

New Bern Amateur Radio Club



foto by W2RLG & W2HVX

Volume 32, Issue 7, July, 2009



Logo tnx to Eve, XYL of W2HVX

W4EWN/R

146.610 / 146.010 PL 100 Hz.

444.900 / 449.900 PL 100 Hz.

Website: <http://www.nbarc.org>

Next Meeting -- Thursday, July 2, 2009

6:30 PM at Famous Subs & Pizza, 2210 Neuse Blvd.

Program:

FINANCIAL REPORT

The only thing we owe for is the A/C for the repeater, which should be less than \$100....and the two bills, power and phone. Otherwise we have in the bank as we speak: \$818.56 in checking, and \$3,460.96 in the savings account.

Ray Hemphill, **W7OPH**, Treasurer

FIELD DAY REMINDERS

Hello everyone. I want to remind everyone that it does not matter what class ticket you have, you can operate Field Day. We use our club call, **W4EWN**, and you operate under that call-sign. If you have never participated in Field Day before, don't worry. We will instruct you, and you will find it is very easy and fun. I would like for you to come out, even if it's for a couple of hours and help out in this fun event. You will be glad you did.

For those of you that volunteered equipment, please make sure that you test everything out before Field Day, making sure they are in good working order. Bring your favorite key, keyer, bug, earphones etc. I label all my gear, and it's a good idea. Anyone who has a deep cycle 12 volt battery that you can bring for a backup, would be appreciated.

Setup will start at 730 AM Saturday morning. We want everything (antennas and equipment) set up and working a substantial time before the contest starts. I will hold a strategy meeting at that time, so everyone will know when they will operate etc. This will be flexible to accommodate anyone who shows up and wants to operate when they get there. The contest is for a 24 hour period from Sat. at 1:00 PM to Sun. 1:00 PM. There is plenty of time for everyone to operate and have a good time.

I want to thank everyone who has signed up already to be a part of the event. Also, thanks to my committee people who help to make this event possible. Let us hope for fair weather, good food, lots of tall tales, and big scores to boast about when it is all over. It is a pleasure to work with all of you. See ya there, 73 to all.

Mark, **W2EAG**

F.D. Committee Chairman

A G Kessinger - SK

With regrets, we note the death of one of our members on Tuesday, June 23. He came to New Bern in 1998 and had been a club member for most of the years since. Our condolences go out to his family.

Membership

As of June 15, we have 62 members in good standing. There are 16 more who were members last year but have not renewed as of yet.

The latest roster is now available on the website.

Minutes of Meeting

NEW BERN AMATEUR RADIO CLUB

4 June 2009

The regular scheduled monthly meeting of the New Bern Amateur Radio Club was held this date and the meeting was called to order at 6:30 by President Dave Warwick, **K4DJW**. There were 30 names on the roster, one of which is attached to these minutes.

Introductions were made from the floor.

Sid, **WA4VBC**, gave a report on our repeater. He has spent many hours trouble shooting problems and repairing it. Sid recognized Mac, **WA0ZGL**, Ray, **W7OPH**, and Pete, **KA4SXX**, for their help with the painting and repairs of the repeater site. The Club thanks all the members for the time and effort that they spend to keep us up and running!

John, **KR4ZJ**, announced that the Knights of Columbus on Pine tree Drive will be having their garage sale the 27th of June. They have several bargain priced computers available. Club members have been invited to stop in early and purchase any of these.

Jim, **K4SO**, spoke about this being the start of hurricane season. He has been in contact with Robert Toler from the Red Cross and is still working with contracting the schools for emergency shelters.

Training for **ARES** has been rescheduled at the River Bend Town Hall on 25 June. All interested parties should contact Mark, **W2EAG**, or Jim, **K4SO**, on the details. Members that already know about it should remember to bring their hand outs and paper and pencil.

Dave, **K4DJW**, presented Charter Member Mac, **WA0ZGL**, a plaque of Appreciation of Service for his excess of 30 years dedication to the Club and Amateur Radio. He was also presented an old tube for an old member plaque. Kudos's Mac! (Was your Elmer really Marconi?)

