

**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 to) **RM-10867**
Implement Changes to Article 25 of the)
International Radio Regulation Adopted at the)
2003 World Radiocommunication Conference)

Via the ECFS

Reply to Comments of Rene Desany Made on 19 April 2004

by Leonard H. Anderson

Mr. Desany's Comment is that of a long-tenured conservative in United States Amateur Radio. Of his Comments to three of the four 2004 Petitions, I will address principally his on RM-10867 in my Reply to his Comments. He stated similar opinions on RM-10868 and RM-10879 and my response to those would be the same as made following.

Please allow me to state that I am a retired electronics design engineer with no vested interest in any professional or amateur radio activity nor any educational institution nor with any of those who have commented on these three Petitions for Rule Making. All of the following comments are those of a private citizen fortunate to experience a half century in the radio-electronics industry and military of the United States, that including radio communications.

A. Telegraphy Testing Is A *Hands-On Hardware Learning Experience*?

1. Mr. Desany's 5th paragraph states, "*My contention, is that if cw [on-off keyed carrier radiotelegraphy] is eliminated or sharply reduced a great 'hands on' learning incentive will be lost for the beginner. Therefore, it is IMPERATIVE that the written exams be restructured, by scrapping the published question pools, to eliminate memorization of answers, and that a more comprehensive method be instituted to test an applicants true understanding of electronics and RF principles, etc.*" First of all, the **only** thing about radiotelegraphy being scrapped in some Petitions is the **test**. The license **test** for telegraphy skills demonstrates only one thing: Required proficiency in telegraphy. There is absolutely nothing about the telegraphy test that can possibly apply to radio or electronics hardware.

2. Since Mr. Desany is a long-tenured radio amateur, he may be considering the half-century

old model of a *beginner's transmitter* consisting of a one-tube crystal oscillator followed by a one-tube power amplifier which has its carrier keyed on-off in telegraphy mode.¹ However, the vacuum tube era is long over. So are the older times when voice transmission required a *brute-force* Amplitude Modulator for the two choices of communications: Radiotelegraphy or voice.² Today's amateur radio allows many more modes of communications. The parts count for a *simple* Frequency Modulation transmitter is the **same** as that of a *simple* radiotelegraphy transmitter.³

3. Since the telegraphy test element for an Amateur Radio license demonstrates **only** a required manual proficiency in telegraphy, it is both absurd and impossible to suppose that any telegraphy test elimination would require the substitution of more written element questions on radio theory or regulations.

B. Equality Of Military Or Industrial Technicians To Radio Amateurs?

4. Mr. Desany's 6th paragraph states, "*As a trainer-mentor in the military, in avionics, I found it was imperative that a trainee had a good solid grasp of electronics fundamentals, to be able to grow and upgrade into a capable and knowledgeable technician. The same principles should hold true for an amateur radio operator. To upgrade AND be knowledgeable, it is imperative that he have a solid grasp of the 'fundamentals of electronics.'*" All good general phrases but, in more detail, they fall apart. As a *hands-on* engineer **in** military and civil avionics, principally in airborne radionavigation equipment, I can speak for some experience there, from factory to hangar to flight-line to in-flight work over a span of 48 years.⁴

5. To **be** a working technician on any avionics requires a reasonably thorough knowledge of the particular avionics.⁵ Such avionics **varies widely** in the techniques and sensors involved. Little

¹ Having some experience in electronics as a hobbyist for 57 years, the *vacuum tube era* is quite familiar to this commenter. A two-tube telegraphy-keyed transmitter was used for one afternoon's session at the Signal School at Fort Monmouth, NJ, in the summer of 1952. That was for basic radio indoctrination for most Army radar and microwave trainees.

² By *brute-force* I am referring to the plate modulation scheme wherein an audio power amplifier (whose power output is half that of the RF amplifier's RF output) varies the plate supply voltage. It may be the simplest way, in terms of parts count, to achieve Amplitude Modulation but it is most inefficient at doing so.

