



BARA Facts

Newsletter of the Binghamton Amateur Radio Association

January 2003

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

The President's Corner

I would like to wish everyone a Happy, Healthy, and Prosperous New Year and I hope that it will allow everyone more time to enjoy Ham Radio. I am always amazed by the great diversity of Amateur Radio talent in our club. We have members who are into competitive contesting, DX contacts, building and experimenting. Some run large power outputs and others make QRP power contacts. We are involved in Emergency Communications, Nets, and Community service. From godzilla antennas and towers to basic dipoles; rag chewing; VHF, HF, and Digital Communications — these name just a few areas of our interest. Truly, we embrace an array of activities and as a club we are very lucky to have dedicated members willing to give their time for the Hamfests, Holiday Dinners, Shack Decommissioning, Land Searches, meetings, newsletters, Educational activities, Elmering, and overall support of BARA and the Amateur Radio community. I would like to thank all of you for your help! See you all at the January meeting; all Radio enthusiasts are always welcome — bring a friend! — *Bob, KC2DSS*

Thanks Again!

For the second year in a row, an anonymous person made a donation of \$600 to the BARA treasury at the December dinner meeting. Acting on behalf of the donor Jack, WB2GHH, presented the donation to Paul, N2NCB. BARA is sincerely grateful to the unnamed individual for this repeated act of generosity.

Another Holiday Success

Hedy, AA2MU, arranged another wonderful BARA Christmas Party. We had a great turnout at Russell's and everyone seemed to have a good time. Although the Holiday Season is busy and sometimes stressful, the Christmas Party is always an appreciated break of a couple of hours to relax

with old friends and to make new ones. It's an event that happens every year because Hedy organizes it and she makes sure it's a success. Thanks, AA2MU, it was an evening to remember!

Resolutions for the New Year

2002 is over and gone and it brought many changes to our club. Several keys went silent and will be missed, new members joined and some old friends moved or drifted away. But the biggest change for us as a club was the loss of our lease at the Milks Road property and our biggest challenges for this new year will be to maintain our identity as a Club and to continue our search for a new site.

There's no two ways about it: The Shack helped to give us an identity as a Club and it provided a "place to go" whether to operate, picnic, or just hang out. Finding a replacement will be a challenge and all members are urged to look around, follow leads, and suggest options. This is a job for the entire Club, not just the Officers and Directors. BARA is no greater than (and no less than either) the sum of its members and each of us brings something to this organization that is in its own way irreplaceable.

Look around, think about what excites you in Amateur Radio. If BARA is not "doing enough" in that particular niche then tell us about it and light some fires. But — above all — participate and be part of the team that shapes our Club in 2003!

Field Day is Coming

Although June is still six months away, it's not too soon to begin planning for Field Day. Club participation has been down the past few years and any Field Day operations have been informal. This might be the year to change that and the

position of Field Day Chairman is wide open.

If you have ideas and an interest in making Field Day a major event for 2003 and if you are willing to serve as Chairman, please let our President, Bob (KC2DSS) know. Help get the ball rolling now and momentum will build for June.

Homebrew Hints

If you are working on a special project or restoration and find yourself stuck for a hard-to-find piece of hardware there are a few places where you might find unexpected help.

Auto Parts Retailers often have a selection of switches and controls that can be useful. Many are nicely chromed with machined toggles that could fit right in with a classic panel layout. One of the national chains even offers switches with “safety covers” that have to be flipped back before the toggle can be operated — just the thing for master controls.

Hobby Stores, especially the ones that cater to Railroad and Aircraft modelers, often have stocks of tiny nuts, bolts, and related hardware as well as brass and copper tubing, sheet stock, and paints. In addition to parts, Hobby Stores also carry tools designed for precision work on small-scale projects.

Agricultural Supply Stores can be a source for insulators and Antenna Parts. Check out the Electric Fencing department for raw materials like insulators, feed-throughs, knife switches and related parts. You can also find fiberglass rods (sold as fenceposts) that can be cut down to make insulators or spreaders for open wire line. A useful tool in the fencing department is a “post hammer” which makes a nice tool for pounding in ground rods. Other departments carry pulleys and tackle ideal for Antenna projects.

Marine Supply Houses carry stainless steel, bronze, and brass hardware ideal for Antenna work. The larger houses may also carry grounding supplies and backstay insulators that can be adapted to heavy-duty installations.

And don't forget Antique and Consignment shops. Sometimes an afternoon trolling the Antiques Circuit or Flea Markets with a spouse or significant other will score brownie points for your company as well as a small treasure trove or New Old Stock (NOS) parts that a dealer picked up in an estate and is happy to unload.

Fortune favors the prepared and good luck the

resourceful, so keep your eyes open and don't neglect the unlikely spots in your search for parts!

Antennas and Such

Every Amateur Station has at least one antenna, but this universal equipment is a source of almost endless argument and debate. There's a lot of “conventional wisdom” regarding Antennas, but sometimes this received knowledge is only partially understood or outright inaccurate.

Fortunately there are a couple of sources for the “straight dope” on Antennas and this subject is one area where a little study and application will challenge the intellect, stimulate the brain, and actually enhance your operating success because improving your Antenna System is one way of boosting your signal strength that does not require a new transmitter, receiver, or amplifier. It's also within the reach of every Amateur.

First, it's important to understand that every Antenna System is a balancing of compromises. A system that is optimized for DX work may perform poorly for local contacts. Likewise an “Ionosphere Heater” that blasts the signal nearly straight up may not be ideal for DX (on the earth), but it is just the ticket for local ragchewing and emergency communications on the HF Bands. The important thing is to understand what you want to do with your station and the physical location you have to work with.

