

The Link

April 2003



The Official Journal of the Buffalo Amateur Radio Repeater Association, Inc.

This Month's Program: SKYWARN Training

This month's meeting program will find us receiving SKYWARN training from members of the National Weather Service's Buffalo office. In order to be considered a member of Skywarn, you must receive training every three years. This is your opportunity to get that training!

Skywarn, for those who may not be aware, is the volunteer program whereby amateur radio operators serve as weather spotters for the National Weather Service, and call in reports of severe weather. This field information is of immeasurable help to the Weather Service personnel, even in this age of sophisticated Doppler radar observations. It is a further example of hams' public service to the community.

So, come on out to the Skywarn training on Monday, April 21st. If nothing else, the NWS people usually have some great photos and videos of wild weather!

Hobby Highlights

Richard Sellers, KG2OR

I found an MFJ 816 HF SWR watt meter in my shack. It can measure power ranging from 30 watts to 300 watts. After a quick look at its schematic I can see how the transformer channels forward and reflected power into a swr meter. The device fulfills the need for observing the power output of the radio and the standing wave at the antenna.

How often have you found yourself tuning your rig over and over again to obtain the lowest possible SWR; a 1:1 is the ideal match. The standing wave ratio can frustrate a meticulous ham. If it isn't right an operator may even go through the fundamentals and analyze the system: connections, antenna lengths, or feed line composition.

The problems within SWR activity have been noted by Steve Ford, WB8IMY, in "The SWR Obsession," [QST; April 1994; pgs. 70-74]. He was assistant technical editor at the time, and today he is the editor of QST! You can see this article at www.arrl.org/tis/info/pdf/49470.pdf He writes about "the obsession" operators have with SWR readings, and makes the point in plain English to relax about SWR readings. You can take 2, 3, 4, or 5:1 and continue operating. Tuning down to 1:1 is where you want to be, but he outlines reasons for mismatches: antennas and feed lines. Ladder line is better than coax. A combination of forward and reflected power, and the ratio of forward and reflected power permits him to say the higher the ratio the more power is being reflected back to the transmitter, thus it should be understood that high SWR can damage your set, but we can live with levels of 3, 4, or 5:1. Steve Ford analyzes power losses in coax and ladder line in this article.

Have you ever really thought about your antenna tuner or are you taking it for granted? Steve says "an antenna tuner

Mark the Date:

May 13th Special Field Trip!

As indicated in the previous issue of *The Link*, we have been invited to a special Field Trip event with our friends at the RAWNY club, only the date was uncertain until recently. Tuesday, May 13th is the day! We will gather at the Buffalo and Erie County Naval & Military Park, on the Buffalo River in downtown Buffalo at 7 PM. This will be a "food" event with pizza and soft drinks served during a brief RAWNY business meeting, to be followed by a tour of the USS Little Rock. This event is taking place after hours so we'll have the park to ourselves, offering a unique touring opportunity for the those who attend.



USS Little Rock, photo from www.ussslittlerock.org web site

So that appropriate amounts of pizza and drinks can be obtained, we will need to know how many BARRA members plan to attend this special joint event. Please drop an e-mail to your editor at ka2wft@arrl.net, or phone 834-2664 evenings so we can turn in expected numbers to RAWNY. There will be a \$5 per person charge to cover the cost of the food, payable the night of the event, and your current BARRA membership card will be required for admittance to the park. If you cannot locate your membership card and plan to attend, please contact the editor or Ed Swan, W2EAS, at w2eas@arrl.net or 877-0417. Attendance will be limited to BARRA members and their immediate families only.

doesn't tune the antenna at all" [Op. cit., pg. 72]. That can only be done at the antenna. "Instead, an antenna tuner acts as a resonator and an impedance transformer" [Ibid]. The feed line is rated at 50 ohms and the relationship is called a transmatch!

The final theorem is "power loss in the feed line is a function of type (and length) of feed line you are using, the frequency of the signal and the SWR" [Ibid]. He sums up the article with an approach to "when to worry about SWR-and when not to worry" and he covers HR, VHF and UHF spectrums [Op. cit., pg. 74].

