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

In the Matter of	)	
	)	
Amendment of Part 97 of the Commission's	)	WT Docket No. 16-239
Amateur Radio Service Rules to Permit Greater	)	
Flexibility in Digital Data Communications	)	

COMMENTS OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO

ARRL, the national association for Amateur Radio ("ARRL" or "League"), respectfully submits these comments in opposition to the Petition for Declaratory Ruling filed in the above-referenced proceeding on behalf of New York University ("NYU" or "Petitioner").[1]

The League consistently has supported transparency and openness in Amateur Radio communications, both in filings before the Commission and in its work at the World Radio Conferences (WRCs) of the International Telecommunications Union (ITU). For example, in 2013 the League actively opposed allowing encryption even for limited use for emergency communications purposes.[2] As recently as last July the League's Board of Directors affirmed its continuing opposition to permitting encryption of signals in the Amateur Radio services.[3]

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[1] *See* Petition of New York University for Declaratory Ruling (filed Oct. 24, 2019) ("Petition"); FCC Public Notice, DA 19-1130, WT Docket No. 16-239 (Nov. 1, 2019).

[2] *See* ARRL Comments in RM-11699, Petition for Rulemaking to Amend Part 97 of the Commission's Rules Governing the Amateur Radio Service to Provide for Encrypted Communications (filed July 8, 2013); In the Matter of Don Rolph, Petition for Rulemaking to Amend Part 97 of the Commission's Rules Governing the Amateur Radio Service to Provide for Encrypted Communications, Order (Dismissing Petition), 28 FCC Rcd 13366 (MD, WTB 2013).

[3] *See* AGENDA & MINUTES – 2019 SECOND MEETING ARRL BOARD OF DIRECTORS at minute 31: "(5) Reiterate to the Commission the ARRL's unchanged position — most recently stated in its Comments submitted ***In***

The League does not, however, support the Petitioner's ill-considered request that would change the meaning of the language prohibiting encryption that was agreed to by all countries of the world at the ITU 2003 World Radio Conference (WRC-2003) and subsequently promulgated by the Commission in its Part 97 amateur regulations. The formulation proposed by the Petitioner is both over-broad and vague. It would take terminology that is applicable by treaty worldwide and introduce uncertainty into the Part 97 regulatory scheme and amateur communications conducted daily across borders.

In making its request for new and unique language the Petitioner has not justified, or even explained beyond speculative assertions why or how the current regulatory framework is insufficient either in the United States or more generally throughout the world (since the language specifying the prohibition is the same everywhere).

Accordingly, for these reasons and as further set forth below, the ARRL requests that the Petition of NYU be dismissed with prejudice.

Petitioner's Proposed Terminology Would Introduce Unique and Uncertain Terms to a Treaty Provision That Applies to Radio Amateurs Worldwide

The Commission's rules prohibit "messages encoded for the purpose of obscuring their meaning…." [4] The effect of this provision is to prohibit use of encrypted messages in the Amateur Radio services except for explicit exceptions mostly related to satellite control.[5] The

the Matter of Don Rolph, RM-11699 - that the encryption of messages prohibited in Amateur communications by Section 97.113 of the Commission's Rules and by Article 25, §2 of the International Radio Regulations, should remain prohibited; (6) Request that the Commission remind Amateurs, by whatever appropriate means available, of the current prohibition against transmitting 'messages encoded for the purpose of obscuring their meaning.'" See https://tinyurl.com/rfokhql at p. 17 of 28 (last visited Dec. 1, 2019).

[4] 47 C.F.R. § 97.113(a)(4).

[5] *See* Amendment of Part 97 of the Commission's Rules to Implement Certain World Radio Conference 2003 Final Acts, Order, 21 FCC Rcd 278 (WTB 2006).

operative wording is identical to the prohibition unanimously adopted at the 2003 World Radio Conference (WRC-2003) to govern Amateur Radio communications worldwide and contained in Article 25 of the ITU *Radio Regulations*.[6] The 2003 provision was adopted, *inter alia*, to replace the treaty term "clear language." As related shortly after the provision's adoption at WRC-2003 by Michael Owen, a participant at that conference:

> "The old regulation limited international amateur radiocommunication to "plain language"….
> It is assumed that the phrase in the old provision … meant something transmitted by either voice or Morse that anyone could hear and understand. But today amateurs use many codes, and so what is meant by the phrase "plain language" could become a question in some countries. So, the simple phrase in the old regulation was replaced by a new provision, as follows: ***25.2A*** *Transmissions between amateur stations of different countries shall not be encoded for the purpose of obscuring their meaning*…."[7]

The adoption of this language by the delegates at WRC-2003 made clear and final that digital transmissions, all of which necessarily are encoded, are permitted in the Amateur Radio services so long as they are not used to obscure meaning.

NYU asks the Commission to re-interpret the adopted provision of the world's expert delegates. The Petitioner requests that the Commission declare that the treaty provision and the parallel domestic rule really mean that transmission of "effectively" encrypted ***or*** "encoded" messages are prohibited. NYU adds that prohibited messages should "include messages that cannot be ***'readily'*** decoded over-the-air '***for true meaning.'"*** (Emphasis added.)