Dave, **K4DJW**, held a brief discussion on meeting locations and having different location for special training. Bring your ideas with you to the next meeting.

Ken, **K4KDM**, spoke about the Neuse River Days. Planning was not perfect but it will be better next year. Our Club was there and he thanked Al, **W8UT**, Ray,

W7OPH, Bill, **KI4TDY**, and Bob, **KJ4HJH**, for supporting this function. We had 5 radio operators for 6 Kayaks in the race.

Mark Rappaport, **W2EAG**, spoke about the upcoming Field Day. Remember to bring Transceiver with mics, headphones spare fuses and anything else you might need. Contest will be 27 June, starting at 1300hrs and will run 24 hours until 1300 hrs 28 June. We will run the 24 hrs but we need your support!

Public Relations Bill Ash, **N2GAH**, with help from Mark, **W2EAG**, and Bruce, **N8UTY**, will bring information about Amateur Radio and our club.

Dave, **K4DJW**, will be teaching Scouts to make a single band antenna, the club members will be working with them to earn their Radio Badge. We will have laptops with logging programs at the event. Master Chef Pete Koonce, **KA4SXX**, will set the menu. From what I have heard his cooking will even improve your TX and DX.

Motion to Adjourn by Mac, **WA0ZGL**, 2nd Ray, **W7OPH** at 7:30.

Robert Melle, **KJ4HJH**, Secretary

p.s. Extra, **FYI**: Ed Uhlig, **KI4EQH**, had a heart valve replaced on 16 June. He is not allowed visitors yet but cards would be welcome.

There is a new Contest Club, The Carolina Shine. Hank Arron, **WB4ROA**, from the club, contacted me and they are looking for members. All interested persons are requested to call Hank at 252-249-3767. I invited him to our next meeting. **KJ4HJH**

Neuse River Day -- (We Lucked Out)

The **Neuse River Day** organizing group was as disorganized as we are, their folks complain also. They apparently only had 1 meeting to do their planning, and the one woman who used to do it isn't there, or isn't doing it anymore. We had 4 folks show up, Ken McCain, **K4KDM**, & Al Parker, **W8UT**, who've both done it many times, and 2 others who've never done it. One, Bob Melle, **KJ4HJH**, who's very new to the club, Bill Reasons, **KI4TDY**, who's been a member abt 2 yrs. Ray Hemphill, **W7OPH**, showed up at about 9:30AM. Bruce, **N8UTY**, who was our organizer, had other commitments and hadn't planned to show up. So, Ken & Al decided who'd do what. Ken already knew he'd be on a boat for the kayak races, Al been told by Bruce, "show up and shadow somebody". (Fortunately they had only planned on one boat to

monitor the races.) That was our planning. Our HT's wouldn't get into the repeater reliably, so we setup on 146.490 & worked simplex. Al shadowed the Race Chairman who was "in charge" so to speak, of the boat races, Ken relayed boat info back to him, Bill & Bob stayed at the NRD booth as a "base stn". There was no PA system set up, so nobody knew what was going on as far as start, finish, or standings of the boats. The Race Chairman walked over a few times to where a band had set up in the Gazebo and asked if he could use their sound system to make an announcement. We left about 11:15, with nothing left to do, the "main" races done. There were only 6 boats in the "big" kayak race, 2 teams in the short relay race. A poor turnout all around. Other than the Race Chairman, there didn't appear to be anyone else trying to coordinate the races, and he couldn't do it all. Larry Baldwin, River Keeper, seemed to be the only one who knew what was happening, and tho' he could have used a shadow, none of our folks were capable of keeping up with his fast pace.

The Comm Trailer wouldn't have been any help, but it might have been nice to have a base station with a speaker set up in the Neuse River Foundation booth as a base, rather than HT's. There was no room for that in the booth, but if they had known what we could do for them perhaps we could have served them better.



W2HVX pic

This was the crew for Neuse River Day 2007, 18 ops

Mystery of the Missing Sunspots, Solved?

June 17, 2009: The sun is in the pits of a century-class solar minimum, and sunspots have been puzzlingly scarce for more than two years. Now, for the first time, solar physicists might understand why.