³ That is done by a voltage-variable-capacitance diode across the oscillator tuned circuit, the diode voltage supplied from a high-output piezoelectric element microphone. The microphone substitutes for the telegraphy key used with radiotelegraphy. In either case the RF carrier remains constant. The same sort of *simple* transmitter can be used for Frequency-Shift-Keying teleprinter, the teleprinter signal substituting for the microphone.

⁴ That includes being the only electronics design engineer on the AN/ASM-416 Voice-Warning System Test Set while at RCA Corporation Electromagnetic and Aviation Systems Division, Van Nuys, CA.

⁵ *Avionics* is a contraction of *aviation electronics* and is common-use in both civil and military aviation.

of it is involved with radio communications.⁶ Civilian avionics technicians who cannot perform are generally fired. Military avionics specialists who cannot perform are replaced and retrained. Amateur Radio in the United States is a **voluntary avocational activity**. It is **not a job**.

6. In any **voluntary** activity, any individual may choose to remain at one skill level, to increase that skill level, or to simply cease activity. There is **no imperative** to *upgrade*. United States Amateur Radio is **not a job**. Amateur Radio is a voluntary avocational activity done for recreation, for personal enjoyment.

C. Amateur Radio Licenses Are Academic Or Manual Skill Certificates Of Achievement?

7. Mr. Desany's 7th paragraph states, "*The exam system now in place, with published question pools and 'jiffy' ham classes do not test an applicant's true understanding of the basics, and serve no good purpose but to increase the numbers and NOT the quality of integrity of amateur radio. This system would be intolerable in industry or the military. Why should amateur radio be any different?*" The obvious answer is that United States Amateur Radio **is not a job**. It isn't a guild or union or trade-craft of professional employment. Amateur Radio is, by the first title word *amateur*, a non-professional activity.

8. The Commission was never chartered by legislation to be an educational or academic institution.⁷ Radio operator licenses are a tool of the Commission to regulate United States civil radio services. Licenses are for the Commission's purpose in determining individuals' permission to operate radio transmitters within regulations established by the Commission. It is the mistaken belief of far too many radio amateurs that an Amateur Radio license is some kind of *diploma* or other certificate of academic or skill achievement.

⁶ The majority of a pilot's instrument panel gauges and readouts require some sort of sensor and signal-modifying electronics. For example, the fuel quantity gauges might use a capacitive sensor array in several tanks and require a capacitance bridge modifying electronics calibrated to fuel quantity; aircraft attitudes and maneuvers do not allow simple floats-coupled-to-rheostats as in terrestrial vehicles. Artificial horizons may have inputs from simple gyroscopes or more complex laser ring interferometers; each needs specialized electronics to present the instrument's horizon to the pilot(s). Servomechanisms are still employed in aircraft for a variety of applications and require specialized knowledge of three-phase servo loops. The most complex system now coming into use is the so-called *fly-by-wire* system wherein a bank of digital computers does myriad tasks, part of which is a replacement of mechanical couplings to control surfaces with wires, motors, and sensors.

⁷ The Communications Act of 1934 established the Commission as a federal agency and that was further amended by the Telecommunications Act of 1996. While the Commission has hosted specific radio and communications topic seminars and meetings for dissemination of information on certain topics, the constantly-advancing state of the electronics art requires the Commission itself to keep abreast of that art. One such example is the Notice Of Inquiry (NOI) that appears in proceedings from time to time. An NOI such as on proceeding 03-104 of last year was a specific inquiry from the electronics industry as to standards the industry and individuals thought necessary concerning incidental RF radiation from Broadband over Power Lines, now termed *Access BPL*.

