

**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 Implement Changes to Article 25 of the International Radio Regulation Adopted at the 2003 World Radiocommunication Conference)	RM-10867
)	
)	RM-10870
)	

Via the ECFS

Reply to Comments of Mickey D. Cox Made on 23 April 2004

by Leonard H. Anderson

Mr. Cox's Comments are that of a long-tenured conservative in United States Amateur Radio. Of his Comments to two of the four 2004 Petitions, I will address principally equivalent paragraphs in my Reply to his Comments.

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 Must Be Experienced To Understand It

1. Mr. Cox states, in a parochial tone, "*It is generally accepted that students are not capable of determining the particular academic topics that should and should not be included in a specific discipline. As a college teacher, I firmly believe in this principle. As an experienced amateur radio operator, I also believe this principle applies in the present debate on Morse testing; that is, I submit that applicants with no experience in radiotelegraphy are in no position to argue that General class operators should be excused from demonstrating code proficiency.*"¹ This commenter began HF communications in February, 1953, while in the United States Army, at the third largest primary communications station in the Army Command and Administrative Network. At that time,

¹ 7th paragraph on Cox Comments on RM-10867, 8th paragraph on Cox Comments on RM-10870 with Amateur Extra class included with General class. RM-10870 proposes to do away with all telegraphy testing.

over 51 years ago, **none** of the many communications circuits from Tokyo, Japan, reaching trans-Pacific to the United States and Possessions, south to Okinawa, Manila, and Saigon, used any form of manual telegraphy.² Since then, this commenter has had a career as an electronics design engineer on a variety of communications and radionavigation equipment, operating on more parts of the electromagnetic spectrum using more communications modes and modulations than are allowed to radio amateurs today. At no time was any radiotelegraphy skill required nor used.

2. At one time in the late 1950s, this commenter decided to learn telegraphy and achieved about 8 words per minute cognition. Considering the previous experience in the military and now employed in the southern California aerospace industry, the thought of requiring radiotelegraphy skills to achieve an amateur license for a voluntary avocational activity seemed absurd. It still does, over four decades later. Teleprinter/data throughput in that time has progressed from 60 to 100, 100 to 300, 300 to 1200, 1200 to 2400, 2400 to 14,400, 14,400 to 28,800 words per minute, finally to 56,000 words per minute maximum.³ Manual telegraphy is restrained by human psychomotor aptitudes to a maximum of about 40 words per minute equivalent on bursts, 20 words per minute on short-term sustained operation.⁴ Teleprinters and data terminals can sustain continued throughput as long as there is electric power, paper, and ink. Human telegraphic throughput times are limited by human needs of nature-calls, food, and rest periods.

3. In experiencing a career in electronics, radio being a subset of electronics, this commenter was a witness to what may be called an *ever-changing, ever-increasing syllabus* of knowledge *as it was happening*.⁵ As part of that, Maritime Radio Services, once the champion of radiotelegraphy, has gone over to VHF voice in harbors and inland waterways, Single-sideband voice and data modes on the open ocean. The Maritime World discarded the old 500 KHz MF international telegraphic distress frequency in favor of the Global Marine Distress and Safety System (GMDSS) using communications satellite relay.⁶ Civil aviation abandoned the old *A-NLF* beacons for air navigation

² Military fixed-point to fixed-point communications were standardized in 1948 to teleprinter, voice, and facsimile. In the 1953 to 1956 time of my service at Army station ADA, the mainstay of messaging was via 60 word per minute rate teleprinter. ADA had a 220 thousand messages per month throughput. In the next decade the teleprinters were advanced to 100 word per minute rate machines. ADA operated 24-hours-a-day, 7-days-a-week regardless of ionospheric conditions.

³ *Throughput* is the industry term for rate of communications, any form. The *bits per second* rate normally used to characterize digital communications rate is equivalent to words per minute using a 10-bit-per-character coding with one *word* equivalent to 5 characters plus a space character. All of the example rates may be transmitted over a *voice-grade* circuit bandwidth of 3 KHz.

