

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

**In the Matter of** )  
 )  
**Amendment of Amateur Radio** )  
**Service Rules to Provide for a New** ) **RM-10870**  
**Entry Level Amateur Radio Class** )  
 )

**Via the ECFS**

**Reply to Comments of Richard J. Herzer of 5 April 2004**  
**by Leonard H. Anderson**

I wish to thank the Commission for providing a forum for commentary by all citizens. Please allow me to state that I am a retired electronics design engineer with no vested interest in any professional or amateur radio activity or educational institution nor with any of those who have commented on this petition or 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.

However thoughtful and reasoned, I must take some issue with Mr. Herzer's commentary and that is submitted following.

**A. Allegation of Inadequacy In Emergency Operations Skills**

1. In his second paragraph, Mr. Herzer states, "*The Amateur Radio Service is to be available with trained amateurs to serve in case of local and national emergencies. Yet the NCVEC [National Council of Volunteer Examiner Coordinators] proposal is asking that the FCC create a license structure that does not certify minimum skills from these amateurs that would be need for those emergencies as stated in Part 97.1 d.*" §97.1 (d) states *Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.* There seems to be some confusion there as to the basis and purpose of the Amateur Radio Service.

2. The basis and purpose as given in §97.1 does not explicitly state that Amateur Radio *is* an emergency service, but rather **may** be used as such. §97.1 (a) states, *Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communications service, particularly with respect to providing emergency communications.* The *de facto*, if not *de jure* activities in United States Amateur Radio is that of an avocational pursuit, a

personal recreation for personal enjoyment. In short, a *hobby*. Amateur Radio is not specifically defined as an emergency service of any kind in liaison with existing Public Safety agencies. It *may* do that, and such is commendable. However, *any* citizen may help in any emergency with whatever they have to offer. That is a moral obligation on all citizens, not just radio amateurs.

3. **No** Public Safety agency in the United States uses any manual telegraphy for communications.<sup>1</sup> Except for Amateur Radio and certain geographic locations in Maritime Radio, manual telegraphy is **not** used for any communications by any other radio service, including the military of the United States.<sup>2</sup> The manual telegraphy skills of radio amateurs are not compatible with any other radio service for emergency communications purposes. Amateur Radio frequency band allotments are only compatible in frequency where the Amateur Radio Service is a *secondary or tertiary* priority to other radio services.

4. There are **no** national or state or local government regulations that require Amateur Radio to act as an emergency communications service. Such operation by radio amateurs is done strictly as a voluntary activity. Without continual training or liaison with existing Public Safety agencies, voluntary emergency communications may hinder Public Safety efforts through unneeded *on-the-job* explanations at the onset of any emergency.

5. The normal avocational activities of radio amateurs does not provide any practice or training in emergency communications. Activities of casual communications, *rag-chewing*, netting of a social group, contesting of many and different competitive radio sports, hidden transmitter hunting, model vehicle radio control, making rare contacts with *Dxpeditons* are not applicable to

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<sup>1</sup> The defining adjective of *manual* is used to differentiate from other forms of telegraphy such as teletypewriters or teletypewriters. The latter have been termed as *telegraphy* devices for decades, as witness the U.S. Navy Electronic Systems Command text *Principles of Telegraphy (Teletypewriter)*, NAVSHIPS 0967-235-0010, dated June 1967. *Manual* telegraphy would be as the old ITU Radio Regulation definition of “*send by hand, receive by ear.*”

<sup>2</sup> Maritime Radio uses VHF voice in coastal waters, particularly in and around harbors, plus inland waterways; Single-sideband voice and data modes are used on the open ocean. The Global Marine Distress and Safety System (GMDSS) is a semi-automated emergency communications system relaying through Inmarsat satellites, replacing the old 500 KHz manual telegraphy International Distress Frequency notifications essentially abandoned four years ago. The U.S. Coast Guard no longer monitors that 500 KHz frequency. The only manual telegraphy requirement is to have Radiotelegraph Operators present on ships of a heavy gross weight on the Great Lakes.