At an American Astronomical Society press conference today in Boulder, Colorado, researchers announced that a jet stream deep inside the sun is migrating slower than usual through the star's interior, giving rise to the current lack of sunspots.

For the full story, go to

http://science.nasa.gov/headlines/y2009/17jun_jetstream.htm?list57637

July QST Cover article

Did you see the July QST cover? Pix of Joel Halas, **W1ZR**, the QST Tech. Ed., on his sailboat in Long Island Sound, operating marine mobile. Those are not "setup" pix, he was actually operating on 20m SSB, and checked into the Vintage Sideband Net, 14.293mhz, on Sun. June 24, 2009. Your newsletter editor, Al, **W8UT**, was net control at the time, but a relay station checked him in because propagation wasn't favorable to this area. He was heard here, but not well.

ARES Corner

I was just reading the latest ARRL letter, and I think the following extract would be worth our consideration.

Jim, **KS4O**, EC

Rick Palm, **K1CE**, editor of the ARRL's **ARES** E-Letter <<http://www.arrl.org/FandES/field/ares-el/>>, warns that now is the time for **ARES** members to assess their portfolio of communications equipment and disaster response knowledge. Palm gives several tips for amateurs involved with hurricane operations:

Monitor major HF hurricane networks during events this season. The Hurricane Watch Net (**HWN**) on 14.325 MHz is one of several key players <<http://www.hwn.org/>>. It serves either the Atlantic or Pacific during a watch or warning period and coordinates with the National Hurricane Center (**NHC**) in Miami <<http://www.nhc.noaa.gov/>>. Frequent, detailed information is issued on nets when storms pose a threat to the US mainland. In addition to hurricane spotting, local communicators may announce that residents have evacuated from low-lying flood areas. Other amateurs across the country can help by relaying information, keeping the net frequency clear and by listening. See the **HWN**'s Web site for more information. The net works closely with the hams at the **NHC**'s Amateur Radio station **WX4NHC** <<http://www.wx4nhc.com/>>.

The **SATERN** Net (Salvation Army Team Emergency Radio Network) <<http://www.saturn.org/>> provides emergency communication support to the Salvation Army and populations at large. They also handle health-and-welfare traffic. **SATERN** holds high profile nets on 20 meters (14.265 MHz) during major hurricanes and has a long history of excellence, discipline and service. Refer to the **SATERN** Web site for more information.

The Maritime Mobile Service Net (**MMSN**) <<http://www.mmsn.org/>> meets on 14.300 MHz and is composed of hams who serve and assist those in need of communications on the high seas. According to its Web site, the primary purpose of the net is for handling traffic from maritime mobile stations. The network is recognized by the United States Coast Guard and has an excellent working relationship with that agency. The **MMSN** has handled hundreds of incidents involving vessels in distress and medical emergencies in remote locations, as well as passing health and welfare traffic in and out of affected areas. They also work closely with the **NWS** and **NHC** by relaying weather reports from maritime stations.

The VoIP **SKYWARN** and Hurricane Net <<http://www.voipwx.net/>> operates by combining both the EchoLink and IRLP linked repeater networks, while handling critical wide area communications during major severe weather and tropical events. These operations have gained national stature in recent years, making the Net a critical partner with **WX4NHC**. Whenever tropical weather is posing a threat to the US mainland and certain other areas of interest, the VoIP WX net will be fully operational. See the VoIP **SKYWARN** and Hurricane Net Web site for more information.

Palm said that during hurricane events, there are usually two or three regional nets (usually on 40 or 20 meters) that spring to prominence as major key assets to the disaster response on an ad hoc basis. "Watch for these nets, as well as the nationally recognized networks described above, this season. Don't transmit on their frequencies unless you are absolutely sure you have something substantive to add, and then only under the direction of the net control station," Palm advised.

ARRL Emergency Preparedness and Response Manager Dennis Dura, **K2DCD**, added that when **ARES** activates in response to any tropical event, it is crucial that information flows up through the Section and is reported to Headquarters. "These reports allow us to develop the situational awareness and disaster

intelligence that is required for us as an organization to support the Sections that are impacted" he explained.

