, in 2014 64% of all adults had a smart phone, up from 35% in 2011. Of those 18-29 years old, the number was 85%. More than half of all smart phone users have used it to get help in an

emergency situation. (Pew research - <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>). That has taken some percentage of ham radio usage off the air, particularly at VHF where repeater activity has declined by almost all accounts.

There has been a significant increase in the educational focus on Science, Technology, Engineering and Mathematics fields. There is also a fast growing Maker movement that is based on hands-on, do-it-yourself hobbies and activities. Both of these trends should favor an increasing interest in Amateur Radio.

On the ham radio side, CW activity has remained high, even though not a required part of the exam, as has SSB, but digital activity has grown substantially. ARRL RTTY Contest activity has more than doubled since 2004. PSK-31 started to become popular around 2000, and Joe Taylor started his ham radio software career in 2001 with WSJT. Since then the number of digital modes has multiplied as has the amount of activity. For newcomers, it is way more popular than CW (which is the only mode allowed on HF bands below 10m by Technician licensees).

For all of these reasons, it is worth examining what the entry level license offers, what is required to get started, and recommend changes for improvement. Over the last 15 years, the world has changed, as has Amateur Radio, while the testing and operating privileges for an entry level license have become less relevant.

Current FCC Licensees

Since the FCC rules change to eliminate CW testing (and not implement suggested ARRL changes) in 2006 went into effect in February 2007, the growth of ham radio has been relatively modest at best. (Date from AH0A.org)

	Novice	Technician	General	Advanced	Extra	Total
Feb 2007	22,891	323,493	131,463	69,025	108,605	655,477
Dec 2016	10,012	371,560	172,807	45,071	143,337	742,787
Pct Change	-56.3%	+14.9%	+31.4%	-34.7%	+32.0%	+13.3%

Over those almost 12 years, 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 peak of that growth was in 2009 (2.85%) and 2010 (1.98%) after the CW requirement was dropped – and that may have accounted for an extra 30-35k new licensees. In the previous ten years, the number of licenses peaked at 711k in 1996 and was steady or slowly dropping until 2007.

The Committee’s Entry-Level License Draft

The committee looked at previous ARRL filings as well as entry licenses in several other countries.

We're looking at a couple of ways to accomplish a change, one is to add a new license class that offers low power use of all modes on most HF and VHF bands, but that has to be accompanied with changes in the Technician to allow the same access. The 2004 ARRL approach was to have a simple entry level license and merge the Technician into the General Class license. Both have merits and we'll be examining them carefully. Our initial thinking is that a new license class would be the best path. There is also consideration of special call signs, a limit on the length of the license, and a practical component of the exam.

Gathering Input from Members

A draft survey of members to gather their input has been created but before moving forward we wanted to give a progress report to the Board on our work to date and gather any input on progress to date.

FCC Issues

The FCC has been reluctant to make changes in the licensing system in the past, as shown is FCC 05-253 and earlier proceedings. Some of that appears to be a simple belief that removing the CW requirement would lead to a large increase in licensed amateurs. It didn't, though growth has resumed. Another consideration voiced was the cost and effort it would take to change the existing Universal License System used to track license holders.

This may be our toughest obstacle to any change, so we'll need to put in extra effort to make the best case possible if the ARRL proposes changes.

Amateur Community Questions

The last time the FCC dealt with the license class issue, the controversial topic was the FCC's intention to eliminate the 5 wpm CW test from all license classes. After a lot of discussion and member input, the ARRL supported retaining the 5 wpm test for the Extra Class license only.

There were also a fair number of people who commented that they did not support the ARRL proposal for a new Novice license and combining the Novice/Tech/TechPlus into General or combining the Advanced into the Extra Class. It's unclear if member sentiment has significantly changed in the intervening 13 years.

Needed Improvements in the “Supply Chain”

During our many discussions about the entry level license to date, it became clear from discussion by all committee members that the process for generating new hams that starts with educating the general public about Amateur Radio, through someone deciding to get licensed, studying for the exam, taking the examination, passing the exam, and finally getting on the air and experiencing the different facets of ham radio, has to work from end to end in order to keep Amateur Radio vibrant and growing.

Each part of that “supply chain” has to work, and work well, in order for us to generate new hams, and to attract the generations that will follow us. Here are some high level notes about it, and we expect to have some more refined input and recommendations in our final report.