The Petitioner's proposed "interpretation" of Section 97.113(a)(4) of the Commission's rules would attribute new meaning to this provision, one that was not understood, debated, or adopted at WRC-2003 when the language was approved as an amendment to the ITU *Radio*

[6] ITU *Radio Regulations* Art. 25, § 2A.

[7] Michael Owen, VK3KI, *New Regulations for the Amateur Services,* QST, September, 2003 at p. 42.

Regulations treaty[8] nor by the Commission when it implemented the treaty's provisions within Part 97 of its rules in 2006. The prohibition applies to the international communications of all Radio Amateurs throughout the world, including those of U.S. Radio Amateurs, and common rules and understanding are an important consideration because many communications among Radio Amateurs are between licensees situated in different countries.

The daily communications across borders furthers an important purpose of the Amateur Radio services. As set forth at Section 97.1 of the Commission's Rules, the amateur services are an established for the purpose, *inter alia*, of continuing and extending "the amateur's unique ability to enhance international goodwill."[9] Cross-border communications by radio amateurs would be hampered to the extent that Radio Amateurs in one country have a different understanding of the same provision of the ITU *Radio Regulations* that applies in another country, or as modes of communication commonly used in one country are not permitted in another country.

Vagueness of Petitioner's Proposed "Effectively Encrypted" and "Cannot be Read for True Meaning" Terminology Would Undermine the Existing Prohibition Against Encryption

NYU argues in its Petition that the Commission should abandon the meaning of the language carefully crafted over a period of years by delegates representing every country in the world. Specifically, NYU urges the Commission to interpret the provision as one to prohibit "transmission of effectively encrypted or encoded messages, including messages that cannot be readily decoded over-the-air for true meaning."[10] The vagueness of this untested language on its face would undermine the existing regulation, which has international approval and meaning.

[8] ITU *Radio Regulations* Art. 25, § 2A.

[9] 47 C.F.R. § 97.1(e).

[10] Petition at 1.

The proposed language would, for example, prohibit all "encoded messages." This terminology itself would prohibit the use of digital modes in the Amateur Radio services as explicitly approved by the countries of the world at WRC-2003. The proposed prohibition arguably could include, presumably unintentionally, CW (Morse Code), which is a longstanding means of encoding transmissions. The very fact that messages sent in CW are "encoded" by any definition of the term starkly demonstrates the problem with this proposal. Adding the word "effectively" would make the definition even more vague by including all encoded messages *plus* an additional set of undefined messages. The extent of this proposed additional set of messages is unknown because the application of "effectively" is unknown and cannot be determined on the face of the proposal.

Similarly, it is unclear and undetermined what the Petitioner may mean by "effectively encrypted." "Encrypted itself is a "yes" or "no" binary proposition. The meaning either is hidden from all but the intended recipient(s), or it isn't. A message cannot be considered "encrypted" if the means to enable a non-recipient to understand the message are generally available.

Adding the modifier "effectively" to "encrypted" converts clear meaning into vague uncertainty. If one cannot understand a message because it is being sent in a non-English language, the message "effectively" is encrypted for many. But language does not constitute "encryption" as generally understood because another non-intended recipient *could* understand the message and no intent to obscure the message would succeed.

Under the Petitioner's proposal, how many persons would have to understand the message before an "effectively encrypted" message would move into the category of being "readily decoded over-the-air for true meaning"? What does the Petitioner's proposed term

"readily decoded" mean in the amateur radio context when even plain voice and CW often cannot be "readily decoded" or even decoded at all at any particular location due to propagation vagaries? And what is meant by the term "true meaning" – recording the words sent, or what those words may signify?

The Petitioner's proposal creates more questions than it answers for the regulator later called upon to apply the vague language in a specific case. There would be no history, no international context, nor any contemporaneous decisions by others on the meaning of these terms that would aid the regulator in interpretation. Adopting this proposal would be going down the wrong road. The encryption prohibition should remain universal and clear worldwide as currently prohibited by treaty and regulation.

Petitioner Fails to Demonstrate that the Commission's Rules are Ineffective or Otherwise in Need of New Interpretation

The Petitioner does not address the history and meaning of the regulatory term to any extent. Instead it discusses tangential matters about potential violations that it perceives to be occurring. These are enforcement matters and should not be confused with appropriate interpretation or rulemaking matters. We are unaware of any enforcement case in which the Commission is experiencing difficulty in understanding and applying the prohibition against encrypted messages. The petitioner does not cite a single Commission decision. Instead of relying on Commission (or ITU) precedent, Petitioner relies solely upon its own judgment and misunderstandings.

Petitioner's discussion of what it views as "violations" augurs against its proposal to interpret in some new fashion the international and domestic prohibition. For example, the Petitioner asserts, without any basis in fact, that dynamic compression techniques effectively

encrypt or encode communications.[11] As noted above, ***all*** digital communications are "encoded", as is the accepted mode of CW. Any discussion should focus on encryption, not encoding.