"In this way, we are able to respond to relevant requests from the media and finally to coordinate with the governmental and non-governmental organizations. This information also allows us to make the decision at Headquarters on whether to stand up our Incident Management Team to support and coordinate the operations."

If you are interested in Emergency Communications, please be sure to check out the monthly **ARES** E-Letter <<http://www.arrl.org/FandES/field/ares-el/>>. You can elect to receive this newsletter free of charge via e-mail by going to the Member Data Page on the **ARRL** Web site <<http://www.arrl.org/members-only/memdata.html>>.

Swap Shop

For Sale: (1) Astron 12 volt, 20 amp power supply, model **RS-20A**. As new, \$70.00

(1) **Icom** Marine radio, model **IC-302**, 25 watts (not a handheld). New in box. \$100.00.

(1) **Calrad** 12 volt, 4 amp, power supply, model **45-738**. Good condition. \$25.00

(1) **Heathkit** 12 volt, 15 amp, power supply, model **HP1175**. Good condition. \$50.00

Contact Sid Purvis, **WA4VBC**, at 252-349-3333.

For Sale: **Cushcraft 13B2** Two Meter Broadband 13 Element Boom, \$80.

Diamond X510MA 2m/70 cm Dual Band High Performance Vertical, \$105. Contact Jim Dugan, **W1JFD**, 252-637-5319

For Sale: Marine Antenna, **Shakespeare** Style 390, 2-30 mhz, 1kw, 23 ft high, bought new in 2007, list price \$187, used less than a season, \$75.

Contact Al, **W8UT**, 252-636-0837 anchor@ec.rr.com

Hamfests

July 11, Sat., Salisbury, NC, Rowan ARS, Salisbury Civic Center, 315 Martin Luther King Jr. Ave. So. <http://www.rowanars.org> **Talk-In:** 145.41 (PL136.5) info email , rkbrown5902@bellsouth.net

July 18, Sat., Cary, NC, Mid-Summer Swapfest Cary Amateur Radio Club, Ritter Park, Cary, [301 West Lochmere Drive http://www.qsl.net/n4nc](http://www.qsl.net/n4nc) **Talk-In:** 146.88 -0.6 (no PL tone), info email: w3hl@arrl.net

Coaxial Connectors – The WA4VBC Way

Recently I had the occasion to install a good number of PL-259 and N type connectors on some hardline and double shielded RG-400 coaxial cables. The PL-259 connectors are my least favorite connector and except for the cost, I don't understand why the equipment manufactures continue to use female connectors on equipment that require PL-259 connectors. They are not constant impedance like the N type or others like TNC, SMA, BNC, etc. That being aside, it is necessary to use the WW-II era PL-259 to match equipment ports. While I would never give specific installations instructions to experienced hams as each has their own way of doing it, some better than others, I will make a few general observations that may be helpful for installing the PL-259 or the N type connector.

The first thing that struck me when I was working on the connectors was the large array of tools I had used to do the job. I took the attached photo after I had finished. Maybe others can get by with fewer tools, but those are what I used and I will comment on why I use them.

It is important to cut the cables flush, straight, and not crushed. A sharp knife (I like the box cutter type with a new razor blade) is essential. To cut hardline I use a small tubing cutter or hacksaw with a fine tooth blade. I realized I left them out of the picture. Small electrician scissors work very well to cut the braid on the coax. Scissors work much better than small wire cutters on the braid. Sharp small wire cutters work well on the center conductor. An accurate way measure the cut is important, especially on the N connectors. A small metal machinist rule works well. The ARRL handbook and other sources have the measurements needed.

A small pick or equivalent is needed to smoothly comb out the braid. A magnifying glass is used to inspect the fit and joints.