9. The Commission has no power to regulate individual group or private educational services for instruction in Amateur Radio matters.⁸ The Commission specifically delegates the **content** of all questions and answers to be generated by the National Council of Volunteer Examiner Coordinators (NCVEC) Question Pool Committee (QPC). The Commission establishes the required minimum number of written test element questions and passing scores, plus the final approval of the NCVEC QPC question pool prior to use.⁹

10. Mr. Desany, as well as many other commenters, should note §97.523 which states, “...Each question pool must contain at least 10 times the number of questions required for a single examination.” The Commission does not state any maximum. The number of generated questions and answers produced for any question pool is left entirely up to the NCVEC QPC. The QPC can, if it chooses, generate enough questions and answers to defeat all memorization efforts by anyone save the rare *idiot savant*.¹⁰ Given the near-universal presence of modern personal computers, a relatively-simple program can randomly select questions and print those out for any examination. Size of the question pool is not a significant factor.¹¹

D. Telegraphy Skills Must Be Maintained Through Licensing Forever and Ever?

11. Mr. Desany’s 8th paragraph states, “*In summary, a ‘minimal’ CW requirement of 5 wpm should be retained for both the General and Extra class (5 wpm is hardly a hardship), if for no other reason than to preserve ham radio’s ‘tradition.’ If not, then it would be IMPERATIVE to upgrade the present exam structure to reflect a more comprehensive written test to test an applicants true understanding of electronics.*” Mr. Desany confuses the relationship of manual telegraphy skills with the intellectual skills of electronics theory. There is **no** relationship. Ergo, there is **no** imperative to modify any written test element as any alleged substitute for elimination of the telegraphy skill test.

12. The Commission is not responsible for, nor obliged to be the curator of some *Living*

⁸ Mr. Desany seems to contend that “*jiffy*” ham classes are part of the Commission’s radio operator licensing process.

⁹ Subpart F, Title 47 C.F.R., Part 97. Subpart F rather clearly delineates the differences between Commission responsibilities versus those of the NCVEC.

¹⁰ An *idiot savant* is a mentally disadvantaged person who possess a singular extraordinary ability. Such an example is exceptional memory or the ability to do mathematical operations without any tools such as paper and pencil.

¹¹ If each question plus four possible answers plus other computer *housekeeping* information requires 10 Kbytes of storage space in memory, 50 questions and answers would require a total of 500 Kbytes. A pool of 10 times the number of required questions would require 5 Mbytes. Increasing the number of pool questions to 100 times the number of required questions would require 50 Mbytes of storage space. A now-conventional Compact Disk (CD) can easily hold 550 Mbytes of digital information. CDs can be easily mailed via the United States Postal Service in container envelopes obtainable at any office supply store.

*Museum of Archaic Radio Skills.*¹² The Commission is **not** responsible for maintenance of any *tradition* in United States Amateur Radio through specific, singular proficiency testing. Such tradition maintenance is best done by private groups and organizations.

13. There is **no** regulatory reason to keep manual telegraphy testing for **any** class of United States Amateur Radio license examination. The desires of the long-tenured minority in Amateur Radio do not, and should not, take precedence over the uncountable number of newcomers of the future. The Commission should work for the good of **all** United States citizens, not a few who wish to keep the past alive forever. Radiotelegraphy has a proud history in Amateur Radio but all things come to an end. It is time for telegraphy skill testing to end in United States Amateur Radio..

Summary

Mr. Desany's Comments were found inappropriate and based on old standards and practices in United States Amateur Radio. Amateur Radio should not be shackled to the desires of the few long-tenured amateurs who cling to the past. It belongs to the future and countless citizens not yet enjoying that voluntary avocational activity. RM-10870 represents forward, independent thinking with a look towards the future by those long involved with Amateur Radio. The Commission has made a number of options available to radio amateurs in the recent past and it should continue to do so for the benefit of all. Option is not a failure.

I thank the Commission for allowing an independent citizen's viewpoint to be heard and with the ability to share a half century's accumulation of experience and knowledge in radio and electronics at work and in hobbyist activities since 1947.

Respectfully submitted this 23rd day of April, 2004,

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¹² Early primitive radio could be a communications medium **only** by on-off keying modes such as manual telegraphy. Being the first communications mode is not a validator for keeping such skills alive through license testing. The first primitive radios used arc-induced damped-wave oscillations to generate the RF carrier, commonly referred to as *spark*. *Spark* methods were declared illegal in the United States prior to World War Two.