BARA Facts

Newsletter of the Binghamton Amateur Radio Association

February 2003

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

Timeless words of Wisdom From The Amateur's Code

I have often thought about the following words — The Amateur's Code — that I first read over 30 years ago when I began in my studies to become a Ham Radio licensee. The Radio Amateur is:

CONSIDERATE... Never knowingly operates in such a way as to lessen the pleasure of others

LOYAL... Offers loyalty, encouragement and support to other amateurs, local clubs, and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally

PROGRESSIVE... With knowledge abreast of science, a well built and efficient station and operation above reproach

FRIENDLY... Slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit

BALANCED... Radio is an avocation, never interfering with my duties owed to my family, job, school or community

PATRIOTIC... Station and skill always ready for service to country and community

My thoughts about the Code come in two flavors, (1) We could substitute any organization or hobby for Radio and have some very good rules to live by and (2) Timeless — these rules are as valid today as they were when I first read them. Oh — by the way — The amateur's code was written by W9EEA, Paul M. Segal, in 1928. — *73 DE Bob KC2DSS*

Emergency Exercise

Jack, KB2YEN, our EC and contact with the Southern Tier Chapter of the American Red Cross gave a very interesting presentation at the January General Meeting. In the course of his remarks he noted that plans are in the works for an Exercise this summer.

The present plan calls for an 18- to 32-hour exercise on July 7th through 8th. The exercise will be conducted by the American Red Cross in our region and will be based somewhat on the 1935 flood.

Participation by the National Guard and Civil Air Patrol (CAP) is planned with four Shelters projected. Broome County Emergency Management and the National Weather Service will also participate. It is expected that operations will cover two shifts and that they will commence on Saturday the 7th at 9AM with Sunday being used for debriefing.

Expect to hear more about this exercise as planning progresses and use the time between now and July to prepare your own plans for Emergency Equipment and "Bug Out Bags". These exercises give us a chance to develop our skills and also to learn from our mistakes in a simulated environment.

FCC Petition Notice

A Bulletin of the ARRL informs us that the FCC is inviting comments on an Amateur-Related Petition. According to the Bulletin, Dale Reich, K8AD, has petitioned the FCC to require sellers of two-way voice or data equipment to keep on file a buyer's name, address, telephone number and "any future information when selling a radio that required licensing under the current FCC rules." Comments on the petition, RM-10641, are due February 28.

Information collected would remain private, available only to the FCC or law enforcement. Reich said in his petition that any retail vendor would be able to ask local police for an investigation if the retailer suspected the radios were not going to be used in compliance with the law.

Included in the petition is a requirement for "ownership and license tagging" for gear operating under Parts 5, 15, 18, 74, 80, 90, 95 and 97. In his petition, Reich said such tagging used to be an FCC requirement and that his proposed change was a needed tool for local law enforcement.

The full text of Reich's petition is available on the FCC Web site. Search for the petition number (RM-10641). — *the ARRL Bulletin of 31 January*

Set Your Antenna High (Well Not That High)

One time many years ago — possibly after a few refreshing drinks — this author and a guy named Frank Scoblick, WA3JJJ, decided it would be a great idea for BARA to pull off an "odd" caper in hopes of attracting publicity and in turn new membership. We decided that maybe on Field Day, BARA could operate W2OW from an exotic location. After a few more drinks we finally selected a location....

First, a few words to acquaint you with that time. It was shortly after BARA devised and ran the very successful *E. F. Johnson Shoe Size Contest.* (Unfortunately, the *Who Was Harry L. Contest* faulted shortly after it started.) And it was around the time Senator Barry Goldwater, K7UGA, came to town to accept his Honorary membership plague from BARA. If you recall that night, Barry (at the insistence of John Carrington, WB2SGS) decided to hang around to speak at the E. A. Link tribute dinner. It was the same day that someone named Jane Fonda (I believe Barry described her as "lower than a meadow muffin") dropped by SUNY. Anyway, to get back to my story, it was the year after BARA successfully operated Field Day with the assistance of a five foot diameter weather balloon tethered to my DX-100; a year when the DX-100 weighed more that I did — as I said, a long, long time ago.