Now, we come to the item that has a lot of prevailing opinions. What do we use to solder the connections? Many use a soldering gun. But it has been my experience that even a large 100 to 150 watt gun is lacking in soldering the PL-259 shield to the connector body. A gun does not have the mass to transfer the heat quickly as the tip cools real fast when it comes in contact with the connector body. I have found that a soldering iron with a large tip works better as it allows the body and shield to quickly heat and accept the solder. This helps prevent damage to the coax center conductor. Silver plated connectors solder much better than the cheaper nickel plated ones. Also I like the ones

with Teflon insulation. If using an adapter with small coax like RG-8X it is helpful to tin the adapter before assembly. Always hold the body stationary and screw the adapter into it to prevent damage. Tinning the center conductor and the tip of the PL-259 will help to make a neat job. Use a fine file to clean up any excess solder on the tip and body. Inspect the work with the magnifying glass. Finally test for shorts and low resistance conductivity end to end with a VOM.

It makes a factory looking job and adds strength to use a short piece of heat shrink on each connector. A heat gun will rapidly shrink the tubing. Just don't forget to slide the tubing and the adapter (if used) and the connector body on the coax before soldering. In the heat of battle, I have forgotten to put on the body before soldering more than once. Home improvement stores such as Lowes carry a nice selection of heat shrink and the heat gun as well as hobby stores.

On the N connector check to be sure the center tip is flush with the center ring around the tip. Recently I had a factory installed N connector that was making intermittent connectivity. It turned out that the center tip was recessed too far back in the connector and was barely touching the female center pin. The N is not too hard to install, however it has 5 or 6 pieces that need to be assembled

The debate still rages over which is better; a solder connection or a crimp connection on the connectors. Either will work fine, however if using crimp connections, check the data sheet and get the correct size crimp die for the center pin and body. One final comment, if using BNC connectors be sure you have the 50 ohm ones if using on 50 ohm coax. Some of the BNC connectors used for telecom are 75 ohm, but look about the same. Some are marked as 50 or 75 on the connector body.

Sid Purvis, **WA4VBC**



Q OF INDUCTORS

Andy Griffith, W4ULD 5-14-2009

In this age of digital electronics one can easily forget some of the parameters that were very important to radio engineers of the past. Most of these parameters are just as important today, but seem to be ignored by manufacturers; especially, manufacturers of ham radio antennas who strive to make their products match the 50 ohm output of a transceiver without a tuner and cover a broad portion of a band without retuning. Much of this is accomplished at the expense of efficiency. One of the nearly forgotten parameters I have in mind is the Q of inductors.

$$Q = \frac{X}{R}$$

Where: Q =Quality factor
 X =Reactance of the inductor, ohms
 R =RF resistance of the inductor

The reactance of the inductor is:

$$X = 2\pi FL$$

Where: X =reactance, ohms
 F =Frequency, MHz.
 L =inductance, μH

Capacitors also have a Q; however, it is so high that in LC circuits the resistance of the circuit is usually assigned to the inductor. This is valid as long as the dielectric of the capacitor is air, mica, or Teflon..

The RF resistance of an inductor is much higher than the DC resistance because RF currents only flow on the surface of a wire. This is the so called "skin effect". Thus RF currents use only a small portion of the total cross sectional area of a wire. The skin effect increases with frequency; however, at all amateur frequencies, RF currents flow on the surface of a conductor.

A high Q inductor has a Q of about 200. For this level of Q an air wound coil should have a length no more than twice the diameter and the winding should not be close wound.

The RF resistance of an inductor is very important in pi and pi-L networks in the output of power amplifiers, in antenna tuners, and in the loading coils of short HF mobile antennas. In each case that the total RF of the transceiver must pass through an inductor, the power lost in the inductor will be:

$$P = I^2R$$

Where: P =Power lost. Watts
 I =RF current, amperes
 R =RF resistance

Modern toroid cores made from some grades of powdered iron can be wound to produce Q values of 200. Such cores are used in the pi-L networks in the output of some 100 W transceivers and as tuning inductances in some automatic antenna tuners. One should adhere closely to the manufacturer's specifications when designing a project using powdered iron toroids.