⁴ The psychomotor aptitudes applicable to telegraphy cognition are not the same in all humans. Those that do have them attempt to use themselves as role-models for all humans in order to self-promote themselves.

⁵ That sentence is in a style suitable for college instructors rather constrained by contents of textbooks used in formal instruction.

⁶ The cut-over completion year for GMDSS was 1999. Full details are at www.imo.org, the website of the International Maritime Organization.

in the mid-1950s once VOR or Very high frequency Omnidirectional radio Range ground stations were established.⁷ Absolutely **no** public safety agency in the United States uses any radiotelegraphy for communications. The United States military has abandoned radiotelegraphy for communications.⁸ Radiotelegraphy doesn't have the throughput, the universality, the reliability, the error-correcting capabilities of voice or data modes. **Any student of history of telecommunications can learn this.**

4. What remains is an innate stubbornness of long-tenured radio amateurs who maintain that radiotelegraphy is of some *vital necessity* to be kept in Amateur Radio license examinations. A popular rationale of those long-tenured amateurs is that *it keeps a tradition in Amateur Radio*. First, the Commission is not obliged to be any keeper of that *tradition*. That manual telegraphy testing has always been in United States Amateur Radio license examinations is due more to it never having been removed...partially kept in there by lobbying from even longer-tenured amateurs of the past. Secondly, the Commission has not required that manual radiotelegraphy be used by amateurs over and above all other optional modes.⁹ Thirdly, the Commission is not a curator for a *Living Museum of Archaic Radio Skills*. There is no regulatory reason to continue the manual telegraphy test in United States Amateur Radio.

5. Manual telegraphy proficiency tests prove only **one thing**: The ability to receive by ear and send by hand manual telegraphy. Nothing else is demonstrated by that test, no *tradition*, no radio theory, no knowledge of Commission regulations. Acquisition of radiotelegraphy skills can be done off-the-air, from recordings, from computer programs.¹⁰ It can also be done off-the-air with companions, with groups. It can be done **now, on-the-air, by any class licensee on bands above 30 MHz**. There is **no** need to continue manual telegraphy testing for any Amateur Radio license.

B. United States Amateur Radio Must Be Constrained To The *Elite* Few

6. In his last paragraph, Mr. Cox states, "*The quality of the Amateur Radio Service is more important than its number of licensees.*" That is an absurdly egregious statement. Amateur Radio

⁷ VORs permit any pilot to determine their magnetic bearing to any ground station either manually or automatically, either without ambiguity in radial position. The old LF beacon system used two transmitters and a bidirectional combined antenna pattern such that it was difficult to discern a position going *to* or away *from* that beacon.

⁸ There are **no** Military Occupation Specialties in the United States military involving manual telegraphy as in Morse Code for any communications purposes.

⁹ Not precisely true. At one time in the past, the Commission required some proof of communications ability by submitting personal logs showing radiotelegraphy contacts in order to achieve renewals. That was decades in the past.

¹⁰ The Military Intelligence School at Fort Huachuca, AZ, does teach *passive* manual telegraphy skills for the purpose of foreign communications interceptions. In 2001 that School used two computer programs as learning tools according to course descriptions then on the School's website.

is **not** a job, **not** a union, **not** a guild, **not** a trade-craft of professionals. Amateur Radio is a voluntary avocational activity done for recreation, for personal enjoyment. It should be open to **all** citizens who can meet the licensing requirements. Mr. Cox does not seem to think that, an unfortunate situation. It does illustrate the self-perceived *superiority* status claimed by the long-tenured, those who are adamant in preserving the skills learned long ago, and to force all newcomers to obey those old requirements. Such an attitude is to blame for the polarization of opinions in Amateur Radio of today. Newcomers didn't cause it. The long-timers caused it.

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.

Respectfully submitted this 23rd day of April, 2004,

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