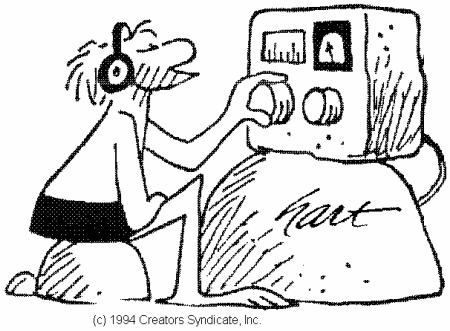

BARA Facts

Newsletter of the Binghamton Amateur Radio Association

March 2004

Website: http://www.wtsn.binghamton.edu/bara

Attention All Members!

Important Business at March Meeting

Change to BARA Articles of Incorporation

Last year your Club Officers and Directors began an investigation into the possibility of obtaining Tax-Exempt status for the Binghamton Amateur Radio Association. This matter has been discussed at General and Board Meetings and has been noted in the pages of the ***BARA Facts.*** **We are very close to obtaining Tax-Exempt status, however IRS Regulations require a small change to our Articles of Incorporation.**

The required change would be to the statement of the purpose of the Binghamton Amateur Radio Association and would explicitly state that the purpose of our association is technical and scientific.

This change represents no departure from the way BARA has defined itself in the past, it merely fulfils an IRS Requirement placed on all Tax-Exempt (501) organizations.

Our lawyer informs us that we are running up against a time limit and that our original application will soon expire. We don't want this to happen because it would mean that we lose the fees tied up in the present application and we would have to start the process over again. **To meet the deadline we must vote on the changes to our Articles of Incorporation at our March General Meeting.**

Those familiar with this process will note that several readings of amendments are usually required. Our Lawyer tells us that this requirement can be legally set aside if a quorum of members (exclusive of Officers and Directors) attend our next General Meeting and sign a document attesting to their consent that we waive the second reading and if we vote on the matter at that time.

The Officers and Directors of the Binghamton Amateur Radio Association need you to attend the March 17th (St. Patrick's Day) General Meeting at 7:30 PM in the Town of Binghamton Hall.

BPL News

The FCC has unanimously approved a Notice of Proposed Rule Making (NPRM) to deploy Broadband over Power Line (BPL). The NPRM is the next step in the BPL proceeding, which began last April with a Notice of Inquiry that attracted nearly 5200 comments — many from the amateur community. The FCC did not propose any changes in emission limits for unlicenced Part 15 devices, but said it would require BPL providers to apply "adaptive" interference mitigation techniques to their systems.

Expressing disappointment in the FCC action ARRL CEO David Sumner, K1ZZ, stated that "the Commission clearly recognized that the existing Part 15 emission limits are inadequate to stop interference, but it's placing the burden of interference mitigation on the licensed user that's supposed to be protected."

Sumner said that if the FCC really believed current Part 15 emission limits were sufficient, it would not have had to require that BPL providers institute interference mitigation systems. The FCC has not yet released the actual NPRM, and revealed only its broad outlines in a presentation by the FCC's Office of Engineering and Technology (OET). Sumner said that the League would not take a formal position until it reviews the full NPRM.

Anh Wride of the OET staff spelled out the scope of the NPRM, which only addresses so-called "access BPL" — the type that would apply radio frequency energy to exterior overhead and

underground low and medium-voltage power lines to distribute broadband and Internet service. Wride said the OET staff believes that interference concerns "can be adequately addressed." and noted that the FCC's BPL NPRM:

- **Applies existing Part 15 emission limits for unlicenced carrier-current systems to BPL systems. Part 15 rules now require that BPL systems eliminate any harmful interference that may occur "and must cease operation if they cannot," Wride noted.**
- **Requires BPL systems to employ "adaptive interference-mitigation techniques, including the capabilities to shut down a specific device, to reduce power levels on a dynamic or remote-control basis and to include or exclude specific operating frequencies or bands."**
- **Subjects BPL providers to notification requirements that would establish a public database that would include the location of BPL devices, modulation type and operating frequencies.**
- **Proposes guidelines to provide for consistent and repeatable measurement of the RF emissions from BPL and other carrier-current systems.**

Mirroring the enthusiasm of his colleagues, FCC Chairman Michael Powell called BPL "tremendously exciting," and although he conceded that BPL has "a long way to go." Powell also said the FCC's OET has worked very hard to try to "get their hands around" the issue of interference and that the FCC would continue its vigilance in that area.