- We need to better understand what will interest people in ham radio, and to target those individuals and groups with the most promise.
- Once someone expresses interest, do we have the right processes to match them with the tools and help needed to get licensed, and classroom opportunities?
- Today, most people study for the exam by themselves, how can we improve upon the tools we have available to them?
- Most people, particularly those under age 30, use smart phone or other electronic tools, not books, to access and learn about the world. We should be utilizing those tools to reach people who might be interested in being licensed.
- The FCC has not made aggregate data available on the age of those being licensed or the age profile of the current Amateur community so it is difficult to know where to make improvements in efforts to attract new hams.
- The current testing process is people and paperwork intensive, and has not changed significantly since it began 33 years ago. Online testing would be a huge boost.
- Getting people on the air after being licensed is an often overlooked area that needs concentration and effort and should be of prime importance to every radio club and local group.

What Can Be Done Now?

- Work to better understand what non-hams think of Amateur Radio and what might attract them to work for a license.
- Look at ways to modernize the training and licensing process to make them more widely available.
- Get aggregate age data from the FCC so we can understand more about existing and new licensees.
- Improve upon what we have in place today to work with external marketing to find potential hams through getting them on the air once licensed.

Next Major Steps

- Decide to go ahead with member survey
- Should there be a new license class or modify Technician?
- How receptive will the FCC be to change
- Should we recommend one or several options for an entry level license?
- What other suggestions to we have for the full process from learning about Amateur Radio to getting licensed and on the air works from end to end?
- Final report to ARRL Board in July

Summary

Everyone on the Entry Level License Committee has been a great contributor and no one has been shy in expressing opinions and suggestions. They have made my job as Chairman easier as a result.

Tom Frenaye

Committee members

Tom Frenaye, K1KI, chairman
Bonnie Altus, AB7ZQ
Tom Delaney, W8WTD
Maria Somma, AB1FM
Bruce Blain, K1BG
Andrea Wayward, KG4IUM
Paul Veal, N0AH
Ward Silver, N0AX