One place that Q is most important is in the loading coil for a short HF mobile antenna on 75 meters. The radiation resistance of a 75M mobile antenna which is about 10 ft. tall is less than 1 ohm. This is usually jacked up to 50 ohms by the addition of an inductor of about 1.5 uH placed across the input terminals of the antenna. The loading coil for such an antenna placed about the middle of the antenna is usually about 100uH. At 3.9 MHz and at a Q of 200 the R is 6.126 ohms. Assuming .5 ohms radiation resistance, the efficiency of this antenna is no more than 7.5 percent. Only two types of antennas that I know of meet the Q=200 criteria. They are the "Texas bugcatcher" and the full sized" screwdriver antenna made by Tarheel or High Sierra. I have measured the Q of loading coils for popular antennas for 75M mobile as low as 50.

If you are considering HF mobile, I recommend the full sized screwdriver type. Do not use smaller screwdrivers, "Slimline" antennas, and "Hamstiks". These antennae are easy to install, look better on the car, and are cheaper, but just don't cut the mustard and you are likely to be dissatisfied with their performance.

TYPES OF TRAP ANTENNAS

Andy Griffith, **W4ULD** 6-6-2009

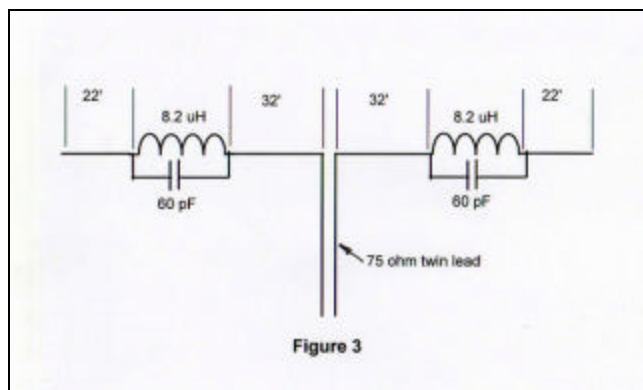
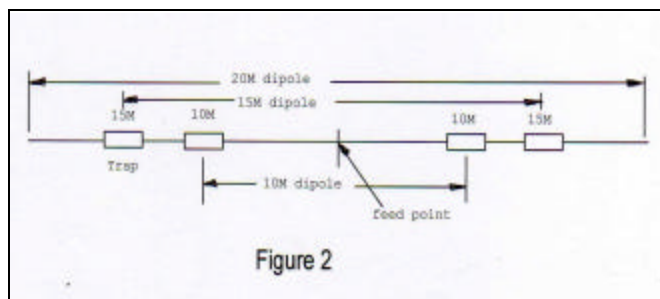
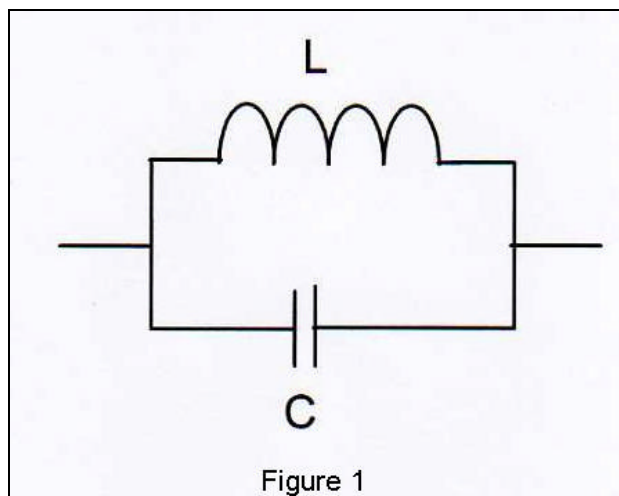
The three types of trap antennas that I am familiar with and have worked with are the common trap, the dual band single trap, and the multiband two trap. I will attempt to discuss each one in future articles. Each type of antenna uses the parallel LC trap diagrammed in Figure 1

Trap dipole antennas which operate on more than one band used to be very popular.. Trap antennas have lost popularity because materials of construction are difficult to find and are expensive. The trap dipoles have been largely replaced by multi band dipoles fed with low loss window line through a T-network tuner to the transceiver. Such antennas have lower loss than trap dipoles and are much easier to construct. than a trap dipole. Low loss window line and efficient T-network tuners were not readily available during the heydays of the trap dipoles. However, there are a few cases where the trap antenna is still used. One is in the common triband beam for 10M, 15M, and 20M. Another is in a Hy-Gain multi-band vertical. Both antennas are quite lossy especially the multiband vertical.