The FCC has posted additional information, including a public notice at <<http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243879A1.doc>>. *[As we go to press, we note that the FCC has released the NRPM and we summarize some details later in this issue. — your Editor]*

Additional information about BPL and Amateur Radio is on the ARRL Web site at <<http://www.arrl.org/tis/info/HTML/plc/>>. — *From the ARRL Letter for 13 February*

Signposts in the Stream

Last month we gave some consideration to Digital Coding and we used the International Morse Code as an example of an "alphabet" that could be coded using Digital Techniques. The choice or Morse for the example was not arbitrary, for Digital Communications are in fact born from Morse and the way that we handle and process Morse Traffic forms the basis for the significantly more complex Digital Systems in use today.

This month we begin to look at a Digital Message in greater detail as we look into the way a Digital Signal is "processed" and as we open the can of worms called "Digital Protocols".

We begin with the digital coding of "*CQ CQ*" and we write the representation in Binary Characters "***111010111010001110111010111000000000 111010111010001110111010111***". As noted last month, the strings should be read from left to right and this time the space between characters as well as the space between words has been highlighted in Bold Type.

It would be well, at this point, to note that when the human processes Morse Code (even a brain so dense as your editor's) it is performing a very complex task. To get a machine to do the same thing is quite difficult and it is worth pointing out that machines can only follow rules and for a Digital Mode to work at all it is necessary for the rules be specified with precision and followed absolutely. A case in point is the technique we use to synchronize our brain with a stream of Morse Characters pounding in our headset: We need a "hook" or a marker that tells us where a character or a word begins and this "hook" for Morse Code consists of the three element inter-character and the seven element inter-word spaces. The rules for correctly coding Morse assure us that every occurrence of three Binary Zeros marks the end of one character and the beginning of the next. Likewise, a sequence of seven Binary Zeros marks the end of a word and whatever follows should be the beginning of the first character of the next word. In other words: The spaces when "nothing" is transmitted are used to synchronize the receiver for what follows.

The key concept to note here is that of Formatting Information into Frames. We have some familiarity with this concept already if we know the basics of Traffic Handling and understand how each message is prefixed with a Preamble that assigns a Serial Number, identifies the Sender, and provides a Word Count (to verify the transmission). Experienced Traffic Handlers may also know of the technique of

breaking a very long message up into several short messages to make more efficient use of the Communications Channel (verifying several short messages is often faster than verifying one long message).

More sophisticated Digital Systems expand on this technique and define the ***Protocol*** (or set of rules) used by Sender and Receiver to include a Data Format for each Frame of information transmitted. Depending on the Protocol chosen a Frame may have a Fixed Size or it may be delimited by special Start/Stop Bit Sequences. Within the Frame there will likely be information used to sort out the sequence of Frames and to identify the Frames associated with a particular message.

Let's return to the processing of our signal for a moment. The Binary Digits (or Bits) that made up "***CQ CQ***" were received serially one-at-a-time by the receiver, but they were not processed that way. Anyone who has struggled with Morse Code knows that the goal is to hear the ***characters*** and (later) to hear the ***words.*** Although we may learn the character "***C***" as ***dah-di-dah-dit***, our goal is to get beyond the individual elements and to hear the letter. To accomplish this the mind must be trained to hear the letters (the streams delimited by "***000***" sequences. This is an example of ***Buffering*** **and, specifically,** ***Serial to Parallel Processing*** and it is of immense importance in the Digital World. Information is received as a Serial Stream of bits and held in a ***Buffer*** (a temporary Scratchpad of sorts) where it is processed as a group (in parallel). If the Parallel Processing is fast enough the Buffered Data will be completely processed before the Serial Stream fills the Buffer again. If processing is not sufficiently fast, the buffer overflows and we find ourselves in the position familiar to many who have taken a Morse Code exam: We are lost, the eyes glaze over, and the pencil stops. The same thing can happen in Digital Communications and it causes an error on the Communications Channel. What happens next is similar to a "Break for Fill" in Traffic Handling: Sender and Receiver must re-synchronize to some previous point in the message.