United States military radio still requires manual telegraphy skills in two specific areas: Military Intelligence operations for passive (receive only) communications intercept and analysis; in the Army as part of the many skills required by a Special Operations Communications Sergeant, Military Occupation Specialty (MOS) 18E. The three Military Intelligence enlisted MOSs are 98C, 98H, and 98K and their training is at the Military Intelligence School at Fort Huachuca, AZ. The description of the Special Forces 18E does not state that manual telegraphy is used in any way, only that such a skill is required, one of many. Descriptions of all Army MOSs are available at [www.goarmy.com](http://www.goarmy.com), a website maintained by the U.S. Army.

emergency communications in conjunction with other Public Safety agencies.<sup>3</sup>

6. In the same second paragraph, Mr. Herzer states “*With the reduced testing and automatic upgrades as proposed by the NCVEC [National Council of Volunteer Examiner Coordinators], this will reduce the ability of future amateurs to respond in times of emergencies.*” Mr. Herzer has not shown that current radio amateurs **are** able to respond as a result of **existing** testing. Response to emergencies is individual and **not** governed by the Commission’s regulations on Emergency Communications as given in Sub-Part E, Part 97, Title 47 C.F.R. Except for §97.407 describing the Radio Amateur Civil Emergency Service (RACES), Sub-Part E only indicates that exemptions to existing regulations may apply during any emergency.

## **B. Allegation That The NCVEC Proposal Has No *Incentive***

7. RM-10870 [NCVEC Petition for Rule Making] proposes elimination of the manual telegraphy **test** for all Amateur Radio license classes. Ergo, there is no **regulatory incentive** to learn manual telegraphy for so-called *upgrading* as with the older, pre-2000 *Incentive Plan* licensing structure of six classes of license.<sup>4</sup> All the **existing** manual telegraphy test rates are the same at 5 words per minute. They have been so for 3 years, 11 months.

8. There is **no** regulation now, nor in the recent past, that any radio amateur begin licensing at the so-called *lowest* class and then work *upward*. Existing regulations allow **any** citizen to enter into Amateur Radio at **any** class for their first Amateur Radio license. **None** of the 18 Petitions for Rule Making submitted in 2003 to 2004 propose any tiered, *up-from-recruit-ranks*, license class *advancement* mandated by regulation.

9. Amateur Radio skills and knowledge may be acquired readily by **individual effort at education** and are not bound strictly to the so-called *incentives to rise to a higher class*. There is a considerable body of work on radio equipment, radio design, electronics of many kinds, purchasable kits of many levels of expertise to learn assembly and construction methods, all within everyone’s reach and none of it requiring any license examination session to use or learn from. There are hundreds of Amateur Radio clubs throughout the United States along with an equal number of volunteer mentors to help anyone learn operational skills.

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<sup>3</sup> A *Dxpedition* (colloquial, coined term) is where one or more radio amateurs travel to an island or land territory, uninhabited or a place having no Amateur Radio activity, for the sole purpose on contacting other amateurs and sharing contact details such that other radio amateurs obtain valid references to tally for some award or competitive nature activity, highlighted by the authorized special call sign of the *Dxpedition* group.

<sup>4</sup> Older Amateur Radio regulations required General and Advanced class licensees to pass a manual telegraphy test at a 13 word per minute rate, an Amateur Extra class applicant to pass a manual telegraphy test at 20 word per minute rate. Four years ago, from Report and Order 99-412, all manual telegraphy test rates were set at 5 words per minute rate.

10. *Incentive to upgrade* will remain the same class-distinction phenomenon common to most human social groupings, that of some having a psychological need to show references of *superiority* over others. Amateur Radio is essentially a pro-active endeavor. Those who can do, will. Those who cannot do, won't. A license upgrade due to passing a couple dozen or so questions, does not show the ability to *do* things to anyone but the examiners. Some sort of ranking enabled by a test taken many years ago is not a truly valid indicator of ability now at current skill requirements.

11. Amateur Radio is **not** a union, craft, or guild as in professional work. There is no real reason to have any sort of *apprentice-journeyman-master* ranking in an avocational activity. There is a reason, a quite evident reason by observation, for long-timers to demand that their self-perceived expertise must be indicated by appropriate rank, status, title. As practiced by most, Amateur Radio is a recreation involving interest in communications, not in role-playing games of *one-upmanship*.

12. If there is to be *incentive* as a positive attribute, regulations are a minor part for getting further knowledge and experience in communications arts. The major incentive will come from the individual fascination of the communications themselves and the technology behind such communications possibilities. Only game-players will profit from increased rank, status, and titles.