Steve Ford's article is functional theory. Functionalism has been popular at times. It is good when describing parts of a whole process that show relationships and laws of science. You will enjoy reading this article for its simple explanation of complicated impedance theory. It is time to operate, I've got an swr of 3:1, and now I know I do not have to fuss with the tuner, or adjust the antenna or feed line length.

73 de KG2OR, Richard Sellers

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W2EUP	224.82 -	Boston
WR2AHL	PL 110.9 442.00 +	Wethersfield
WB2DSS	PL 151.4 443.925 +	Niagara Falls
WA2HKS	444.00 +	Buffalo
WB2DSS	PL 151.4 444.75 +	Kenmore

UO-14 Retransmissions

The downlink of amateur satellite UO-14 is retransmitted on every pass over the Buffalo area on our 444.00 and 146.91 repeaters. For information on uplinking to the satellite, see the BARRA web page.

RAWNY Net

Stop by Monday evenings at 7:00 pm and join the RAWNY club's net which meets on our 146.91 and 444.00 repeaters.

BARRA on the Internet

<http://barra.hamgate.net>

Back issues of *The Link* and a membership application are available on our web site.

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The BARRA E-Mail List Serve

To join, send an e-mail message to:

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with the message `subscribe barra` in the main body of the note.

To send a message to the list subscribers, address your e-mail to:

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The Link is published eight times a year by BARRA, the Buffalo Amateur Radio Repeater Association, Inc. The opinions expressed herein, however, are not necessarily those of the Board of Directors or membership of BARRA. Letters to the editor are solicited and must be signed. Names and addresses will be withheld if requested. Material for *The Link* should be sent to the Editor:

Buffalo Amateur Radio Repeater Ass'n
P.O. Box 507
N. Tonawanda, NY 14120-0507

or may be submitted electronically to the editor's e-mail address: ka2wft@arrl.net. The editor may be reached by telephone in the evenings at (716) 834-2664.

DISTRIBUTION

The Link is available in both print and electronic formats. If you wish to receive *The Link* in the Adobe cross-platform PDF format by e-mail instead of regular mail, please notify the editor at ka2wft@arrl.net.

ARTICLES

Articles for the *Link* on any subject, technical or general interest, are always welcome and encouraged. When submitting material to the *Link*, please type it or submit it electronically, if possible. Remember that the editor reserves the right to make necessary changes including reformatting and condensing for space and that Full Membership may be obtained by writing articles.

LINK DEADLINES

All material must be submitted to the Editor by the end of the month previous to the issue (e.g. December 31st for the January issue). Of course, if the material is received earlier than that date, you will have a better chance of getting your article in the next issue. All advertising is subject to the same deadline.

ADVERTISING

Want-Ads are free to BARRA members and are published in the next available issue. Ads from other hams are accepted free on a space-available basis. Ads appearing in other club newsletters with which BARRA has an exchange agreement are reprinted on a space-available basis.

Display advertising is available at the prevailing rates. Business card size is currently \$2.00/mo; full page is \$16.00/mo. Contact the editor for rates for other sizes.

DUES

Basic membership rate: \$20.00

Family member in the same household as first member: \$3.00

Discounts from basic rate

Senior Citizen (65+): -5.00

Disabled: -5.00

Voting member: -5.00

Full-time student with ID: -5.00

Each new member recommended: -1.00

Note: A voting member is a member who has performed a service for BARRA (e.g. helped out at an activity, written a *Link* article, etc.).

Hobby Highlights

Richard Sellers, KG2OR

Since the advent of radio frequency safety regulations I have been careful about observing the distance between myself, others, and my antenna. We should all be aware of the RF safety rules, because we sign that we understand RF safety on our FCC license application.



I woke up one morning and felt like an antenna. I walked to the faucet to brush my teeth, and I turned the cold water on with my left hand, and when I felt the cold water with my right hand I got a shock! Static electricity I declared! Then I touched a metal door knob, and to my surprise; another shock, and I even saw some spark! I wonder, do we need safety regulations for static electricity? Let's remove our rugs, regulate current in the brain, and use rubber, or wood for handles and door knobs.