Appendix A – License Change Timetable

Appendix B – ARRL intro text in RM-10867 to create a new license plan

APPENDIX A

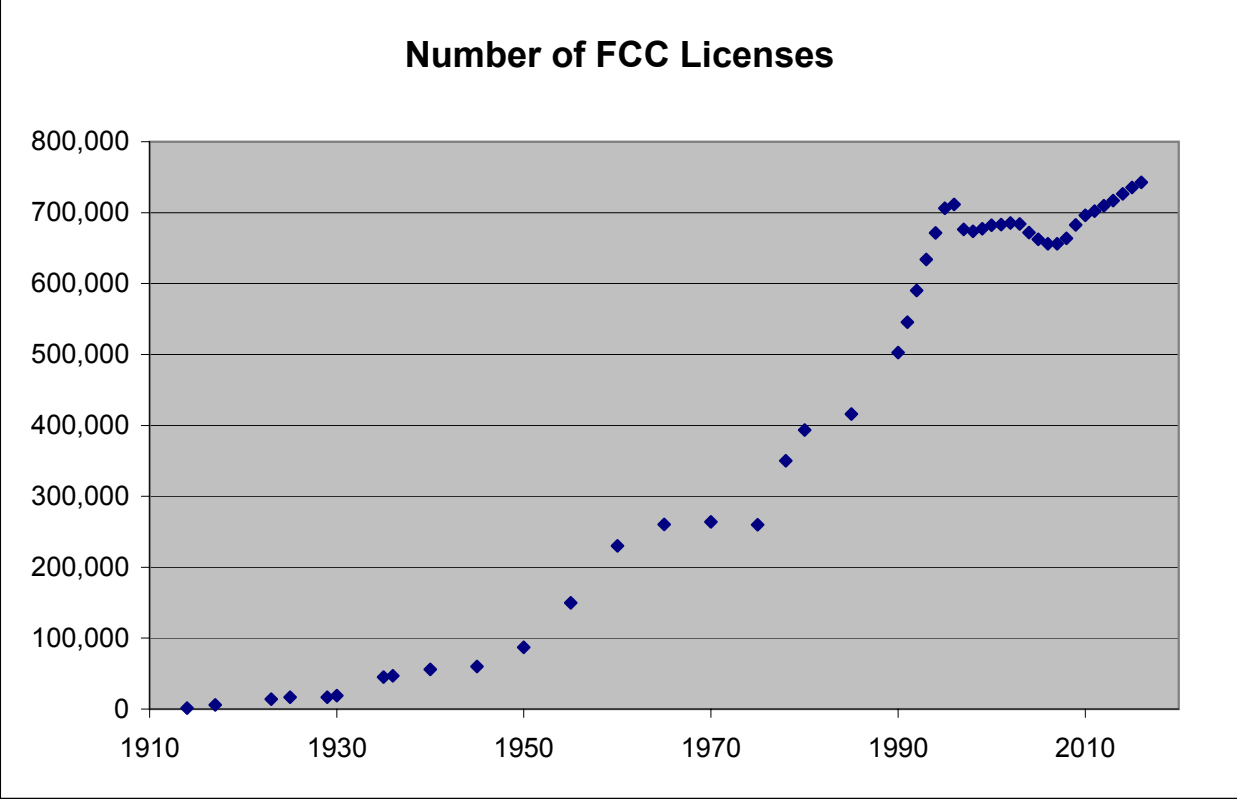
License Timetable

Year # hams Licensing changes

2016	742,787	
2015	735,405	
2014	726,275	FCC (12-283) exam credits, remote exams
2013	717,201	
2012	709,575	
2011	702,056	FCC (09-209) issues new vanity and club callsign rules
2010	696,041	
2009	682,497	
2008	663,564	
2007	655,842	
2006	656,068	FCC (04-140) 80/40/15m SSB expansion, N/T get Gen CW on 80/40/15; N/T get 28-28.3 CW/digital; FCC (05-235) drops Morse Code requirement
2005	662,600	
2004	671,837	FCC (03-104/04-37) BPL approved; ARRL (RM-10867) proposes new entry level license
2003	684,059	ITU drops Morse Code requirement; FCC (02-98) grants access to 5 MHz;
2002	685,308	ARRL Novice refarming proposal RM-10413
2001	683,037	Club licenses now handled through VECs, FCC CORES license admin system established
2000	682,240	
1999	677,392	FCC (98-143) Restructuring. Licenses for Novice/TechnicianPlus/Advanced no longer issued, 20wpm Morse eliminated, General/Extra now 5wpm
1998	673,823	PSK-31 starts; US joins CEPT for international licensing
1997	676,506	FCC (95-57) RF safety questions(5 ea) added to Question Pools, 1x1 callsign program started; FCC license renewal online w/ULS
1996	711,759	FCC (93-62) new RF safety rules; VECs can now handle and send renewals, modifications, changes to FCC
1995	705,994	FCC (93-305) new vanity callsign program; FCC (94-59) new rules for digital modes; FCC (94-40) access to 219-220
1994	671,489	FCC (93-267) instant licensing after VE pass; VECs can send exam info to FCC electronically
1993	634,017	FCC (92-154) Novice exam added to VEC program FCC (93-62) RF safety rules
1992	590,088	
1991	545,548	FCC (90-55) splits Technician into Technician(no Morse Code) and TechnicianPlus
1990	502,677	
1989		FCC (88-467) Access to 18 Mhz; FCC (PRB-3) declines to est privatized callsign program; FCC rewrites Part 97; ARRL proposes Communicator no code license (RM-6995)
1988		FCC (87-14) removes 220-222
1987		FCC (86-161)Novice enhancement. Technician/General split into two 25 questions exams, Novice/Technician get 28.3-28.5 SSB access; FCC (85-196rev) requires one QP
1986		FCC (85-196) turns Question Pools over to VECs; FCC (85-22) rules on repeater coordination
1985	415,856	FCC (84-960) grants access to 24 and 902 mhz bands; ARRL (RM-5038) files for Novice enhancement; FCC (85-87) sat dish pre-emption (OTARD); FCC (PRB-1) pre-emption
1984		FCC (83-28) FCC proposes and drops CW elimination; ARRL joins FCC VEC program, FCC (82-83) HF phone bands expanded; FCC (83-337) licenses all 10-year now
1983		FCC (83-27) VEC program established; FCC (82-624) power limit now 1500w out; Congress passes bill allowing VEC reimbursement
1982		FCC (82-727) Novice exam process revised; Access to 10 Mhz granted
1981		
1980	393,353	FCC (80-739) implements some WARC-79 decisions
1979		Packet radio starts
1978	350,000	Novice now 5-years and renewable, Technicians get full access 50 Mhz and up, new callsign system
1977		Novices can run 250w, Conditional license eliminated
1976		
1975	260,091	
1974		
1973		
1972		Expanded Technician access to 2m, Novices can use VFO, HF phone band expanded
1971		
1970	263,918	Initial buildup of 2m FM repeaters
1969		ARRL proposes ful VHF for Techs, plus 10m and Novice CW