13. The Commission is not chartered by law to *be* a school or educational institution. Amateur Radio licenses are just grants from the Commission that individuals or clubs may operate transmitters on allocated amateur bands using allocated modes and modulations. Licenses are **not** certificates of learning or of achieving anything but passing examinations according to Commission regulations. The urban myth of license classes being a sort of *diploma* indicating supposed expertise is firmly entrenched in the *amateur community* psyche.

### C. Morse Code Is the Fundamental and Universal Mode of Communications

14. Mr. Herzer, in his 12<sup>th</sup> paragraph states "*Morse Code (CW) is considered the most fundamental mode of communications. It serves better than voice and the digital modes under extremely noisy band condition. It can be operated with the use of the most simplest of equipment. It serves as an international language, and is the second most popular mode of communications in amateur use.*" All of that is legend from the past. It must be examined, myth by myth.

15. On-off manual telegraphy was only the **first mode** in early primitive-technology radio simply because no other mode was possible in 1896, the year of the first demonstration of radio as a communications means by Marconi in Italy and Popov in Russia. With no vacuum tubes yet invented to produce Radio Frequency (RF) oscillations or to amplify same, those first *transmitters* used arc-induced damped oscillations at RF or *Spark*. Such RF generation is now outlawed. The first voice transmissions by radio did not happen until Reginald Fessenden's Christmas Eve broadcast of 1906 using a special high-heat carbon microphone in series with the antenna. The Fessenden demonstration did not result in anyone else adopting that method, despite the obvious novelty at the time.. Practical voice modulation would wait many more years until vacuum tubes and better circuitry

made voice modulation possible. At 108 years after the first radio communications transmissions, all other radio services except amateurs have **abandoned** this so-called *most fundamental mode*.

16. The claim that on-off manual telegraphy is supposedly *better* than digital modes at *extremely noisy band conditions* is not an absolute. Phase-shift keying (PSK) data modes can work at lower relative signal levels or with higher relative noise levels than with on-off keyed Continuous Wave (CW) carriers. The claim is **only true** in a comparison of **manual** telegraphy versus **manual** voice analog amplitude modulation. Several methods of voice and data digital modulation are far superior to on-off keyed manual telegraphy at overt, wideband RF jamming at far higher signal levels than noise from natural electrostatic sources.<sup>5</sup> The major effort of signal-to-noise improvement on all modes, all modulations on radio is with **receiver systems**, not in the transmitters.

17. That one- or two-tube on-off keyed CW vacuum tube transmitters are *simpler* than multi-tube amplitude modulation (AM) voice transmitters is quite correct. But vacuum tube AM voice transmitters began a decline at about the beginning of the 1950s, replaced with simpler Single-Sideband (SSB) voice transmitters. Vacuum tubes of the economical variety are not and have not been reliable. The myth that began prior to World War Two in Amateur Radio dies hard into this new millennium. Solid-state electronics devices are 100 to 1000 times more reliable than ordinary vacuum tubes, permitting years of continuous use out of integrated circuit (IC) devices in everyday appliances. Today, the parts count of a simple two-transistor, low-power transmitter on-off keyed carrier type and a variable-capacitance diode frequency modulating (FM) the oscillator of the same circuit is the **same**. A CW receiver needs a beat frequency oscillator added to its detector while an FM receiver needs a limiter stage. The parts count for the receivers are essentially the **same**.

18. That International Morse Code is a *universal language* is a preposterous claim by those whose primary language is English. Morse Code itself is only an asynchronous on-off coding representing the 26 letters, 10 numerals, and the common punctuation marks found in written English.<sup>6</sup> That it is *universal* is due long ago CCITT decision to standardize international telegram exchanges for *one* character set rather than the dozens that were in use.<sup>7</sup> There is no *universality* in the English language as a language over an above other languages, only *standardization*. Those

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<sup>5</sup> The standard small-unit U.S. military radio is the SINCGARS (SINgle Channel Ground Air Radio System) family exemplified by the AN/PRC-119 manpack set. The SINCGARS family uses digital voice and data basic modulation plus the optional FHSS (Frequency Hopping Spread Spectrum) of the RF carrier at 10 hops per minute. Between 1989 and 2003 approximately a quarter million radio sets have been manufactured and fielded in the U.S. military according to ITT, Fort Wayne, IN, information.. The communications robustness of the SINCGARS family is extraordinary.