Kenneth Macleish, W7TX, in November 1992, *QST*, wrote "Why an Antenna Radiates." Notwithstanding, the radio propagates a signal from the transmitter, and then someone, somewhere, is trying to find a QSO on a certain frequency, but regarding the basic physics during operation, that can remain relatively insignificant to the operator; he or she might be more interested in the quality of the radio system. Thus, if I were to direct you to read this article at www.arrl.org/tis/info/whyanradiates.html then be prepared to read about the "coulomb field, magnetic field, dynamic electrical field, radiation field, induction field, characteristic impedance of space, vibrating electrons, bootstrap forces, radiation vs. ohmic resistance, radiant energy, heat, current and their rates of change, inertial mass, gravitational mass, phases of magnetic fields and electron speeds, near field, far field, forward and reverse polarity, field strength, corona, vibrating electrons, free electrons, Newton's second law, real power, reactive power, real power flow, and reactive power flow"(Macleish, *QST*, 1992). These subjects are his headings. Are you ready to tune up your rig? Concentrate on the real power flow in his article, because the motion of the field and the forces acting upon it constitute a great deal of antenna rationale in his article.

The way electrons work with an antenna, and reading Macleish's article gives the impression of scientific appreciation; every once in a while reading technical and theoretical summations about propagation is rewarding. Macleish describes many electronic principles, and explains some physics in a comprehensive manner. Physics and amateur radio play a vital role in many of our practical and theoretical works. It should be beneficial to the reader to brush up on the science of amateur radio since our method and theory depend on it.

73 de KG2OR

Congratulations to our 2003 Auction Raffle winners: Stan, KB1XW; Jim, KA2IWK; and Marc, K2MDM. Thanks go out to our Auction helpers: N2MWO, N2YDM, W2EAS, K2MDM, WA2ZSJ, N2IE and KC2FIV, and a special thanks to our auctioneer, Dutch, K2JGI. We also need to thank Crest A/V Electronics for our electronics prizes and Teds Hot Dogs for kitchen supplies, as well as an extra big THANK YOU to all who came out on a less-than-wonderful winter night!

N2YDM/R Update

Ben Bass, N2YDM

There have been a number of events and tasks surrounding BARRA's 147.00 repeater in the past few months, but first a little background on the repeater. For many years 147.000, then known as W2OXB/R, resided on BARRA property in Cherry Creek, NY where it was solar and wind powered. In December of 2000 the club decided that it was too expensive, for a variety of reasons, to maintain the repeater at that location. Anticipating the abandonment of the Cherry Creek Site the club moved the machine to its present location (after a long stay at the GLB shop for reworking) on Elmwood Avenue in the Town of Kenmore in 1999. The Cherry Creek property was subsequently returned to the family of Jack O'Connor, W2OXB SK. Upon Jack's passing in September, 2001, I became the trustee of this repeater.

The repeater has operated without major problems from the Elmwood Avenue site since some time in 2000. Fast forward to the spring of 2001. Suddenly, we are consistently hearing another repeater at an S5 or better, on the pair, with the call VE3NU. Since I am the database manager for WNYSORC, I knew that we hadn't coordinated another repeater on this pair.

Within a couple of weeks, WNYSORC received a request from Paul Stapells, VE3NU, for coordination on the pair. In the request, he said, "it has been on the air on this frequency since May 10, 1996 & the closest other frequency to me is in Jamestown, NY. I had a meeting last year with one of their members and in over 4 years they have never heard it save for severe inversion etc." I knew this was a lie. By that time the repeater had been removed from Cherry Creek (and re-coordinated with WNYSORC) for over two years. If he had spoken to BARRA, I would have been aware of it as a member of the Technical Committee. That spring was the first time we heard it.

He further claimed, "it outputs 12 watts maximum to the Sinclair 210 C 2 which is precisely 45 feet above ground at my home QTH." I don't think so; we were receiving it at better than S5. Lie #2.

To be sure, I plotted the distance from his QTH to Cherry Creek and to Kenmore. The distance from VE3NU to Kenmore is 57.1 miles. However 29.4 miles of that is across Lake Ontario, making the distance, with lake enhancement, effectively, 42.4 miles.