Compression and dynamic compression are widely recognized as efficient methods for encoding content so as to lessen the time needed for transmission, as is Automatic Repeat Request ("ARQ"). Dynamic compression can be especially useful when different languages utilize the same software, as in amateur radio. Hams worldwide employ these techniques in their quest to improve communications on the HF bands, and that use is widely permitted. The techniques save spectrum and also play key roles in successful transmissions under varying propagation conditions.

As noted in the ARRL's *Ex Parte* Comments, the ITU is engaged in a project that actively supports use of these very techniques by radio amateurs in Caribbean and Central American nations.[12] The public interest value proposition is straight forward: radio amateurs are an important resource at times of communications emergencies, and to have the equipment and skills when needed, radio amateurs need to engage in every-day activities using the communications methods and equipment. Handling messages using efficient digital means is an important capability to have on tap when other means of communication fail, but these means cannot be expected to exist unless operators are trained and equipment is used during non-emergency times as well.

The Petitioner alleges that some of the digital techniques commonly used by radio amateurs throughout the world nevertheless cannot be decoded over-the-air or are difficult to

[11] Petition at 3.

[12] ARRL, *Ex Parte Comments* filed in this Docket on September 17, 2019, at pp. 4-5.

decode. Petitioner's repeated assertions and protestations evidence that the Petitioner either misconstrues or is ignoring the Commission's applicable regulatory scheme. In Section 97.309(a)(4), the Commission explicitly authorizes amateurs to use new digital techniques without prior Commission approval provided that the techniques employed are publicly documented. When adopting the rule, the Commission approved the published documentation for three specific techniques that demonstrate the level of documentation required by the rule.[13] The Petitioner has not brought any complaint to the Commission with a showing that the rule requiring sufficient public documentation is being misused or violated.

In any event, other commenters have accessed the public documentation for the digital techniques addressed by the Petitioner and in the record those radio amateurs have filed descriptions of their successful efforts to monitor some of the modes being discussed.[14] The Commission also has been informed in the record that software is available without cost that permits viewing Winlink Pactor signals in real time using a Raspberry Pi or an SCS modem.[15] The multiple submissions are uncontroverted by any factual evidence indicating that they do not

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[13] *See* 47 CFR § 97.309(a)(4). The documentation approved by the Commission for the three techniques is published on the ARRL's website and may also be published elsewhere, *see* Amendment of the Amateur Service Rules to Clarify Use of CLOVER, G-TOR, and PacTOR Digital Codes, 10 FCC Rcd 11044 at fns. 4,5 (WTB 1995).

[14] *See* Gordon L. Gibby MD, KX4Z, *Ex Parte* Comments, WT Docket 16-239, "Inconvenient Observations" (filed Nov. 1, 2019) and "Inconvenient Data, Experiments Capturing PACTOR-3 Communications with a Raspberry Pi (without any PACTOR modem)" (filed Nov. 25, 2019); John S. Huggins, KX4O, Ex Parte Comments, WT Docket 16-239, "Exhibit Demonstrating over the air monitoring of a Winlink email exchange using, in this example, the Pactor Mode" (filed July 30, 2019); and "Addendum to previous exhibit" (filed Aug. 13, 2019).

[15] *See* Hans-Peter Helfert, Spezielle Communications Systeme GmbH & Co. KG, *Ex Parte* Comments, WT Docket 16-239: "Regarding monitoring/transparency of our PACTOR 3/4 communications modes (filed Oct. 23, 2019). *See also* PMON – a PACTOR® Monitoring Utility for Linux: https://www.scs-ptc.com/en/PMON.html.

work as stated. The filings demonstrate that the specific Winlink signals referenced by Petitioner as necessitating the adoption of additional regulatory restrictions can, in fact, be monitored over-the-air from hundreds of miles distant. Although this is a relatively new development and appears to be a work in progress by multiple parties, it is uncontroverted that the public documentation has been available for years, and in some instances for multiple decades, and can be used to implement a monitoring method for the described digital techniques.

Conclusion

Experimental traditions, international goodwill, and emergency communications capability all are recognized purposes of the Amateur Radio services in the Commission's rules.[16] The Commission has addressed amateur use of digital signals in multiple proceedings, beginning with Docket 20777 in 1976.[17] There has been no showing that the current regulatory scheme is deficient in prohibiting encrypted messages.

The Petitioner in this case fails to explain why and how the current regulatory scheme does not sufficiently prohibit encrypted messages in the Amateur Radio services, both in the United States and in the other countries with whose Radio Amateurs Commission licensees communicate daily. To the contrary, adoption of the Petitioner's proposals would add confusion -- rather than clarity -- and diverge from the international consensus on prohibiting encrypted messages while fostering vibrant experimentation with digital techniques.

Accordingly, the ARRL respectfully requests that the Petition of NYU be dismissed with prejudice.

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[16] 47 CFR § 97.1.

[17] An early history of digital techniques used in amateur radio was published in 1985, *see* P. Karn, H. Price, & R. Diersing: "Packet Radio in the Amateur Service*", IEEE Journal on Selected Areas in Communications* at pp. 431-439 (May, 1985).

Respectfully submitted,

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