<sup>6</sup> The first "morse code" originated with Samuel F. B. Morse consisting only of numerals. Groups of five numerals were devised to represent words or phrases common in letter communications. Morse's financial mentor and supporter Alfred Vail is reputed to have suggested the alternative of single characters based on a printer's type case. While the latter is still in contention between the family descendants, the second method is used today.

<sup>7</sup> That standard is presently referenced in §97.3 (a) (27) but has been revised at the International Telecommunications Union and the CCITT document given a new nomenclature as well as additions.

whose primary language is other than English, especially those whose languages are syllabic, have to essentially learn *another language* to use International Morse Code. Spoken English was adopted by the International Civil Aviation Organization (ICAO) for all voice communication on airways only as a *standard*.<sup>8</sup>

19. That telegraphy is said to be the *second most popular* mode has very limited references, due only to an American Radio Relay League (ARRL) informal poll and then only on amateur HF bands. By informal monitoring of amateur HF bands in southern California, that mode appears to be a very distant second. The Commission allocates 17 other bands above 30 MHz for amateur use with greater than 23 GHz of total bandspace. MF and HF amateur bands occupy only slightly more than 3.7 MHz total bandspace. Use of telegraphy above 30 MHz is in niche applications such as moonbounce or meteor scatter communications. The vastly predominant mode on VHF and UHF amateur bands is FM voice. The *second most* is still **second** and that is no criterion to mandate manual telegraphy testing in the Amateur Radio service.

20. Mr. Herzer asks in his 12<sup>th</sup> paragraph, “*How can an amateur state that he/she has advanced skills and has become an expert and yet does not have the knowledge or skill to operate in the simplest mode of communication?*” That is flawed in several aspects. A spoken language is the actual simplest communications between humans. We all learn that in very early childhood and adapt quickly to it. No tests are needed to ascertain our vocal communications skills prior to entering the first school. Since there is no essential *simplicity* difference between a CW telegraphy and FM voice station equipment, it should be pointed out that a vocal language already learned and applied would be the tie-breaking vote for FM voice as the *most simplest system*.

21. That question statement is contradictory. Expertise is seldom in *simplicity*. **Experts** knowledgeable in communications technology would bypass manual telegraphy in favor of dozens of other modes, modulations, and sub-systems which work better, faster, and more reliably than manual telegraphy. Experts are unlikely to be curators of living museums of archaic radio modes and methods. Experts would look for reliability in communications. A communications circuit requiring a telegraphy operator at each end will introduce a double error possibility due to human error. This is especially true if signal levels are near the noise floor of receivers, a condition often stated in regard to the alleged superiority of telegraphy.

22. Learning and gaining expertise in telegraphy requires a definitive *psychomotor aptitude* which is not a common trait in humans. That is unrelated to intellectual aptitudes applicable to learning abstract concepts such as electronics. Intellectual ability is nearly always applied to how *smart* a person is considered. An *expert in radio* is judged by an individuals’ intellectual knowledge

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<sup>8</sup> That adoption was in 1955, the same year as the standardization of the *NATO Phonetic Alphabet* in the U.S. military, words picked carefully to be pronounceable approximately the same in the languages of the NATO members. This commenter was serving in the U.S. Army at the time, in communications, and had to quickly adapt from the previous phonetic alphabet. The ICAO radio communication voice language was picked due to the majority of pilots in the world airways speaking English at the time. That old *NATO Phonetic Alphabet* is still the standard phonetic alphabet in the U.S. military of 2004.