That balloon was something special. It came in a cardboard cylinder about four feet long and four or five inches in diameter. When opened, one end of the tube tapered down so that the balloon material could slide over that end. The other end of the tube fit over a cylinder of material that generated a lighter then air gas when energized with moisture. (Let's not spend time thinking about where our crew found the liquid to energize the generator.)

Back to Mount Marcy. It seemed like a good idea: Pack up a few cars with the required "stuff", drive to the top of that hill, set up, and operate (possibly from the lodge that *must* be on the mountain).

In the sunlight of a new day minimum research revealed that Frank had made a very bad decision. A seven mile hike over terrain that looks much less inviting than Burr Creek at low water? Nuts to that and *I* for one am glad that *I* didn't have anything to do with such a crazy idea!

John Carrington saved the day. He invited BARA to operate Field day from his "backyard" on Bear Swamp Road (that name is enough to make you worry). I think we almost electrocuted his neighbor's horse that year, but that's another story for another time — *Thanks to Jack, WB2GHH.*

Parts, Parts, and More Parts

Last month we noted some unconventional sources for parts and equipment, but this month we'll look a little closer to home and highlight Unicorn Electronics — our local distributor for parts, tools, equipment, and other assorted electronic goodies.

Unicorn is located at 1 Valley Plaza in Johnson City (tucked in next to Route 17's Westbound lane between Harry L. Drive and Glenwood). They are also on the web at <<http://www.unicornelex.com/>>.

Besides Computer Parts and Professional Sound Systems (which we will skip over) Unicorn stocks a wide array of parts and hardware. If you are working on a restoration or a new project the chances are very good that Unicorn either stocks the part you need or that they can obtain it for you in a very short time. Best of all, the staff is knowledgeable and helpful. They know their stock and they can answer questions.

For the beginner in construction (or for an "old hand" looking for a weekend project) Unicorn offers something rare in today's market — kits — You will find a fair amount of wall space given over to kits from at least four manufacturers (including one local label) and although many of them are geared towards the audio or "electronics" hobbyist, a fair number are of interest to Hams. If you have been feeling the urge to get some experience with a soldering iron you can likely find an interesting basic kit that will give you valuable experience as well as more sophisticated projects to challenge you as you progress. And if you lack the tools you will also find a good selection of professional grade tools.

A Matter of Some Complexity

Last month we had an article outlining some Antenna Topics in general. In this issue (and, I hope, in subsequent issues) we will continue the presentation with additional topics on Antennas, Transmission Lines, and other Technical Topics. It's hoped that this material will be useful to those who may be studying for the Higher

Class licenses and entertaining (and perhaps informative) to old hands as well. Comments, clarifications, and corrections are always welcome.

In discussions of Antennas, Transmission Lines, SWR, and such the term Impedance often pops up and it does so in a guise that suggests a similarity with Direct Current (DC) Resistance. Although Impedance and Resistance are related they are by no means identical so let's try to set the record straight.

Without going into detail all practical circuits contain Resistance, Inductance, and Capacitance. Transmission Line/Antenna Circuits are no exception. Although a Pure Resistance may behave "simply" in an RF Circuit, few Resistances are really "Pure" and Inductance and Capacitance make things much more complex. To express this complexity in a form that can he handled mathematically it is customary to separate the effect due to Resistance from that due to the combination of Inductance and Capacitance (the Reactance). These two effects are assumed to act graphically at right angles to each other (on a graph Resistance would be on the x-axis and Inductance/Capacitance on the y-axis) and the resulting combination is referred to as the Complex Impedance (a Complex Number). Resistance is generally positive along the x-axis and on the y-axis the total contribution due Reactance is the sum of the positive Inductive portion and the negative Capacitive portion. To simplify things (believe it or not) this pairing is often written as *"x+jy"* and denoted the Complex Impedance. The *"j"* in the expression is a special construct called the *j-operator* and it is a notation for the "undefined" operation of extracting the square root of negative one.