The distance from VE3NU to the former W2OXB site is 98.57 miles. However 51.20 miles of that is across Lakes Ontario and Erie, making the distance, with lake enhancement, effectively, 72.97 miles. Because of lake enhancement, he is less than the required 100 miles from either location. He is also only 5.75 miles from first adjacent VE3SKY on 146.985 in Toronto. WNYSORC requires 40 miles separation between first adjacent channels. Accordingly, his request for coordination was denied by the repeater council.

WNYSORC offered to find him another pair, but he was not interested. Mr. Stapells made it abundantly clear what the repeater council could do with its coordination process. At that time it appeared that he increased the power and even started a weekly ARES net to make sure the repeater got plenty of use.

Because of the relatively low profile of our repeater, the stronger VE3NU was actually causing interference with users of our machine. In general, when a non-coordinated repeater causes interference to a coordinated repeater, the FCC and

Industry Canada (IC) require the trustee of the non-coordinated repeater to resolve the interference, usually by taking the non-coordinated repeater off the air. Both the FCC and IC recognize WNYSORC as bonafide coordination entity.

On December 7, 2001, I filed a complaint with Dave Viglione, KF2CC, Engineer in Charge of the Buffalo FCC office. Despite several months of trying, Dave was getting no cooperation from Industry Canada. Since the interference was still present, I took it to the next step. On March 29, 2002, I contacted Riley Hollingsworth, FCC Special Counsel for Amateur Enforcement. Mr. Hollingsworth agreed to look into my complaint.

Mr. Hollingsworth and I emailed back and forth a number of times on this for the better part of a year. Despite his best efforts, he could not get any cooperation from Industry Canada. Sadly, based upon my experience with broadcast and commercial radio, this is the rule rather than the exception. Typically the FCC reacts swiftly to requests or complaints from Industry Canada. IC rarely reciprocates or even responds on a timely basis.

It became a moot point when VE3NU mysteriously disappeared from 147.000 as quickly as he had appeared almost two years earlier. On February 12th of this year, the mystery was solved when WNYSORC received a request from VE3NU for coordination on another pair. In his request, he apologized for the trouble he had caused, placing the blame on a number of health problems and the medications he was taking. I accepted his apology and his explanation, happy to be rid of him. But I doubt it will end there. Since he can't be coordinated on the new pair, we expect the problem to continue, but on somebody else's coordinated pair.

As for 147.000, a new antenna and feed line are in place. On March 29th we had a work party to install the Mastr II. Thanks to those who helped me with this move, including WA2HKS, K2DSN, KC2JUF (and his XYL), N2HP, an old friend, Howie Wharton, and Rich, WB2DSS. Marc, K2MDM, contributed a hand truck and a cart for the repeater and duplexers to sit on. Together we managed to get the six foot high rack into the basement.

We removed the "old" 147.000 and wheeled the new repeater into position. However, there was a problem. The power amplifier would not load into the duplexers or into the antenna itself. We tried all different combinations of cables and settings, but nothing worked. Finally we decided to leave it on the exciter, about 30 watts, and that's where it is now. We're trying to determine what the problem is. The current, temporary, configuration is a General Electric Mastr II with an NHRC-3 controller. A CTCSS tone of 107.2 Hz. is required to access the repeater.

There are two reasons for this temporary configuration. One reason is controller we want to use doesn't exist yet, except on paper. The other, more important reason, is that WB2DSS wanted the damn thing out of his garage! As soon as the new S-Com controller becomes available, I plan to order one and we'll implement the permanent configuration, which will include linking to the 444.750 repeater, which also resides at the Elmwood site.

Photos of the Recent 147.00 Work Party are on Page 7!



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At the October general membership meeting, Rich, WB2DSS, modeled some new BARRA apparel now available through BARRA member Carl Brittain, WA2OLW, at Leprechaun Graphics. These are high-quality items that let you show your club colors in style. The available items and their prices are shown below. Return this page with your payment to Carl at the address at the bottom of the page to order.