and accomplishments and expertise, not in manual telegraphy skills.<sup>9</sup>

23. Mr. Herzer makes an implication as well as a very incorrect statement in his comments' 12<sup>th</sup> paragraph, "*It also serves as a mode of communications during emergencies when all modern forms of communications are lost, as in the case of NYC during 9/11, there was no internet in or out of the city.*" In reality, on the basis of much mass media news as well as industry publication news, **no telegraphy was used** in the heinous Attack on America in New York City (NYC) on 11 September, 2001. The twin towers of the World Trade Center (WTC) were destroyed and falling debris in turn caused damage to the NYC Emergency Communications Center in an adjacent building. Some, but not all telephone trunk lines were severed in lower Manhattan, the location of the WTC. NYC fire and police personnel used their existing radios, as did many other agencies in the aftermath to perform rescue work and medical aid, then to begin clearing away debris. In many cases, radio communications had to be relayed by improvisation, vehicle to vehicle, but it was done with existing equipment. The northern two-thirds of Manhattan borough was untouched as were all other boroughs. Some Internet servers and concentrators might have been destroyed in the immediate area of the WTC but not all. Internet service into or out of NYC was not completely lost. At the Pentagon in Washington, DC, existing military and city radio facilities were used effectively. A year-old utilities control network at the Pentagon effectively isolated the one corner of the impact area to prevent spread of the resulting fire.

#### **D. Dumbed-Down Newbies Are A Discredit To The Service**

24. Mr. Herzer alleges this in his 14<sup>th</sup> paragraph, "*The 'dumbing down', as some call it, of the Amateur Radio Service has been quite obvious.*" This seems to be a personal viewpoint, a rather testy one to be sure. Mr. Herzer has not proved this alleged *obvious* condition by any comparison data of old versus new.

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<sup>9</sup> All recruits into the United States armed forces of the period from World War Two to about 1960 were given a series of aptitude tests used to advise personnel specialists on their ability to learn different military occupation specialties. Morse code cognition using only a few character sounds was one of those tests. In 1952 this commenter was one of those recruits yet was assigned to the Signal Corps despite failing that code aptitude test. The then-required rate of radio operators was 20 words per minute. Informal information indicates the percentage passing the code aptitude test was less than 20 percent (private communications at Far East Command Headquarters in 1954). The commenter's military assignment was to a Signal Battalion in Tokyo, Japan, in 1953 and the HF transmitter station of ADA, then the primary communications station of the Far East Command. ADA had not used manual telegraphy mode transmissions since 1948; all transmissions and receptions were voice and teleprinter on SSB and Frequency-Shift Keying TTY circuits to Korea, Okinawa, Phillipines, Honolulu, Anchorage, Seattle, San Francisco, and a faraway city in southeast Asia called Saigon. Operations were 24 hours a day, 7 days a week, regardless of ionospheric conditions. The average amount of traffic relayed by ADA Control was 220,000 teleprinter messages per month during 1955. Operational responsibility was reassigned to the U.S. Air Force from the Army in 1963. USAF ceased HF operations in the Tokyo area in 1978 and the facilities returned to the Japanese. Callsign ADA remains in use, that of Headquarters, U.S. Army Pacific based at Fort Shafter, Hawaii.

25. Considering that the NCVEC Question Pool Committee originates all questions and answers in the question pool, reviewing each element pool bi-annually, and that the NCVEC is made up of so-called *high-class* amateur licensees, it would seem reasonable that the NCVEC does know something of United States Amateur Radio. In addition, the Commission reviews each question pool and has final authority on its use. It would also seem prudent for Mr. Herzer to take his complaints on the quality or alleged non-quality of written tests to the NCVEC Question Pool Committee rather than to the Commission.

26. Mr. Herzer complains in his last sentence of paragraph 14, “*In time of emergencies these operators [Communicator class of a possible future] would not help the American public but hinder in the efforts to set up emergency communications due to their lack of skill and knowledge.*” This is not only strong language but also evidentiary of *a priori* knowledge of a specific alternate future! Mr. Herzer is reminded of the distinct **lack** of Amateur Radio emergency communications setup in the immediate aftermath of the Attack on America of 11 September 2001. That was in our recent past when, supposedly, all of the *amateur experts* were available to do just as he requires those of the future to do.

27. Mr. Herzer is reminded that Amateur Radio is essentially a voluntary avocational endeavor, utilized for personal recreation and enjoyment. It is not a *service* such as a military service or public safety agency. Neither is it a union or craft or guild. Activities evolve over time to suit the majority, not the rather arrogant demands of the long-timers who wish to issue orders to all those in *lower ranks*. There should not be any problems with citizens enjoying a hobby, a pastime, an activity that can stimulate the mind and spirit. No radio amateur should have to stand in ranks, salute higher ranks, or march to some old drumbeat of the past, not for a hobby. The future is optional. 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 towards proposed rule making.

Respectfully submitted this 5<sup>th</sup> day of April, 2004,

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