Location. Would that we all had perfect locations with plenty of room and no ground losses. Well, the real world just isn't like that at all. If your site is less than ideal or if neighbors, spouse, family, or other considerations force hard compromises, take heart. Remember that any antenna is better than no antenna and that clandestine operators running QRP Power Levels into temporary (and indoor) Antenna Systems have shaped world events. Install what you can and make it work.

The Myth of Matching. Matching the Antenna to the Transmitter is almost always possible, but an understanding of what happens during the Matching Operation is often fuzzy. “Conventional Wisdom” is that you should trim the Antenna to resonance, but cold reality demands to know *at which frequency?* If you trim to a specific frequency then a simple QSY will “throw the system off”. True enough, and that's where a Matching Network (Antenna Tuner or Transmatch) can be helpful. That's what the Clandestine Ops use and there's nothing wrong with using one so long as you

understand what it does and how to use it.

Simply put a Transmatch is a Transformer. It presents an Impedance on the Input Side and it allows you to adjust that Impedance. Why is this important? Most modern Transmitters expect a 50 Ohm match at the output. If they do not see this match, they reduce their output to protect the final transistors. A Transmatch can adjust the impedance of the Feedline/Antenna System to the expected 50 Ohms. Contrary to some opinion a properly adjusted Transmatch does not waste power any more than a properly designed AC Line Transformer wastes power.

The SWR Demon. Sometimes being able to measure something causes more trouble than it is worth. SWR (Standing Wave Ratio) on a transmission line is a case in point. Standing Waves arise in the Transmission Line of an Antenna System when the Source, Line, and Antenna Feedpoint Impedances are mismatched. The Antenna cannot absorb all of the power and some is reflected back to the source, however — contrary to common belief — the reflected power is not lost. In fact, it is re-reflected back to the Antenna and eventually radiated. There are only two real losses connected with SWR. Many modern transmitters will fold back power to protect the finals when there is an “excessive” SWR on the line. But note that this is not a real loss, it is due to circuitry in the transmitter. The real loss associated with SWR is due to the line loss in the transmission line itself and it is not so great as many assume. In fact, in a line (and a pretty poor line at that) that loses 10 dB when properly matched the SWR must be between 7:1 and 10:1 to add another 3 dB (Decibels) of loss due to SWR.

What’s in a Decibel? Decibels represent the common logarithm of a Power Ratio and while that might sound like a mathematical mouthful, they provide a simple means for comparing power levels. Of interest to us as Amateurs, Decibels represent gain or loss over some reference point and in very rough terms a change of 3 decibels is considered equivalent to one S-Meter Unit. This represents a perceptible change in what the listener hears. In practical terms, if you can increase your signal strength by 3dB than the person on the other end can hear the change. Now, here’s where the fancy “logarithm part” is useful: Decibel changes can be handled by simple arithmetic. If you improve your signal buying better Coax and losing 2 dB of loss and if you install a new Antenna that gives you 1 dB of gain over your previous Antenna (note that both figures were with reference to the previous situation) then you buy yourself $2+1 = 3$ dB of

improvement or about one S-Unit.

Separating the Wheat from the Chaff. Some may take exception to the remarks made above because they do “go against” conventional wisdom and you can find texts that seem to oppose these views. There are, however, some very helpful references that “shoot straight and hit the mark”.

The ARRL Antenna Handbook is one of the standard references and is found in many Engineering and Industrial Libraries. It may be dense and complex in places, but the devil is always in the details and the rewards of working to learn something are not to be sneezed at.

Reflections on Transmission Lines and Antennas by Walter Maxwell, W2DU, is a classic. Originally published by the ARRL and recently re-published by *Worldradio*, this is the book to read if you want to understand what happens once the signal leaves the Transmitter (Maxwell’s figure 1-1 is the source for the information on loss noted above). If you are an ARRL Member you can access and download the *QST* articles that formed the basis for Maxwell’s book by logging on the ARRL Website and searching on “reflections”.

The Aerials Trilogy. Kurt N. Sterba writes for *Worldradio* magazine. His columns are remarkable for their acid wit as well as his willingness to take the bull by the horns, attack myths, and present the evidence needed to back up his claims. Some complain that Kurt is a “One Note Louie” because so many of his columns harp on SWR and Antenna Gain misconceptions, but these are the areas where we as Amateurs need to clean up our act. You can purchase *Aerials* volumes I through III from *Worldradio* as individual books or as a collection with additional chapters on the *Worldradio 1999 CD-ROM*.

Bill Orr and Joe Carr. Both these gentlemen (alas now Silent Keys) contributed to the body of knowledge on Antennas. Joe Carr’s *Antenna Handbook* is a useful addition to any Amateur’s bookshelf. Bill Orr edited the *West Coast Radio Handbook* and wrote numerous books on Antennas and related subjects. Any of his books is worth a careful read. — *Your Editor Ed, KB2SCF*

January Meeting Agenda

The main agenda item for January will be the 2003 BARA Budget as prepared by our Treasurer Paul, N2NCB.

The Program for January will be presented by Jack Smith, KB2YEN, and will cover the American Red Cross and various Emergency Service related topics.

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

Binghamton Amateur Radio Association, Inc.

P.O. Box 853

Binghamton, New York 13902

Next General Meeting

7:30 PM, Wednesday, January 15th Unitarian Universalist
Church Riverside Drive, Binghamton, Next to Lourdes Hospital

Board Meeting

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

Exam Session

7:00 PM Monday, January 27th
Vestal Public Library, Route 434 Vestal
1:30 PM, Saturday February 8th
Endicott Fire Station, Across from UE High School

BARA Dues

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

First Class