By using this seemingly obscure notation and keeping separate the Resistive and Reactive (that is, Inductive/Capacitive) components of the system we turn a troublesome and almost intractable problem into something that can be handled in a fairly straightforward way. The notation might seem confusing, but if you have ever done any work with Vector Quantities it will be familiar. Rest assured, this stuff is practical and a little effort will equip you for significantly greater understanding of what happens in Feedlines and Antennas. It might also be helpful at this point to suggest a little "outside reading" on *vectors* and *complex numbers* in any basic textbook of trigonometry or an encyclopedia.

Before passing on it's worth noting that the Complex Impedance can be converted into an Absolute Magnitude by squaring the *x-* and *y-*terms, adding the results and extracting the square root. To give an example: a system having 3 Ohms of resistive and 4 Ohms of inductive reactance *(3+4j Ohms)* contains a total of √((3*3)+(4*4)) or 5 Ohms impedance. Note that it's customary to attach the unit Ohms to the result and to refer to it in generic terms as "the Impedance". Note also that the result would be the same if the reactive portion was capacitive *(3-4j Ohms).*

So how does this tie into Antennas? Well, a Feedline/Antenna system presents a specific Complex Impedance at the Transceiver Coax Connection (its Input) for each frequency of operation. If the Absolute Magnitude of this Impedance happens to be the same as the Absolute Magnitude of the Impedance of a Transceiver (say 50 Ohms) attached to the Input, then all is well and good, otherwise there is a mismatch and Standing Waves (an SWR > 1) develop in the system.

How can we reduce or eliminate these Standing Waves? By introducing an additional Impedance between the Transceiver and the Feedline/Antenna system. If the Inductive and Capacitive Reactances of this new Impedance are chosen properly they will combine with the Feedline/Antenna system Impendence so that the resultant exactly matches the Impedance presented by the Transceiver. We can call this additional Impedance a Transmatch or an Antenna Tuner, but the result is a "perfect" match between the Transceiver and the Transmatch and an SWR of 1.

However — and this is a very important point — the match along the Transmatch/Feedline/Antenna system will not be perfect and the SWR in *that* part of the system may be much higher than 1. Is this a problem? Well, not necessarily, but that's a topic in itself and for another time. — *your editor, Eddie*

New York State PRB-1 Bill

Our New York State Section News notes that the Antenna Bill incorporating FCC PRB-1 into state law has been re-introduced to the New York State Senate as S-63. It awaits introduction to the Assembly. This bill passed the Senate in the last Session, but it never made it to the Assembly. Let's hope better this time around and when the opportunity offers, let's show our support with letters, faxes, calls, and other communications to our state representatives.

Program Notes for February

The February General Meeting of the Binghamton Amateur Radio Association will be held at 7:30 PM on Wednesday the 19th.

The scheduled program topic is "Emergency Communications — Another Aspect" and the presenter will be our Broome County ARES Assistant Emergency

Coordinator Jack Connors, WB2GHH.

Club Officers and Committees			
President	**Bob McCabe**	**KC2DSS**	**748-9808**
Vice President	**Jack Connors**	**WB2GHH**	**724-8822**
Secretary	**Ron Regan**	**N2RWK**	**722-6790**
Treasurer	**Paul Slocum**	**N2NCB**	**687-2057**
Directors	**Bob Handel**	**K2FU**	**693-4310**
	Steve Orzelek	**N2MSB**	**775-0281**
	Ed Plesnar	**KB2SCF**	**754-3810**
	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, February 19th Unitarian Universalist Church Riverside Drive, Binghamton, Next to Lourdes Hospital

Board Meeting

7:00 PM, Wednesday March 5th
Broome Community College Campus, Office of Emergency Services (West Side of Campus)

Exam Session

7:00 PM Monday, February 24th
Vestal Public Library, Route 434 Vestal
1:30 PM, Saturday March 19th
Endicott Fire Station, Across from UE High School

BARA Dues

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

Binghamton Amateur Radio Association, Inc.
P.O. Box 853
Binghamton, New York 13902