Silent Keys

It is with regret that we report the passing of several Amateurs. We extend our condolences to the families of the following Amateurs and we thank Jack, WB2GHH for bringing these Silent Keys to our attention.

WA2VSO: We note with sadness the untimely passing of a friend and former business associate, Robert "Bob" Weaver, WA2VSO. Bob was born and raised in the Renova, PA area and was a long time resident of Floral Ave, Johnson City. He was a retiree from General Electric/Lockheed Martin in Johnson City. Bob was 61.

WA2GBG: Ronald P. Gwara, WA2GBG, age 60, died unexpectedly on February 10, 2004. He was born in Endicott, NY and more recently lived in Waverly, NY. He was a retired employee of I.B.M. and Lockheed-Martin in Owego, NY. Funeral services were held on February 14, 2004 in Waverly.

BPL Update — NPRM Released

The FCC has released its Notice of Proposed Rule Making (NPRM) on Broadband over Power Line (BPL) systems. The 38-page NPRM (in ***ET Dockets*** 03-104 and 04-37) proposes amendments to FCC **Part 15** rules to define so-called "Access BPL,", to make rules specific to BPL systems, and to provide measurement guidelines for BPL devices and systems. The NRPM makes no changes to Part 15 emission limits for unintentional radiators

The ARRL has noted several issues pertinent to the NPRM and in particular notes that although the proposed rules hold operators of Access BPL systems responsible for eliminating any harmful interference that may occur, the FCC has also said that it believes current Part 15 emission limits for carrier current systems — in conjunction with certain additional requirements specific to Access BPL — "will be adequate to ensure that existing radio operations are protected against harmful interference." The ARRL remarks that, with licensed services and government users taking up large portions of the HF spectrum, protecting all licensed HF users could prove to be a nightmare for BPL providers. Furthermore, while the FCC maintains that licensed services must be protected, the proposed rules place the burden of initiating corrective action on the shoulders of the licensed services. The ARRL suggests that "as a practical matter, the FCC's proposed rules offer no protection at all to mobile and portable stations."

The full text of the NPRM is available from the FCC Website and the comment deadline is 45 days after the NPRM has been published in *The Federal Register*. Interested parties may file detailed comments on the NPRM via the FCC's main Electronic Comment Filing System (ECFS) <<http://www.fcc.gov/cgb/ecfs/>>. The FCC is also accepting brief comments on the NPRM via its

ECFS Express page <<http://gullfoss2.fcc.gov/ecfs/Upload/>>. — *from the ARRL Letter for 27 February*

Club Officers and Committees			
President	**Bob McCabe**	**KC2DSS**	**748-9808**
Vice President	**Ron Reagan**	**N2RWK**	**722-6790**
Secretary	**Allen Lutins**	**KC2KLC**	**729-4817**
Treasurer	**Paul Slocum**	**N2NCB**	**687-2057**
Directors	**Bob Handel**	**K2FU**	**693-4310**
	Malcolm Heath	**KC2EOV**	**753-7248**
	Steve Orzelek	**N2MSB**	**775-0281**
	Mel Snitchler	**WE2K**	**723-9612**
W2OW Trustee	**Frank Scoblick**	**N2HR**	**729-4249**
Newsletter	**Ed Plesnar**	**KB2SCF**	**754-3810**

BARA, The Binghamton Amateur Radio Association is an ARRL Affiliated Club

Next General Meeting

7:30 PM, Wednesday, March 17th: Town of Binghamton Town Hall, 279 Park Avenue, South of the Ross Park Entrance

Board Meeting

7:00 PM, Wednesday April 7th: Broome Community College Campus, Office of Emergency Services (West Side of Campus)

Exam Session

7:00 PM Monday, March 29th: Vestal Public Library, Route 434 Vestal 1:30 PM, Saturday April 10th: Endicott Fire Station, Across from UE High School

BARA Dues

$18/year Single Member; $27/year Family

DX Cluster

W2OW on 145.070 MHz with a Data Rate of 1,200 baud; questions to n2bc@stny.rr.com

W2OW Repeater

147.390 MHz, 100 Hz CTSS. BRAT Net every Sunday Evening at 8:00 PM Local Time

Binghamton Amateur Radio Association, Inc.

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First Class