The common trap antenna uses two parallel resonant traps tuned to each center frequency of operation. The high impedance traps are used as insulators on each end of the dipole section for each band of operation as shown in Figure 2. Figure 2 shows a 3 band dipole for 10M, 15M ,and 20M. The 10M traps isolate the center section for 10M. The rest of the antenna has no effect on 10M.. The 15M traps isolate the 15M section.. The common tribander beam for 10M, 15M, and 20M uses this principle.

The two band single trap antenna uses the principle that a trap operated above its resonant frequency will have plus or inductive reactance and vice versa. Thus, a "trap" can be selected for the center of a 15M/20M antenna that will have negative or capacitive reactance on 15M and positive or inductive reactance on 20M. Thus the trap acts like a loading device whose reactance cancels the negative reactance when operating at the lower frequency and cancels the positive reactance when operating at the higher frequency.. The antenna length will be somewhere between the normal dipole length for 20M and the normal length for 15M. any two frequencies may be chosen for the upper and lower frequencies.

The last type of multiband antenna uses a single trap in each leg of a dipole. The system depicted in Figure 3 was worked out by W3DZZ and is reported in the 1974 ARRL Antenna book and also in subsequent issues. The depicted antenna resonates at 3,750 MHz., 7.20 MHz., 14.150 MHz., and 29.5 MHz. The traps are resonant on 40M; thus the center section of the antenna is simply a 40M dipole with parallel resonant traps for insulators. The LC of the traps is chosen so that the trap reactances permit resonance for the antenna on 20M and 10M. Note that the design does not resonate on 15M or any of the WARP bands. I used a version of this antenna for several years. To operate on 15M I hung a 15M dipole beneath the antenna and used the same feed point.



Cast of Characters:

President: Dave Warwick, K4DJW
Vice President: Pete Koonce, KA4SXX
Secretary: Bob Melle, KJ4HJH
Treasurer: Ray Hemphill, W7OPH
Emergency Communications: Jim Wright, KS4O
Assistant Em. Comm.: Mark Rappaport, W2EAG
Public Svc/Special Events/VEC: Bruce Arnold, N8UTY
Repeater Trustee: Billy Morton, KE4YMA
Program Committee Chairman: Igor T. Troll
Photography: Mac Eutsler, WA0ZGL

The Newsletter Team:

Al Parker, W8UT, Editor
The NBARC Newsletter is the newsletter of the New Bern Amateur Radio Club, Inc., 1508 Kimberly Road, New Bern, NC 28562.. NBARC is an affiliated club with the ARRL and ARES.

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Selected Local Nets Times are local time, unless otherwise stated

Club Net Manager: position open
Craven County ARES: 146.61 MHz, 2000 before threatening wx; monitor during ARES activations
NC ARES Net, 3.923 MHz, 19:30 daily
Waterway Radio Cruising Club: 7268 kHz, 0745 daily
Fairfield Harbor Cruising Net, 7224, 0730 M-F
NC Morning Net: 3927 kHz, 0745 daily
Carolina Slow Net (CW): 3695 kHz, at 8PM ET (5wpm) daily
Coastal Carolina Emergency Net: 3908 kHz, 1900 daily
Tarheel Emergency Net: 3923 kHz, 1930 daily
Carolinas Net (CW): 3573 kHz, 1900 (20 WPM), 2200 (10 WPM) daily
Carteret County ARS/ARES: 145.45 mHz, 1930 Tues./ Emerg Traffic handling 1st Tues. after 4th Sat., monthly Skywarn: 145.21 mHz, 2100 Tuesdays
Pamlico County ARES: 147.210 MHz, tone 151.4, 1930 Wed.
ENC Emergency: 146.685 mHz, 2100 Thursdays
ENC Traffic: 146.685 mHz, 2030 daily
NBARC Ragchew: 146.61 mHz, 2000 daily

New Bern Amateur Radio Club

<http://www.nbarc.org>

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