BARRACustom Imprinted Order

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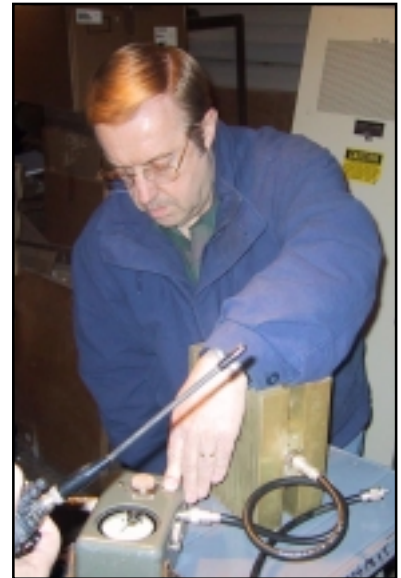
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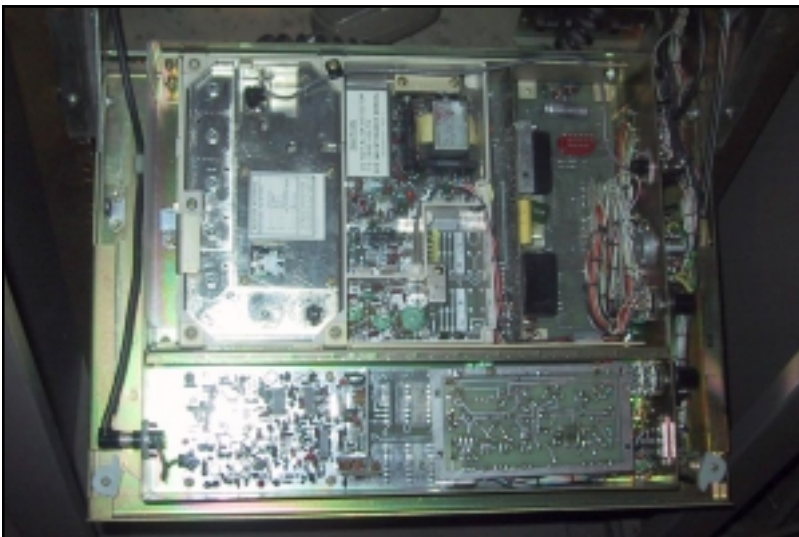
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PICTURE PAGE!

Some shots taken by Ben, N2YDM, of the recent repeater swap-out at the Elmwood repeater site. See the article on Page 4 for the whole story.



Ted, WA2HKS, takes an SWR measurement.



The General Electric "works in a drawer" MastriI

Rich, WB2DSS, notes system voltages and current.



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Calendar of Events

GENERAL MEETINGS

General meetings are held at St. Bartholomews Episcopal Church, Brighton and Fries Roads, Tonawanda, across from Kenmore East HS. Doors open at 7:00 pm for rag chew, business meeting at 7:30, with program following.

Monday, April 21, 2003 -- SKYWARN presentation and training by members of the NWS Buffalo office.

Tuesday, May 13, 2003 -- Joint meeting, pizza party and tour of the *USS Little Rock* with RAWNY at the Buffalo and Erie County Naval & Military Park. Cost is \$5/person. See details on Page 1.

Monday, June 16, 2003 -- Program topic TBA.

Monday, July 21, 2003 -- Annual BARRA Mobile Clinic and Picnic at the Cole Road repeater site.

**NO GENERAL MEETINGS IN MARCH,
MAY, AUGUST OR NOVEMBER**
The *Link* is not published in those months.

BOARD MEETINGS

Board Meetings are held the second Monday of every month at Crest A/V Electronics, 1570 Main Street, Buffalo, between Michigan and Ferry Streets. The meetings begin at 7:30 PM and members are always welcome to sit in on a meeting or bring concerns to the board.

TECHNICAL COMMITTEE

The Technical Committee has formal meetings the first Friday of every month at 7:00 PM in Room 117 of the BOCES Potter Road Career and Technical Center, 705 Potter Road, West Seneca (Corner of Slade, Potter and Orchard Park Rds). Come on out to BARRA's own CCITT (Coffee & Crumpets Interrupted by Technical Talk), where progress of current projects is evaluated and new projects are planned. The meetings usually conclude with munchies at a nearby restaurant.

BARRA will have its annual information table at the Rochester Hamfest, Saturday, June 1st, 2003. Volunteers are needed to help staff the table throughout the day, from 8:30 AM to closing. If you can spare some time that day, contact your editor at ka2wft@arrl.net or 834-2664 evenings.