1968 SSTV authorized
 1967 Novices lose 2m, now 2-year license
 1966
 1965 260,301 Novice changed to two years?
 1964 Incentive licensing implemented
 1963 63-67 - Incentive licensing debate
 1962
 1961 First Oscar satellite
 1960 230,000
 1959
 1958 Access to 11m withdrawn, new CB license created
 1957
 1956
 1955 150,000 SSB promoted over AM for HF voice; Technician gets 6m; 160m access
 1954
 1953 Novices get access to 40m
 1952 Major changes in rules; new 15m band, voice allowed on 40m
 1951 Licenses A B C turned into Novice Technician Conditional Advanced Extra; Novice is 1-year (80m, 11m, 2m)
 1950 87,000
 1949
 1948
 1947 Hams lose 29.7-30 and 14.350 to 14.400
 1946 5 and 2.5 meters changed to 6 and 2 meters
 1945 60,000 Ham radio back after WW2
 1944
 1943
 1942
 1941
 1940 56,000 WW2 restrictions on ham radio start
 1939
 1938 New bands - 2.5m 1.25m
 1937
 1936 46,850
 1935 45,000 FM defined by Armstrong, ARES started
 1934 FCC established (replaces FRC)
 1933 Field Day started, FRC requires hams to be tested in person; license name changed to A B C
 1932 Amateur First Class (replaced Amateur Class)
 1931
 1930 19,000
 1929 16,829
 1928
 1927 Federal Radio Commission established; Amateur Class (renamed from Amateur First Grade) Temporary Amateur (was Amateur Second Grade); international prefixes defined
 1926
 1925 16,500 IARU established
 1924 New bands - 80 40 20 and 5m
 1923 14,000 Extra Class license created; CW becoming dominant over sparkgap
 1922
 1921
 1920
 1919 WW1 restrictions end
 1918
 1917 6,000 WW1 restrictions start
 1916

1915
 1914 1,200 ARRL established
 1913
 1912 Licensing starts under Dept of Commerce; Amateur First and Second Grade
 1911
 1910
 1909 First radio clubs started
 1908
 1907 Deforest - triode
 1906
 1905
 1904 Fleming - vacuum tube
 1903
 1902
 1901 Marconi - signals cross Atlantic
 1900



Appendix B
Excepts from RM-10867
filed by ARRL with the FCC 1/27/2004:
pages 8-9-10

10. ... ARRL suggests that consideration of Morse telegraphy and nothing more in the course of evaluation of license structure would be insufficient and short-sighted. The promotion of education, technical self-training, and advancement of interest in Amateur Radio technology requires consideration of other, interrelated issues at the same time. It is not sufficient to merely eliminate or retain Morse telegraphy as a licensing requirement, as there are other issues that, looking forward for the next ten or fifteen years, require consideration. There are three primary concerns now. These are: (1) the fact that the only 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; (2) the fact that the entry level Technician Class license examination is (of necessity) overly comprehensive in its subject matter,⁶ and is therefore a deterrent to newcomers and inadequate as an entry-level license class; and (3) although the Commission has determined that three license classes is the proper number, that was not achieved in Docket 98-143. There remain officially six license classes at the present time, and there will be all six for the indefinite future, as the Novice and Advanced Class licenses are renewable, and the Technician Plus class is retained with different privileges from the Technician Class. Each of the above issues can and should be dealt with domestically, now that Article 25 of the Radio Regulations has been revised, and now that there is some experience with the rules adopted in WT Docket 98-143, and with the shortcomings of the current Technician Class license as an entry-level license class.

⁶ This is not to suggest that the examination is overly difficult. However, a look at the test preparation materials for Technician class licensees 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, and hence the Technician license is inadequate as an entry-level license class. A recent survey commissioned by ARRL reveals that a large proportion of recent licensees feel that the examinations were not relevant to their Amateur Radio operations.

11. Those who advocate the elimination of the Element 1 examination requirement and nothing more may argue that theirs is a “simple” plan which could be implemented without much regulatory fanfare. That argument, however, misses the point. In fact, merely eliminating the Element 1 requirement leaves legacy license classes and unnecessary remnants of the old, 6-class license structure before the Docket 98-143 proceeding. It also fails to address the significant problem perceived by ARRL: that the Technician Class license is, for too many, a “dead end” to what might otherwise be an active, progressive interest in Amateur Radio, technical self-training, and incentive-based educational progress in the many facets of the avocation. ARRL has developed a comprehensive licensing plan which both simplifies the license structure, as the Commission intended to do in Docket 98-143, and which also makes Amateur Radio more relevant to newcomers and better preserves the incentive upgrade system. It does this by creating a true entry-level license class which at once requires a reasonable volume of material on which a candidate is examined, and which offers sufficient operating privileges as to expose the entry-level Amateur to a wider variety of the facets of the avocation than is available to current Technician Class licensees. It creates a balance between these two seemingly conflicting goals. Once implemented, the following licensing plan will prove far simpler than the present scheme, as well as one more consistent with the Commission’s goals and objectives for the Amateur Service. Finally, the proposal establishes for this entry-level license class a portfolio of operating privileges which are consistent with an examination that would not include material that is inappropriate or irrelevant at the entry level.

(For the full ARRL proposal, the full text of RM-10867 is at <https://ecfsapi.fcc.gov/file/6516083735.pdf>)